Ἔχεις μοι εἰπεῖν, ὦ Σώκρατες, ἃρα διδακτὸν ἢ ἀρετή; ὢν διδακτὸν ἂλλ’ ἀσκητὸν; ὢν ὡς ἀσκητὸν ὡς μαθητὸν, ἄλλα φύσει παραγίγνεται τοῖς ἀνθρώποις ὢν ἂλλῳ τινὶ τρόπῳ.
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A STUDY OF ADULT LEARNERS’ ATTITUDES TOWARDS INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

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Abstract

The rapid development of modern technology and its penetration both into the daily life of an individual and in the collective “doings” of people, has transformed the nature of training of adult learners towards Information and Communications Technology (ICT). This study focuses upon whether factors such as age, gender, as well as previous experience have influenced this transformation. This research showed us that there are more positive and fewer negative feelings of training adult learners, towards ICT. As concerning the gender factor, it seems that women tend to be better recipients of knowledge compared to men, although they seem to have reservations as to whether the use of the computer yields positive consequences in the teaching and learning process. The age factor does not show a statistical significance. Frequency of use, as a factor of experience, relates to all factors which shape peoples’ attitudes towards computers.

Keywords: Attitudes, adults, training, ICT

1. Attitudes

Since the beginning of the 1990’s Information and Communications Technology (ICT) rapidly developed, directly affecting the functions and operations of specific social fields such as entertainment, education, the economy, etc. Needs which have arisen and which concern economic, technical and socio-cultural factors demand for new and
specialized expertise, methodological changes and renewal in the work field, as well as adaptability to evolution and change. Social exclusions may be derived from, for example, ethnic minorities or from “sensitive” groups of people such as ex-drug addicts, people who have been imprisoned or handicapped people, etc. These are reasons that will eventually become the driving force which will prompt an individual to seek for further education which will aid him in his work (Kokkos, 2005).

Adult education has always followed the demands of society and economy and therefore only lately offers thematic units which deal with basic skills in ICT. During the last seven years in Greece these units are greatly in demand and are usually offered by centers of Lifelong Learning.

The purpose of this paper is to examine the degree to which adults may change their mind before and after their participation in an ICT programme. In this research we basically, examined whether adults do eventually change their minds (their attitudes, in short, their values and predispositions) after attending and completing an ICT course.

More specifically we looked into the following factors which influence the attitudes of adults towards an ICT course:

- their self-confidence when using a computer:
  - the usefulness of computers in their daily and professional lives;
  - their familiarization with electronic computers and by extension with the ICT in general;
  - their perception on what will happen to their health when exposed to computers for short or long periods of time;
  - the gender factor ability of both genders to effectively use a computer;
  - the age factor when using a computer;
  - previous experience in computers.

In the field of social psychology and social sciences the concept of “attitude(s)” plays a very important role. An attitude is defined as a positive or negative feeling or intellectual condition of the mind which is “learnt” or “organized” through experience and which exercises influence upon the response – attitude of a person towards another person, situation or object. The Theory of Reasoned Action (TRA) proposed by Ajzen and Fisbein (1980), maintains that the convictions concerning an object lead to the “creation” of an attitude towards this object. This attitude influences the “conduct” towards this object. The “conduct” of people in turn, has repercussions upon “the real attitudes” of these people towards the “object”. Often, these attitudes towards an object may change the initial conviction(s) of the person(s) towards the object.

Attitudes are not the only or the most important factors which predict a person’s behaviour, thus a certain amount of inconsistency is expected between attitudes and behaviours. These inconsistencies are usually expected when an individual is not free to behave in a manner which is congruent to his attitude, as well as when the individual does not have the skills to display or to show this kind of behaviour (Winter, et. al, 1998). Scientists have attempted to determine more integrated and complete models which deal with attitudes and behaviours, and this is why they have included within them a variety of characteristics of the person and the environment (Davis, 1993; Al-Khaldi and Al-Jabri, 1998; Beckers and Schmidt, 2003).
1.2 The need to record peoples’ attitudes towards computers
The study probes into the attitudes of participants towards ICT and computers. Attitude towards computers is defined as the general evaluation or frame of mind of a person which may be favourable or unfavourable towards computers or towards specific activities which are aided by computers (Smith et. al., 2000).

According to Palaigeorgiou (2006) the application of the Theory of Reasoned Action (TRA) in the use of computers brings about certain consequences to ICT users (especially their future intentions concerning the use of computers), which in turn will bring about other consequences upon the actual use of the computer.

The use of new technologies, including ICT causes anxiety and fear to many people especially those who are not very familiar with it (Panagiotakopoulos, 2002: 127-128). Many people have reservations as to whether they are capable of using a machine. Thus, many trainees may have a negative opinion, or at best have reservations on the use of computers, and very often this may lead a number of trainees to either temporarily stop attending or to drop out from a course altogether.

Alienation, estrangement and antisocial behaviour are attributes given to informatics and more specifically to its overuse; and so is habituation or addiction to the overuse of a computer. The negative consequences the overuse of a computer has on the health of a person (sore wrist, sore eyes, harm to the skin, as well as a bad posture of the body) are quite visible and support the negative attitude of some people towards computers.

Lately, instances of suicide due to physical debilitation and addiction to the use of computers especially among minors, who have a history of overuse, discourage adults from learning to use computers. The unbearable pressure, caused by lack of free time or because of unemployment, as well as the feeling of inadequacy brought about when associating with very experienced and competent users contribute to a negative attitude towards learning how to use a computer, sometimes long before an informatics programme starts.

1.3 Factors which shape – influence attitudes towards the use of a computer
Different kinds of scales have been used from time to time, to measure attitudes towards the use of computers (Smith et. al. 2000; Selwyn 1997), nevertheless most of the times, they include common factors such as self – efficacy or confidence (Al – Khaldi and Al – Jabri 1998; Beckers and Smidt 2003), computer anxiety (Al – Khaldi and Al – Jabri 1998;), the perceived usefulness of the computer (Davis 1993), the perceived ease-of-use (Davis 1993), the level of computer skills (Beckers and Schmidt 2001), and finally the perceived consequences for society (Beckers and Schmidt 2003).

The use of the computer is greatly influenced by the attitudes of trainees especially as concerning the manner and means of their use as has been shown by research (Al-Khaldi and Al-Jabri, 1998). In this particular research, which deals with the shaping of attitudes we chose six parameters:

- Computer anxiety. The anxiety which concerns computers is a “negative emotion and is evaluated negatively, and is also caused by the use of computer technology” (Bozionelos, 2001).
Self-confidence, which expresses the belief someone, has in his abilities, as concerning the use of a computer, which will aid him in the completion of his assignment. Self-confidence influences a person’s attempt his determination and interest, as well as the difficulties he may face in the completion of his chosen aims and the results of his attempts (Durndell and Haag, 2002).

Its usefulness in social life. This factor focuses upon, (generally speaking), the negative and positive influence of computers (Richter, et. al., 2000) which very often appears as a stress component of computer use (Beckers and Schmidt, 2001). This component incorporates within its scale, the perception of participants as concerning the value of the use of computers in the work field, in education and social life.

Possible negative consequences when using a computer. Participants are concerned that the regular use of computers for a long period of time may have a negative effect on the health of the user.

The existence, or not, of previous experience. Previous experience in the use of computers is very important as it seems to shape, either positively or negatively, the role it will play in a person’s attitude towards its use in the future (Palaigeorgiou, 2006: 8).

Expectations and fears of participants in the seminar concerning the use of computers.

Adults come to training seminars carrying with them a socioeconomic background, with perceptions and values that have already being shaped. They usually have fixed expectations as concerning their learning process and have their own learning models and are also competitive (Rogers, 1999: 92). Rogers (1999) “delearning” is semantically closer to what Bachelard called “epistemological impediment”. An “epistemological impediment” may be considered as the existence of a particular portion of knowledge, which for a particular time span aided in solving problems and gave answers to particular questions within a specific framework, and which became part, or became “hooked” in the minds, of the trainees as long-term knowledge. If this knowledge proves to be inadequate when applied within another framework or when applied to new problems, then we have an “epistemological impediment” (Brousseau, 1983). Epistemological impediments which are shaped within the framework of training are defined as educational impediments (Bachelard, 1970).

These parameters showed a direct relationship between the use and the exploitation of computers. These parameters are also examined in connection with the age and gender of the individuals.

Previous experience is a parameter which we often come into contact with when we examine peoples attitudes towards computers. A different aspect of this parameter is examined in this research. This aspect is distinguished into subjective and objective experience and is examined in conjunction with their influence in the shaping of trainees’ attitudes. A subjective experience is an individual, psychological condition which reflects the feelings and thoughts a person describes as existing in a particular interaction with his computer. An objective experience is one which describes the total number of external observations, direct and/or indirect interaction of the individual and his computer, as this evolves in the course of time (Smith, et. Al., 1999: 228).
Experience is composed of factors such as the ability to use a computer, use-amplitude and amount of experience.

According to Palaigeorgiou (2006) the concept of “computer experience” usually describes the exposure a person has to the computer and the effects which gradually accumulate in the course of time. A person’s previous experience, in the use of a computer, plays a very important role in the shaping of a person’s “feeling of control” over his computer, it helps him evaluate its usefulness, etc.

The term “experience” is usually shaped by previous events which are directly connected to the learning processes of the particular discipline. According to bibliographical references concerning computers, the following is of major importance and should be mentioned:

- Initial experiences, concerning the use of computers, which may have been negative (Rosen, et. al., 1987), positive (McIlroy, et. al., 2001), lax (Todman and Monaghan, 1994), whether the individuals themselves had any control over their experience or not (Todman and Monaghan, 1994; Beckers and Schmidt, 2003), the nature of the support they may have received (Beckers and Schmidt, 2003) and finally the age within which they accomplished the aforementioned (Weil, et. al., 1990).
- The “most important” experiences which are distinguished by negative or positive feelings (Weil, et. al., 1990).
- These formal characteristics are connected thereafter with attitudes, thoughts and feelings such as, for example anxiety (Rosen, et. al., 1987), attitude towards its use (Tsai, et. al., 2001), intensity of its use (Beckers and Schmidt, 2003) their performance in training seminars (Holt and Crocker, 2000).
- Finally, the relationship between age and attitude towards the ICT’s may change their stance after exposure to regular use.

1.4 The Purposes and Research Questions

So far research has shown those adults’ attitudes towards ICT and more specifically how these attitudes are shaped, before and after their participation in computer seminars, is particularly limited. What is attempted with this research is a contribution to the limited, so far, understanding of adults’ attitudes towards ICT, and how these attitudes are transformed during the course of an training programme. The purpose of this research is to evaluate adults’ attitudes before and after their participation in seminars which are organized in Western Thessaloniki and which concern ICT, and is also in correspondence with the gender, their age and their experience which in the use of computers.

The program dealt with adult education in basic skills to use a computer. The topics of the program were the use of Windows operating systems, the word processing software and spreadsheets. The learning process was combined with demonstration and discussion of the tools and the capabilities of each software and parallel with the application of exercises on the computer.

The following research questions were shaped by the specification of attitudes of trainees (Selwyn, 1977; Palaigeorgiou, 2006), gender differentiations in ICT (Coffin and MacIntyre, 1999; Robertson, et. al., 1995), age factors, previous experience in the use
of computers (Tsai, et. al., 2001;):

▪ Is there a noticeable change in the attitude towards ICT of trainees who participated in the training programme entitled “Basics Skills in ICT”
▪ Do gender differences play an important role in the alteration of adult attitudes toward ICT?
▪ Does age play an important role in shaping adults’ attitudes towards ICT?
▪ Does previous knowledge – experience in the use of ICT play an important role in forming/transforming adults’ attitudes?

2. Methodology

To measure a person’s attitude towards an object or an event, a researcher should either directly observe his attitude towards the object or event, or the person involved should be able to express his feelings himself (Pyrgiotakis, 1992: 44). This research is divided into two levels: Firstly we examined the opinion of participants at the beginning of the programme so as to pin-point their attitudes towards ICT at that particular point in time. What followed was a “post hoc” or in retrospect evaluation, as participants’ attitudes concerning the programme were re-examined after the end of the programme.

Closed questions were asked to secure a reliable comparison of the answers given by participants and it also facilitated the analysis of the questionnaire. There were questions of a demographic – social character which were codified at a “nominal scale” and questions which were directly related to the aims of the research which were codified with the aid of the Likert Scale, and last but not least multiple-choice questions were also processed. The framework of the questionnaire was based upon an Attitude Scale towards the use of Computers, very similar to a First Year Student’s Questionnaire used in the Department of Informatics (CASF – Computer Attitude Scale for Computer Science Freshmen) (Palaigeorgiou, et. al., 2005).

The formation of the questionnaire was conducted according to:
▪ the conceptual placement and analysis of the research framework;
▪ the bibliographical study of similar research which also dealt with the attitudes of individuals the use of computers, as well as the factors which influenced these attitudes.

The scales aforementioned, which concerned the definition of the term “attitudes towards computers” constituted the basic evaluative factors of the degree of attitude transformation of adults towards ICT.

2.1 Distinguishing variables according to how much time is spent in ICT activities

The term “experience” is usually associated with particular events which have happened in the past. Events which are considered of similar importance to the aforementioned, but which deal with computers, are described thoroughly in bibliographical references of the particular discipline. These events are:

The first/initial experiences, of individuals after the use of a computer. These experiences are distinguished into positive or negative ones and also whether
individuals had a control (or not) of these experiences (Beckers and Schmidt, 2003, as well as the positive or negative feelings which accompany them (Weil, et. al., 1990).

For the purposes of this research we chose questions which were based on negative events (inability to use a computer, fear, anxiety), factors which influence the behaviour of people, their thoughts and feelings such as their anxiety (Todman and Monaghan, 1994), whether they like computers (Beckers and Schmidt, 2003), their attitude towards computers (Tsai, et. al., 2001) and the frequency of use (Beckers and Schmidt, 2003). The more intense these feelings of discontent towards the use of computer are (according to the user) the more possible it may be that the user will look for the reason why he has these feelings and what happened to trigger them.

2.2 Frequency of computer use
The frequency of computer use is one of the variables most commonly used in research and it refers to the experience an individual has with computers, and has been connected with many other variables such a self-confidence in using a computer, anxiety, etc. The use of a computer is measured in two ways:
- By directly recording the time allotted to the use of a computer
- Indirectly, by expressing their feelings when using a computer, for example, like or dislike.

The statistic analysis of the data which arose from the answers given by participants, concerning their experience in the use of a computer including age and gender distinctions, all showed that these three variables are either decisive or unimportant in the shaping of a person’s positive or negative stance towards ICT. A test was used in the case of gender differences concerning the use of computers whereas for the other two variables, which are continuous variables, we used the Pearson-R coefficient correlation which was more appropriate for the needs of this research. To analyse the data we grouped the questions so as to facilitate the variables which were used in the different verifications (Pearson, T-test, Mean). One-way-ANOVAs was used to check the average mean score in cases in which the population was divided into more than two groups as is the case of adults being distributed into groups according to their age.

To verify our research hypothesis we chose p<0.05 as level statistic importance. There is a statistically important influence of the dependent upon the independent variable, or at least there was a statistically important influence of the independent upon the dependent variable. To analyze the questionnaires it was necessary to evaluate the reliability of the test, for this reason, and for reasons of credibility we utilized Cronbach’s alpha.

3. Description of the Sample of the Population – Results
The sample, for practical purposes, was confined within the Prefecture of Thessaloniki, and more specifically the western part of Thessaloniki (Table 1).
Table 1: Data concerning participants in the research

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</tbody>
</table>

Table 2 shows the negative feelings that adults have before being trained, as well as after being trained. The comparison between the two categories of the questionnaires, as concerning the general population, with regard to the negative feelings, shows an important statistical connection. After the end of the programme fewer adults express negative feelings as there is a change of stance towards ICT and computers in general, given the fact that feelings towards objects, techniques, tendencies, etc., are factors that can be measured. The value of Cronbach’s alpha is 0.811 for the initial investigation and 0.742 for the final. The test is considered reliable since reliability value is bigger than 0.70 in both cases.

Table 2: The Average Mean Value of feelings according to the type of questionnaire

<table>
<thead>
<tr>
<th>Type of Questionnaire</th>
<th>A.M.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear_Mistake_Handling</td>
<td>Initial 3.08</td>
</tr>
<tr>
<td></td>
<td>Review 2.07</td>
</tr>
<tr>
<td>Agitation</td>
<td>Initial 2.63</td>
</tr>
<tr>
<td></td>
<td>Review 1.98</td>
</tr>
<tr>
<td>Anxiety</td>
<td>Initial 2.80</td>
</tr>
<tr>
<td></td>
<td>Review 1.96</td>
</tr>
</tbody>
</table>

In Table 3 we see the figures which concern negative feelings in the use of a computer. Even though one of the feelings expressed by trainees concerning the learning environment, and his relationship with other trainees, is that of anxiety, in this case the trainees’ stance was negative. The value of Cronbach’s alpha is 0.830 for the initial investigation and 0.865 for the final.

Table 3: Average Mean Score concerning the negative feelings expressed by trainees compared non-experienced with more experienced trainees

<table>
<thead>
<tr>
<th>Type of Questionnaire</th>
<th>A.M.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad with Experienced Trainees</td>
<td>Initial 2.82</td>
</tr>
<tr>
<td></td>
<td>Review 2.08</td>
</tr>
<tr>
<td>Awkwardness Questions</td>
<td>Initial 2.65</td>
</tr>
</tbody>
</table>
Table 4 shows the figures which concern a trainee’s skills and his self-confidence in the training process. There is a positive (upward) increase in trainees’ positive feelings. Trainees’ feelings are positively transformed and this gives them a sense of self-confidence when using a computer. The value of Cronbach’s alpha is 0.712 for the initial investigation and 0.719 for the final.

Table 4: Average Mean Score of positive feelings according to the type of questionnaire

<table>
<thead>
<tr>
<th>Type of Questionnaire</th>
<th>A.M.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-confidence</td>
<td></td>
</tr>
<tr>
<td>Initial</td>
<td>3.02</td>
</tr>
<tr>
<td>Review</td>
<td>3.75</td>
</tr>
<tr>
<td>I have a knowledge of Computers</td>
<td></td>
</tr>
<tr>
<td>Initial</td>
<td>3.05</td>
</tr>
<tr>
<td>Review</td>
<td>3.80</td>
</tr>
<tr>
<td>I find solutions</td>
<td></td>
</tr>
<tr>
<td>Initial</td>
<td>2.92</td>
</tr>
<tr>
<td>Review</td>
<td>3.74</td>
</tr>
<tr>
<td>The use is a simple process</td>
<td></td>
</tr>
<tr>
<td>Initial</td>
<td>2.92</td>
</tr>
<tr>
<td>Review</td>
<td>3.70</td>
</tr>
</tbody>
</table>

Between the first and second questionnaires, which were handed in by the trainees who participated in the research and which concerned the importance of the use of a computer in the work fields, there had been a differentiation. The value of Cronbach’s alpha is 0.750 for the initial investigation and 0.704 for the final.

Table 5: The Average Mean Score which shows acceptance of the usefulness of ICT per type of questionnaire

<table>
<thead>
<tr>
<th>Type of Questionnaire</th>
<th>A.M.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important occupational tools</td>
<td></td>
</tr>
<tr>
<td>Initial</td>
<td>4.54</td>
</tr>
<tr>
<td>Review</td>
<td>4.43</td>
</tr>
<tr>
<td>Tools aids of life</td>
<td></td>
</tr>
<tr>
<td>Initial</td>
<td>4.52</td>
</tr>
<tr>
<td>Review</td>
<td>4.27</td>
</tr>
<tr>
<td>Improvement of communication</td>
<td></td>
</tr>
<tr>
<td>Initial</td>
<td>3.70</td>
</tr>
<tr>
<td>Review</td>
<td>3.80</td>
</tr>
<tr>
<td>Need(s)</td>
<td></td>
</tr>
<tr>
<td>Initial</td>
<td>4.08</td>
</tr>
<tr>
<td>Review</td>
<td>3.82</td>
</tr>
</tbody>
</table>

As concerning gender, the results of the initial questionnaire justify the point of view which supports that women are more anxious and agitated when using computer (Table 6). Women and men express fear of wrongly using a computer differently.
Table 6: **Average Mean Score of expressing negative feelings according to gender and type of questionnaire**

<table>
<thead>
<tr>
<th>Gender</th>
<th>A.M.S. of Initial Questionnaire</th>
<th>A.M.S. of Review Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad handling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>2.79</td>
<td>1.86</td>
</tr>
<tr>
<td>Woman</td>
<td>3.19</td>
<td>2.15</td>
</tr>
<tr>
<td>Agitation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>2.49</td>
<td>1.89</td>
</tr>
<tr>
<td>Woman</td>
<td>2.68</td>
<td>2.02</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>2.45</td>
<td>1.84</td>
</tr>
<tr>
<td>Woman</td>
<td>2.93</td>
<td>2.01</td>
</tr>
</tbody>
</table>

As concerning fear, or the serious consequences which may be caused by the over use of a computer, the many hours spent working in front of a computer, and finally the negative attitude of trainees towards computers (depending on their use), the results are as follows:

Table 7: **Average Mean Score concerning consequences per gender and type of questionnaire**

<table>
<thead>
<tr>
<th>Gender</th>
<th>A.M.S. of Initial Questionnaire</th>
<th>A.M.S. of Review Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem_Many_Hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>2.74</td>
<td>1.92</td>
</tr>
<tr>
<td>Woman</td>
<td>2.80</td>
<td>2.23</td>
</tr>
<tr>
<td>Physical Disability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>2.85</td>
<td>2.14</td>
</tr>
<tr>
<td>Woman</td>
<td>2.69</td>
<td>2.05</td>
</tr>
<tr>
<td>Pastime_Negative_Stance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>2.49</td>
<td>1.84</td>
</tr>
<tr>
<td>Woman</td>
<td>2.52</td>
<td>1.84</td>
</tr>
</tbody>
</table>

There is a balance in numbers between men and women concerning isolation and use of a person’s intellect/brain. Women seem to be more negative, compared to men, towards a long-term use of a computer or the application of ICT.

Table 8: **Average Mean Score which concerns the personality of a person according to his/her gender and according to the type of questionnaire**

<table>
<thead>
<tr>
<th>Gender</th>
<th>A.M.S. of Initial Questionnaire</th>
<th>A.M.S. of Review Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less use of his/her brain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>3.66</td>
<td>3.59</td>
</tr>
<tr>
<td>Woman</td>
<td>3.70</td>
<td>3.71</td>
</tr>
<tr>
<td>Isolation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Man</td>
<td>3.87</td>
<td>3.32</td>
</tr>
<tr>
<td>Woman</td>
<td>4.03</td>
<td>3.33</td>
</tr>
</tbody>
</table>

There does not seem to be a statistically important difference between different
age groups, as concerning ICT.

There is homogeneity in all age groups, taking into consideration the general population, when considering the negative feelings towards ICT. In the case of this research there is a reduction in the negative feelings towards ICT.

When considering experience, in connection with the negative feelings adults may have towards ICT, the correlations are very significant (0.001).

There is a very important statistical relation \( r=0.64, \, df=169, \, p=0.00 < 0.1 \) between the average mean score and the expression of fear especially in the wrong use of a computer.

There is a very important statistical relation \( r=-0.316, \, df=169, \, p=0.00 < 0.1 \) between the average mean score concerning the use and the difficulties faced in using a computer.

There is a very important statistical relation \( r=-0.245, \, df=169, \, p=0.00 < 0.1 \) between the average mean score concerning the use of a computer and the agitation this use may cause to the user.

There is a very important statistical relation \( r=-0.334, \, df=169, \, p=0.00 < 0.1 \) between the average mean score concerning the use of a computer and the anxiety which its use may cause.

There is a very important statistical relation \( r=0.360, \, df=169, \, p=0.00 < 0.1 \) between the average mean score concerning the use of a computer and a person’s expression of self-confidence.

4. Concluding Remarks

Attitude scales which have been developed in the course of this research, show important aspects of the relationship between man and his computer or ICT. The scales consisted of factors such as stance, gender, age, and experience which correlated with self-confidence, previous knowledge of computers and the stress that accompanies the use of different programs. The verification of correlations of both dependent and independent variables showed the attitudes of adults towards the effects of long-term use of computers, the positive or negative feelings towards technology in general and last but not least the evaluation of consequences brought about by computers in the personal and social life of the user.

After examining the results we noticed a decrease of negative feelings towards ICT. Feelings such as anxiety, fear of the consequences which may be caused to the health and personality of those adults who use or overuse a computer, were higher in the Initial Questionnaire and lower in the Review Questionnaire. The results of the t-test showed that in all cases variations are unequal thus revealing an important positive statistical connection between the Initial and the Review Questionnaire. At the end of the programme participants seemed to be less afraid of making a mistake than at the beginning of the programme, they were also less agitated and anxious. Most participants are less afraid of negative consequences, the use of computer, might have to their health and they are also less worried about working for long hours in front of a computer, they also don’t have a negative stance towards using a computer in general. Feelings of discontent and embarrassment towards more experienced trainees, were
limited at the end of the programme. Trainees felt less awkward, at the end of the programme, and had no problems in asking questions. Trainees also used appropriate techniques to build team spirit and mutual esteem which would help them in their learning process.

This research has confirmed that computers are important tools both in the work field and in life, our findings are also in line with and confirm Backers’ and Schmidt’s (2003) theory. There is a difference of opinion between the Initial and the Review Questionnaire concerning the importance trainees place on computers. This is due to the fact that trainees do not feel awe when seated in front of a computer at the end of the programme, as they did at the beginning. Trainees can now handle an ICT programme as they know the potentials of a computer and the consequences of its misuse. Nevertheless, the mean average score, which shows the hazards of using a computer excessively, as opposed to using ones brain, as well as personal isolation from the rest of his environment due to the overuse of his computer still remains very high. Adults seem to be informed about the negative impact the overuse of a computer may have on his personality.

As a result of all the aforementioned, especially the increase of positive feelings towards ICT, we have a large number of trainees who feel that they have acquired a sufficient amount of knowledge and are now able to find solutions to problems which arise. Our findings are in line with Davis (1993), as well as Durrneld and Haag (2002) who insist that self-confidence influences person’s efforts, determination, interest, level of difficulty which his/her aims present and last but not least his/her level of knowledge in informatics at a later stage. The aforementioned prove the positive transformation of trainees’ attitudes towards ICT, compared to the answers given by trainees in the Initial Questionnaire.

As far as gender differences are concerned, this research has proved that even though women are not fervent users of a computer and display negative feelings, agitation, anxiety and a fear of making mistakes when using their computer (Coffin and MacIntyre, 1999). Furthermore, compared to men, women were more frequently able to acquire a better knowledge of the computer. According to bibliographical references, even though women were better recipients of knowledge than men, and look forward to the process of training they judged the general consequences brought about by the use of a computer less positively. Nevertheless, the majority of the women (70%) who participated in this research, as opposed to bibliographical references which support that women are short on participation (Gorard and Selwyn, 2005), showed a clear interest in programmes which deal with informatics. The fact that there is homogeneity, in many respects, between the two genders shows that there is a balance in the differences between the two genders and this is in line with the findings of Anthony, et. al. (2000). Nevertheless, there seems to be a distinction made in the case of women who need special attention as they need to acquire self-confidence, as concerning their knowledge, and motivation, so as to be able to overcome their anxiety when using a computer.

The results of the present study seem to confirm the findings of Polemi-Todoulou(2005). Morer specifically, our study shows that there does not seem to be a statistical importance in the case of age differentiation and ICT. There was a
homogeneous decrease of negative feelings in all groups. More positive feelings seem to be displayed by the age group which is over 60 years of age. Nevertheless the aforementioned group does not seem to differentiate itself from the rest of the groups who seem to present similar numbers. The positive attitude of the age group is justified by the fact (and by bibliographical references) that this group of people needs to renew, improve and enrich their knowledge (Polemi-Todoulou, 2005: 195–199).

All groups agree upon the fact that computers are very important both in their daily lives and in their work, we see this in both the Initial Questionnaire and in the Renew Questionnaire.

There is, it seems, a particular interest and participation of women, of the age group, between 30-40 years of age both in the Initial and the Review Questionnaire. According to Polemi-Todoulou (2005) women of this age group do not display a preference to domestic life but desire to be financially independent. This desire for financial independence motivated them to participate in the training process, to tax their strength, to compare themselves with their counterparts, and to regain or to gain skills. This developmental need of women strengthens their motivation and their participation in the training process, especially women who are over thirty, justifying in this way their participation, in large numbers, compared to the smaller turn out of men, in the training process.

The intensity of computer use, as an experience factor, is related to all the factors which shape trainees attitudes towards computers, thus strengthening Al-Khaldi’s and Al-Jabri’s stance upon the subject. This importance is presented positively in connection with the question on how trainees perceive the knowledge they acquired and in connection with how they expressed their feelings of anxiety. The more experienced trainees become the fewer negative feelings they seem to have, which verifies relevant bibliography mainly that of Palaigeorgiou (2006). Experience is a benefit for members of the training group since the evaluation of multiple parallel and similar experiences promotes critical thinking and encourages experimentation.

Furthermore, adult trainees were very cautious in their evaluation concerning the consequences brought about by the long-term use of computers, thus they were sparing in their statements and the average mean value was also low. This brings forth the need to examine future working conditions and to present ergonomic matters concerning the use of a computer during training. These initiatives will help adults understand the problem, which they may also be facing in their work field or in their everyday life, and perhaps even manage to solve it.

5. Propositions

It would be best, for reasons of comparison and for a more multidimensional approach to adults’ attitudes towards ICT, to investigate other factors which may influence them, for instance the learning style of an adult learner (Sadler-Smith, 1997) plays an important role in the formation of his attitude. The teacher-trainer (the “carrier” of this change) with his stance, his guidance, his training methods, and generally with his behaviour within the group, may shape perceptions and views towards the subject under scrutiny. The degree to which adult trainees accomplished their goals and
fulfilled their educational needs, is a factor which plays an important role in the fostering of positive or negative feelings towards ICT.

References

A STUDY OF ADULT LEARNERS’ ATTITUDES TOWARDS INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)
Vasilis Neofotistos, Efthymios Valkanos, Giorgos Hlapanis, Dr. Makrina Zafiri


Brief Bio

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ADULT EDUCATION: NECESSITY, EVALUATION AND TRENDS OF EDUCATION TEACHERS IN GREECE AND EUROPE

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Abstract

Over the past four (4) decades, adult education appears as a separate and very interesting field of scientific approach and educational practices. In the frames of the knowledge-based society we live in today, a key position is held by both, initial training and further qualification. Multiple researches highlight the importance of further training in contributing to the improvement of quality of education, professional development and skills of teachers. Since teachers are considered among the driving forces to promote whatever changes, the outlook for the training of teachers in a globalized society is important. Condition, of course, of all these is a lifelong trainee-teacher. The valuation of lifelong educational activities of teachers in Greece points out shortcomings, weaknesses and problems. The European Union's approach regarding training emphasizes the need to change the role of the teacher, focusing on a multifarious framework of competencies, reflective practice and research and aiming at the configuration of a critically thinking teacher.

Keywords: Adult education, lifelong teachers' education, changing roles, re-meditation, training programs, evaluation.

1. Introduction to Adult Education

Adult education is emerging as an issue on the scenery of educational policy and hence of the Science of Education about the middle of '70s. The first person who dealt systematically with this issue was Malcolm Knowles who is the exponent of the theory of andragogy. His views on the radically different way of adult thinking and behavior in relation to minors and the much broader and of different dimension from the point of available experiences, are contained in his book with the feature “The modern practice of adult education: Andragogy towards pedagogy” (Knowles, 1970) and were those who, having a great influence, dominated during the decades 1970-1980. As an extension of the strong need for self-determination of adults and the search for their active participation in the processes of their own concern, adult education aims at the empowerment of learners, having as main characteristic methods of experiential learning, open collaborative relationships between trainers and trainees and the discovery-heuristic path to knowledge (Knowles, 1998, Kokkos, 2005).

Several scholars of adult education criticized strongly andragogy, arguing that it is only a simple axiomatic set-system, which lacks of scientific documentation, while others sought to investigate the characteristics of adults as learners, to draw
conclusions about teaching practices, which should be used (Kokkos, 2006). Over the last fifteen (15) years, the search for one prestigious theory that highlights the fundamental difference and the specific purpose of adult learning, seems to find response in the theory of transformative learning - without neglecting the contribution of other important scholars, who made their own way on this issue, such as P. Freire, A. Rogers and P. Jarvis - with main exponents Mezirow and Brookfield, who support that the way of adult learning in relation to the minors is not only different but also more integrated and this is due to their potential capacity for critical re-meditation (Mezirow, 1991, Brookfield, 1996). Here, of course, it is introduced the consideration, whether all adults are able or willing to meet the process of reflective learning. In order to overcome such obstacles, the participation of learners in a collaborative team of mutual support and common experience of feelings, exchange of experiences and opinions-point of views and test alternatives is of critical and major importance (Brookfield, 2000, Mezirow, 2000).

From the moment the importance of adult education was recognized internationally - around the late ‘90s\(^1\) - for economic and social development, social cohesion and active participation in the knowledge economy, it became clear priority (Rogers, 1998). The general starting point of the discussion was the growing demand for education by adults who had already graduated from the educational system and had already undertaken educational and social roles (full or part time).

When teaching the group of people that society labels as adults, all activities by which they learn in an organized and systemic way are included in the broad field of adult education. Training is included in adult education, since it is its subsystem, including initial and continuing vocational training, apprenticeship, training in the workplace, multidimensional training of socially rejected groups (Rogers, 1998).

2. Teacher training: Necessity or manipulation tool?

A generally used definition in adult education - as there is not a commonly accepted definition\(^2\) - is the one according to which in this process there are involved all those activities of an adult, thanks to which changes are achieved in the cognitive toolset but in values, attitudes, perceptions, and the abilities and skills as well (Papastamatis, 2009). In the field of education, it seems that any required changes pass through the changing the attitudes and beliefs of teachers (James & Pedder, 2006). Apart from the active participation of teachers in the procedures of introduction of innovations and the encouraging of re-meditation processes in their teaching practice, a further important tool for changing their educational behavior seems to be their training (Eaton & Carboneb, 2008).

The term “training” qualifies all procedures and activities directly related to the conception, design and implementation of specific programs aimed at improving, upgrading, enrichment and development of academic or practical, professional and

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\(^1\) In the European Union, the year 1996 is declared as the “European Year of Education and Lifelong Training” and the Committee at the same time publishes the “White Bible: Teaching and Learning towards the Society of Knowledge” which records the new perspectives.

\(^2\) This happens because all definitions are grounded on certain assumptions and value judgments, which result from different educational and philosophical aspects.
personal interests, abilities, knowledge and skills of teachers during their service time (Mavrogiorgos, 1983). This does not mean, however, that training is synonymous only with the acquisition of new knowledge. Shortcomings that exist in basic education-training, which had been established by the existing research in our country (Athanasiou et al, 1993) but in other countries as well (Newton & Brathwaite, 1987), make it identical – and at the same time necessary – with the cover of lack of knowledge of the main studies, giving to every teacher the possibility, to cope successfully with the demands of the modern school, the content of studies and his/her individual student separately (Hatzidimou & Taratori, 2003).

The social, cultural, political and educational conditions which determine the particular educational system of the day identify the function of education (Mavrogiorgos, 1999). Thus, by the early ’70s, the training is closely linked to the concept of “vocational training” (Henderson, 1978). Since it was argued that school offers knowledge, concerning the preparation of the student for facing life, the “professionalism” of this training began to weaken. Thus, the teacher, besides being a “good craftsman” had to acquire skills related to purely educational work (Athanasiou et al, 1993). In the early ’80s, the term “staff development” associated with the study of effects on the teacher at school, began to prevail the term “training” (Power, 1981). Finally, in the middle of the ’80s, new terms begin to prevail on the issue of training, those of “lifelong education” and “continuing education”, where teachers in order to cope with contemporary social and educational problems, with all the positive effects that this implies (improving quality and school effectiveness, etc.) are invited to enrich constantly, knowledge and experiences, in other words be become “long term students” (Bolam, 1986).

Training can contribute in a meaningful way, in the various changes involved in people's lives, contributing to their adaptation (of people) to new situations (Vergidis, 2003). Since the contribution is obtained there is a double benefit. On the one hand, the teacher by upgrading his skills, but also complementing his original education, becomes more capable in the management of issues at school that refer to further specialization as well as more efficient in the production of educational work. On the other hand, satisfaction of the education system needs which render it sustainable as well as the successful integration of these functional needs, are among the arising benefits. Furthermore, the merit function of education is strengthened, since through training most qualified manage to be more effective in their educational work or to occupy senior positions in the educational hierarchy (Giavrimis, 2011).

Some of the objectives of training, which must be noted that was and still is a key demand of the profession, is focusing in the updating of modern pedagogical and sociological sciences, in modern, associated with the school, pedagogical issues, such as learning difficulties, intercultural education etc. and the latter, in particular, for years in the use of new technologies and the possibilities for further knowledge and information through this use. Other (objectives) refer to the filling of gaps of teachers in their basic education and teaching practice, as well as in the encouraging and strengthening of highlighting of problems in school and, at the same time in search after solutions and their facing. Finally, training places special emphasis on promoting communication between teachers and parents and among teachers as well and above all in the opening of school in society (Mavrogiorgos, 1983, Hargreaves & Fullan, 1992,
Mantas, 2002).

The various situations which are indicated in the objectives of training are those that mark its necessity. Therefore, the need for training is shared, when - as already mentioned - i) there are deficiencies in basic education, educational changes and innovations are made in various fields (education of repatriated and foreign students, flexible zone, learning disabilities), which teachers are required to realize, without, sometimes, having sufficiently information (Nasainas & Tsiga, 2004), ii) there is a long time between graduation from the basic training school and the appointment, iii) new technologies in education are used or iv) when teachers are promoted to executive positions of education and it is imperative to respond with competence, ability and success to the demands of their new tasks (Mantas, 2002).

In recent years, the field of education receives strong influences due to the rapid developments in science and technology and the internationalization of social, economic and cultural relations. School walking towards the “knowledge society”, must meet a series of requirements regarding the content of school knowledge, the utilitarian application of educational tools and practices, assessment of produced educational work and effect, flexibility, adaptability and change in teacher and student relations, in its democratic organization and operation (Bouzakis, 2000). Along that route the teacher has to obtain the best possible professional competence, disposing the necessary scientific prestige, modern communication skills, familiarity with new pedagogical approaches and new methodological approaches, through the appropriate provision and utilization an un-interrupted, progressive and effective training action.

For some theoretical scholars, through the educational, administrative and bureaucratic control exerted on teachers, training is considered as a means of manipulation of educational practice (Mavrogiorgos, 1983, Noutsos, 1979). Such approach makes training a highly strategic mechanism in order to introduce and support changes in the educational system and ultimately, to test the teachers, whilst at the same time it weakens and reduces significantly its compensatory role, due to changes in context (Andreou & Papaconstantinou, 1994).

What is marked nowadays, but was emphasized in the past as well, is that the handling of rapidly changing social conditions and changes in knowledge in the curriculum and pedagogical- teaching approaches from the initial education and training is seen as weak and inadequate. In exchange, training and lifelong education of teachers is considered to work constructively, not only in the direction of school effectiveness but of renewal and modernization of education systems as well (Davis-Kahl & Payne, 2003), with criticism of course and re-meditation turning to the approach methodology of training programs and the interventionism of the dominant ideology (Giavrimis, 2011).

3. Professional development: The new international trend of teacher training

The ascertainment that improvement of teacher education is a top priority for the improvement of the quality and efficiency of education is something that is repeated continuously, in surveys, studies, projects and school learning improvement practices. The continuing professional development is considered, on a consistent basis, one of
the two poles\(^3\) of the thematic for the improvement of the school quality, the upgrading of the professional status of teachers and the design, configuration and implementation of educational or institutional changes (Gotovos, 1982, Hargreaves, 1994\(^9\)). In order for teachers to be able to serve the teaching objectives, it is not enough simply to be well prepared for the profession, but they also must have the ability to maintain and improve their contribution to this, through and from their own long-term learning.

Therefore the key factor in the quality of educational work, the professional development of teachers, is a process of continuous transformation of their practice, through their experience and participation in both formal and informal forms of training. The international experience of application of the theory of transformative learning in teacher training institutions, have much to teach the Greek education in this direction. Characteristic are the examples that Mezirow himself cites from teacher training, which develop critical re-meditation upon the scientific and ideological assumptions, according to which criteria and evaluation procedures are formed (Mezirow, 2000). The strengthening of the relationship of teachers with the knowledge, the human-pedagogical dimensions and their linking with social environments are the points at which the professional development aims. The role of the state, here, is crucial (Doukas et al, 2008).

Professional development is directly and interactively connected to a lifelong teacher training, and the need for continuous education is enhanced and enforced by the successive changes in the environments of learning communities. Through these changes, new requirements are arising regarding the qualifications and more generally the role of the teacher. The characteristics of the teacher as derived from modern learning needs and approaches is the pursuit of active participation of the pupil in the process of learning and the culturing of methodological skills for an independent-self-directed learning, with main aim to enable the students to meet the environments of constant change and diversity. In order for the teacher to meet his new role, it is necessary for him to be treated now as a lifelong learner-professional who meditates, who enters the profession with that basic knowledge and then builds new knowledge and experience, based on the pre-existing, in other words what is set as a key priority, is none other than the improvement of his/her training (Lieberman, 1994).

Well due to the nowadays demanding conducting conditions of teaching and the new dimensions of the professional role of teachers, the concept of “professional development” seems to be the one which dominates the approaches to training. As a process, however, professional development is considered quite complicated, which can not be exhausted at the base of the completion of undergraduate studies or, again, to be designed in a short frame, to serve exclusively the purposes of a teaching program. Thus the scheme “initial education, accession to the profession and training” is now considered ineffective, without meeting the modern educational requirements and expresses completely the dimension of professional development.

Although professional development of teachers was related in earlier reports to the acquiring of knowledge and enhancing of skills in teaching (Hoyle, 1980), the current vision is enlarged, including both natural learning experiences and the conscious and

\(^{3}\) The second one is training.
planned activities, which are for the direct or indirect benefit of the individual, group or school and contribute to the improvement of the quality of education in the classroom (Day, 2003). In such a procedural framework, teachers, individually or in cooperation with others, review, redefine their teaching objectives and extend their commitment over such change agents, a fact which helps them, besides providing for search and re-meditation, to acquire and critically develop their knowledge, skills and emotional intelligence. Thus they respond in a way of professional thinking which assists and facilitates their interaction with pupils and their colleagues in all stages of their career.

The professional development of the teacher is a continuous and multi-layered process that involves not only formal interventions at the level of institutional procedures and training activities (participation in organized seminars, workshops etc.) offered by the administration (Hargreaves, 1994b) but also individual-personal learning experiences and informal development opportunities at school (reading of professional magazine articles or books, participation in business cooperation networks etc.) (Lieberman, 1996, Ganser, 2000). These (informal mainly processes) enable most of the teachers to learn to survive any educational situation, to become effective and to develop the possibilities offered to them to explore, experiment in classroom in a creative way, to have access to specialized knowledge and act in a context of mutual support and cooperation with their colleagues (Hargreaves, 1995).

The teacher, in the process of professional development, is characterized as participant of active learning, and is involved in specific teaching activities and observation operations and critical reviews as well. Therefore, the process of professional development of teachers produces more effective results when it is school-based and linked to specific daily activities of teachers and pupils (Ganser, 2000). Moreover, it is an open collaborative process, since, as mentioned above, the re-meditation of teachers is not only on an individual basis, but mainly and most effectively in interaction with others teachers. It can, of course and must include (re-meditation) other persons as well, such as education officials, parents and the wider educational community (Clement & Vanderberghe, 2000).

Many researchers, with regard to professional development, point out the need for transfer of increased competencies to teachers and, more generally, to expand their role. However, the vast majority of researchers notes that in order to materialize the vision of the “professional teacher” it is necessary to have new structures and institutional arrangements (Papanaoum, 2003, Darling-Hammond, 1996). However the novel structures and arrangements should be free from the arising dilemma, many times as bisector between the needs of the individual and the system in order to apply an overall assessment of the professional development of teachers. And this because the polarizing separation between the identified training needs of teachers and education policy priorities raises barriers between the theoretical and practical level, sets the margin of the social context in which training occurs and, mainly, it obscures the debate on what kind of teacher we are looking for today (Res, 2005, Papanaoum, 2003). The professionalism of teachers needs a holistic view which promotes — allows the consideration of basic education, training, school and the education system, based on new — every time — social conditions and needs (Xochellis, 2005, Mavrogiorgos, 1999).
4. Training in Greece

The institution of training in Greece appears for the first time with the decree of March 16, 1881 (16/3/1881), which removes the monitorial method, introduces common-teaching and sets, urgently, the problem of training teachers in the new method (Andreou, 1982). In the modern Greek education system, the development of teachers' training, depending on the goals and organization, can be divided into three (3) periods (Doukas et al, 2008):

**a) Training from 1977 to 1992**

At this time, the responsibility for training - organization and provision – is entrusted to S.E.L.M.E. (Training Schools of teachers of Secondary Education) and S.E.L.D.E. (Training Schools of teachers of Primary Education). The duration of the training programs are one-year, allowing the participation of a small number of teachers. The institutional framework of the training programs of specific training schools which have operated in the bureaucratic-school way, in regard to the administration, the forms of work and project evaluation system of teachers was formed and operated without the required research of occupational needs of Greek teachers, ignoring them absolutely (Xochellis, 2005, Grollios, 1998).

The most serious change in teacher training is introduced with Law no. 1566/1985 (Government Gazette, f.167/09.30.1985, vol. I) defining the objectives, forms, organization and implementing bodies. Three (3) forms of training are proposed, namely:

I. Introductory training for newly appointed teachers, before taking up their duties.

II. Annual training for those who have completed five (5) year service and

III. Periodic expeditious trainings during the school year, on educational innovations.

The same law established the P.E.K. (Periodic Education Centers), a first attempt of decentralization of teachers' training (Mavroeidis & Typhas, 2001). But seven (7) years passed since the operation of the PEK4, which, in 1992, with the new Law no. 2009, as the main training bodies, are set directly under the control of the Minister of Education. The new Law no. 2009/1992 reinforces the role of the Pedagogical Institute (P.I.) in exercising education policy as a national institution, which develops, coordinates and monitors the implementation of teacher training.

**b) The period 1992-1995**

It is marked as a transition period, from the long term training courses controlled by the political powers to the short, free choice ones, proposed by the P.I., while the responsibility for implementing them is entrusted to the local P.E.K. Of course, the number of trainees increased, however direct control by the political power is maintained (Grollios, 1998). Despite the fact that P.E.K. programs were directly dependent on the central government and faced intense bureaucracy, they instituted self-reliant and flexible training mechanisms. However further investigation proves that the training needs of teachers continues to be absent (Vergidis, 1995).

Several researchers, evaluating the effectiveness of the existing training schemes,

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4 Meanwhile SELME and SELDE continue their operation until 1989.
consider it as non-existent, and, very often, standards of other countries with different educational culture were adopted, and the role of teachers as autonomous and responsible professionals, deteriorated significantly and schoolwork merely satisfies predetermined performance targets, without having the possibility of conformation or change of the framework for the creation of educational practices (Hatzipanagiotou, 2001, Iphanti, 2004).

c) Training from 1995 to nowadays

The second phase of P.E.K. starts from the academic year 1995-1996, developing short training seminars, which teachers choose freely and attend at their free time and for which they are paid. On the other hand, political involvement is reduced (Grollios, 1998), as well as the design of the content of training programs undertaken by a team of trainers, proposed by the P.E.K. to the teachers and they make the choice.

During the period from 1996 and onwards, the implementation of the training programs starts through EPEAEK of the European Community Support Framework, addressed to newcomers and older teachers and executives of education, aiming to their academic and professional upgrading (Mavroeidis & Typas, 2001). For the first time, an attempt is made to map the training needs of teachers and study of the institutional training frameworks (Goliaris, 1998).

Nowadays, teacher training, depending on the nature, is divided into mandatory and optional (Doukas et al, 2008). Mandatory training forms are:

- The introductory training of teachers of both levels, who are candidate for appointment and lasts up to four (4) months.
- The periodic training for permanent teachers, which is held each academic year in two (2) courses.
- Specific training programs for all active teachers, which is of short duration (from 10 to about 200 hours, depending on the type of education, general or special).
- Administrative and consultative training for the teaching staff (Law no. 3848/2010).

Also there are implemented special training seminars, mainly on a voluntary basis, having as objects Environmental Education, Health Education, Traffic Education, Special Education, Gender Equality, School Vocational Guidance etc. targeting at the satisfaction of the identified training needs.

A number of associations exists behind the realization of all these programs, such as P.E.K., Universities, Technological Education Institutions (T.E.I.), School Advisors, School Units, Hellenic Open University (H.O.U.), Foundation of Youth and Lifelong Learning (F.Y.L.L.), scientific associations of teachers, scientific trade union centers etc.

Weaknesses, shortcomings and problems are identified in the evaluation of the existing training activities in Greece (Doukas et al, 2008). Although since the middle of ‘90s, many new and flexible forms of training prevailed, of large or small scale, the educational professional development programs for teachers are weak to contribute in a meaningful and effective change, which is compatible with both the new requirements and challenges of our time and the efforts to improve education. While teachers speak positively for the need of training, on the other there are recorded problem areas, such as centralized operation, the school-centered character, the
distance between the real needs of teachers and of applied programs, problems in the training material and training of trainers, etc., questioning in this way, the quality of training (Pedagogical Institute, Department of Education-Assessment, 2005, Papanoum, 2003).

5. Trends in teacher education in the European Union

Before even the European Community was engaged with the establishment of an institutional basis of education in the Treaty of Maastricht, the training of human resources of education was an issue which troubled the Union. One of the most important texts through which the interest of the Community is demonstrated, is the “Conclusions of the Council and the of Ministers for the in-service teacher training” of May 14, 1987, where special attention is given to the training of servicemen teachers, according to the social, technological, economic and demographic changes observed (Markopoulos, 1990). This text considers necessary to encourage the training of teachers and therefore encourages its member countries (Council of the European Communities, General Secretariat, 1987) to:

▪ Clarify the purpose of in-service training.
▪ Create a flexible, comprehensive and diverse offer of in-service training offer for teachers.
▪ Connect the in-service training programs with plans to professional development.
▪ Create the resources available for in-service training.
▪ Promote continuity between initial teacher education and in-service training.

The approach of the European Union on training, today, focuses on the need to change the role of the teacher who, in order to meet the modern needs of the information society and knowledge, social cohesion and active citizenship, is called to pay special attention in (European Union-Council, 2007):

▪ Promoting new forms and learning products.
▪ Re-designing-reforming teaching and learning process in the classroom.
▪ Working “outside the classroom”: at school or training center and other social partners-bodies.
▪ Integrating of New Technologies in formal learning situations and throughout their professional practice.
▪ Operating, as a professional scientist.

The preceding is part of a perspective of the teaching profession, the basic principles of which are recorded in a text, released by the European Union in 2005, entitled “Common European Principles for the Qualifications and Competencies of Teachers”. These principles (four) characterize the teaching profession in Europe, as a profession of:

▪ High competencies, requiring extensive knowledge of the subject but of the broader cultural and social context as well.
▪ Lifelong learning requires continuing professional development throughout his career, to be able to integrate innovation in his tasks.
▪ Which is marked by mobility, both in initial and continuous training.
Based on the collaboration of educational services, educational institutions, training providers, local authorities and relevant interest groups. Then, teachers, in order to respond to the new demands of their profession should have the ability to:

- Work together with others - to cooperate.
- Work with (according to) knowledge, technology and information.
- Work together with society and within it, contributing in particular to the safeguarding of the quality of their work.

In the announcement of the European Commission to the Council and the European Parliament (2007), with subject “Improving the Quality of Teacher Education”, it is expressed the important position of the European Union on the issue of teacher training staff, stating that: “the motivation, skills and competences of teachers, trainers, other teaching staff and of the guidance and welfare services, and the quality of school leadership, are key factors in achieving high quality learning outcomes ... The efforts of teaching staff should be supported by continuous professional development and by good cooperation with parents, welfare services for pupils and the wider community” (European Commission, 2007).

The Commission presents in the same text a model of in-service training and professional development that covers the entire career of teachers, through which it is proposed (ibid):

- Participation in introductory training programs during the first three (3) years of occupation.
- Access to structured guidance and mentoring by experienced, responsible professionals throughout the course of their professional career.
- Participation in annual discussions about their needs on training and development, as part of a wider program of service or the institution where they work.

The Commission also supports a framework of autonomous lifelong learning for teachers, according to which these teachers need to evaluate constantly their own training needs on the one hand and on the other, the relevant national and European institutions need to provide incentives, resources and the necessary support systems, required for continuing professional development.

How much importance is attributed by the European Union to the training of teachers, was recently expressed by joining the “professional development of teachers and trainers” in the system of indicators to measure progress towards the objectives of the program “Education and Training 2010”. In the Progress Report, in 2007, “professional development of teachers” is defined-characterized as a monitoring indicator of the “modernization of school education” (Teacher Training Agency, 2007).

6. Concluding remarks and questions

The emphasis given by the training of teachers in the role of the teaching profession, as a propelling force in the emerging communities of learning is evident. In any case, the continuing education of teachers must be a key goal whose achievement, however, should not be made difficult by a framework of centralized education control, where specificities and individual needs of servicemen teachers are ignored. In this
One of the critical issues that are in the center of interest in the training of teachers and identified to be investigated is to support the professional development of teachers and, in particular, strengthen opportunities-motivation of the profession. This includes the continuous improvement of skills and qualifications of teachers, and the extension of their role as designers, makers and promoters of learning (Doukas et al, 2008).

In order to make progress on this issue, it is necessary and imperative to weight development needs of teachers at regular intervals and in parallel to promote research concerning the role of the teacher as an agent of change and the relationship of that role, with the objectives of applied educational policies. Such an approach becomes more important when, often, the role of teachers as change actors, is contested and shrinks to a mere recipient and executor of orders and instructions (Xochellis, 2005). Indeed, enhancing the voice of teachers in subjects that concern may have a beneficial effect in the direction of a self-determined professional development, escaping from the framework of institutions of only identified needs, leading professionalism in cramped perceptions and stagnation.

Important also issues that need further investigation are, the ongoing teacher training to changing contents of subjects, the effect of New Technologies, new ways of learning and methods, effects that have socio-cultural environments, diversity and multiformity of the student population etc. Moreover, issues related to redesign and evaluation of training needs, quality criteria and support mechanisms and the transfer of responsibilities to schools, are considered of remarkable and in depth discussion and objective investigation.

Given that the quality of education and the effectiveness are linked organically with the quality of teachers who serve it, a new framework for the exercise of educational work can lead educators to intervene as transformers and the training programs to make their professional development a necessary, ongoing, exploratory and collaborative activity.

References


Cassell.
AMBIGUOUS FOREIGN STUDENTS’ IDENTITIES: NATIONAL IDENTITY “IN BETWEEN” IN A GREEK INTERCULTURAL SCHOOL

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Abstract

A central issue in the academic discussion related to immigrant groups and their integration in their “new home”, is national identity. This paper focuses on the construction of the foreign students’ identity, as shown in an ethnographic case study of the students’ subjectivity of the Intercultural School of Evosmos in Thessaloniki in Greece, and on how they form their own subjectivity. Most students as second generation immigrants constantly negotiate multiple identities. This negotiation leads to the construction of ambivalence and conflicting identities that are represented with uncertainty and equivocation in speech. In this paper, I will present briefly a conceptual placement in social constructionism and the distinction between primordial and modern nationalism and will continue focusing on how the ambiguous and conflicting identities of foreign students are shaped based on conception of national identity, the role of nostalgia and memory and finally on the polycemy of the construction of national identity of students.

Keywords: intercultural education, national identity, immigrant groups, subjectivity, discourse analysis, social semiotics

1. Introduction

Over the past decades Greek society has accepted the process “change of identity”. The society was transformed from monocultural into multicultural. The movement of people both from the Balkan countries and those of the Soviet Union probably brought the Greek society in an awkward position, either because the Greek leaders couldn’t predict it, either because the leaders and the Greek society turned a blind eye they believed that the Greek nation was a “non brotherhood” nation. Immigration has reached the point where 8.4% of Greece’s official population are now foreigners (nearly 912,000 people, according to the 2011 national census of whom it is estimated that more than 250,000 are undocumented (Gialis, Herod & Myridis 2014:25). With the domination of the official national language which overlooked the immigrant and refugee groups that had moved to Greece before 1990 to the educational system remained monolingual and monocultural. The effect of this blending of “old” and “new” migration produce a new form of diversity, a more complex one, in which neither the origin of the people, nor their presumed motives of migration, nor their
sociocultural and linguistic features can be presupposed (Extra, Spotti & Avrameat 2009:4).

The Ministry of Education having to deal with the new multicultural population was forced to make arrangements for the adjustment of the Greek educational system to a new school reality. The reception classes and support courses in operation since 1980 grew and close to schools of repatriated students–operating since 1985–Intercultural Schools were founded in order for foreign students to integrate in a school environment which respects cultural diversity and promotes the coexistence of native and foreign students in a school environment where their cultural differences are utilized.

The basic aim of my research is to explore the ways in which minority students construct their national identity through discourse. Critical Discourse Analysis and Social Semiotics are used as methodological tools for date analysis. The examination of research data shows that national identification is imagined; students produce new voices and construct multiple identities which are often dilemmatic and in conflict with each other. Minority students, who are second generation immigrants, negotiate their identities trying to build up new ones in order to adjust to their new environment. In doing so, they construct ambivalent identities which are commonly represented in uncertain and evasive discourses.

My research brings into focus both the content and form of the discourses minority students use in order to talk about their national identity, thus offering a voice to stories that often remain unheard.

In this paper, which is based on my PhD research project, I study ways and discursive practices according to which foreign students build their identity. The interpretation and the explanation of discourse show how they construct their subjectivity while talking about their identities. The parameters that are studied in this paper are firstly about the conflicting identities, secondly about the essentialist construction of national identity and the citizenship and thirdly, about nostalgia and memory related as spoken by foreign students.

2. Epistemological context

In the relevant bibliography two approaches are found for creating nation-states: the traditional and the post-modern approach. In the traditional nationalist historiography, national identity is seen as stable and unchanging, as an integrity through time and history of each nation. National identity determines the construction of individuals in a national group by giving forms of solidarity and expressing common traditions, memories, common linguistic style and the possibility or not of the incorporation of a nation in a state.

It is difficult and perhaps unwise to try to define national or ethnic identity because of its multidimensional, changeable, narrative and ambiguous –as Homi Bhabha points out– nature. In this context, of primordial conception of the creation of nations (Smith 2000), the concept of ethnic identity is used, an identity that is somehow part of the national one, but is associated with potential nations and determines the cultural existence of the dominant ethnic group in a state. The ethnic identity is recreated by the members of ethnic communities even when they live outside their country of
According to the modernist approaches, the nations’ construction lies historically in the creation of the nation – states since the 18th century and is studied and determined each time with reference to both the development of nation-states in terms of financial relations and industrialization and by reference to the ideology of nationalism.

The modern approach of the construction of the nations and national identity produces a discourse in contrast with the essentialist perception of national identity and the natural integration of the individual into a nation and giving materialistic features and social and political origins. Specifically, a group of people becomes a nation when they acknowledge the rights and obligations of each member in the name of their common property as members of the same ethnic group – since nations are constructions of human perceptions and solidarities and power (Gellner 1983, 1992, Hobsbawm 1994). Members of a nation share a unified political will, they are united under a common culture and a political ideology, common memories, myths, symbols and traditions.

Individuals are established as national subjects of the nation-state and its mechanisms, such as public education, and it’s the nation state itself that builds an imagined community through which cohesion and solidarity are produced (Anderson 1991, Liakos 2005).

Therefore, an imaginary ethnic group is created based on the official language and the establishment of a “racial” community in the sense of kinship of the national population which ensures “the kinship of the children of homeland” (Balibar 1988). So, consequently a brotherhood is constructed among the other members of the same nation and those of the diaspora. Homi Bhabha (1990, 1994) demonstrates as well, the absence of immigrant groups from theoretical approaches and from the study of nations and shows that they are treated as if they have always been non-existent in the world if nation-states. The new ethnicities mobilize identities both by reference to the present and the cultural context and the past and its “hidden” stories and memory. In this new nationalities, members of minority groups and immigrants are included (Hall 1996, 345-349).

In the analysis and interpretation of the data of my research are taken into account specific assumptions regarding the construction of national identity. First, national identity is constructed through discourse. Identities are produced and linguistically formulated through interactions. The rhetorical promotion of national identification and the discursive construction and reproduction of national difference are taken into account (Fairclough 1989, 1992, 1996, Kress 1988, 1989, Hall 1996, Wodak 2009). Second, it designates the variability of national identity and sometimes the dilemmatic identity. Finally, national identity and the conception of the nation are imagined (Anderson 1997).

The post-modern approach to national identity now speaks of multiple identities and not just one. Bilig (1995:21) argues that “national identity is not a thing; it is a short hand description for ways of talking about the self and community. Ways of talking [...] that are related to forms of life”. When it comes to immigrants or minority groups then not only multiple but ambiguous identities are constructed.

Although this research agrees with the post-modern approach, the creation of notions and the construction of national identity, a traditional approach to the
interpretation of students’ discourse shouldn’t be excluded.

2.1. Immigrant Students’ Population

Greece faced the flows of immigrants for the first time not in the 90’s but much earlier. Besides the refugees from the Asia Minor, the refugees of Constantinople in 1950 and the Greek populations that came from Egypt, Greece started in 1970 to receive a large number of Africans and Pakistan’s economic immigrants – due to the search of cheap labor and also because it adopted the relevant policies of other European countries about a “global industry migration”.

However, the large flow of immigrants in the 90s which led to an attempt of regulation and official immigration policy – without any substantial changes from the previous ones – is spotted in the 1990’s, when population movements from the Balkans and the countries of the former Soviet Union started.

The Greek educational system had to be adjusted to this reality and officially accept its multicultural nature by moving on through changes, in order to exclude foreign students. Therefore in 1980 special classes have been created to help students learn the greek language and to comprehend the content of the curriculum of classes such as Greek Language, History, Mathematics, which are called “Classes of Reception” (Τάξεις Υποδοχής) and “Tutoring Groups” (Φροντιστηριακά Τμήματα). The main goal of the creation of these classes is the most rapid accession of the students in the “normal classes” and not their encouragement through their culture too.

A special form of education has also been created for the “homogeneis” students that is called Schools of Repatriated. Unfortunately, these schools weren’t operating at that time as a centre of bilingual education and multiculturalism. The aim was to embody students in the Greek educational system but through their isolation (Damanakis 1997). It is important to mention, though, that in 2010 an educational project of Aristotle University of Thessaloniki, called Diapolis, that aimed to an equal education for immigrant and repatriated students was conducted and it was addressed to the public primary and secondary schools with population of immigrants and repatriated students over 10%. This project involved pupils and teachers and it improved the educational work of schools and prepared them to meet the challenges of a multicultural society. It aimed to improve school performance of repatriated and foreign students in Greek schools, in order to ensure as far as possible equal education groups with indigenous students and their social integration (http://www.leacomm-platform.eu/lt/categories/library-and-research-area/item/659-diapolis-education-of-immigrant-and-repatriate-students-aristotle-university-of-thessaloniki.html).

It is obvious that for the Greek educational system foreign students had a kind of “cultural lack” that had to be disappeared so that these students could be assimilated into the Greek educational and social context. Therefore in 1996 a new law introduced a new type of education, the Intercultural Education. Intercultural Cultural Schools function under the law of the whole greek public education and the main goal is to support foreign students inside a multicultural school society and use positively their different “cultural capital”. For this purpose teachers use certain books for teaching the greek language as a second language and sometimes – if it is permitted by bureaucracy – foreign teachers are employed to cooperate with greek teachers. For the employment of the latter the knowledge of a Balkan language or the Russian language
is an advantage.

In Intercultural Schools student population is mixed and the school must be consisted of a 60% of Greek students and a 40% of foreign students. Sometimes a Cross–cultural school is easy to become a “ghetto school”

Regarding the student population for the school year 2002-2003, 98.241 foreign and repatriated students were registered in schools of both Primary and Secondary Education (Skourtou, Vratsoli & Govaris 2004). This figure corresponds to 6.7% of the student population for that year. The percentage of foreign students in the years 2004-2006 was 8% (Drettaki:2007). In schools in Athens and Thessaloniki the percentage was 45% (Linaroud: 2006). According to the data of I.P.O.D.E. (Institute of Repatriated People and of Intercultural Education) in 2006 there were 27 Intercultural Schools (13 Elementary, 8 Junior High Schools and 6 High Schools) and 122 Reception Classes. In Intercultural Schools student population is mixed and the school must be consisted of a 60% of Greek students and a 40% of foreign students. Sometimes an Inter–Cultural school was easy to become a “ghetto school.

The members of the second generation of immigrants –children who attended schools in the host country– experience an ambiguous socialization that differs from that of the first generation immigrants: members of the first generation have been fully socialized in their culture before arriving to the host country. Children are culturally and socially integrated by the influence of the social environment, school and the media and afterwards financially and professionally. When it comes to the first generation immigrants, the opposite occurs. The third generation is usually the one that seeks to reconnect with its culture. In the phase of adjusting and assimilation in the new culture they form a new meaning of self identity. If the child experiences strong bonds with its family then it reflects the minority culture. The knowledge of language and culture depends on the motives that a child has. There is a possibility of an identity crisis, because the child feels guilty and embarrassed when he or she tries to adjust and accepts the values of the new culture. It is important to say that immigrant children experience multiple structures of expectations and therefore they don’t create a notion of safety and security as native children. Children of the “second generation” experience a contradictory socialization. This is a basic differentiation between the first and the second generation: the members of the first generation have already been socialized in their culture before their arrival in the new country.

In fact, children that aren’t born in the host country face a lot of difficulties, as they are obliged to use another language in their new social environment and adapt to a whole new educational system which is unknown to them (Ventoura: 1994: 60-69, Mousourou 2006: 225-227). In the case of repatriation, parents decide to be repatriated and that decision embodies their dream of a better life. Yet, children are oriented to the past and to their life in the country in which they were born. So, they prefer to account themselves as “foreigners”, an identity that has an impact on how they represent themselves and on how they deal with their new school environment. Cultural and language differences empower their solidarity and also their cultural differentiation. Foreign students interpret language and cultural differences not as boundaries that they have to overcome but as identity symbols that they have to maintain (Veikou 2004:110-112). Therefore, they form a “minority culture” through which they ensure their “otherness” and through which they avoid being
underestimated by the culturally dominant group (Cummins 1999:75). In any case, identity is not static but constantly negotiated through the interaction of the subject with its social environment.

The opacity of words, the communication failure of migrants in the host country, the attempt to adjust into the new environments causes racist reactions to the members of the dominant cultural group of the host country. It’s an expression of “neoracism” (Balibar & Wallerstein 1991), “a racism without a race”. This is a racism that has as its main theme not only the biological superiority but the cultural differences as well.

3. Methodological tool

Studying identities, the concept of discourse plays a dominant role. In the area of deconstructionism and social constructionism, identities are defined as social structures which are manufactured by means of discourse. Discourse is a social practice, formed by social institutions that at the same time creates and forms the context for those persons involved in communication in any social occasion. Discourse is regarded as a mode of action, one form in which people may act upon the world, especially upon each other, as well as a mode of representation. Semiotics, regarding to Kress and Hodge (1988), provide the possibility of analytic practice, for the many people in different disciplines who deal with different problems of social meaning and need ways of describing and explaining the processes and structures through which meaning is constituted. The study of discourse is regarded as dominant one in the construction of social identities both in the field of Social Psychology and in the field of Pedagogy and Ethnographic Research approaches. Research methods of ethnography are employed and applied in case studies within the context of educational ethnography (Avgitidou 1997:68). Ethnographic approaches examine social processes as well as the societal context of minority groups in the post-modern society. Ethnography, therefore, studies the contexts of diasporic cultures. Nowadays, researchers use biographical research methods, narratives and sociolinguistics methodology giving, thus, voice to the “voiceless” (Lecompte 2002:283, 287-292). My field research was conducted within an Intercultural School of Thessaloniki, and consists of observation and semi-structured interviews of minority students and it’s a case study research within the context of educational ethnography. Case study focuses upon specific groups or subjects and aims to answer questions of “how” and “why” without trying to give general conclusions. It reflects real life cases and uses various methodological research tools (Yin 1989: 7-8, Dooley 2002: 337-338). It should be mentioned that discourse analysis researchers are interested in the different ways in which participants organize their discourse and in the consequences of their current selection (Potter & Wetherell 2009: 74-75).

This research shares the above thesis about discourse and especially the one established by Gunther Kress, Robert Hodge and Norman Fairclough. In my research I use Social Semiotics and Critical Discourse Analysis. My Thesis attempts an examination of the national identity of minority students through their discourse.

The combination of the two methods mentioned above –Social Semiotics and Critical Discourse Analysis– came about because of the specific characteristics of
students’ discourse and the difficulties that occurred on how to handle discursive oral text of students who couldn’t use Greek language fluently. This led me to a further study of these two methods and to the conclusion that the two methods—apart from being used in the fields of deconstructionism and social constructionism (Burr1995:16-26, 61-63) which is crucial for the reading and interpretation of texts—share many common features in the basic units of analysis which are mainly discourse, type, text and context. Similarities between the two methods are observed in semiotic functions of grammar, negation, modality, transformations, syntax and subject positions. The authors use similar interpretation techniques in linguistic analysis of the text and in the interpretation of ideological complexes and logonomic systems as well. What is particularly important is that they have many similarities, which contributes to the effective use of both methods of Discourse Analysis and Social Semiotics. These two methods have contributed to an unusual and interesting interpretation of the data.

The survey was conducted in the Intercultural School in Evosmos, in Thessaloniki, Greece, involving school visits, lessons’ observations in Reception Classes and Tutoring Groups and contacts with teachers and students. The number of foreign students at the beginning of the research was 69 out of 313 of student population. It is necessary to be stated that the number of foreign students is not stable during the school year because of the removal of their parents in a different neighbourhood or in another town or because the bureaucratic legitimating procedure of their stay is not completed. Therefore at the end of the school year the student population consisted of a 22% of foreign students. There are 31 interviews—16 by male students and 15 by female students which the research material is based on.

The guideline and the questions of the interview were based on the theories of national identity, as a part of cultural identity, on children’s language level and on the specific conditions of children’s origin (such as questions that had to do with religion). Pupils came from Albania, Russia, Georgia, Bulgaria, Germany, Kazakhstan, the Dominican Republic, Armenia and Azerbaijan. The primary aim of the research was to examine the ways in which students construct, maintain and modify the characteristics of national identity as they are constructed in the specific context through their discourse. Accordingly, the article seeks to portray some of the processes and experiences of identity construction and modification through an analysis of the students’ interview accounts or narratives. For the purpose of this paper, I have chosen the interviews, where students construct their conflicting identities, multidimensional identity related to “blood” and, on the other hand, identity related to citizenship either while talking about their origin and either while talking about their homeland using their memories and constructing dilemmatic and very often ambiguous identities.

4. Analysis

4.1 Students Discourse and Conflicting Identities

Identity is constructed through the production of a variety of factors. Immigrants produce new voices and new identities are constructed often through competitive discourses that structure conflict or ambivalent identities. Ethnicity is not handed “naturally” but discovered through history, storytelling and memory. The new
ethnicities mobilize their identities both by referring to the present and their cultural context and by referring to the past, its’ hidden stories and memory.

Students reject and select forms of identities and sometimes produce ambivalent or conflicting identities. During the interviews, I didn’t ask them to talk directly about their national identity. Students didn’t use the term “identity”. I used questions that activated issues of identity in students’ discourse, such as questions about national teams, national symbols, which motivate solidarity and emotional tension (Lekkas 2006: 142-143). Through the support of the national team, which is a symbol of national state, the idea of national devotion is incorporated (Hobsbawm 2004: 243).

Vassilis from Georgia says: “When I was there, I was always supporting Greece. Now Georgia. When I was watching the football game between Greece and Georgia, I was at my aunts’. It was my aunts’ name day. People came and we all were watching the game. Everybody was supporting Greece except from me. I was supporting Georgia. Georgia scored three goals. I was very happy”.

Narration is oriented at the mimetic plane and used by societies to reproduce value systems. The story is a narrative form more oriented at the semiosic plane (Hodge & Kress 1988: 229-230). Vassilis recalls a family story to talk about his support to georgian football team contrary to the other family members. He begins his narration with a time clause “when I was watching” and he continues his story by the use of the clause “everybody was supporting Greece except from me”. In the second sentence he puts the pronoun “everybody” as the subject and the pronoun “all” in order to ensure his statement but also to contradict with the choice of the others. However, before he started recalling his story, he highlighted his previous support to the greek team by using twice the sentence “I was always supporting the greek team”. In Vassilis discourse national symbols are given to the national football teams. It is characteristic that he uses the metonymy “Greece” and “Georgia” instead of “the greek or the georgian football team”. Metonymy operates as a referential function of language in the semiosic plane but it acts upon the mimetic plane. Metonymy of “Georgia” and “Greece” shows the significance of these countries (Lakoff & Johnson 2005: 74-80).

Philippa from Georgia and Peter from Russia express themselves in a similar way and we can notice a dilemma in their discourse: “I wanted Georgia to win (he refers to a football match between Greece and Georgia) but when we lost I didn’t feel sorry, because I am here in Greece, I just wanted Georgia to win”. Peter wavers when he is asked about his homeland: “Russia. Oh, not, Greece but Russia draws me”. Phillipa answers directly at first, but then using the contradictory conjunction “but” she transforms her previous thesis. The oppositional rhetoric she is constructing shows a negotiation of identity. She is moving through her discourse from "here" to “there,” as she tries to define her identity.

Abraham from Armenia, claims that he is “like a Greek”, because everybody recognizes him as Greek, and that in a football game between Armenia and Greece will remain “neutral”. But in a football game between Greece and Russia he will support the greek team “because he lives in Greece and his football coaches are Greek”. It is

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1 Football is a sport that has multiple symbols. Football mobilizes identities, national, ethnic, professional or regional identities. It operates symbolically not only at national level, when the fans activate their collective national identity, but also at local and always in confrontation with the Other. In the case of football, regional identities are strengthened (Bromberger 2007: 69-70, 86-87).
important here that firstly, his identity is constructed through the eyes of other people (Hall 1996) around him and secondly that the significant parameter isn’t his origin but his love for football. The phrase “like a Greek” implies that he maybe isn’t Greek (Holton, Makridge & Flippaki-Warburton 1999: 448-449). Additionally, using the phrase “like a Greek” he constructs a subject position in-between (Bhabha 1990: 1-5).

Liza from Albania claims that in a football game between Greece and Albania she would support Albania. And she continues: “When I was in Albania, Greece. Albanians don’t play well and because I didn’t know back then that Greeks hate the Albanians and there was racism. So, I started supporting my team”. Liza before coming to Greece had shaped a positive representation of Greece. However, racist practices provoked a sense of threat and as a result a bond to her community. Racist practices produce and reproduce borders between “us” and the “other” and strengthen solidarity, cohesion and security of familial groups (Gotovos 1996:90).

Elias from Kazakhstan has been living in Greece for the past three years. He introduces an “intermediated identity” – according to the term “in between” introduced by Homi Bhabha (1990, 1996) for the new ethnicities – which are basically made up by repatriated students. When asked about his country, he says: “My homeland? You mean where I was born? Greece (he answers quietly). But if we think about in such a way...I can’t understand this: let’s say that, when you say home, you mean if I feel as if it is my home? I still feel as if it is”. The boy from Kazakhstan constructs a dilemmatic discourse concerning the notion of homeland which is not clearly defined. He wants me to be more concrete since he seems to perceive the notion of homeland either by talking about the country where he was born - “homeland, do you mean where I was born?” - or by using sentimental criteria trying to define the notion of homeland – “I didn’t quite understand this: when we speak about homeland do we mean what I feel as my homeland?”, and he finally embarrassingly answers that both countries are his homeland.

The negotiation of the concept of homeland is continuous in the discourse in order to ultimately determine which is his homeland. He uses the verb "feel" which indicates the subjectivity in determining the country and creates a mental process non-interactive syntagmatic model. The subject does not act on any subject in the utterance. Elias, like the rest of the repatriated students, chooses both countries to define his homeland in the specific context.

It is very common in students’ discourse the use of “here” and “there”, “now” and “then”. These transformations in speech is a common characteristic in the diasporas’ discourse as it shows the continuous geographical flows of people that have a strong impact on the contraction of national and at the same of global identities (Brah 1996:194-196). Even more those contradictory adverbs shape divided lines between the familiar group and “otherness”.

Students in their discourse show multiple identities that involve their birth place, their parents’ and grandparents’ origin, how their family migrated and their current residence. Therefore, the subjects of the research construct their identity and produce a variation in their discursive practices which appears due to the grounds and practices they have experienced in their homeland and due to those that either collide or agree in the host country and their new cultural environment. Speaking in terms of Social
Semiotics confrontation processes are decisive aspects of social formations and affect upon every aspect of semiotic systems (Hodge & Kress 1988: 7). Discourse is constructed through conflicts. The tension and hesitation in choosing between discourses used by the speaker and the discourses that are available for the interaction, generate the need for the subject to choose how he or she will construct his or her own discourse. This hesitation that it is produced through discourse has to do with the differences among the individual discourse history, the current subject position and the context of interaction (Kress 1989: 11-15).

4.2 The Essential Perception of Identity Vs. Citizenship
National identity is noticed in everyday life, in the world of nations-states. Members of an ethnicity share common myths, common memories and traditions that either do or not find a political expression in the nation-state where they belong. National identity in the traditional discourse is constructed as a “natural” as having “one nose and two ears” (Gellner1992: 22). Meanings such as unity, identity, brotherhood and homeland form a national symbolism. According to Hobsbawm (2004) the invented tradition and the constructed past function in a similar way. National ideology often refers to “blood relations” (Bilig 1995:55). Blood relations links origins from family ideology. So, relating to an ethnotic group seems like a “legacy” and a ‘natural bond’, concepts that characterize racist discourse.

Iliriana (from Albania) says in her interview: “I don’t believe that a person who comes to Greece can be Greek. It’s the blood”. And Boris (he comes from Georgia) in a relative question he answers: “Why…the blood is Albanian, so it will remain Albanian. That’s all. There is a pupil in my class, an Albanian, he forgot his language and acts like a Greek. I tell him: “Do not forget your language”. He doesn’t remember anything. He says: “I came here when I was four, that’s why I forgot all this stuff”. I tell him not to forget. It doesn’t matter how old he came or how old he will be. Even if I was born here it wouldn’t matter. I wouldn’t be Greek, because my parents are from Georgia. Why would I want to be Greek? I like Greeks, I have no problem being from Georgia. I like the fact that I am from Georgia. None can be Greek when he comes from another country. You can talk, and talk and shout that you are Greek but you are not Greek at all”.

We notice a stable national identity that is represented as hereditary. The relationship among the members of an ethnicity is based on “blood relations”. It is a metaphor noticed in such cases “because his blood is Albanian, he will remain Albanian”. Therefore, blood is personified and acquires national dimensions. It becomes “Albanian blood” and remains as it is through time. The use of future tenses “will be”, “will remain Albanian”, connect ‘national blood” to the future giving continuity to the national identification. In his narrative is shown the power of language (and narrative) to produce, reproduce and sustain in an imaginary level national identity and national memory. Time doesn’t seem to affect the stability of national identity when Boris claims that “it doesn’t matter how old he came or how old he will be”. Criterion of defining national identity is parents’ origin. His style of speech is consistent with the equivalent of an ethnocentric discourse that gives priority to the origin and language. It is characteristic the extreme expression (Potter & Wetherell 2009: 77) “no one can become Greek” and the use of the second person singular with
which we make generalization. Second person singular shows what a person should have done and it expresses the most informal and familial mode of generalization in the students’ discourse in the semiosic plane (Hodge & Kress 1988: 257).

Vladimir, a student from Russia, talks about his identity saying: “Even if I go to another country I will still be Ukrainian and Greek. If I go to France, I wouldn’t be French forever, I would still have my roots”. Vladimir refers to “roots” while he is talking about his origin. This metaphor of the national subjects as if they were “implanted” in their homelands is an intertextual form of a botanic discourse and it is a construction of an ethnocentric discourse (Malkki 1996:437).

Gregory from Russia in a relative question answers: “Even if I will be a hundred years old, I would never say that I am Greek. How could I? Why should I be Greek? I am Pontios”. National identity seems unchanged over the years. The nonnegotiable student identity is the Pontian identity. An ethnic identity that doesn't seem to bond with greek national identity: “How could I? Why should I be Greek? I am Pontios”. The constant questions nevertheless indicate a lack of confidence in his discourse.

National identity is motivated and presented here as a characteristic that the subjects are born with. Identity is related to a traditional national discourse that gives identity its “inherited dimensions”. Students refer to identity as something passed from one generation to another as it is inherited by blood. This metaphorical use of blood as a natural bond reminds us the racist discourse of “race purity” which now becomes a “national purity”. This essentialist representation of national identity as an inherent characteristic is associated with the representation of the country in terms of family, mother country and homeland but also with a biological nationalism (Bilig 1995:105, Frangoudaki 2004:21, 29).

On the other hand, there are some voices that form a discourse using terms of citizenship. So, they construct their identity by expressing the right to be Greek citizens or citizens of the states they choose by remaining in the state for many years and by following traditions and the law. Through those invented, according to Hobsbawm 2004 (21), symbols and practices, people realize that are citizens of a state.

Katia from Russia claims that it is possible for a person to become Greek: “He should probably have Greek relatives, live in Greece for a long time, speak greek language, I don’t know for sure. He should participate in national celebrations, obey the law”. Katia in her discourse introduces the relatives’ origin, a permanent residency in country, language, the respect of tradition and the law as criteria of the construction of a new national identity. We notice the weak modality in her speech with the use of the adverb “probably” and the negation “I don’t know”, but when she refers to tradition and the law, she constructs her utterances with stronger modality. Therefore, except for the pro-political criteria of being a member of a nation (Liakos 2005: 112), the political aspect of a nation is introduced in her discourse, as she uses terms of citizenship, the reference to the law.

Another student, Marianna from the Dominican Republic says: “It is possible for someone to be Greek, if he wants to. He must be here for five years, mustn’t he? He

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2 The term Pontios in the Greek language stands for an ethnic group that comes from the region of Pontos (Asia Minor) in Asia, in present Turkey. It’s an ethnic group that suffered genocide by the Turks and were forced to immigrate to Greece.
has to do that, if he wants to become Greek. If I go to France or England and if I want to be French or English, I have to stay there and deposit my papers”. Marianna clearly expresses the possibility to change the civil identity as she speaks in terms of citizenship. She expresses a lack of certainty as she uses the tail question “mustn’t he?” but this uncertainty fades as she uses the emphatic verb “must” and “has to”, which imply the obligation of a person to acquire citizenship. She, thus, argues that the acquisition of citizenship depends on subjects’ free will as “it is possible for someone to be Greek, if he wants to”.

Hristos from Georgia and Antonis from Germany feel the same way as Katia and Marianna. Hristos says: “If someone wants to become Greek he must have a citizenship status. He must go to the Police and have an ID card. He also must want to be Greek” and Antonis answers: “Anyone can do whatever he likes. If someone wants to be Greek, let him be. I think that it is stupid to have separated countries. I think that people should all be united”. Antonis expresses his opposition to the nation-state as he uses a negative evaluation “I think that it is stupid to have separated countries”. The use of the third person is dominant when he talks about the hypothetic but obligatory, in his words, unification of all nations. Using the third person in his discourse he takes a distance from it and he gives validity to his statement.

Citizenship is an important aspect of identity which includes a political commitment and participation of the subject in the community. Citizenship is constructed when the subjects assert their social and economic rights, they don’t speak in terms of national identity to justify discriminatory or stereotyped behaviors and they experience a positive multiplicity of citizenship (Ross 2007: 293). Citizenship is a more inclusive concept than nationality (Extra, Spotti & Avermaet 2009: 5-6). Everyone can take the subject position of a citizen, in the sense that he or she can structure his or her discourse through citizenship (Donald 1996: 174-175). Students talk about identity in terms of citizenship giving to the subject the ability to select and build his or her own identity if it is desired.

4.3 Nostalgia and Memory

Most students miss their homeland and this is noticed when talking about their country, relatives and friends. The students who have been living in Greece for a few years, give detailed descriptions of the towns and the villages they come from. On the other hand, the memory of students living in Greece for many years is weak as they claim that they don’t remember anything.

Sometimes students refer to their birth place and to the people—relatives and friends— that they miss and other times they refer to traditional practices that function symbolically in the recreation of their identity. These have to do with traditional food, holidays, exchange of gifts, playing in the neighborhood. Ivanka from Bulgaria expresses her nostalgia about her hometown, Sliven: “Sliven is a beautiful place and I miss it. I miss everything there. I miss my house, my school, the things we did there, the holidays and celebrations I remember. My grandma, my grandpa, my cousins, my friends I hang out with, the places I went to. It’s been almost two years since I’ve been gone. This summer I will go there, whatever it takes”. Philippa from Georgia and Elira from Albania feel the same way. Philippa says: “I miss all my relatives, my school, my house, I miss them a lot”. Ivanka and Philippa express emphatically the nostalgia they
feel about their hometown using the verb “I miss”, which is dominant in their discourse and by using the extreme expression “everything” and “all”. They maintain the bonds with their relatives, friends and places in an imaginary level.

Iliriana feels nostalgia when comparing Koritsa and Thessaloniki: “Koritsa is a small town, people aren’t rich there, it is a poor country, it doesn’t have lots of beautiful things as Thessaloniki has. It has schools, not so organized and nice as they are here, but it is my place and I want to go there. I miss it lot”. Iliriana constructs her discourse with a comparison between Koritsa and Thessaloniki. She expresses an oxidentalistic phrasing as she uses positive evaluations for Thessaloniki which is represented as an organized and beautiful city, shown as a “stylized picture” of the West contrary to her representation of Koritsa. However, using the contrasting conjunction “but” and the possessive pronoun “my” in the utterance “it is my place”, she chooses Koritsa despite the advantages of Thessaloniki. Elira feels the same way: “When I watch TV and they speak Albanian, I cry and tell to my mum “I want to go back to Albania”. The experience of nostalgia is delivered by emotion.

The detailed description given by Boris who comes from Georgia and has been living in Greece for two years is a characteristic one: “Houses have three or five floors...where I lived, the town had two sides, there was a bridge and a river –you might know– it’s called Doukouvari –we called it the left and the right side. On the left or on the right –I can’t remember– a bit old or new, it was twenty years ago, everything there on the new side were eight and nine storey houses. On the old side, under six floors. It was better there. At first, there weren’t roads but they built everything. There was a big park. Big. And a lake and a boat to row. Many games and something like a park for animals”. Boris makes a detailed description of his city by using a limited language code, through which his hometown is represented as he even recalls the number of storeys of the buildings in his neighborhood. Moris from Georgia describes his hometown like Boris: “It is beautiful. There is a sea, we have lots of things there, beautiful things, such as a big church. Many people from other towns –even from Greece–visit this church”.

Hristos from Russia and Abraham from Armenia don’t remember anything about their parents’ homeland. Abraham says: “I don’t remember anything. I was one year old, when we left. I have never seen it”. To my surprise when Hristos was asked to describe his city he briefly described Thessaloniki, “the White Tower and the port”.

In most of the description students used the adjective “big” to describe size and the opposites “big–small” when comparing their homeland with Thessaloniki. Most students who have been living in Greece for many years say that they couldn’t describe their town as they don’t remember it and at the same time they are not very nostalgic. The fact that national identity is kept in mind is because it is a part of the daily practices, so the members of each national community are so familiar with these, that reproduction and preservation are considered as natural. So, the symbolic reproduction of identity is “naturalized” (Bilig 1995: 37-38, Hobsbawm 2004). It is particularly interesting when students attempt to describe in detail the space, the

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place by referring to the blocks of flats in their neighborhood, their parks, the schools and the roads. Students through discourse regenerate the outer material reality of spaced buildings, roads and other familiar spaces, interpreting each time its various parts (Lagopoulos – Boklund 1992:39-41), as they recall by telling the place they used to live and giving interpretations such as of the country they feel nostalgia about.

According to Doreen Massey (2005:8-9), we recognize space as a product of interrelations, as constituted through interactions, as the sphere of the possibility of the existence of multiplicity, as the sphere of coexisting heterogeneity. We understand space as always under construction, perhaps as simultaneity of stories –so-far. The space is being made and it’s being symbolized through students’ discourse. The complexity of their identities and its conflicting sides are noticed in the descriptions of the place they come from and are compared to the place of reception. This students’ multidimensional subjectivity is mobilized every time they asked for clarifications about the place, in order to construct their discourse. The identity of these “imagined communities of diaspora” is daily made through the engagement of different and possible conflicting parameters of the social environment (Brah 1996: 183). Since students talk about it, we can see the relationship between space and social significations. Material dimensions are associated with the cultural ones. Therefore, space is simultaneously a materialistic and a cultural system. Through discourse, space is reconstructed as students choose, organize and interpret the signs (Lagopoulos and Lagopoulou –Boklund 1992:43) by talking about the nostalgia they experience or not related to the place of origin.

5. Conclusion

The approaches of the Discourse Analysis and Social Semiotics which are used in the analysis of students’ interviews allows the researcher to study and interpret students’ discourse combining theoretical aspects with the methodology. Therefore, the researcher interprets the data while making their analysis using the above methodological tools. However, we can make some notifications in general and discuss some issues, derived from the study of students’ discourse based on the analysis parameters that are important for the understanding of the ways in which students form or negotiate their identities.

Previous surveys indicate the negotiation of immigrants identity and identity transformation as it is constructed in a dilemmatic way in the case of repatriated students (Vergeti 1996, Veikou 2004,) either as it is shaped through the subjects’ discourse about immigration (Sapountzis, Figgou et al 2006, Xenitidou 2008) either as identity is constructed through the context of minority discourse (Figgou, Boatzis & Tsonidis 2007). This study of foreign student’s discourse shows the multiple dimensions of national identity as it is constructed through foreign students’ discourse in an Intercultural School. National identity isn’t just a cultural dimensioned category but it includes an imagined identification with a nation or an ethnic group and an issue of political legislation as well. Students form a polysemic identity, as they combine multiple and often contradictory discourses derived from their everyday life.

Most of the students shape their identity as if it is inherited, as an essential characteristic unchangeable during time. This identity is being inherited “through
“Blood”, therefore, acts as a national symbol, common in the nationalistic discourse. Only a few of the students constructed an identity of citizenship while talking about national identity. Unlike the essential representation of national identity some students construct an identity of citizenship as they speak of the possibility of the subject to obtain one, to select and build his or her own identity if it is desired. Those students shaped their subjectivity firstly as potential citizens and secondly as “national subjects” as they occupy the position of the subject-citizen.

These conditions enable the subject to set a different ethnic identity than it represents. In that case, we notice that a certain thesis of the post-modern approach is represented that a nation is not a stable social entity but a social entity only as long as it relates to the "national state", which legitimizes the nation. The formulation of the identity of citizenship is consistent with the modernist approach. The modernist approach produce a discourse in contrast with the essentialist perception of national identity and the physical integration of the individual in a nation. Members of a nation share a unified political will, they are united under a common culture and a political ideology, common memories, myths, symbols and traditions (Hobsbowm 1994).

A discourse on nation is usually obtained with references on space and locations. Nations – States are located in certain spaces in maps and they form a certain kind of national symbols. The identification of national identity and space is represented as a “norm” (Anderson 1997: 259-260, Malkki 1996: 436-437). Student's descriptions, though, are not formed with relation to maps or geography. They are strictly related to their microcosm: their hometown, their village, their neighborhood. Through their memory they recall the places they have been living by giving them social interpretations, such as playing in the playground with their friends or walking in the alleys and the parks.

Members of immigrant communities, as they move from one place to another, are cut off of their national space and their imagined bonds with it. This disconnection is expressed by using the opposite adverbs “here” and “there”, which construct the spatial and imagined boundaries between the past and the present. The spatial attributes that students use, as they talk about their identity, express national or ethnic symbols and separate the familiar from the unfamiliar, “us” from “others”. Diaspora's imagined communities identity is formed every day through different and even contradictory discourses of their social environment (Brah 1996:183). Material and cultural dimensions of space communicate.

Additionally, the relationships between immigrants and places are likely to change as well. Some changes may be positive and meaningful and lead to acceptance and better integration of immigrants, while others may be characterized by prejudice, alienation, and insecurity. Above all, the well-being of immigrant sending and receiving places depends on the immigrant experiences in both locales (Kaplan & Chacko 2015: 136).

For students that took part in this survey, national identity is shaped when they are asked to speak about their personal and family stories and about their expectations related to whether they’ll stay in Greece or not. Their identity is formed when talking about themselves or the community. Their subjectivity is constructed as they recall their experiences in the different environments –such as family, school and social environments– of the countries they come from. They describe the places they live,
their origin and negotiate their identity. Students’ identity is polysemous—both imagined and determined by materialistic factors—and for many have ethnic characteristics. Whether they construct their multiple identities or produce an ethnocentric discourse they understand that they won’t return to their homeland. This assumption contributes to factors relevant with the future and therefore to a renegotiation of their identity and their place in the Greek reality.

Greek education has to listen to those voices and take under consideration the dimensions of foreign students subjectivity in the setting up and in the implementation of educational programmes and intercultural interventions, if it wants to become a true democratic intercultural education leaving behind its ethnocentrism and its national introversion. The state and the educational institutions have to reconsider intercultural education in terms of democracy, bilingualism and intercultural dialogue, especially nowadays as Greece faces new challenges in creating social and educational policy for immigrants.

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**Brief Bio**

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BRANDING CULTURAL HERITAGE: GLOBAL VS LOCAL

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Abstract

While the general economic environment is uncertain, many cities turn to branding in order to gain tourist and economic growth. Heritage can play a significant role for brands because it can strengthen an emotional connection to local communities by reestablishing this connection to the past. A brand name represents something not epidermal but with deeper essence. Yet, many branding campaigns focus just on logos or slogans. The case of Hippocrates in the city of Larissa, central Greece, provides a different approach on how a brand name can be formed on a steady basis although this name has a global resonance.

Keywords: brand, cultural heritage, Hippocrates, Larissa

1. Introduction

The existence as well as the assemblage of cultural activities in central urban areas is a tendency of cities to invest in cultural sector, anticipating both economic and social regeneration, creating synergies among sectors like tourism and culture. Cultural heritage, either tangible or intangible, is considered as a basic element of a city’s identity because of its contribution to economic growth and social cohesion, offering residents a sense of belonging. Nowadays, it is a fact that culture in general, is a great advantage for a city in the modern world (Pratt 2011, Throsby 2001).

There is no doubt that the progress of technology is the main cause for shaping a more extended, globalized environment. One of globalization’s effects is the competition which is observed among the cities (Kavaratzis and Ashworth 2005). Thus, cities make efforts to distinguish themselves in order to become desirable tourist destinations or potential workplaces (Kotler and Gertner 2002) and creating an identity depends on various factors such as economic, political and social (Kavoura 2012). Globalization is also the driving force for any city which seeks to attract some kinds of resources like human, financial and infrastructure (Popescu 2012). As a result, competition is an element that characterizes the way cities try to promote their image. In the era of economic and cultural globalization, the enhancement of cultural heritage and place identity constitute competitive edges of cities in the process of intercity competition – and especially in the field of cultural tourism. In this direction, city branding can be considered as an appropriate recipe which facilitates a city to cope
with any other antagonism.

This paper aims to investigate how important a brand name can be or in other words its quality size. More specifically, the main research question is “Is a famous brand name enough by itself”? The research took place in the city of Larissa, central Greece and it had to do with Hippocrates, the father of Medicine. The first part analyzes the relationship among cities, cultural heritage and brand while the second part focuses on the policies and practices that a local community should adopt so that a brand name can last through time.

2. City, cultural heritage, brand

Cultural heritage as a factor of significant importance in the economic development of cities constitutes a scientific and research field with great interest in the last two decades in the European continent (Barnett 2001, Richards 1996). Cities have always played an important role as cultural and economic centers, creating high levels of innovation and development, producing culture (Scott 1997). The aim of the functional use of cultural heritage is the enhancement of local competitiveness through the combination of culture and local development. In this context, the local differentiation persists and is reinforced. This situation is expressed with the term “glocalization” which is a composition of the words “globalization” and “localization” (Beriatos and Gospodini 2002).

It is obvious that cities or even countries are in close relation to specific monuments which, depending on the circumstances, are called brands. Branding plays a crucial role in tourism planning and policies (Prideaux and Cooper 2002) and has evolved in a very useful tool in urban regeneration programmes (Eshuis and Edwards 2013). Symbols and images are two important aspects which form to a great extent a positive view for a potential destination (Beirman 2003, Pike 2002, Trauer and Ryan 2005).

The term “brand” is coming from the Norwegian word “brandr” which means “burn”. The ancient Norwegians used to mark their animals with fire in order to separate them from the other animals which belong to their fellow countrymen and to protect their property from thefts (Nalmpantis 2013). Brand is the securing and guarantee of a unique quality. It is a comprehensive process of creating and giving meaning to a place, a dialogue between tangible and intangible which make it unique and different in relation to other competitive destinations. It is considered the first and most important step in the implementation of efficient and competitive strategies (Dwyer et al. 2009, Go and Govers 2000).

A basic aim of cities in the present is finding new ways of attracting people – visitors or residents – and businesses (Morgan et al. 2011). The competition of the cities imposes somehow the quest and discovery of those elements which make them different in the global framework. Typical examples, concerning monuments, are Acropolis (Greece), Machu Picchu (Peru), Taj Mahal (India), Great Wall (China), Eiffel Tower (France). Past fascinates a lot of people and this fascination is a tribute to cultural heritage as well as to time itself (Strauss and Lord, 2001). Cultural heritage allures because it provides everyone the ability to live a grotesque experience compared to the present. The emotion attachment with the past which people seek through nostalgia is considered of great importance (Walsh 1992). Place Identity has
close relation to the sense of being a person of a city (Hummon 1986), bearing in mind not only the spatial but also the social dimension of the word “city”.

The primary attraction that either tourists or residents feel about a monument is something deeper and in particular its interpretation – what is hidden behind the construction material – and interpretation is above all communication (Karavasili and Michelakis 1999), mental and spiritual. In this way, heritage tourism along with branding is an applied practice of a monument’s interpretation. A monument has clearly a tangible subsistence but is simultaneously the testimony of a place’s identity with social and psychological extensions (McDonald 2006). It should be specified that the information which derives from any monument does not necessarily constitute an interpretation. On the contrary, interpretation includes information and its main goal in not so the teaching part as much as the challenge of meditation and internal search (Nuryanti 1996). Every monument of great prestige becomes an object of admiration for its authenticity. Authenticity is not something that anyone can possess but a structured reality which arises as a result from the effects between local community and external environment (Zhu 2012). Thus, authenticity extends far beyond the tangible aspect since a monument also preserves in time intangible items. Lavvas (2010) quotes that cultural heritage is human’s effort to head counter to time, to succeed in the world of consciousness something that cannot succeed in the real world.

Since monuments are closely related to every human entity, community (local residents) seems to play a crucial role to their preservation, displaying and interpretation. This role becomes more significant in case a monument is placed within an urban web. Unfortunately, most surveys focus on how important is residents’ participation from a theoretical point of view. Still, there are surveys that underline residents’ participation in a monument’s displaying despite its big range. For instance, monuments such as Domboshava in Zimbabwe (Chirikure and Pwiti 2008), the ancient city of Chunchucmil in Mexico (Ardren 2002), the New Lanark Mills in Scotland (Garrod et al. 2012) and the Lenggong World Heritage Site in Malaysia (Jaafar et al. 2015) prove the essential meaning of public involvement through community archaeology and local guides.

3. Study area

The research focuses on the city of Larissa in the region of Thessaly, central Greece. Larissa has approximately 200.000 residents and it is known for its geographical position, right in the middle of the country. The city has a great history but until now no attempts have been made to promote its image to the external environment, either in the rest of the country or abroad. Larissa is inhabited without pause since 6.000 BC (Mpantziou-Efstathiou 2008). This is a historical element of great significance because Argos in the region of Peloponnese and Larissa in the region of Thessaly are the two oldest cities in Greece. The city and the prefecture are classified very low in the visitor arrivals tourism rates comparing with the other cities and prefectures of Greece respectively. Despite the existence of a brilliant cultural heritage (mythology – history) known in a global scale, the city as a whole (local government and residents) decided recently to form an image based on it and create an identity separate from any other. The two competitive advantages concerning cultural heritage in the city of Larissa are
the 1st ancient theatre (Spanos et al. 2014) and the monument of Hippocrates (Spanos 2014).

Undoubtedly, the father of Medicine is a distinctive item of Greek cultural heritage and cannot be ignored in any case. On “Agrianos” 27th, a month which corresponds to the current month of January, the founder of scientific medicine was born in the island of Kos. His father was Heraclides (descendant of Asclepius) and his mother was Phenarete (descendant of Herakles) (Mandilaras 1992). He was taught the medical science in the school of Knidos (city in Asia Minor, across from the island of Kos) and Kos and he travelled not only in Greece but also in distant countries like Scythia and Egypt (www.hipocratesgarden.gr). His two sons, Thessalos and Drakon, were also doctors while his great grandchildren, Drakon the 3rd and Hippocrates were doctors in the Macedonian courtyard of Alexander the Great (Kalleggia 2006). The fact that he gave the name “Thessalos” to one of his sons proves the close relations he had with the region of Thessaly. Larissa at that time was a thriving city and the aristocratic family of “Alevades” promoted to a large extent any intellectual activity which could occur. According to Soranos, a historian of the 2nd century AD, he went to Thessaly because he was suggested to do so in a dream (Literary Group of Cactus 1996). The logical explanation, of course, was his innermost willingness to die near the homeland of his ancestor, Asclepius. It must be noted that the “Asclipieio” (temple and sanatorium dedicated to Asclepius) in ancient Trikki (modern Trikala, a city near Larissa) is the oldest among 400 in the Greek territory. Since the importance and the quality size of Hippocrates have been understood by the local community, Larissa in cooperation with the island of Kos makes efforts to display the monument of Hippocrates (Image 1) and create its image through this brand name together with the ancient theatre.

**Image 1: The monument of Hippocrates in Larissa**

*Source: Author.*
4. Study method

Hippocrates in Larissa represents an interesting research object for study for several reasons. Firstly, the city had no branding campaign before. Secondly, it is the first Greek city that elaborated a strategic marketing plan (cultural heritage plays a key role). Thirdly, the whole effort of displaying the monument of Hippocrates and connecting it to city’s identity has been running for the last 10 months only from a part of residents whose personal involvement makes eventually the difference.

This is a qualitative study whose investigation took place between March and May 2016. As a participant, the author – founding member of the cultural institution “Hippocrates in Larissa” – joined every activity that had to do with the promotion of the image of Hippocrates in the context of Larissa from June 2015. The second most notable source of data was interviews. Semi-structured interviews were conducted and recorded with the Ephorate of Antiquities of Larissa, 13 cultural organizations in the city of Larissa, 5 tour operators, 3 guides, Municipality of Larissa, local Hotel Chamber and 40 residents. The emphasis on personal incentives of the individuals is the main reason why semi-structured face-to-face interview were chosen as the appropriate method. As Bryman (2004:147) states, “…the interviewer usually has some latitude to ask further questions in response to what are seen as significant replies”. The interviewees were asked about the way that the monument of Hippocrates could evolve into a brand and the role of the local residents. In addition to personal participation and interviews, secondary data was collected such as articles from newspapers and magazines, internet publications and promotional material (e.g. brochures).

The recorded data were analyzed by using the method of content analysis. Content analysis aims to objective and systematic description of the overt content of the communication of written or oral speech (Berelson 1971). This method is used to determine the characteristics of the content and the transmitter of the communication (Vamvoukas 2010). The analysis focuses on terms, meanings or topics which have to do with the object of the study, gathering information related to the subject and how they are perceived by individuals or groups. This means that the above sample was purposing because it includes the elements a qualitative researcher wants to investigate and the knowledge and the will of the interviewees to participate in research issues (Thomson 1999).

5. Study findings

The recorded data were read in order to gain a complete understanding about what the interviewees said and/or did. The next step was the codification of the data and the creation of codes (Huberman and Miles 1998) useful to this research. After the research ended, two outcomes (codes) were brought on the surface; the local or non-local administration of the specific monument and the way the brand name is built. The first aspect is something that worries the local community and this is explained from the five years experience at least, regarding the 1st ancient theatre. More specifically, the ancient theatre belongs to the Ministry of Culture and there is much delay in anything that has to do with its displaying. The Director of the Ephorate of Antiquities of Larissa stated:
“What we expect is a change of the management from the central to the local level. Every place has advantages and disadvantages which differ from city to city. Scientists and residents – the whole community – do know better than anyone else our potential and the ways that can annihilate our weaknesses in order to promote the city’s image”.

This statement was commonly agreed since the slow procedures of the monument’s displaying is a bad experience in general and this is something not desirable for the monument of Hippocrates either. The city mayor went a step further and stressed:

“Central management must exist but its main role should be auxiliary. Local heritage management is crucial in order to engage the residents in any process related to our cultural heritage. The existing monuments belong to community and community is the residents”.

Despite the fact that several researchers have indicated the difficulties and problems of residents’ involvement in communities’ issues like those (Aref 2011, Blackstock 2005, Jamal and Getz 1999, Okazaki 2008, Reed 1997, Russel and Vidler 2000, Simmons 1994), the above opinions strengthen a general consensus that without residents’ engagement nothing is sustainable. Branding is inextricably related to tourism and the involvement of the local community in tourism issues is the key for tourism to be sustainable (Allen et al. 1988, Brent Ritchie 1993, Hardy et al. 2002, Lankford 1994, Williams and Lawson 2001) since the sense of the responsibility of the residents towards community and their practical engagement are highlighted as important factors from designers, managers and specialists (Boyd and Singh 2003, Campbell 1999). Some residents complained:

“Everybody knows Greece’s economic situation. Yet, there is strong will from some residents to participate voluntarily because they express the desire to offer to their city in any way. But unfortunately there are many times that we feel our voice and wills are not heard”.

The arguments for promoting the participation of residents derive from the belief that active participation is much more preferable than passive participation (Arnstein, 1969; King et al., 1998). With the involvement of residents, the proposed policies is much easier to keep up with their preferences while the public shares the responsibility for the sometimes difficult decisions that local authorities have to make. Thus, solutions in a holistic content occur (Irvin and Stansbury 2004). Therefore, the aim of the participation is to obtain the best possible and most beneficial decisions that will deliver effective benefits throughout society (Beierle 1999) while achieving agreement and consensus can prevent the occurrence of any complication in the long term (Yuksel et al. 1999). The views of residents, their support and their participation can direct the development of tourism in safe paths and avoid any conflicts within society (Bandyopadyay and Morrais 2005, Dredge 2010, Shelson and Abenoja 2001). Haywood (1988) defines participation as a process in which interest groups take part and the decision making is shared. For this to be possible, the transfer of power in decision-making from local authorities to the local community is necessary (Salazar, 2012). Moreover, many of the benefits of participation can be detected not only by the result but also during the whole process in which, for example, feelings may occur such as local pride and a sense of belonging (Yung and Chan 2011). Above all, the involvement of the local community ensures guests a memorable experience while the...
local society itself is able to benefit from these visits (Sebele 2010).

The second outcome of the survey has to do with the way the local community wants to form the brand of Hippocrates. Unlike to what is mostly adopted for the promotion of a brand in a global context, this is a different case. The main target of the existing cultural organizations and principally of the cultural organization “Hippocrates in Larissa” is to form the appropriate conditions for an “inside to outside” promotion of this brand name. This means that Hippocrates and his philosophy should be part of residents’ lives, a living brand. One person who belongs to this cultural organization explained:

“Everybody who participates in this organization knows well what, how but mainly why he/she is doing what he/she is doing. Pure interest is the motive of all who participate and this guarantees an excellent result. This is a policy that we copied from the new founded Diachronic Museum of Larissa. There are young people who offer their services voluntarily and through time the museum has been part of the city and its fame has crossed Greek borders. This is exactly what we are looking for the monument of Hippocrates too although we are in the beginning of our effort”.

The chairman of the cultural organization “Hippocrates in Larissa” stated:

“Although Hippocrates is a global known name we cannot change our city’s image through logos or slogans. Besides, Larissa is not a tourist place and it tries now to put itself on the tourist map. These would be hasty movements and there would be no quality in what we want to promote. The secret is the understanding of the knowledge that comes from Hippocrates. We should make the philosophy of Hippocrates a part of our daily lives; I mean, it is important to know encyclopedic information about our ancient theatre but it is more important to understand the values the ancient theatre represents. We should do the same with Hippocrates because – and maybe this is strange for most people – medicine is philosophy. We, residents, should be a living brand”.

It is therefore obvious – and also through current reality – that although Hippocrates is a famous brand name by itself, the city should do more so that it can be transmitted in a cultural heritage centre based on a brand; unless the whole community desires only the arrival of romantic wayfarers.

At this point, it is appropriate to analyze what is hidden behind the father of Medicine that these people implement for themselves every day and try to persuade other residents to follow also this path of mentality, so that Hippocrates can be a living brand.

The critical condition of the era that Hippocrates lived is proven by a tremendous change of how human deals with medicine. Until those years, the occurrence of any disease was associated with the will of the gods. For instance, the god Apollo, in the epic “Iliad”, causes epidemic in the camp of the Achaean Army, insulted one of his priests. Similar situations can be observed in other figures of Greek mythology too such as Philoctetes, Bellerophon, Niobe. However, gods had the ability to heal diseases or wounds as well. For example, Athena heals Diomedes and Aphrodite heals her son, Aeneas. There were only a few cases in which mortals or demigods distinguished themselves for their medical knowledge such as Melampus, Amphiaraos, Trofonios, the sons of Asclepius Machaon and Podalirius and of course the son of Peleus and Thetis, Achilles.
The change of how humanity perceives science in general and medicine in particular, lies on the influence of the Presocratic philosophers which acted as a catalyst. It is no coincidence that the common ground of all sciences (cosmology, mathematics, physics, chemistry, biology, medicine) is philosophy. Philosophers such as Thales, Anaxagoras, Pythagoras, Heraclitus, Empedocles, Parmenides, Xenophanes, Anaximander, Anaximenes abandoned the prevailed beliefs in that time and they turned to the explanation of the world and its phenomena through reasoning – experience and observation – which lead to knowledge.

The close link between medicine as well as the other sciences to philosophy is reflected in Empedocles who tried to reconcile the opinions of Heraclitus and Parmenides. The first, supported the notion that there is nothing more stable that change itself (Phalcos – Arvanitakis 2010) and the second that birth and death exist only in the fake world of phenomena (Karagiannis 2003). Empedocles attempts a compromise between the two of them and argues that there is no birth and death but four eternal and immutable elements corresponding to “earth”, “air”, “fire” and “water”. The mixing of these elements in the right proportion entails harmony and health is such a harmony.

This philosophical direction was, according to the prevailing view, the model of the four humors theory in the medical school of Kos; blood, phlegm, yellow bile, black bile (Lypourlis 2000). The way that Hippocrates perceived medicine starts with the notion that the interpretation of what is happening in the human body is understandable only if the body is treated as a subset of a broader system (universe). This is underlined also in Plato’s “Phaedrus” where Phaedrus himself calling on Hippocrates states that the interpretation of human body’s nature cannot be understood without the interpretation of “Holon” (universe as a broad system) (Doikos 2006). Therefore, the contribution of the Presocratic philosophers is the logical explanation of the phenomena and the entire universe as well as the transition from the macrocosm of the universe to the microcosm (e.g. human body) of beings with the conviction that the laws which rule the one rule the other as well. The abandonment of biased medicine was a real fact and medicine is considered until nowadays as a science.

It is obvious that Medicine is not just a practical issue but part of philosophy. The chairman of the cultural organization “Hippocrates in Larissa” noted:

“Howing Hippocrates’ philosophy is crucial for our future branding campaign and this can be seen from the resonance of this policy today in Larissa. Sentences such as “prevention is better than cure” and “we are whatever we eat” are not just theoretical phrases; they are applied philosophy that anyone can implement and this is our hope”.

All this effort of ten months has brought some significant results and suggestions which are the following:

i. Rename of the current University Medical School as “Hippocratic Medical School”.

ii. Establishment of annual international medical conferences.

iii. Enhancement of pharmaceutical conferences.

iv. Providing diplomas to foreigner graduating students of medical schools at the monument of Hippocrates reading Hippocrates’ oath (this proposition is under discussion and takes place already in the island of Kos).

v. Educational activities for students of primary, secondary and high school.
vi. Information for the importance of proper diet through free seminars from local nutritionists and dieticians.

vii. Reinforcement of Larissa’s image along with other items of cultural heritage.

viii. Increase of tourism due to educational excursions from schools of other Greek cities.

ix. Growing interest from tourists abroad who want to add in their program a visit to Larissa along with other sites such as Olympus, Pelion, Meteora, Dimini etc.

x. Creation of botanical garden with the plants of Hippocrates at “Alcazar Park”.

6. Conclusion

Larissa is a city without tourist past that is now trying to put itself on the (cultural) tourist map. Since the recording of the city’s cultural potential has been fulfilled, the local government, the Ephorate of Antiquities, cultural organizations and the local community have decided in common for the extroversion of the city. The monument of Hippocrates contributes greatly to this direction and this is evidenced by everything that has been done until today. Regarding the case of Hippocrates, it seems that an “from inside to outside” approach is adopted (local residents are the initial recipients) so that Hippocrates can be considered as a brand name based on local heritage management and understanding of knowledge. This is vital since it secures the long term sustainability of a monument and does not condemn it to oblivion. A similar example of a monument within urban web in Greek territory is the archaeological site of the town of Pharsalus (Spanos 2015). This is a slow but steady process whose basic purpose is to build a brand on a sense of belonging and a shared purpose (Govers 2003). Hence, a qualitative brand is preferred at first which can ensure any future planning strategy. Economic benefits for the city or the residents should not be deemed as the original target of a brand but of course it is a secondary target that is worth (Grimwade and Carter 2000). The initial aim should always be the understanding of the values of any cultural heritage asset.

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CONSTRUCTING CHILDHOOD IN EDUCATIONAL DISCOURSE

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Abstract

This study explores the ways through which childhood is constructed as a social category in educational discourse. 112 early childhood education undergraduate students, 30 novice and 30 experienced kindergarten teachers participated in the study. Participants were asked to write down freely their views about the characteristics of childhood and children’s ability to take decisions for matters that concerned them. Results highlight the dominant discourses that provide an image of childhood as a homogeneous social category with deficit characteristics. Differences among the three groups of participants were observed. Namely, undergraduate students constructed a romantic and ideal image of childhood, novice EC teachers constructed an image of children as capable agents, while experienced EC teachers emphasized more on the role of the adult and on contextual factors in the formation of childhood.

Keywords: childhood, images, educational discourse, early childhood education

1. Introduction

This paper is based upon two basic theoretical stances. One that claims that childhood is socially constructed (James, Jenks & Prout, 1998) and one that supports that language is a source of socially constructed meanings that represents and at the same time constructs the world / relationships / identities (Fairclough, 1989). These two theoretical stances, one mainly coming from the work of the New Sociology of childhood and the other coming from Critical Discourse analysis share important assumptions that support their dialogue and co-operation. These assumptions are: firstly that discourses construct social reality but at the same time draw from social practices and the context in which they are realized. Thus, there is a dialectic relationship between discourse and social practice. This is evident in the works of the New sociology of childhood when children are perceived as social agents that create and transform values and cultures but at the same time draw from existing practices and culture, i.e. during their play (Corsaro, 1997). Secondly, identities are understood as being socially constructed through daily practices that position children in various...
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Social contexts. Such an understanding leads to an investigation of the ways by which educational discourse or the media (Avgitidou & Stamou, 2011) and other social practices position childhood within daily practice.

Therefore, what our research attempts to highlight is how childhood is constructed within teachers’ educational discourse. While there are studies which show teachers’ ideas and practices concerning mainly children’s learning and play, we have limited research findings concerning practitioners’ images of childhood and how these are constructed. Teachers’ (educational) discourse (Solomon 1994, Vidali 2000, Makrinioti 2001) has been highlighted as a normalizing discourse which influences our views of the desired and accepted nature of childhood. These views are important because they are closely related to views of the teacher’s role and of early childhood education (Hallden, 2005, Dahlberg & Moss 2005, Sherwood, 2001). Thus, the idea of a ‘lacking child’ requires a teacher who is the privileged voice of authority and a view of early childhood as transmission pedagogy (Dahlberg & Moss, 2005:103). As Sorin (2005) and Woodraw (1999) have shown, the image of a child as innocent, powerless and in need of adult protection has been a dominant construct in early childhood policy and practice. However, recent European documents, education policy makers, human rights ambassadors and academics stress the need for children’s participation and “voice” in the educational process (Moss, 2007).

James, Jenks and Prout (1998) have described different discourses of childhood based on elements of social theory that are presented in the form of dichotomies. These dichotomies are: structure versus agency, identity versus difference, local versus global, and continuity versus discontinuity. While we are aware of the concerns for a dichotomous framing of childhood (Canella, 2002), by proposing these dichotomies, James et. al (1998) underline specific analytical categories for theorizing childhood. These categories are agency, homogeneity, space and time. Based on these categories, James, Jenks and Prout (1998) then refer to different discourses of childhood, namely ‘the tribal child’, ‘the minority group child’, ‘the social structural child’ and ‘the socially constructed child’. While ‘the tribal child’ discourse shows children as autonomous and independent agents, creating and experiencing their own separate world, ‘the minority group child’ discourse sees children living in an adult-centered world, in which they function as deficient subjects. ‘The social structural child’ discourse perceives childhood as a permanent feature of any social structure, and thus a universal category. Homogeneity is stressed as the main characteristic that organizes the social structural discourse, talking about childhood as a general category with no space, time and other contextual determinants. Finally, ‘the socially constructed child’ discourse stresses childhood as a temporal and local phenomenon, where children are either products of the time and conditions they live in, or a construction through the dominant modes of speech. This last discourse leaves space for viewing children as actors who interact with and may shape the world they live in. Further, the image of ‘the romantic childhood’, drawing from Rousseau and ‘the lacking childhood’, drawing from Piaget, are possible views of childhood constructed in educational discourse. We will use the discourses presented above in analyzing educational discourse and exploring the ways it constructs and positions childhood as a social category.
2. Research aims and questions

Our specific research aims are to show which discourses of childhood teachers construct or draw upon in their texts and to reveal the linguistic patterns that sustain the different discourses of childhood drawn upon in teachers’ discourse.

The research questions are:

1) What are (pre-service and in-service) teachers’ constructs of childhood?
2) From which discourses do teachers draw upon to construct their views of childhood?
3) What are the implications of these patterns (in terms of both form and content) for the images of childhood that emerge from their texts?

3. Methodology

Pre-service teachers and early childhood teachers were asked to write down freely their views about the characteristics that they would attribute to childhood and their thoughts on the ability of children to make decisions for matters than concern them (question 2). With the first question, “what characteristics would you attribute to childhood?”, we wanted to know which features of childhood were highlighted as important and if pre- and in-service teachers had a homogeneous image of childhood or if they varied their description of childhood according to different criteria. With the second question “can children make decisions for matters that concern them?”, we wanted to elicit teachers’ views of children’s agency through their justification of children’s ability to make decisions for matters that concern them.

113 pre-service (PS) students and 60 early childhood teachers, from whom 30 were novice (N, 1-5 years of experience) and 30 were experienced educators (E, more than 15 years of experience), participated in the study. Written responses were analysed firstly by content analysis and then by Critical Discourse Analysis (Fairclough, 1989 & 1992). A combination of the use of content analysis and discourse analysis has been supported in previous research, highlighting the text from different perspectives (Galasinsky & Marley, 1998; Stamou, Lefkaditou, Schizas, & Stamou, 2009). Specifically, in our research, we were based in multiple reading of texts so that we recognize and determine concrete meanings, the particular vocabulary (words-key) and the conceptual content of analytic categories, aiming both at measurement of their frequency but also their interpretation. We determined as basic unit in order to analyze our data either the phrase or the paragraph explicating a specific meaning. In other words we focused in a thematic inductive analysis, based on the meanings and importance that the participants gave in their written answers. Moreover, the discourse analysis of texts was based on the three levels that Fairclough (1989) proposed. In the first level, the micro-level of description, we seek the formal elements of text that are related with the vocabulary, the grammar and its syntactic structure. The second stage of text analysis, the meso-level is explanatory, seeking how the linguistic modalities draw from different discourses (intertextuality) that construct both images and arguments related to childhood. Last, regarding the macro-level of social practice we discuss the meaning of the discourses that these texts draw upon (Fairclough, 1989: 140-166).
4. Results

4.1. Pre-service and in-service teachers’ construction of childhood through content analysis

Content analysis of the 1st question regarding children’s characteristics showed that while pre-service, novice and experienced teachers referred to a variety of characteristics regarding children’s temperament, emotions, social behavior, cognitive capacities and activities, there were several characteristics that were stated more frequently (see Table 1).

Table 1: Percentages of most stated characteristics in P, N and E teachers’ texts

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Pre-service</th>
<th>Novice</th>
<th>Experts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spontaneity</td>
<td>40%</td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Play</td>
<td>38%</td>
<td>13%</td>
<td>18%</td>
</tr>
<tr>
<td>Curiosity</td>
<td>37%</td>
<td>20%</td>
<td>22%</td>
</tr>
<tr>
<td>Joy</td>
<td>32%</td>
<td>13%</td>
<td>3%</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>31%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>Innocence</td>
<td>26%</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>Carefree</td>
<td>27%</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Active and lively</td>
<td>6%</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Egocentrism</td>
<td>3.5%</td>
<td>15%</td>
<td>35%</td>
</tr>
<tr>
<td>Aggressive</td>
<td>9%</td>
<td>20%</td>
<td>15%</td>
</tr>
</tbody>
</table>

(percentages do not add to 100%, since participants gave more than one answer)

In Table 1, we observe that pre-service teachers emphasize in their responses a romantic, idyllic childhood and give higher percentages to characteristics that stress this image of childhood such as joy, sensitivity, carefree, spontaneity and play. It is interesting that in their descriptions of childhood, pre-service teachers do not consider children’s schooling experience as a setting that they draw from in their description. At the same time, in-service teachers give lower percentages to joy, sensitivity and play in their descriptions and stress more children’s egocentrism and aggression drawing from the context of children as educational subjects or pupils.

Indicative examples from their texts are:

“Characteristic elements of childhood are carelessness and play. Children look for means that produce joy. Childhood is characterized by innocence” (PS 10/111).

“Movement, spontaneity, curiosity, concrete thinking, egocentrism, imagination” (N18/30).

“Some children are disciplined, some are undisciplined, some are very selfish” (E1/30).

“They have very big difficulty in collaborating between them as teams, in this age they do not collaborate easily, at least the first time, because the teacher afterwards helps them to overcome all these problems. They are very active in the last years. They are aggressive, undisciplined, more aggressive and undisciplined
the last years than before, they do not have any constriction to adults, for example to distinguish that this is the teacher. They behave more violently, verbally and bodily, taking the law in their hands easily. Big percentage today are aggressive also violent concerning older times” (N8/30).

4.2. Pre-service and in-service teachers’ construction of childhood through discourse analysis: A homogeneous childhood through lists and detailed descriptive accounts.

It is interesting that a very small percentage of either pre- or in-service teachers differentiated among children in their written responses. Specifically, 9 out of 111 pre-service teachers (9%), 3 out of 30 novice teachers (10%) and 7 out of 30 experienced teachers differentiate among children (23%). Expert teachers show higher percentages of differentiation among children, since they attribute differences among children to specific factors, such as family upbringing, time spent by parents for their children’s education, and so on.

Regarding discourse analysis, teachers use the genre of description in the form of a list or an account as concrete text types to construct the homogeneous childhood. The text type of the list aims to present on the one hand, a complete and naturalized image of childhood that corresponds to all childhoods).

**Example of a List:**

1st question: What characteristics would you attribute to childhood?

**Written response:**

- Play
- Movement
- Spontaneity
- Curiosity
- Concrete thinking
- Egocentrism
- Imagination (N 18/30)

The selection of the account as a text type on the part of teachers constitutes a more complete, both quantitatively and qualitatively, description, in order for them to support their opinion better and become more persuasive. In some cases, through the text type of the account, a homogeneous image for childhood is constructed, by referring to childhood as one, with a generalized common characteristics referring to children’s personality and actions. Thus, childhood is presented as an undifferentiated social category. This discourse refers to a global childhood, that previously is passive receptor of situations and previously agent of action. In all texts the subject is omitted and the use of simple present represents the truth and certainty in the described pedagogic discourse.

“Aliveness, joy, enthusiasm, simplicity, sincerity, activity, need for love, need for movement, need for acceptance, for friendship, for praise. Research, curiosity, authenticity. Feel centre of the world and have need for the interest of other. Disappointed easily, they require insistently persons in order to surround them with respect and love. Want the time and the reward of adults. They are unable often to take the other’s perspective because they are possessed by the insistence to make their wishes happen” (E 47/60)¶
In other cases different types of children are distinguished with the use of oratory “some children” or “other children”, which differentiates children from one another.

“Some of them are not interested, do not follow the conversation and bother others around them, do not put down effort in order to do something and usually say I cannot or I don’t know” (E 1/30).

In such responses, despite the different descriptions of children, the image of the “ideal childhood” is apparent in teachers’ negative evaluation of specific children’s behavior. Specifically, the ways teachers describe the differences in children’s responses to kindergarten activities and offer negative evaluative comments based on mental processes (Halliday, 1994) reveal their expected and accepted image of childhood. Thus, children are expected to be disciplined, participate and be interested during activities in an early childhood setting. Through this pattern, childhood is once again homogenized since expectations do not vary among children.

4.3. The minority group childhood

The image of the minority group childhood is closely related to teachers’ responses to the 2nd question, since they judge children’s ability to make decisions for matters that concern them. Most participants did not give a clear positive answer to this question, but argued that children can decide about matters that concerned them under specific pre-conditions (see table 2). These pre-conditions were mainly the topic of the decision (i.e. what was the content of the matter that children would decide), the presence of a guiding adult and background (family) factors that affect children’s ability for decision-making. However, each category of participants gave different percentages to each answer, highlighting their image of childhood.

<table>
<thead>
<tr>
<th>Table 2: Percentages of participants’ response regarding children’s ability to make decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Response</strong></td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>Yes, but simple matters</td>
</tr>
<tr>
<td>Yes, but support of adults</td>
</tr>
<tr>
<td>Depending upon background factors</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

(percentages do not add to 100%, since participants gave more than one answer)

While both pre-service and in-service teachers distinguished between simple (clothing, play, friendship) and important matters (safety, health, food, schooling) for decision making, pre-service teachers used this as their main argument for a yes or no answer to the 2nd question. The reasoning of the yes answer under specific pre-conditions was based on an image of children as lacking maturity and critical thinking:

“I believe that a child can make decisions only for some matters. However, these matters can’t be very serious and critical, because a child is at an age that has not acquired a lot of experience and knowledge. Issues that they can decide upon are to choose their friends, decide if they will participate in a game, what to do in their free time” (PS 11/111).
“Yes, for unimportant things, such as what clothes they will wear, what game they will play” (PS 35/111).

A lot of novice teachers (36.5%) highlighted in their responses an agentive role for children based on modern pedagogical theories that stress either that children learn through decision making or that children’s voice should be appreciated and taken into account.

“Of course they can decide, because their judgment on an issue is based upon what they want, their preferences and what they live” (N30/30).

“Yes, this is what the early childhood curriculum promotes, anyway” (N4/30).

“Yes, because, in this way, they participate themselves in the process of learning” (N17/30).

These views are based on the aims of early childhood education curriculum which stress children’s participation and respect for their opinion. We can hypothesize that novice teachers are more familiar with the last ECE curriculum since it has recently changed and has probably formed part of their initial teacher education.

Expert teachers stressed the guiding role of adult as well as other background factors as criteria for giving a positive response to children’s ability for decision making. These factors were mostly the family background of children and their individual cognitive capacities:

“Judgment and decision in relation to children depends upon the conditions under which they are asked to make a decision, the environment in which they grow up and the intelligence of each one” (E 5/30).

The restrictions teachers use both in terms of content and linguistic form to describe children’s abilities highlight issues of power relationships among adults and children due to the minor status of children. In addition, in their descriptions, the use of words that declare weakness, need and disability parallel to the needs of children for love, safety and stable climate put restrictions on children’s action and at the same time position adults in a hierarchical status in relation to children. These restrictions assist as a supporting framework to justify and point out the importance of intervention and the necessity of adults’ guidance. Thus, socialization discourse is used to construct the idea of the minority group child evident in statements such as the following:

“Under our own guidance and help, perhaps, they can also accomplish to make decisions” (E 15/30).

“As long as a child is young, the supervision is essential” (E17/30).

“Children are not, however, in a place to decide for matters that concern them, because they think in a way different from adults and know less things” (E22/30).

The discourse of the minority group childhood based on socialization theory is also supported by references of teachers to the early childhood curriculum as a way to validate their claims according to the official pedagogical discourse “As far as I know as an early childhood teacher, the dominant characteristic is the socialization trend”. It is our hypothesis that expert teachers draw from the traditional sociological theories that supported previous early childhood curricula that gave emphasis on children’s socialization processes rather than active engagement in the educational process.
5. Conclusions

Both pre-service and in-service early childhood teachers construct childhood through different discursive practices that draw from normalizing educational discourse of how children should be (disciplined and interested), developmental psychological theories (immaturity and egocentrism), classical sociological theories (need of adult protection and guidance in the socialization process) and curriculum as an intertextual resource. Homogeneity of childhood is striking in teachers’ discourse even when differentiations are described among children. The discourse of homogeneity is supported by references to: a) children’s special status in the life course due to their biological age (social structural child), b) their limited abilities – presenting children as minor (minority group childhood) and c) their differentiation from adults (tribal childhood).

Having in mind early childhood teachers’ constructions of childhood, one may question their possible influence on the roles and practices they might adopt during the educational process. Will the construct of homogeneity affect the opportunities teachers will give for differentiation of space, organization of time and educational activities to match the abilities and interests of all children? In addition, we wonder if the construct of minority-group childhood, thus the image of the lacking child, will hinder the opportunities teachers offer for children’s active participation, dialogue, problem solving and decision making processes in the kindergarten. These issues are at the core of pedagogical theory that supports children’s participation as children’s right and way of learning. However, becoming or in-service teachers need to be supported first to rethink their educational discourse concerning children and childhood and then interact with theory, research and practice that offers alternative views of children’s agency in the construction of the social world they live in. Future research can look into relations between educational discourse regarding childhood and practice to give an in-depth understanding of the presuppositions for a participatory early childhood education.

References


Arnold.
ELEMENTARY SCHOOL PUPILS’ ATTITUDES TOWARDS GEOGRAPHICAL VARIATION IN POPULAR CULTURE TEXTS: EVIDENCE FROM GREEK DATA

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Abstract

The aim of the present study is to explore the metapragmatic stereotypes of elementary school pupils towards geographical varieties, using as stimulus a TV commercial, in order to understand how they perceive and define these varieties. Specifically, we look into the children’s beliefs on the overt and covert prestige of geographical varieties and dialect speakers, that is, on the acceptability that varieties and their speakers may have within and outside their social space (Trudgill 1974). The research findings indicate that the children of our sample associate varieties to specific geographical and communicative context and specific social groups. Pupils therefore appear to follow the dominant metapragmatic stereotypes of strictly bounded language varieties, and don’t seem to challenge the assumption of distinct and autonomous varieties.

Keywords: elementary school pupils, attitudes, geographical varieties, popular culture texts, “matched-guise” technique

1. Linguistic attitudes and metapragmatic stereotypes

Dialectology and traditional sociolinguistics lay particular emphasis on language

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structure, arguing that languages and language varieties constitute a set of fixed linguistic rules and conventions. This resulted in strict linguistic boundaries and the connection of languages and language varieties to geographical and/or social contexts. In other words, according to this particular theoretical approach, the language variety used by a speaker reflects the place of origin and the social group to which this person belongs (Hudson 1996: 22).

However, recent decades have witnessed a tendency to challenge the positions of the above theoretical approach. The idea of discrete, bounded and autonomous languages and language varieties is no longer viewed as natural. Language varieties are not defined as fixed entities, affiliated to a specific geographical area or social group (Blommaert & Rampton 2011: 3-4). Essentially, each speaker is able to construct, shape and compose a personal language style through specific linguistic choices, depending on the identity the speaker aims to construct in each communicative situation. It is therefore impossible (or at least very difficult) to bound a language variety or to draw conclusions about the socio-cultural characteristics of an individual based on the language variety used (Johnstone 2009: 159-160).

In the context of denaturalizing the existence of established linguistic structures, emphasis is placed on critical approaches in terms of what the speakers themselves define as language or language variety and how specific linguistic choices come to be seen as language varieties. The concept of language is viewed as an ideological construct, shaped under the influence of social, political and historical factors (Blommaert 2006: 512). Contemporary sociolinguistic research therefore focuses not on the geographical and/or social boundaries of a variety, but on the speakers’ beliefs about the function and geographical and/or social framework of a variety. The study of the speakers’ linguistic attitudes is therefore particularly emphasized (see, among others: Baker 1992: 10-11; Kakridi-Ferrari 2007).

Linguistic attitudes are shaped by views about the nature and characteristics of various languages; they relate to prejudices and stereotypes regarding how various language elements function. To use the terms of anthropologists Silverstein (1993) and Agha (2007), we could say that linguistic attitudes stem from language ideologies or metapragmatic stereotypes shaped by speakers regarding various linguistic phenomena. According to Agha (2007: 150-151, 154), these stereotypes constitute the speakers’ internalized assessment models for language varieties and their use. So, based on metapragmatic stereotypes, speakers express attitudes and evaluative judgments of how specific linguistic choices function. These stereotypes arise from language use and assessment, circulate socially, and affect interactions between speakers of a language community. The process by means of which particular language forms become ideologically invested with particular social meanings and/or identities is called enregisterment (Agha 2003; 2007: 55, 61-64: see also Johnstone 2009). Speakers, taking specific metapragmatic stereotypes into account, either express their views on various language elements directly, describing them as “right”, “wrong”, “appropriate”, “inappropriate”, “common”, “unusual” and so on, or express their evaluative judgments indirectly, associating specific language elements with particular social characteristics and/or communicative situations. For example, according to sociolinguistics research findings, speakers associate the use of geographical varieties mostly with manual labor workers (see Halliday & Hasan 1985: 42). Essentially, the
speakers’ beliefs prescribe how language elements are grouped and assessed, recording them as language varieties. In other words, the speakers’ metapragmatic stereotypes are decisive in shaping the boundaries of a language variety.

Speakers shape their linguistic beliefs under the strong influence of language ideologies circulating in their community. In Greece, as in most western nation-states, the promotion of linguistic homogenization and the marginalization of linguistic variety were (and remain) a dominant metapragmatic stereotype. Linguistic homogeneity and monolingualism are based on the idea that languages and language varieties are strictly bounded systems, used in specific, also bounded, social formations (Blommaert & Rampton 2011: 1, 4). Specific institutions of power, like the media and education, play a decisive role in achieving linguistic homogeneity. Since media depictions of sociolinguistic diversity underlie particular assumptions about the social meaning of language, the media function as “metapragmatic activity” (Agha 2003). Specifically, the discourse of the media often dictates expected linguistic behavior through the alignment of television characters with linguistic homogeneity and the respective metapragmatic stereotypes (Stuart-Smith 2006: 141, 148). In fact, in the Greek media, television characters who do not follow the dominant language ideology are often humorously targeted (see Archakis et al. 2014; Pavlou 1997).

In this context, the present paper attempts to determine how speakers, functioning within specific metapragmatic stereotypes, shape their linguistic attitudes, assess a language variety and delimit the acceptability of its use.

2. Linguistic attitudes towards geographical varieties: Research findings

Early sociolinguistic research already placed particular emphasis on studying the attitudes of speakers towards the geographical variety they used or towards the geographical varieties of other communities. These studies showed that their participants associated the use of geographical varieties with a rural environment (see, indicatively, Diercks 2002: 63; Inoue 1999: 154-156; Preston 2003).

In Greece, numerous studies have addressed linguistic attitudes towards geographical varieties, particularly the Cypriot dialect. The findings of these studies have a lot in common with observed linguistic attitudes of speakers worldwide. More specifically, in Greece, speakers predominantly associate geographical varieties with a rural and informal environment and the variety used in urban areas and institutionalized communication circumstances with the Standard Modern Greek (SMG) (Papas 2008; Pladi 2001). It should be noted that the use of geographical varieties in these circumstances is often assessed positively, since in the minds of speakers it relates to strengthening social ties between speakers, solidarity, and a feeling of belonging to a social group (Kourdis 2007: 88, 130-131; Pladi 2001). Greek speakers seem to display a negative attitude towards using geographical varieties in formal communication circumstances, either characterizing it as “incorrect” or simply by showing a preference for the standard language (Papas 2008; Pladi 2001; Stamou, Maroniti & Griva 2015). In fact, the use of geographical varieties in formal communicational circumstances may entail a disadvantage for the career and social advancement of the dialect speaker, as it is interpreted as lack of education (Kourdis 2007: 88-89; Papas 2008).
In Cyprus, speakers display similar linguistic attitudes, as the Cypriot dialect is associated with rural and informal environments (Papapavlou 1998; Pavlou 1997). Ioannidou’s research findings are particularly interesting (see, indicatively, Ioannidou 2009); she found that the presence of the dialect in the educational framework of Cyprus was very strong, but its use related mostly to ‘informal’ communicative circumstances in schools, regarding the organization of the classroom and informal conversations and comments, not the ‘main teaching’. In the communicative circumstances of the main teaching, the language used was the standard, as it was directly connected to formality. Educators seem to be ‘tolerant’ towards the use of the Cypriot dialect, which “tolerance” essentially amounts to a symbolic devaluation (Tsiplakou 2007). In Cyprus, the state encourages education in SMG, because it provides a powerful means of connecting Greek Cypriots to Greece, establishing a framework of linguistic homogenization. This language policy has been decisive in shaping the linguistic attitudes of pupils; studies where the sample consisted of Cypriot preschool (Kounnapi 2006) and elementary school pupils (Pavlou 1999) reveal the participants’ negative attitude towards the Cypriot dialect.

The present study focuses on the dominant metapragmatic stereotypes of elementary school pupils on geographical diversity. Taking into account the findings of previous research, we investigate the children’s beliefs on the overt and covert prestige of geographical varieties and dialect speakers.

3. Methodology

3.1 Data selection

As a stimulus for eliciting the children’s attitudes we chose to use TV popular culture texts. We selected texts that are well-liked by pupils of the fifth and sixth grade (see Fterniati et al. 2013), so as to ensure that the pupils would have had extensive exposure to the language varieties represented in these texts. In this way, we wanted to make sure that the pupils would express linguistic attitudes towards the represented language varieties, as the lack of experience/exposure to these texts could lead to a lack of linguistic attitudes.

Specifically, in order to study the pupils’ linguistic attitudes to geographical diversity, we utilized excerpts from a popular television commercial by a major mobile phone company (Vodafone), which had been broadcasted in Greek television in 2011-2012. The commercial is set in a hypothetical regional place, presumably a village, and represents the romance between two young dialect speakers, Kitsos and Tassoula, along with the presentation and promotion of mobile telephone gadgets. The variety used by the characters of the commercial is not a distinct geographical variety, but reflects a generic rural speaker in northern Greece, with elements of northern vocalism, where unstressed mid vowels [e] and [o] are raised to [i] and [u], and unstressed high vowels [i] and [u] are typically deleted (see Kontosopoulou 2008: 92-108). Due to the protagonists are presented as drawing upon the semantic fields of computing and mobile technology, the geographical variety is represented as incongruous, inappropriate, deviant and laughable (see also Archakis et al. 2014).
3.2 Sample selection and research instrument for the detection of linguistic attitudes

The study was conducted in May 2013 in four state elementary schools in the wider region of Achaia. A total of 96 fifth and sixth graders were selected (11-12 years old).

During the research, the pupils watched three television excerpts, approximately 2 minutes long each, one of which was the commercial by Vodafone, featuring Kitsos and Tassoula. In order to collect our research data, we administered an anonymous questionnaire. The pupils’ questionnaire included closed questions, some of which are analyzed in the present paper.

Apart from the above questions, in order to reveal and record the children’s linguistic attitudes to geographical diversity, we implemented a modified version of the “matched-guise” technique, which has been used extensively in language attitudes research (see Giles & Powesland 1975). The classic version of the “matched-guise” technique utilizes a number of speakers/researchers, who are competent users of the languages or language varieties under study. The speakers are recorded reading the same text aloud, adapted in the languages or language varieties under study. The participants listen to the recorded texts, which alternate in a sequence that does not allow participants to recognize the same speaker reading the text in a language or variety different to the one initially used. In this way, participants are under the impression that the number of speakers they listened to is greater than it actually is. They are then called to assess the speakers in terms of various characteristics, such as intelligence, social class, education, etc., unaware that in many cases the speaker is the same. Consequently, if the same speaker is rated differently when using different linguistic guises, it can be concluded that the determining factor of the assessment is the speaker’s language variety and the listener’s attitude towards it.

The present study implemented a modified version of the “matched-guise” technique, since the stimulus utilized did not consist of recordings of the same speaker in different varieties, but of the Vodafone commercial, starring Kitsos and Tassoula. Having watched this commercial, pupils were asked to evaluate dialect speech, using a four-point scale (1 = Not at all, 2 = A little, 3 = A lot, 4 = Definitely) to assess seventeen different characteristics, regarding mental ability, habits, attitudes, behaviors to others (e.g. insignificant, outdated, weird, funny, friendly, important, intelligent, pleasant). Essentially, the pupils’ assessments of dialect speech imply their evaluation of the dialect speakers themselves.

3.3 Statistical Analysis

The statistical analysis of the data was conducted using the statistical software SPSS 20.0. In order to analyze the research data that we collected by the modified version of the “matched-guise” technique, we implemented the Factor Analysis statistical test. This test uses algorithms to compare the similarities presented by the pupils’ questionnaire answers in terms of evaluative assessments, and groups these assessments. Essentially, the algorithms group the variables/assessments that have the same or/similar values in the pupils’ questionnaires.
4. Findings

This section presents the findings of part of our research, revealing the metapragmatic stereotypes that are dominant in the views of elementary school pupils, in terms of geographical diversity. We aim to determine the children’s beliefs on the overt and covert prestige of geographical varieties and dialect speakers.

In the present study, the results of the data analysis using Factor Analysis led to the creation of four groups, which we analyze in order to interpret the children’s linguistic attitudes. Each group consists of evaluative assessments that relate to each other, according to the children’s answers (see Table 1).

Table 1: Evaluative assessments of geographical variety and dialect speakers

<table>
<thead>
<tr>
<th>Evaluative assessment</th>
<th>1ST category: Overt prestige (acceptability in formal social settings)</th>
<th>2ND category: Personal integrity (within a community)</th>
<th>3RD category: Humorous stigmatization</th>
<th>4TH category: Speakers’ social prestige (within a community)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indifferent</td>
<td>.825</td>
<td>-.025</td>
<td>-.047</td>
<td>-.139</td>
</tr>
<tr>
<td>Insignificant</td>
<td>.788</td>
<td>-.007</td>
<td>.134</td>
<td>-.134</td>
</tr>
<tr>
<td>Incongruous</td>
<td>.743</td>
<td>-.115</td>
<td>-.040</td>
<td>.035</td>
</tr>
<tr>
<td>Unappealing</td>
<td>.733</td>
<td>-.179</td>
<td>.319</td>
<td>.050</td>
</tr>
<tr>
<td>Useless</td>
<td>.698</td>
<td>-.242</td>
<td>.176</td>
<td>-.052</td>
</tr>
<tr>
<td>Outdated</td>
<td>.590</td>
<td>.001</td>
<td>.209</td>
<td>.223</td>
</tr>
<tr>
<td>Intelligent</td>
<td>-.226</td>
<td>.802</td>
<td>.135</td>
<td>.001</td>
</tr>
<tr>
<td>Important</td>
<td>-.098</td>
<td>.783</td>
<td>-.196</td>
<td>.224</td>
</tr>
<tr>
<td>Beautiful</td>
<td>-.033</td>
<td>.646</td>
<td>-.069</td>
<td>.179</td>
</tr>
<tr>
<td>Funny</td>
<td>.026</td>
<td>-.002</td>
<td>.800</td>
<td>.213</td>
</tr>
<tr>
<td>Weird</td>
<td>.190</td>
<td>.091</td>
<td>.697</td>
<td>-.092</td>
</tr>
<tr>
<td>Stupid</td>
<td>.293</td>
<td>-.186</td>
<td>.545</td>
<td>-.130</td>
</tr>
<tr>
<td>Incorrect</td>
<td>.341</td>
<td>-.395</td>
<td>.488</td>
<td>-.008</td>
</tr>
<tr>
<td>Friendly</td>
<td>-.201</td>
<td>.287</td>
<td>-.092</td>
<td>.765</td>
</tr>
<tr>
<td>Rustic</td>
<td>.202</td>
<td>-.176</td>
<td>.082</td>
<td>.702</td>
</tr>
<tr>
<td>Cheerful</td>
<td>-.013</td>
<td>.298</td>
<td>.060</td>
<td>.687</td>
</tr>
<tr>
<td>Nice</td>
<td>-.046</td>
<td>.377</td>
<td>.135</td>
<td>.457</td>
</tr>
</tbody>
</table>

Interestingly, numerous studies on linguistic attitudes, implementing the “matched-guise” technique, have systematically grouped the participants’ assessments into three categories: (1) competence, (2) personal integrity/reliability, and (3) social prestige/attractiveness (see Preston 2003; Ryan & Giles 1982). In fact, the assessments grouped in the competence category related to the standard linguistic variety, while the assessments grouped in the social prestige and personal integrity categories have
mostly been associated with the use of geographical varieties (see above). In the present research, the Factor Analysis showed that the pupils grouped their evaluative assessments into four categories, three of which were very similar to the above categories.

The first category presents similarities to the assessments grouped into the competence category and relates to the standard linguistic variety (ibid). In the present study, this category, as it emerges from the children’s answers, includes assessments that denote the lack of overt prestige of geographical varieties that is the lack of acceptability in formal social settings. This category includes terms such as indifferent, insignificant, incongruous, useless, and outdated, attributing negative characteristics to both the geographical variety and dialect speakers. It should be noted that these perceptions, which devalue geographical varieties and their speakers, already start to develop in the speakers’ childhood (see also Kounnapi 2006; Pavlou 1999).

The pupils’ answers also shape two different assessment categories, which systematically emerge in previous studies on linguistic attitudes (see Preston 2003; Ryan & Giles 1982) and relate to the dialect speakers’ personal integrity/reliability (2nd category) and their social prestige (4th category). Specifically, the second category includes assessments as: intelligent, important, and beautiful, denoting that the pupils attribute quite a positive evaluation on the personality of speakers who use a geographical variety, while the fourth category is shaped by various assessments (including friendly, nice, and cheerful), revealing the children’s beliefs on the speakers’ social prestige. It should be noted that the children included the assessment rustic in the fourth category. The specific evaluative assessment could have both negative (e.g. rube, unlearned) and positive (e.g. traditional bread, namely, healthy, tasty, fresh) connotations. Associating this evaluation with the others of 4th category (friendly, cheerful, nice), it is clear that this term takes positive connotation. So, the combinational interpretation of the social characteristics of the 4th category reveals that the students possibly associate the use of geographical varieties with the strong social bonds often found in rural environments. In other words, the second and fourth categories reveal the children’s belief that the geographical variety entails a covert prestige, due to its connotations of proximity and solidarity, features often displayed by closed communities in rural areas (Trudgill 1974).

Although the first category of negative evaluative assessments seems to logically contradict the pupils’ positive assessments in the 2nd and 4th categories, it should be noted that this specific distinction appears systematically in several studies on linguistic attitudes (see Preston 2003; Ryan & Giles 1982), depending on whether it is assessed in the context of a specific dialect-speaking social group or according to the values that are acceptable to formal social contexts.

In the present research, apart from the three assessment categories that appear systematically in numerous studies on linguistic attitudes, the Factor Analysis identified an extra category (see Table 1, 3rd category), including assessments as funny, weird, stupid, incorrect. We feel that these assessments reflect the children’s beliefs for the humorous stigmatization of the geographical varieties and dialect speakers. Specifically, the classification of funny and weird in a common category reveals that children associate deviation with humor, contrasting it to what is socially expected and acceptable (see, indicatively, Attardo 1994). Pupils seem to perceive the representation
of nonstandard varieties in our stimulus as incompatible, and therefore funny. This category also includes the assessments stupid and incorrect. In other words, pupils probably feel that the representation of the geographical variation on television aims to make viewers laugh through the devaluation of dialect speakers and the humorous stigmatization of the dialectal varieties (see also Archakis et al. 2014; Pavlou 1997).

To sum up, a dominant belief of the pupils is that geographical varieties entail no overt prestige and are negatively evaluated in formal social settings (1st category). The children's negative linguistic attitudes to geographical varieties and their belief that these varieties lack overt prestige demonstrates that pupils are influenced by the metapragmatic stereotypes of linguistic homogeneity, through which the dominance of the standard language is promoted and the use of language varieties is devalued. In fact, according to their answers, pupils seem to believe that geographical varieties are targeted and humorously stigmatized in their television representation (3rd category). Their answers show that children in the last grades of elementary school are already influenced by metapragmatic stereotypes reproduced by Greek media, aiming to promote the standard linguistic variety and stigmatize geographical varieties (Archakis et al. 2014).

Moreover, influenced by metapragmatic stereotypes promoting the strict delimitation of varieties to specific communicative contexts, pupils seem to shape different linguistic attitudes on the covert prestige of a geographical variety and its dialect speakers. Specifically, children evaluate dialect speakers positively, both as individuals (2nd category) and as social beings (4th category), when they use the geographical variety in the context of their dialect community.

5. Discussion – Conclusions

Over the past decades, theoretical approaches challenging the existence of fixed and rigid linguistic structures prompted the review of how the speakers themselves define linguistic variety and how specific linguistic choices end up being perceived as language varieties. In other words, sociolinguistic research focuses not on the geographical and/or social boundaries of a variety, but on the speakers' beliefs on the geographical and/or social context of specific language elements, which are perceived as varieties. Emphasis is therefore placed on the speakers' linguistic attitudes, which stem from metapragmatic stereotypes, i.e. the speakers' internalized models for evaluating the use of specific language elements. In this context, we studied how elementary school pupils perceive and define nonstandard geographical varieties. Our aim was to reveal the children's beliefs on the overt and covert prestige of geographical varieties and dialect speakers.

These findings show that our pupils follow the dominant metapragmatic stereotypes that promote language varieties as strictly bounded systems. So, pupils don't seem to challenge the assumption of distinct and autonomous varieties. Essentially, the children of our sample define language varieties as elements that correspond to specific geographical and communicative contexts, and to specific social categories. The dominance of this metapragmatic stereotype in the children’s beliefs can be analyzed in the following points:

1. Pupils attribute covert prestige to the geographical variety, positively assessing
dialect speakers within their local/rural community, both in terms of personality and as social beings. In contrast, when pupils consider geographical varieties isolated from their ‘natural’ environment, they assess them negatively and fail to attribute overt prestige.

2. Children humorously stigmatize the geographical variety.

We should not forget that the attitudes that we studied have evoked in the context of a specific and stigmatizing (though certainly hegemonic) media portrayal of geographical diversity, i.e. a commercial in which the dialectal differentiation is highly stigmatized. It is probable, that with a non-stigmatized stimulus, different attitudes would emerge. Nevertheless, the aim of our study was exactly that, i.e. to study how pupils react to a well-accepted media portrayal of geographical diversity. The pupils’ responses to the study we conducted on their attitudes show that children in the last grades of elementary school are already influenced by metapragmatic stereotypes and ideologies reproduced by Greek media, aiming to promote the standard linguistic variety and stigmatize geographical varieties (Archakis et al. 2014; Pavlou 1997).

We believe that such conclusions help promote the need for the development of critical literacy by pupils, so that they can be able to detect, instead of accepting uncritically, the metapragmatic stereotypes that are propagated by popular culture texts and that influence their linguistic attitudes (see also Stamou, Politis & Archakis 2016).

References


ELITE POWERS AND THEIR IMPACT ON THE EDUCATION OF THE PRINCIPALITY OF SAMOS (1834-1912)

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Abstract
In 1834, when the Aegean island of Samos became a Principality under the Ottoman rule, new balances, with regards to the distribution of power, were established, as well as a unique educational system, clearly distinguished from that of the Orthodox Christian Communities of the Ottoman Empire. The article highlights, these new aspects of the educational history of the Samian Principality, through the bidirectional relationship between education and elite powers, political, economic and religious, as established: a) at the local level consolidated by the Prince, the Metropolitan and the local political parties of the Principality, which represent organized socioeconomic interests, b) but also on the international axes set by Greece, the Ottoman Empire and the Ecumenical Patriarchate. The research records the effects of such relations in the formation of the institutional framework and the prevailing educational ideology of the Principality.

Keywords: Principality of Samos; education; elite powers; Ottoman Empire; Ecumenical Patriarchate

1. The existing literature, aims, objectives, methodology
This paper focus on the Principality of Samos, a ‘semi-autonomous’ peculiar regime with Ottoman suzerainty (Svoronos 1903a). This study concerns the period since the establishment of the Principality (1834) up to its catalysis (1913) and aims to: a) the
interpretation of the power relations as formed in the Principality in different periods and in their different contexts. b) The imprinting of networks of elite powers in education. c) The ‘typological’ classification of Samos’ model, concerning the relations between education and the actors of power. This attempt is significant because that the education of the Principality of Samos constitutes a unique example. Since its formation is based on the local Samian statutory framework, which differentiates the education of the Principality from that of the Greeks who lived in the Ottoman Empire (Svoronos 1903a). As a result, the networks of elite powers are differentiated in the context of the Principality. However, this study focuses on elite powers, does’ not suggest an underestimation of people’s riots. E.g. the Samian people riot in 1849 (in the wake of international uprisings of 1848) which, in this study, is accessed as a mark of an historical incision that inaugurates a new historical sub-period (PGAS 1841-1849).

Furthermore the existing literature concerning the relation between the notions power and education is full of relating references. So Kestere & Rubene et al. (2015: 5) claim: “Education and power relations are closely intertwined: education is both the legitimiser and the instrument of power, as well as the generator of power relations. Education can be explained through power, and power can be understood through education”.

The term elite is described by many scientists with a variety of different and sometimes contradictory theories (Sola 2000). Sola argues that, contrary to the common belief that in the modern era elite theory is a product of late 19th and early 20th century, we should firstly mention the precursors of 18th and 19th century such as A. de Saint-Simon, Aug. Comte, A. de Tocqueville and H. Taine who, often in their respective social-political and historical-political analyses, “had the occasion to use the concepts of élites and managerial classes as an indispensable key for interpreting epoch-making phenomena such as revolutions and the attempts for restoration, the imposition of the bourgeoisie and the class struggle” (Martinelli 2009b: 5).

Significant elite theorists at the turn of the 19th and 20th centuries are: G. Mosca, V. Pareto, M. Weber and R. Michels. G. Mosca defines elite as a small in number leading social group. He argues that the organized minority is imposed on the unorganized majority, monopolizes and enjoys the advantages of power. According to this theory elites have a social preponderance due to a kind of superiority (material, intellectual) (Martinelli 2009a, 2009b). V. Pareto describes ‘many elites’ that they follow each other in power (circulation of elites) (Pareto 1935). M. Weber theory is near ‘classical elite theory’ but also near ‘modern elite perspective’ and ‘democratic elitism’: “This portrayal-stressing power concentration in the state apparatus, legitimacy of rule, centrality of leadership groups, and the capacity of these groups to form cohesive power actors...” (Pakulski 2012: 38). R. Michels describes the importance of leaders’ elite in a political system and the leadership as an affair of a few individuals (iron law of oligarchy), (Michels 1911).

The structural-functional approach, introduced by Radcliffe-Brown (Erickson & Murpht 2002, Radcliffe-Brown 1940), influenced the power elite theory of F. Hunter. He examined elites on the small scale of a community and tried to investigate the webs and interconnections between clergy, political and economic power elites. He distinguished the obvious holders of power to the real holders. He introduced the notion of ‘power structure’. And he focused on how works the decision making
activities (Hunter 1953). G. W. Domhoff, much like Hunter, in his book “Who Rules America?” focused on local and national networks and access them in their decision making roles in order to take conclusions about the power structure of the country. He estimates that a high financial elite class, (e.g. banks, corporations), dominates the ‘power structure’ of the country, both in economic and political level (Domhoff 1967).

C. Wright Mills described into a social-conflict approach, the ‘social power’ as the interconnected interests of the leaders of the military, corporate, and political elements of society. And he describes as power elite a ‘quasi-hereditary caste’ which often profits from a qualified education and enters into predominant positions (Wright Mills 1956).

On the one hand, M. Gilens and B. I. Page, in their statistical analysis of policy issues, concluded that “Multivariate analysis indicates that economic elites and organized groups representing business interests have substantial independent impacts on U.S. government policy, while average citizens and mass-based interest groups have little or no independent influence. The results provide substantial support for theories of Economic-Elite Domination and for theories of Biased Pluralism, but not for theories of Majoritarian Electoral Democracy or Majoritarian Pluralism” (Gilens & Page 2014: 565). On the other hand, Marxist sociology rejects these theories as leading to an underestimation of the role of the masses and social classes. According to T. B. Botomore, social revolutions cannot be interpreted by the activities of small social groups, but by the action of entire social classes (Botomore 1993).

The Marxist theory of power was based on the role of force as the basis of ruling class domination. Gramsci identified two quite distinct forms of political control: domination, which was practiced by police and hegemony which referred to both ideological control and more crucially, consent. By hegemony, Gramsci meant the permeation throughout society of an entire system of values, attitudes, beliefs and morality that has the effect of supporting the status quo in power relations. Gramsci divided the superstructure into the public institutions such as the government, police, armed forces and the legal system he regarded as the state or political society and the non-coercive ones were the others, such as the churches, the schools, trade unions, political parties, cultural associations, clubs, the family etc. which he regarded as civil society. To some extent, schools could fit into both categories. Parts of school life are quite clearly coercive (compulsory education, the national curriculum, national standards and qualifications) whilst others are not (the hidden curriculum) (Bates 1975).

Finally, referring to methodological issues it has to be mentioned that historical interpretive research method (Cohen & Manion 1996) and content analysis of laws, decrees and proceedings were used to look into the ideological interaction of the bodies vested with power and education. The relevance to the statutory framework and the ideology of the education of the Principality of Samos bibliographical references are meager. The research focuses on the study of the primary file material (Cohen & Manion 1996, Mpagias 1998) and the sources which were used in the present study are mainly primarily on the effects of the princely power in the formation of the educational structures. Specifically, the most significant source of data collection for the research, constituted published and unpublished file material as for example: Imperial Fermania for the Principality of Samos, Laws and Principal decrees of the Principality of Samos, President Decrees of Provisional Government of Samos,

Specifically the periods are divided into sub-periods using as criteria how the individual character of the hegemonic power was formed. Consequently, this schedule follows the presentation of findings and focus on the predominant elite powers into the historical sub-periods of the Principality of Samos as follows: a) the period of the mighty Prince 1834-1849, with the preponderance of the Prince Steph. Vogoridis, who represented the Newly-phanariot elite (PGAS 1834-1849, PDSP 1836-1847, PSP 1842-1847, The Prince Decree of Samian Hegemony of 1837). b) The period of parliamentary and national regime 1850-1907, with the preponderance of the local haute bourgeoisie elite which controls the leading of the local political parties, the General Assembly of Samians and the Parliament (Laws of S.H. 1851-1907, Decrees of S.H. 1851-1907, PGAS 1849-1907, PSP 1849-1907) and c) the period of intense procedures of nationalization 1908-1912 (Laws of S.H. 1908-1912, Decrees of S.H. 1908-1912, PGAS 1908-1912, PSP 1908-1912). This subdivision: a) allows highlighting the forms of power relations developed in the Principality of Samos in each sub-period. b) Permits to record the effects of such relations in the formation of the institutional framework and the prevailing ideology of education in each sub-period. And c) decodes the process of transition from the education of the Principality to the Greek national education in the last periods.

Additionally, in our study structural-functional analysis (Terlexis 2001) was used to capture the dynamics of bodies vested with power and examine their influence on the educational institutional framework. The formation of the education of the Principality, based on the local statutory framework, permits intervention to: a) the Ecumenical Patriarchate (Files of Ecumenical Patriarchate 1831-1913, Varvounis 2005), b) the Greek state, c) the Ottoman empire, whereas, within the same framework, the Interventional role also is consolidated by a) the Prince, b) the Metropolitan and c) the local political parties of the Principality, which represent organized socioeconomic interests (Laws of S.H. 1851-1912, Decrees of S.H. 1837-1912, PGAS 1834-1912, PDSP 1836-1847, PSP 1842-1912, Ioannidis & Gaggos 1875, Svoronos 1903a, Svoronos 1903b).

2. The construction of elite powers in the context of the Samian Principality

The Principality, established in 1834 according to the Privileged Organization of Samos approved in 1832, was formed on this specific statutory framework, within which the powerful collective power of the Prince was developed. The Regime was ‘constitutional’ Domination with no clear separation between the three powers. And the right of voting was subjected to social and financial restrictions (Svoronos 1903a). The first Prince of Samos, Steph. Vogoridis, was proved also the longest serving Prince in the office, the entire period of 1834-1849, and his power presented the following characteristics: a) the center of power was re-located from Samos to Constantinople, since the Newly-phanariot Prince Steph. Vogoridis lived away from Samos. He visited the island once or twice (Lacroix 1853) and ruled with the assistance of nine governors (Ptnis n.d.), b) The Privileged Organization was violated due to the Prince's
prosecutions enforced to his opponents, due to his interventions in the choice of his officials who staffed the administrative mechanism, due to the presence of the Ottoman army, in the Principality, after his invitation and due to the repudiation of many foreigners (H.L.L. [Hippocrates Lycurgus Logothetis] 1849), c) The prince controlled the Parliament of Samians, choosing their own deputies by a larger number of candidates elected parliamentarians from the General Assembly. President of the Parliament was the Prince (PGAS 1834-1835, 1835-1840).

The period of the mighty Prince 1834-1849, concerning the governing of Prince Steph. Vogoridis, was marked by people’s riots (1835 and 1849) protesting against his overall rule (Vakirtzis 2005). The main protestors were the members of the ascending merchant-marine class (Sevastakis 1995, 1996, Vafeas 1998a, 1998b). The commercialization of the agricultural production, the development of marine and commerce and piracy also contributed to the development of the merchant-marine class (Laiou 2002). The economic liberalization (Burns n.d.) pervaded the General Assembly of Samians of 1849 (PGAS 1841-1849) an ideology which reached its peak after 1850.

The main characteristic of the historical framework of the period of parliamentary and national regime 1850-1907 was the enacting of the Organic Law of 1850 by which the distinction of the three powers became obvious. Since the Legislative power was exercised by the General Assembly by the Samian People and the Prince, who could, in emergency cases, issue legislative orders. The Administrative power was exercised by the Prince, the Parliament, the Municipalities and the officials of the Principality. Whereas, the judicial duties were exercised by the Parliament, the municipalities and the courts. The establishment of the ordinary courts and the organization of the management were the first result of the Organic Law (Svoronos 1903b). However, the most significant consequence of the establishments of the Organic Law of 1850 was the provision in the merchant-marine class of the right to elect and be elected, which led to the gathering of political and economic power in the hands of the civil class (Ioannidis & Gaggos 1875). The democratization of the representation system, with the election law of 1899, accelerated the procedure of urbanization, which led to the formation of an educated urban elite (Koukoulis 1910). This new elite with the Gymnasium (High School) as its center, was gathered and united in the political party which Themistoklis Sofoulis established in 1900 (Ptinis 1994). The political domination of the bourgeois class and the subsequent emancipation of the General Assembly of Samians, resulted in the restriction of the power of the Prince (Kavvadia 2003, Ptinis n.d.). The orientation of the two parties of Samos, the ‘Patriotic’ and ‘Progressive’ in the Athenian center was demonstrated by the ‘common’ conference of their heads Ioannis Hatzigiannis and Themistoklis Sofoulis in the Athenian newspaper ‘Acropolis’ at the turn of the 19th century to the 20th, in May 1899. The article writes that, the sixty years old, I. Hatzigiannis was called for many years ‘igemonofagos’, because of his crucial role in the rapid change of the Princes of Samos, from the Sublime Porte, due to his actions. The article also states that he frequently visited Athens (Christovasilis 1899).

The immediate consequences of this kind of political development were the changes in the financial field: the transition of the island into industrial capitalism, the gradual coming of an international market and the awakening of the national
consciousness of the islanders, with the contribution of the political parties and the bourgeoisie class of the island (Orfanou 2012).

The period of intense procedures of nationalization 1908-1912 is characterized by the revolts of 1908 in Turkey (Kitsikis 1998, Veremis 1977a) and of 1909 in Greece (Kitsikis 1998, Veremis 1977b). Both, expressed claims in powers by the bourgeois and were factors of a most intense national awakening. These revolts created a different framework and heralded a new era. The awakening of a new, highly educated elite and its growth in power is described also by the Samian election law of 1908 which defined the electorate “to have property of 10,000 grossia or University degree or to be officials in the Principality” (Law of Samian Hegemony 2034/3-7-1908, Nikolaidis 1995). However, the Principality of Samos was led steadily to the procedures of nationalization oriented to the Greece, the revolution of the newly-Turkish people had a negative impact on the Principality. On the 30th of July 1908, in the Principality a festive welcome was made to the representatives of the Ottoman Progressive and Unionist Committee (Nikolaidis 1995). A princely ‘coup’ was demonstrated which abolished the General Assembly and led to rebellion and the running away of Th. Sofoulis (Miller 1914). In 1911, the General Assembly was closed and in the elections, many Samian people were led to the ballot boxes by violence. Even the Turkish soldiers voted instead of citizens (Kekridis 2003). The violations of the Organic Law of 1850 continued and the Prince Andreas Kopasis circulated in 1909 in Samos ‘Nea Samos’, a newspaper of his political propaganda (Arslan 2004). After his assassination, in March 1912, he was succeeded by G. Vegleris, the last Prince of Samos (Loukatos 1977). During September of 1912 the Samian people with their leader Th. Sofoulis and assistants, many Cretans, Asian Minors, Macedonians and Ikarians, declared the revolution (Ptinis 1994). On the 11th of November 1912, the revolutionary committee declared the union with Greece (Vakirtzis 2005). The union was final on the 2nd of March 1913 when the Greek war ships reached the island (Miller 1914).

3. The imprinting of networks of elite powers in education

The operation of education in Samos in 1834-1850 was typically defined by the provisions of the Organic Privileged Provision of 1832. In the substance, however, was defined legislatively by the voting of the General Assemblies of the Samian People (PGAS 1834-1849) and the Prince decree of 1837 (PGAS 1835-1840: Στ΄ 1838). On the issue of the administration and the financial sources of education the Parliament is mainly implicated and secondly the Metropolitan, in an auxiliary and limited in responsibilities role, determined by the legislation of the Principality.

During this period, the fundamental education of Samos which prevailed, was the type of ‘monitorial’ schools. And in the secondary education the type of Hellenic School dominated. The spreading of education included a primary school in every community and four Greek schools, one for each one of the capitals of the four parts of the island. However, many were the problems in their functioning due to financial problems of the Principality, as the prince had collected all the public revenues of the island (Orfanou 2012).

During the period of parliamentary and national regime (1850-1907) the education is governed by the legislative framework which comprises the Organic Law of 1850.
According to this framework the Prince ‘supervised’ the arts and education. The sponsoring of schools and the payroll was conducted by the Principality and the Deputies were responsible for the management of the resources. The period of communitarianism and nationalism, was given the liberation of structures of growth in the political scene of the bourgeois class. The results of the said changes were the establishment of schools with practical vocational orientation, the turn towards the Greek models.

During the same period, we have transformations in the school types. According to the regulation of 1866 two three-class Boarding Schools (Port of Vathi, Neo Karlovasi) were changed into two, two-class Hellenic School and in 1874 in full three-class Hellenic Schools. According to the transformation of 1880, full six-class Primary Schools were created in four capitals of the departments with the unification of a four-year inter-teaching, with the two first classes of the Hellenic School. Moreover, the third class of the Hellenic School in Vathy was incorporated into the four-class, up to that time Gymnasium, whereas, some primary schools evolved into seven-class Urban Schools. During this period, a decision was made upon the sending of scholars in Athens in order to be educated in the co-teaching method. In the year 1886 the co-teaching and the training of teachers by the Principality was enacted.

After 1860, the on-site production of school books commenced. During this period, emphasis was given on pre-school, whereas Aristomenis Stergioglidi, the Gymnasium Principal and Supervisor of Education, fought for the establishment of kindergartens in 1896 in all parts of the island. In primary education, since 1854, the type of the inter-teaching schools dominated, whereas in secondary education, already since 1855, the Hellenic School of Vathi was organized as Pythagorean Gymnasium and in 1870s was recognized as equivalent to the Greek Gymnasiums. As far as the women’s education is concerned, in 1854 established the Girls School of Vathi and in 1861 three additional Girls School. Even more, within the frameworks of the vocational education, the establishment of the business vocational schools prevailed, both private and public.

The Private education in Samos was organized in 1898 by Law regarding the supervision of private schools in Samos. It included the Commercial Lyceum Alkiviadis Spyridis ‘Samos’ (1898) and the Business Lyceum of Zisimos Nikolaidis ‘Pythagoras’ (1900). Orthodox religious schools were: the Hieratic School of Malagari (1855) and the ‘Holy Teaching Establishment’ of the Union ‘Anatoli’ of Patmos, which in 1906 was transferred to Samos.

Catholic schools also existed there. Specifically, the Missionaries of ‘Société des Missions Africains de Lyon’ appeared in Samos in 1886, where they directed a Males’ School (1890-1930) and the Sisters of Saint Joseph de Lyon established in Samos a girls’ school. In 1859, the sending of teachers was requested by the Greek state.

The Assembly of 1885 acted for the invitation of an expert in the teaching of the ‘demotic’ language. By special law, a ‘Special Examination Council of Primary Education’ was appointed and Aristeidis Charokopos was invited from Athens, as an organizer. During this period the education in Samos presented an image of improvement and the students almost doubled from 1875 up to 1898. The impact of the ‘educational demoticism’ on the island, witnesses a parallel course with the one of the modern-Greek state. The ascent of the bourgeoisie class in Samos, in that period, creates the requirements for the union of the island with Greece (Laws of S.H. 1851-1907, Decrees
of S.H. 1851-1907, Orfanou 2012).

The period of intense procedures of nationalization 1908-1912 was a period decisive in shaping the character of Samian education. In 1910, the schools in Samos were under the supervision of the Administration. And the personnel appointed by the Prince and paid by the Public Fund. The schools of fundamental education were primary, by Urban Schools. Even in 1910 a Full Girls and a Kindergarten School were put in operation in the port of Vathy. Whereas, private education included the School of Home Economics of Maria Kairou. Apart the Pythagorean Gymnasium in the capital of the Principality, other secondary schools functioned as: the vocational Mavrogeneios School, the Holy Educational Establishment ‘ANATOLI’, a private Business Lyceum, and others. In the field of ideology, the increase of the influence of the national center led to the drawing of models and standards from Greece, accelerated the procedures of contestation against the power of the Prince and improved the gradual nationalization of the educational mechanisms. The Samian educational legislation was simulated to the one of the Greek state. An expression of this evolution is, for example, the abolishment of the compulsory teaching of the international language Esperanto (Laws of S.H. 1908-1912, Decrees of S.H. 1908-1912, Orfanou 2012).

4. Interpreting the relation between education and powers

It is beyond any doubt that during the period of the mighty prince Steph. Vogoridis 1834-1849, the Ecumenical Patriarchate and the Metropolitan have not the full responsibility of the education, as in the Greek Orthodox schools of the Ottoman Empire. In that sense the predominant elite power in the education of the Principality of Samos was the Newly-phanariot elite. A leading elite, strictly cooperated with the Ottoman Empire and the Ecumenical Patriarchate, which was represented by the Prince of Samos Steph. Vogoridis (Stamatopoulos 2003). The local elite powers were pushed aside until the General Assembly of Samian in Pyrgos. This expressed editorially the revolt of 1849, claiming the freedom of trade and the interests of the local commercial-marine bourgeoisie (PGAS 1841-1849). The dominance of this elite had a decisive impact on the authoritarian character of the administration of education, while the types of schools chosen were from the Ottoman standards of schools of ‘romaiikou millet’. The pressure of the rising middle classes to take part in the functions of education assumed the character of open conflict and accelerated the developments in society and the economy.

On the contrary, during the period of parliamentary and national regime (1850-1907), the leading elite was the ‘haute bourgeoisie’ of the Principality. Characteristic are the cases of the two leaders of the two main political parties of the Principality, I. Hatzigiannis and Th. Sofoulis, who are members of a high social-economical local bourgeoisie. The role of the Newly-phanariot elite, represented by the Prices, was supplanted by the local economic and political elite powers. The local political parties were linked mostly with the Greek State and less with the Ottoman Empire. The organization of the schools was alike to this of the Greek State Schools and was clearly distinguished by the school organization related with the Ecumenical Patriarchate and the local Metropolitan.

It is also argued that education is linked with the diffusion of the dominant ideology
of the bourgeoisie (Milios 1993). The kind of schools and content of knowledge in the Principality reflects the ‘ideology’ of a bourgeoisie class (establishment of schools with practical vocational orientation, business vocational schools prevailed) and the growing Greek nationalism. E.g. Greek nationalism as described in the history books printed in the official Princely Printing of Samos island since 1900 and prepare the integration of the island in the ‘national body’ of Greece (Gialamas & Iliadou-Tachou et al. 2014).

However, during the period of intense procedures of nationalization (1908-1912) two main elite powers are emerging. A new local bourgeois class, based on the ‘educational level’ and not the social-economical origins of its members, as is described previously (Law of Samian Hegemony 2034/3-7-1908, Nikolaidis 1995). And secondly, a Prince, approved by the New-Turks, who with a princely ‘coup’ abolished the General Assembly, led to rebellion and the running away of his opponents, as Th. Sofoulis, the main representative of the Samian local parliamentary (Vakirtzis 2005, Ptinis 1994). In this period the education remains near the Greek and western models (textbooks, curriculum, and organization of studies). However, the compulsory teaching of Esperanto (Laws of S.H. 1908-1912, Decrees of S.H. 1908-1912), tried to give a sense of cosmopolitanism versus the nationalism. The assassination of the Prince restores the leadership of the local haute bourgeoisie, as represented by Themistocles Sofoulis, as the main elite power (Vakirtzis 2005, Ptinis 1994).

5. Discussion: The ‘typological’ classification of Samos’s model

Within the frameworks which was formed by the Sublime Porte and the Great Forces, the Samian Principality developed a unique regime of education which, by 1850, was defined more by the decisions of the General Assemblies of the Samian People and the social-financial developments, which brought new forces in the political scenery of the island and less from the traditional centers, such as Sublime Porte or the Ecumenical Patriarchate. The education of the island, affiliated to the authoritarian character of the Principal Power, exploited the Organic Law since 1850 and afterwards, returned in the emerging bourgeoisie layers to undertake educational initiatives at the beginning and formulate afterwards the character and its structure. The increased effect of the Greek state contributed to the specific laws and was imposed on the education. At the end of the period, the decrease of the influence of the Prince, in combination with the transformation of the social power of the parties in a political-Interventional role, contributed, not only to the increase of their power, but also to the acceleration of the nationalization procedures by the changes of types, grades, language etc., which occurred in the Greek state and were influenced by currents, which were growing in this period such as educational demoticism. In the last said period and a while before the integration of Samos in the Greek state, the ideology and philosophy of the education was defined by the nationalism, dominant in this period. Consequently the elite-powers in Samian Principality responded to the structural-functional approach, introduced by Radcliffe-Brown (Erickson & Murpht 2002, Radcliffe-Brown 1940), and influenced by the power elite theory of F. Hunter. Samian elites were developed inside the Samian community and their structure was determined by the interconnections between clergy, political and economic developments as they were influenced by the international evolution process. Within this context, the establishment of ‘hegemony’
consisting of the bourgeoisie’s intelligentsia, which had been graduated from the schools of Samian Hegemony, had serious consequences: this ‘hegemony’ contributed to the ideological control of the population and accelerated either the process of national identity’s configuration or the process of national homogenization.

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ETG IDOINES EN FRANCE, EN GRÈCE ET AU QUÉBEC – UNE ÉTUDE COMPARATIVE SUR LA FORMATION INITIALE DES ENSEIGNANTS DU PREMIER DEGRÉ

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Abstract

In this paper, we study and compare the personal and ideal Geometrical Working Spaces in France, Greece and Quebec for the future primary school Teachers'. This work extends a previous research in which a test elaborated from the Greek side, after translation, has been given to French students. For this second study we use a more important number of students (166 Greeks and 103 French). The test exercises were chosen from the French side but 2 of these exercises were, with some modifications, from the first test (exercises 2 and 3). To complete the analyses, these 2 exercises were proposed to 41 students from Quebec. The global question of this second study was the following: if we propose to Greek students exercises that come from the ideal French Geometrical working Space, are they going to be more flexible. For each item we have elaborated one *a priori* analysis and we used the software CHIC for the evaluation.

*Keywords: Mathematical Working Space, Geometry, Prospective Teacher Training, Proof*
1. Introduction


Pour cette étude, nous nous appuyons sur un nombre plus important d’étudiants-professeurs (166 grecs et 103 français). Les items sont issus d’un sujet proposé aux étudiants français, sujet extrait d’un sujet de Concours de Recrutement des Professeurs des Ecoles (CRPE), hormis deux exercices repris, avec des variations, de la précédente étude (exercices 2 et 3). Pour compléter les analyses, ces deux derniers exercices ont aussi été proposés à 41 étudiants québécois.

Au regard des thèmes abordés, la première étude avait permis de montrer, d’une part qu’il y a une adéquation forte entre les ETM₉ personnels et l’ETM₉ idoine chez les étudiants grecs, et d’autre part, que la différence des ETM₉ idoines français et grec demande aux étudiants français, faces à des tâches grecques, diverses adaptations ce qui semble entraîner une flexibilité et une certaine richesse dans leurs réponses, ce qui contraste avec les réponses stéréotypées issues de l’ETM₉ idoine grec.

La question globale de cette seconde étude consiste à se demander si, en proposant aux étudiants grecs des exercices issus de l’ETM₉ idoine français, ceux-ci montreront plus de flexibilité.

Pour chacun des exercices, une grille d’évaluation basée sur une analyse a priori des exercices et permettant une utilisation du logiciel CHIC (Gras & al., 2009) a été élaborée.

2. Contexte de l’étude

2.1 Trois systèmes de formation différents


En Grèce, dès l’entrée à l’université, les étudiants se destinant au professorat du premier degré doivent faire le choix d’une université pédagogique où ils préparent, en quatre ans, un diplôme. Ils peuvent passer un concours de recrutement national ou devenir contractuel. Au Québec, comme en Grèce, les étudiants suivent une formation sur 4 ans après le DEC (Diplôme d’Études Collégiales) qui marque la fin de la scolarité secondaire. Avant d’aborder cette formation exclusivement consacrée à l’enseignement au niveau primaire, les étudiants suivent des cours de remise à niveau en mathématiques et en français. En France, pendant les trois premières années universitaires, les étudiants préparent une licence de leur choix. C’est seulement

1 ETM₀ : Espace de Travail Mathématique Géométrie
ensuite qu’ils préparent un concours spécifique pour l’enseignement primaire. Après obtention de ce concours, ils sont, après validation d’une année de stage et de formation, titulaires d’un poste d’enseignement du premier degré.

On relève donc une année universitaire d’enseignement de plus en France, mais en Grèce et au Québec, les quatre années de formation sont totalement destinée à l’enseignement primaire contre seulement deux en France.

Les institutions d’enseignement primaire diffèrent sur deux points essentiels. En Grèce et au Québec, l’enseignement primaire se poursuit jusqu’au grade 6 inclus alors qu’en France il se termine après le grade 5. Avec une année de plus d’enseignement dans le premier degré en Grèce, il y a plus de notions mathématiques à enseigner qu’en France. Parallèlement, on constate rapidement que, à niveau d’âge identique, les programmes grecs sont, en mathématiques, plus consistants que les programmes français. Ainsi, les professeurs du premier degré en Grèce doivent maîtriser, pour les enseigner, un plus grand contenu mathématique que leurs homologues français. Au Québec, comme en Grèce, l’école primaire s’étale sur 6 années (réparties en 3 cycles) mais les objectifs à atteindre ne sont pas clairement explicités dans le programme. Cette ambiguïté est source de bien des difficultés dans les classes.

2.2 La géométrie dans la formation des enseignants
Les contextes de formation en France et en Grèce concernant la géométrie sont très similaires et classiques à l’exception de deux points : en Grèce, et depuis l’enseignement secondaire, une attention particulière est portée aux cas d’égalité des triangles et aux triangles semblables (dès la fin du gymnasio, grade 9) alors qu’en France, les théorèmes sur les triangles isométriques sont à peine vus en classe de seconde (les triangles isométriques ne sont plus au programme du secondaire en France depuis 2009, grade 10), et les triangles semblables ne sont essentiellement abordés qu’à travers le théorème de Thalès. En revanche, en France les transformations sont enseignées avec une tradition forte même si l’on note aujourd’hui un certain déclin. Avant les changements de programmes du collège qui ont eu lieu en 2008, il y avait une transformation nouvelle par année (symétrie axiale, symétrie centrale, translation et rotation). Aujourd’hui la translation et la rotation ne sont plus au programme. Néanmoins, les symétries axiale et centrale restent des objets importants de l’enseignement des mathématiques en France au secondaire. En Grèce, ces deux transformations sont à peine mentionnées dans le secondaire. À propos des transformations, la situation au Québec est encore différente : la symétrie axiale (réflexion) et la translation sont travaillées dès le primaire, essentiellement sur des supports quadrillés puis, la rotation et l’homothétie sont étudiées au secondaire pour les constructions à la règle et au compas (rotation) et pour les calculs de longueurs (en ce qui concerne l’homothétie). Les cas d’égalité et les cas de similitude des triangles sont aussi au programme de fin de secondaire mais les activités qui sont associées à ces sujets relèvent toutes de calculs de mesures manquantes. La démonstration en géométrie est donc peu abordée dans le programme général du secondaire. C’est à la fin du collégial (dernière année avant l’université) que les élèves qui suivent la voie scientifique étudient les différentes formes de preuves.
Les cours dispensés aux futurs enseignants sont dans la ligne de cette tradition même si, en France, les transformations ne sont pas au centre des enseignements. On se rend compte alors que, sur ces deux points, égalités des triangles et transformations géométriques, les trois systèmes scolaires montrent des traditions différentes, ce qui oriente les choix pour résoudre un exercice. On peut raisonnablement penser que, le cas échéant, un étudiant grec préférera utiliser le théorème sur l’égalité des triangles alors qu’un étudiant français s’orientera plutôt vers l’utilisation d’une transformation. Nous verrons que ce n’est pas tout à fait le cas pour les étudiants français car les configurations de base comme le parallélogramme constituent aussi des outils importants de la géométrie : il n’y a pas d’équivalent français au théorème sur l’égalité des triangles utilisé en Grèce. On peut faire l’hypothèse que les étudiants québécois se référeront aux cas d’égalité des triangles comme les étudiants grecs, au détriment des propriétés des parallélogrammes, mais avec moins de rigueur puisque les deux exercices proposés sont très éloignés des activités menées au cours du trimestre de didactique de la géométrie au primaire et des activités que les étudiants ont connu au cours de leur propre scolarité au secondaire.

Les étudiants français participant à l’étude ont reçu un total de 30 heures sur la géométrie en tout début d’année universitaire. Les étudiants grecs ont reçu un total de 18 heures attribués à des notions de géométrie. Au moment de la passation des épreuves de l’étude, les étudiants québécois ont suivi un enseignement de 36 heures de géométrie (théorie et didactique).

Les sujets ont été proposés aux étudiants français dans les conditions du concours, sur les six centres IUFM de l’académie d’Orléans-Tours et les résultats concernent 103 étudiants. Les items de l’analyse ont été traduits en grec et proposés en examen en première année de l’université pédagogique de Macédoine Ouest auprès de 166 étudiants. Indépendamment des questions de traduction, certaines questions du problème n’ont pas été posées aux étudiants grecs (tracé de la figure à l’échelle et tableur) puisqu’elles ne correspondent pas à des tâches usuelles du cursus grec.

Au Québec, les exercices 2 et 3 ont été proposés à 41 étudiants de l’Université de Montréal, à la fin du trimestre consacré à la didactique de la géométrie.

3. La notion d’espace de travail géométrique


Le plan épistémologique se structure avec la mise en réseau des trois composantes suivantes :
- un espace réel et local avec un ensemble d’objets de nature sensible ;
- un ensemble d’artefacts qui seront les outils et instruments utilisés par le géomètre ;
- un référentiel théorique constitué de définitions et de propriétés.
La fonction de l’ETM\textsubscript{G} dépend fortement aussi d’une dimension cognitive structurée autour des trois processus suivants : visualisation, construction et preuve (Duval, 2005).

Les différents types de traitement des figures au sens de Duval permettent de décrire l’articulation entre les composantes de l’ETM\textsubscript{G} et de décrire la conceptualisation en jeu.

L’adaptation des composantes conduit à considérer différents types d’ETM\textsubscript{G}. Nous nous intéresserons plus particulièrement à l’ETM\textsubscript{G} personnel des étudiants futurs professeurs qui est celui que les élèves s’approprient en fonction de leurs connaissances mathématiques, de leurs capacités cognitives et du contrat en jeu (Houdement & Kuzniak, 2006).

3.1 Les ETG de référence, idoine et personnel

Le fait pour une communauté d’individus de s’accorder sur un paradigme donné pour formuler des problèmes et organiser leurs solutions en privilégiant certains outils ou certaines manières de penser, définit un ETM\textsubscript{G} de référence. Pour connaître cet ETM\textsubscript{G}, il faudra dégager ces manières de faire et de voir en décrivant notamment le style du travail géométrique avec ses règles de discours, de traitement et de présentation. Cet ETM\textsubscript{G} dépend du paradigme privilégié : Géométrie I, II ou III (Houdement & Kuzniak, 2006).

Une fois posées les bases de la géométrie enseignée, il reste à se préoccuper de son enseignement effectif qui nécessite l’existence d’un espace propice à l’enseignement réussi de la géométrie visée. L’ETM\textsubscript{G} de référence doit être aménagé et organisé pour devenir un espace de travail géométrique avec ses règles de discours, de traitement et de présentation. Cet ETM\textsubscript{G} dépend du paradigme privilégié : Géométrie I, II ou III (Houdement & Kuzniak, 2006).

Les ETM\textsubscript{G} idoines doivent être investis par les élèves et étudiants qui se les approprient avec leurs connaissances et leur fonctionnement cognitif particuliers, donnant lieu à des espaces de travail appelés ETM\textsubscript{G} personnels. Ils se constituent de manière progressive et peuvent parfois ne pas être opérationnels. La notion d’ETM\textsubscript{G} personnel ne concerne pas uniquement les élèves et les étudiants, elle concerne aussi les professeurs. En effet, ces derniers doivent avoir une conscience claire de la nature des espaces de travail géométrique idoines afin d’éviter les malentendus résultant d’une gestion floue et implicite du jeu entre les paradigmes.

Dans la pratique, les ETM\textsubscript{G} personnels et idoines, ne reposent pas sur un seul paradigme mais plutôt sur une articulation entre les paradigmes et celle-ci peut être maîtrisée ou non. Un changement de domaine permet de faire le lien entre deux ETM\textsubscript{G} relatifs à des domaines différents (la fibration, cf. Kuzniak & Richard, à paraître), pour leur articulation. Mais on peut aussi y voir un effet de contrat, de l’ETM\textsubscript{G} idoine pour faire ce type de problème. Si le changement de domaine est automatique, systématique, cela participe-t-il à la conceptualisation ?
3.2 Traitements de la figure et composants épistémologiques de l’ETMG

Duval (2005) discute le rôle de la visualisation dans le développement du raisonnement en géométrie. Il distingue différents types de traitement de la figure :

- la décomposition méréologique implique un découpage de la figure de départ en sous-figures de même dimension ;
- la déconstruction instrumentale implique l’utilisation d’ instruments (règle graduée, compas, etc.) dans le but de reconstruire la figure ;
- la déconstruction dimensionnelle implique une déconstruction en unités figurales de dimension inférieure dans le but de mettre en relation ces unités figurales.

Ces différents types de traitement de la figure impliquent une organisation différente des composantes de l’ETM_{G}. La décomposition méréologique suppose un raisonnement basé principalement sur la perception à travers des découpages et superposition de la figure : le pôle “espace réel et local” de l’ETM_{G} sera le pôle dominant. La déconstruction instrumentale implique la mise en œuvre d’instruments dans un but de construction : dans ce cas, le pôle “artefact” sera dominant. La déconstruction dimensionnelle permet de mettre en évidence des relations entre unités figurales de dimensions inférieures et d’en déduire des propriétés géométriques associées à un raisonnement déductif : le pôle “référentiel théorique” est le pôle dominant. À chaque traitement de la figure est associée une organisation différente de l’ETM_{G} et peut permettre de caractériser les ETM_{G} personnels.

4. Méthodologie

La méthodologie développée vise à identifier les ETM_{G} idoines en France et en Grèce, sur certaines notions, et notamment identifier les similitudes et les différences. Cela suppose qu’il existe un ETM_{G} idoine qui soit propre à chacune des institutions d’enseignement nationales. Nous nous intéresserons plus particulièrement à l’ETM_{G} personnel des étudiants futurs professeurs qui est sans doute très proche de celui que les élèves du secondaire s’approprient en fonction de leurs connaissances mathématiques, de leurs capacités cognitives et du contrat en jeu.

La méthodologie se fait en deux temps, en proposant les exercices d’un pays à l’autre et réciproquement. Les énoncés sont alors directement traduits. Il est aussi possible d’utiliser des « énoncés neutres », en laissant les étudiants interpréter les énoncés dans leur ETM_{G} personnel.

On peut penser que les énoncés des deux exercices sont neutres pour les deux populations FR et GR puisqu’ils peuvent s’interpréter dans les ETG idoines des deux pays, même si l’interprétation est différente, la situation n’est pas si claire pour la population QU vis-à-vis du deuxième exercice. Les énoncés sont également choisis en fonction des contrats didactiques et des attentes des institutions. Les traces laissées par les étudiants et associées aux ETM_{G} personnels permettent, statistiquement, de relever des tendances qui sont les traces de l’ETM_{G} idoine. Ainsi, les ETM_{G} idoines sont identifiés à travers les ETM_{G} personnels des étudiants, en ne se limitant pas uniquement aux pourcentages, mais aussi en utilisant les statistiques implicatives.
5. Le Test, Analyse a priori

Nous proposons dans cette section une analyse a priori de trois activités extraites du test soumis aux deux populations française et grecque, en lien avec les ETM_{G} idoines des deux pays: d'après la première étude, on peut faire l'hypothèse d'un même ETM_{G} idoine pour l'exercice 2, et des ETM_{G} idoines très différents pour l'exercice 3. Nous donnons pour chaque exercice les indicateurs retenus pour l'étude statistique avec, pour chaque question, les deux indicateurs généraux suivants :

- **NR** : pas de réponse – l'exercice n'est pas abordé ou à peine. Cet indicateur est nécessaire pour les statistiques et ne montre pas qu'il n'y a pas eu d'activité mathématique.
- **OK** : bonne réponse – la solution est trouvée, sans erreur de raisonnement mais avec possibilité d’implicites.
- **Autres** : pour des procédures de résolution marginales

**5.1 Exercice 2**

Exercice 2 (avec figure) : Soit un rectangle ABCD tel que AB = 5 m et BC = 18 m. Trouver la position du point E sur [BC] telle que l'aire de ADCE soit le double de l'aire de ABE.

**Figure 1**

Indicateurs spécifiques :

- **A3** : partage en trois aires égales, si visualisation du découpage en 3 fois 1/3 (avec une surfigure, le rectangle DCEF) ou en 1/3 + 2/3 (sans forcément une surfigure), nécessite un travail préliminaire (décomposition méréologique non indiquée) dans le domaine de la géométrie
- **Equ** : mise en équation, avec changement de domaine, si utilisation d’une équation (juste ou fausse) – hypothèse que l’introduction d’une lettre (x), pour désigner une longueur inconnue, a pour visée la résolution d’une équation ;
- **Surf** : utilisation (ou repérage) de la surfigure le rectangle ABEF (ou DCEF) – lien avec A/3

Il s'agit d'un type d'exercice classique dans les manuels scolaires, en France comme en Grèce. On en trouve de nombreuses variantes plutôt dans les chapitres d’algèbre pour travailler la dimension outil des équations pour résoudre des problèmes de géométrie. On le trouve aussi au Québec mais dans les chapitres de géométrie. Il s'agit d'un énoncé proposé dans les ETM_{G} idoines français et grecs, on ne s'attend donc pas à des différences importantes entre les productions des deux populations. Le même
exercice avec l’indication de « x » sur la figure avait été donné dans le premier test : ce changement de variable didactique fera l'objet d'une comparaison.

La procédure majoritaire (procédure 1) attendue : (ABE) = 5x/2 ; (ADCE) = 18×5–5x/2 d'où l'équation 90–5x/2 = 5x que l'on résout pour trouver x = 12 (en mètre). Il s'agit d'une procédure avec un changement de domaine (de la géométrie avec les grandeurs vers l'algèbre).

Il n'y a pas de travail géométrique à proprement parler si ce n'est l'utilisation de la formule de l'aire d'un rectangle et celle d'un triangle rectangle. Il est à mentionner toutefois qu'une décomposition méréologique de la figure est nécessaire afin d'obtenir une équation. Mais cette décomposition est déjà indiquée sur la figure et on peut supposer que cela ne sera pas source de difficulté pour la plupart des étudiants, français ou grecs. En outre, ce type de décomposition méréologique est commun aux ETM idoines des deux pays.

Une variante de cette procédure consiste à utiliser la formule de l'aire d'un trapèze pour exprimer l'aire de ADCE : (ADCE) = 5x(18+18–x)/2. Il n'y a alors pas de décomposition méréologique.

Toutefois, d'autres procédures sont envisageables où l'essentiel du travail reste dans le domaine de la géométrie des grandeurs, sans changement de domaine vers l'algèbre. En complétant le rectangle ABEF, on peut découper le rectangle initial ABCD en trois aires égales par une décomposition méréologique (procédure 2). Le tiers de l'aire de ABCD est 1/3×90 m²=30 m² et donc ABEF est un rectangle d'aire 60 m² avec un côté de 5 m, donc l'autre côté mesure 60 m²/5 m=12 m.

Des adaptations de cette procédure sont possibles, notamment avec une mise en équation et donc un changement de domaine vers l’algèbre. Ainsi, après un découpage de ABCD en trois aires égales, peut-on s’attendre à une écriture d’une équation du type « 5x = 60 », plus facile à résoudre.

Les deux procédures ci-dessus sont nos guides pour cet exercice. Elles sont relatives à des ETM différents. Dans le premier ETM, le traitement géométrique est réduit au calcul de l’aire d’un trapèze, soit par soustraction (décomposition méréologique) soit par application de la formule d’un trapèze, et à l’utilisation de formules simples. Dans la deuxième, le traitement géométrique est plus complexe car il y a un intermédiaire à considérer, le rectangle ABEF, et la décomposition méréologique accompagne une reformulation des données du problème. Les calculs algébriques s’en trouvent largement simplifiés.

5.2 Exercice 3
Exercice 3 (sans figure) : Dans un triangle ABC, on note M le milieu de [BC] et on considère le point S sur (AM) tel que MS=MA et S≠A.Comparer les longueurs des segments [AB] et [SC].
Indicateurs spécifiques :

**Egal** : utilisation d’un cas d’égalité du triangle, si utilisation (juste ou non) du théorème sur l’égalité des triangles

**Par-Surf** : mention/utilisation d’un parallélogramme (surfigure)

**Sym** : mention d’une symétrie centrale, si mention/utilisation d’une symétrie axiale

Les étudiants, français ou grecs, devront tout d’abord réinterpréter la question dans leur ETM idoine afin de trouver une procédure de résolution. On peut facilement imaginer que les étudiants grecs vont avoir une réponse en référence à l’ETM idoine sur les triangles égaux. Il y a des indicateurs, sans doute implicites, qui déclenchent chez les élèves l’utilisation du théorème sur l’égalité des triangles. Parmi ces indicateurs, on trouvera la comparaison d’angles ou de longueurs intervenant dans des cas d’égalité des triangles. L’interprétation par les étudiants français ne sera sans doute pas unique, car l’ETM idoine français permet plusieurs procédures de résolution dans le paradigme GII.

On peut identifier trois procédures principales.

**Procédure 1** : utilisation du cas d’égalité des triangles Π-Γ-Π, les angles égaux, \( \triangle AMB = \triangle CMS \), dans deux triangles les angles opposés par le sommet et \( AM = MS \) et \( BM = MC \).

**Procédure 2** : M est le milieu commun des diagonales du quadrilatère ABSC qui est donc un parallélogramme. Les propriétés du parallélogramme permettent de conclure.

**Procédure 3** : M est le milieu de \([BC]\) et de \([AS]\), et les propriétés de la symétrie centrale de centre M permettent de conclure.

Pour cet exercice, on peut s’attendre à différentes approches de la part des étudiants français. Nous pensons qu’ils vont utiliser le parallélogramme et la symétrie. En revanche, on peut penser que la procédure 1 sera largement majoritaire chez les étudiants grecs, notamment à cause de la question « comparer les segments ». Des remarques relatives à la configuration du parallélogramme sont possibles car il s’agit d’un objet d’étude au secondaire en Grèce. Au Québec où la symétrie centrale est présentée comme une rotation de 180°, les procédures les plus courantes devraient faire appel aux souvenirs des étudiants à propos des cas d’égalité des triangles ou des
propriétés des diagonales du parallélogramme, souvenirs qui remontent la 3e année du secondaire pour certains d’entre eux (grade 9).

On relève ainsi trois ETM qui se distinguent pour l’essentiel par le référentiel théorique : un ETM autour des triangles égaux (*procédure 1*), un ETM autour du parallélogramme (*procédure 2*) et un ETM autour de la symétrie centrale (*procédure 3*). Il est toujours possible, bien que largement hors contrat en France comme en Grèce ou au Québec, que des étudiants se limitent à une visualisation ou un mesurage de la figure en référence au paradigme GI.

Bien entendu, d’autres procédures sont possibles, les trois ci-dessus sont celles attendues compte tenu de ce que l’on connaît des ETM idoines français, grec et québécois.

### 5.3 Problème (uniquement posé en France et en Grèce)

#### 5.3.1 Les questions A

A1) Montrer que le triangle ABC est rectangle en A.
A2-a) Calculer l’aire du triangle ABC.
A2-b) En déduire la distance du point A à la droite (BC).

![Figure 3](image_url)

On ne retient pas d’indicateurs spécifiques, on se contente ici des variables OK et NR.

Les questions A1 et A2-a) proposent des changements standards entre les domaines géométrique et numérique. Ce sont des questions calculatoires et on s'attend, pour les étudiants grec et français à une utilisation du théorème de Pythagore et à l'utilisation de la formule du calcul d'aire dans un triangle rectangle. On fait l'hypothèse d'utilisation correcte massive du théorème de Pythagore dans les deux populations. On peut s'attendre, pour quelques cas marginaux à l'utilisation de l'équerre pour justifier le fait que le triangle ABC est rectangle, mais le dessin à main levée devrait limiter cette procédure. La question A2-b) devrait révéler plus de difficultés : elle utilise le résultat de la question précédente (même si le « En déduire » mobilise l'utilisation de la question A2-a)) et fait appel à la notion de distance d'un point à une droite. On peut ainsi envisager un ETM idoine identique sur ces questions pour la France et la Grèce.
5.3.2 Les questions B1

B1) J est situé à égale distance des points A, B et C.
B1-a) Que représente le point J pour le triangle ABC ?
B1-b) Préciser la position particulière de J dans ce triangle.

Indicateurs spécifiques :

- **CCC** : Centre du Cercle Circonscrit
- **MilH** : Milieu de l’hypoténuse
- **OK** : (si justification par des arguments mathématiques)

5.3.3 La question B2

B2) On place un point K milieu de [AB] et un point I au milieu de [AC]. Montrer que AKJI est un rectangle.

Indicateurs spécifiques :

- **DM** : utilisation du théorème de la droite des milieux
- **Thal** : utilisation du théorème de Thalès
- **3Dr** : utilisation de la caractérisation d’un rectangle comme un quadrilatère ayant 3 angles droits (ou 4 angles droits)
- **Para** : utilisation d’une caractérisation d’un parallélogramme avec en plus un angle droit
- **Hom** : utilisation de deux rectangles homothétiques.
- **P2P** : Perpendiculaires à deux parallèles.
- **CCC-med** : (KJ) et (JI) sont les médiatrices (avec 3Dr par exemple).
- **Triani-sm** : utilisation d’un découpage d’un triangle en 4 triangles isométriques

On rencontre dans cette question un ETM complexe avec de nombreuses procédures pour parvenir au résultat. Citons quelques procédures :

**Procédure 1** : Utilisation de la droite des milieux pour montrer que (IJ) est parallèle à (AB) et (IK) est parallèle à (AC). On a ainsi un parallélogramme avec un angle droit en A.

**Procédure 2** : Utilisation de la droite des milieux pour montrer que (IJ) est parallèle à (AB) et donc perpendiculaire à (AC) grâce à la propriété qu’une droite parallèle à une droite perpendiculaire à une troisième est aussi perpendiculaire à cette troisième droite et de même (IK) est perpendiculaire à (AB). On a ainsi un quadrilatère à trois angles droits.

**Procédure 3** : AIJK est l’homothétique du rectangle obtenu en complétant ABC en un rectangle.

**Procédure 4** : Comme J est le centre du cercle circonscrit, (KI) et (KJ) sont les médiatrices de [AB] et [AC]. On obtient ainsi un quadrilatère à trois angles droits.

Dans les procédures 1 et 2, le théorème de Thalès peut bien sûr remplacer la droite des milieux.

5.3.4 La question B3

B3) On appelle H le pied de la hauteur issue de A dans le triangle ABC. Montrer que si on se déplace sur le segment [KI], on reste à égale distance de A et H.

Indicateurs spécifiques :
Med : reformulation de la question en « (KI) est-elle la médiatrice de [AH] ? »

DM : utilisation du théorème de la droite des milieux

Thal : utilisation du théorème de Thalès

Hom : utilisation de triangles homothétiques

Equid : utilisation du centre du cercle circonscrit (CCC) à un triangle rectangle (deux fois : I pour ACH et K pour ABH)

Perp-mil : pour une preuve par perpendiculaire passant par le milieu.

Mixte : perpendiculaire et un point équidistant (ou un point équidistant et passe par le milieu).

Comme pour la question précédente, on se retrouve ici face un ETM\(G\) complexe offrant de nombreuses variétés de procédures. Elles commencent par une traduction de l'équidistance en termes de médiatrice.

**Procédure 1** : En utilisant deux fois la droite des milieux (dans ABC et dans ABH), (KI) est parallèle à (AB) et passe par le milieu de [AH].

**Procédure 2** : Le point I est équidistant de A et H car c'est le milieu de l'hypoténuse [AB] dans le triangle ABH rectangle en H. Idem pour K. Ainsi (IK) est la médiatrice.

**Procédure 3** : Par le raisonnement utilisé dans la procédure précédente, I est équidistant de A et H. On montre ensuite que (IK) est perpendiculaire à (AH) comme dans la procédure 1.

On peut s'attendre à ce qu'un certain nombre d'étudiants soient capables de reconnaître qu'il s'agit d'une question sur la médiatrice sans être capable de la traiter.

La procédure 2 fait appel à une surfigure. Elle ne sera sans doute pas la plus fréquente.


**6.1 Exercice 2**

Comme on pouvait s'y attendre, il y a une baisse de la proportion d'utilisation d'une équation (voir la table 1) puisqu'il n'y a plus de x indiqué sur la figure (comme dans le test initial). Néanmoins, les pourcentages d'utilisation d'une équation restent forts, ce qui est un indice d'un ETM\(G\) idoine pour ce type de problème. Il y a également une baisse de la réussite et le fait d'opter pour une mise en équation, variable « equ », n'implique² pas la réussite, variable « OK », sans doute à cause d'erreurs algébriques.

En revanche, la réussite implique l'utilisation d'une équation comme on peut le voir dans les graphes implicatifs (niveau 99) et cohésitifs (figure 4).

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²au sens de la quasi-implication.
Cet ETM se retrouve aussi chez les étudiants québécois où l’algèbre est massivement utilisé.

Il est à noter que les étudiants qui ont imaginé le découpage en 3 aires égales ont presque tous réussi l’exercice. Ceci révèle une analyse pertinente de la figure géométrique et les traitements algébriques pour résoudre l’équation qui y sont associés sont élémentaires. En outre, on peut signaler l’importance, pour cet exercice, d’un travail dans le domaine source avant de faire le changement et que ce travail est favorisé par l’absence de l’indice « x » sur la figure (voir Montoya & Vivier, 2014).

Ainsi, la similarité entre 2-A/3 et 2-OK (figure 5) est-elle meilleure qu’entre 2-eq et 2-OK, ce qui peut s’expliquer par le fait que la mise en équation et la résolution d’équation pose problème à un quart des étudiants.
6.2 Exercice 3
On retrouve dans l’exercice 3 une très forte présence de l’ETM$_{G}$ idoine associé à l’égalité des triangles en Grèce avec une proportion bien plus faible, attendue chez les étudiants français. Cela confirme que l’ETM$_{G}$ autour des triangles égaux constitue un ETM$_{G}$ idoine fondamental dans l’enseignement grec. Il est largement disponible pour les étudiants et est, de ce fait, un élément des ETM$_{G}$ personnels largement partagé, laissant peu de place à des ETM$_{G}$ alternatifs.

En faisant la comparaison sur les deux populations et avec les analyses de notre première étude nous pouvons dire que, dans la première étude, nous avions observé que le manque de référence théorique, conjugué à une influence liée à la formulation de l’énoncé, se percevait bien chez les étudiants français qui tentaient d’utiliser le théorème sur les triangles isométriques (54%). Mais avec l’adaptation de l’énoncé, les étudiants qui essayent d’utiliser ce théorème baissent (6,8%). On a ici un indice de l’ETM$_{G}$ à utiliser que l’on pourrait qualifier de crucial car, contrairement au « x » dans l’exercice précédent, sans cet indice, l’ETM$_{G}$ autour de l’égalité des triangles n’est plus utilisé par les étudiants français alors qu’il concerne environ la moitié des étudiants (sur 26) dans le cas où il est présent.

On remarque en outre, et cela provient vraisemblablement du fait que ce type de problème n’est pas lié à un seul ETM$_{G}$ idoine en France, qu’il n’y a pas de procédure type pour effectuer ce type d’exercice, ce qui amène la variété des procédures, entre les procédures 2 (avec parallélogramme) et 3 (avec la symétrie centrale). La situation est très différente de celle de l’exercice 2.

On peut penser que ces deux énoncés sont neutres pour les deux populations FR et GR car ils peuvent s’interprêter dans les ETM$_{G}$ idoines des deux pays, même si l’interprétation est différente. En revanche, il ne s’agit pas d’un énoncé neutre pour la population QU car les démonstrations ne sont pas dans l’ETM$_{G}$ idoine québécois. Pourtant les étudiants québécois ont largement réussi cet exercice. En effet, ils ont su proposer des réponses argumentées, faisant appel aux propriétés des figures qu’ils connaissaient, même si le formalisme d’une démonstration n’a pas toujours été respecté.

Table 1: Résultats aux exercices 2 et 3 ; FR1 et GR1 réfèrent aux populations de la première étude

<table>
<thead>
<tr>
<th></th>
<th>Exercice 2</th>
<th></th>
<th>Exercice 3</th>
<th>EgT</th>
<th>Surf</th>
<th>Sym</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NR</td>
<td>OK</td>
<td>equ</td>
<td>A/3</td>
<td>Surf</td>
<td>NR</td>
</tr>
<tr>
<td>FR1 (26)</td>
<td>8</td>
<td>81</td>
<td>81</td>
<td>8</td>
<td>12</td>
<td>69</td>
</tr>
<tr>
<td>GR1 (100)</td>
<td>14</td>
<td>70</td>
<td>85</td>
<td>15</td>
<td>12</td>
<td>77</td>
</tr>
<tr>
<td>FR (103)</td>
<td>15,5</td>
<td>54,4</td>
<td>64,1</td>
<td>23,3</td>
<td>1,9</td>
<td>16,5</td>
</tr>
<tr>
<td>GR (166)</td>
<td>10,2</td>
<td>44,0</td>
<td>62,0</td>
<td>17,5</td>
<td>3,0</td>
<td>6,6</td>
</tr>
<tr>
<td>QU (41)</td>
<td>0,0</td>
<td>51,2</td>
<td>82,9</td>
<td>46,3</td>
<td>46,3</td>
<td>0,0</td>
</tr>
</tbody>
</table>
7. Etude de l’ETMG Triangle Rectangle et Aire (Ex2, A1, A2a, A2b et B1)

Nous étudions dans cette partie un ETMG sur les triangles rectangles, aires et théorème de Pythagore avec l’exercice 2 et les premières questions du problème (l’énoncé proposait un contexte de course dans une école, la figure à main levée était donnée, voir la figure 3).

Les arbres de similarité (figures 6 et 7) présentent des profils proches avec néanmoins des différences remarquables. Par exemples, les variables de réponses pour les questions B1 sont similaires à A1-OK (théorème de Pythagore) pour la population FR alors qu’elles sont similaires à A2b-OK pour la population grecque (distance d’un point à une droite). On peut penser que cela est le signe d’une structuration différente des ETMG idoines FR et GR.

Figure 6: arbre des similarités – population Gr

Figure 7: arbre des similarités – population Fr
En regardant les pourcentages, les aspects calculatoires sur les aires ou dans l'utilisation du théorème de Pythagore, les populations grecque et française disposent d'ETM idoines proches comme on peut le constater avec la table 2.

<table>
<thead>
<tr>
<th></th>
<th>Pb - A1</th>
<th></th>
<th>Pb - A2a</th>
<th></th>
<th>Pb - A2b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NR</td>
<td>OK</td>
<td>NR</td>
<td>OK</td>
<td>NR</td>
</tr>
<tr>
<td>FR (103)</td>
<td>6,8</td>
<td>73,8</td>
<td>7,8</td>
<td>75,7</td>
<td>37,9</td>
</tr>
<tr>
<td>GR (166)</td>
<td>16,9</td>
<td>62,0</td>
<td>12,0</td>
<td>65,7</td>
<td>32,5</td>
</tr>
</tbody>
</table>

En revanche, pour les caractéristiques géométriques du point J, cela n'est plus le cas puisque cette question nécessite l'introduction du cercle de centre J, un intermédiaire dans le travail. Les résultats sont :

<table>
<thead>
<tr>
<th></th>
<th>Pb-B1ab</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NR</td>
<td>OK</td>
<td>CCC</td>
<td>MilH</td>
<td></td>
</tr>
<tr>
<td>FR (103)</td>
<td>8,7</td>
<td>44,7</td>
<td>66,0</td>
<td>47,6</td>
<td></td>
</tr>
<tr>
<td>GR (166)</td>
<td>16,3</td>
<td>30,1</td>
<td>30,7</td>
<td>20,5</td>
<td></td>
</tr>
</tbody>
</table>

Les étudiants grecs connaissent le théorème sur le cercle circonscrit à un triangle rectangle, pourtant 16,3% d'entre eux n'ont pas répondu. On peut penser que la différence provient d'un travail géométrique différent et donc d'un ETM idoine différent.

8. Un ETMG Complexe (Ex3 et PB B2 B3)

Il s'agit d'un ETM autour de la démonstration dans les triangles qui est complexe car il rassemble plusieurs ETM simples mais liés : des objets (triangle, rectangle, angles), des notions (équidistance, médiatrice), des théorèmes (droite des milieux et théorème de Thalès). Les procédures utilisées par les étudiants (notamment pour B2 et B3) sont nombreuses et les usages contrastés. On relève notamment : 1) aucune utilisation de rectangles homothétiques, alors que l'on aurait pu s'y attendre de la part des étudiants grecs ; 2) une forte utilisation de la caractérisation par trois angles droits des rectangles en France par rapport à la Grèce ; 3) aucune utilisation de la propriété d'une droite perpendiculaire à deux parallèles en Grèce (contre 13,6% en France) et 4) des cheminement variés dans les résolutions des questions chez les étudiants français.

Pour B2, on reconnaît (figure 8) la procédure 1 dans le bloc de droite (B2-DN → B2-para), mais sans lien avec la réussite à B2 ; on reconnaît également (figure 8) la procédure 4, à gauche (B2-CCC-med → B2-3Dr) qui implique la réussite à B2. Pour B3, les procédures sont peu visibles mais on relève l'importance pour la réussite de l'utilisation de la caractérisation de la médiatrice comme la perpendiculaire passant par le milieu.
Les ETM_{p} personnels sont variés et laissent entrevoir un ETM_{p} idoine large et donc offrant une flexibilité.

**Figure 8 : graphe implicatif, population FR, questions B2, B3 et Exercice 3 ; niveaux 99 et 95.**

Globalement, on relève une faible réussite à B2 chez les étudiants grecs (9% OK ; 38,6% NR) contrairement aux étudiants français (49,5% OK ; 19,4% NR). La réussite baisse pour B3 et les non-réponses augmentent à environ 50% pour les deux populations. Cet ETM_{p} complexe ne semble pas à portée de la plupart des étudiants grecs mais pose aussi des problèmes aux étudiants français comme on peut le constater aux tables ci-dessous.

**Table 4: Résultats, en pourcentages, à la question B2**

<table>
<thead>
<tr>
<th>Pb-B2</th>
<th>NR</th>
<th>OK</th>
<th>DM</th>
<th>Thal</th>
<th>3Dr</th>
<th>Para</th>
<th>P2P</th>
<th>CCC med</th>
<th>Trian Isom</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR (103)</td>
<td>19,4</td>
<td>49,5</td>
<td>18,4</td>
<td>6,8</td>
<td>42,7</td>
<td>24,3</td>
<td>13,6</td>
<td>22,3</td>
<td>0,0</td>
</tr>
<tr>
<td>GR (166)</td>
<td>38,6</td>
<td>9,0</td>
<td>10,8</td>
<td>3,0</td>
<td>12,0</td>
<td>27,1</td>
<td>0,0</td>
<td>2,4</td>
<td>10,2</td>
</tr>
</tbody>
</table>
9. Conclusion

En Grèce, avec un ETM\textsubscript{G} de référence fortement lié à la tradition euclidienne, on remarque un ETM\textsubscript{G} idoine autour du théorème d'égalité des triangles bien installé qui induit des ETM\textsubscript{G} personnels en adéquation avec cet ETM\textsubscript{G} idoine. De ce fait, les étudiants grecs, face à un exercice de géométrie, se placent immédiatement dans cet ETM\textsubscript{G}. Bien entendu, cela n'est pas toujours aussi systématique et il n'y a qu'à conséder l'exercice 2 où cet ETM\textsubscript{G} n'est pas du tout convoqué, pour s'en convaincre. Il y a donc des indicateurs, sans doute implicites, qui déclenchent chez les élèves l'utilisation du théorème sur l'égalité des triangles. Parmi ces indicateurs, on peut penser que des demandes de comparaison d'angles ou de longueurs intervenant dans des triangles jouent un rôle important.

Les étudiants français montrent une certaine flexibilité de leurs ETM\textsubscript{G} personnels, avec l'utilisation des ETM\textsubscript{G} autour de transformations géométriques et l'utilisation de surfigures, variété des réponses qui augmente avec l'étude du parallélogramme à l'exercice 3 car il n'y a pas qu'un seul ETM\textsubscript{G} idoine pour ce type de problème en France contrairement à ce qui se passe en Grèce.

Enfin, concernant les décompositions méréologiques, on peut remarquer une différence entre les deux populations. Pour l'exercice 2, ce type de décomposition ne constitue, sans surprise, pas de problème.

Après avoir proposé aux deux populations grecque et française, des exercices issus de chaque pays, on constate que les étudiants grecs ont à leur disposition un ETM\textsubscript{G} personnel plus restreint et lié à l'ETM\textsubscript{G} idoine alors que les étudiants français semblent témoigner d'une plus grande flexibilité en fonction de la situation géométrique et de sa présentation (formulation et illustration).

Pour les aspects calculatoires sur les aires ou dans l'utilisation du théorème de Pythagore, les populations grecque et française disposent d'ETM\textsubscript{G} idoines proches. Pour les caractéristiques géométriques du point J, cela n'est plus le cas puisque cette question nécessite l'introduction du cercle de centre J, un intermédiaire dans le travail. L'ETM\textsubscript{G} complexe pour les questions B2 et B3 ne semble pas à portée de la plupart des étudiants grecs mais pose aussi des problèmes aux étudiants français.

La comparaison est plus difficile avec le Québec. En effet, si, dans le cas de la France et de la Grèce, les perspectives et visées des ETM\textsubscript{G} idoines sont proches, ce qui est sans doute le signe d'une proximité des ETM\textsubscript{G} de référence, en revanche cela n'est plus le cas avec le Québec, notamment pour ce qui est de la démonstration ce qui a des conséquences importantes sur les méthodes, le travail et la nature des objets en jeu. Ainsi, la méthodologie développée semble n'être pertinente, en utilisant des énoncés...
neutres, que lorsque les ETMg de référence sont proches, ou qu’il y ait une certaine forme de compatibilité.

Références


Brief Bios


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PÉDAGOGIE, THÉÂTRE POUR LE FLE ET FRANCOPHONIE

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Abstract

L’intégration des activités et des pratiques théâtrales dans la classe de langue, et notamment dans le domaine du FLE, est une expérience très intéressante pour l’enseignant et pour l’apprenant à la fois. Car comme le souligne aussi le comédien de formation, Adrien Payet, elle relie de façon très habile le théâtre, l’anthropologie et l’enseignement (Adrien Payet, 2014). Dans cette manifestation d’interférence, l’apprenant-acteur apprend d’une part à « vivre les mots ou les notions de grammaire plutôt que de les intellectualiser » (ibid. Souligné par Le Café du FLE) ; l’enseignant développe de l’autre des visions et des pratiques d’enseignement qui dépassent les stéréotypes traditionnels et renvoient à une approche actionnelle communicative augmentant l’interaction en classe tout comme dans la communauté éducative la plus vaste avec emphase sur les savoir-faire communicatifs des élèves! L’intégration des activités théâtrales dans l’enseignement du FLE introduisant la mobilisation et la gestualité et exigeant la présence physique des élèves, attire leur intérêt et leur attention, créant en même temps un climat amusant et édifiant. Dans cette perspective, jouer et apprendre, théâtre FLE et enseignement sont au cœur de la pratique didactique en combinant art et francophonie, en prouvant à la fois que l’art peut être accessible à tous!

Keywords: théâtre, FLE, didactique théâtrale

La pratique de l’improvisation théâtrale libre

L’essentiel de mon propre processus d’enseignement/apprentissage est que la pratique théâtrale soit basée sur l’improvisation libre sans être liée exclusivement à une pièce de théâtre précise ! Qu’il s’agisse de créer une histoire, un personnage, ou une émotion, l’improvisation est à la fois un exercice et un jeu pour les apprenants. Du fait que le vocabulaire des élèves est relativement restreint et l’emploi du français a lieu dans des circonstances de temps et de lieu spécifiques et dans un environnement donné, enfin à l’intérieur d’un domaine d’action particulier, la construction du spectacle de théâtre et la découverte du scénario se réalisent sous l’effet de la dynamique d’improvisation ! C’est justement la particularité de ce contexte linguistique et éducatif du potentiel scolaire limité à des actes de parole liés à des champs thématiques et culturels très concrets : px. se présenter, dire l’âge, l’heure, se faire des amis, manger et habitudes nourricières, s’amuser etc., qui amène, qui m’a amenée à l’improvisation théâtrale et à la construction de ce que le Cadre appelle mutatis mutandis, un scénario d’apprentissage-action (Cadre Européen Commun de Référence pour les Langues (CECRL), 2001).
Un scénario d’apprentissage-action

Mon scénario d’apprentissage-action est inhérent à un vocabulaire précis et concret et à des modalités morphosyntaxiques adaptées aux possibilités des élèves en élargissant parfois leur champ cognitif et lexical. Les élèves sont ainsi encouragés à réutiliser tout ce qu’ils ont déjà appris et à passer, sans s’en rendre compte, à une espèce d’autoévaluation et de performance éducative. À travers un mode original de mobilisation de l’imaginaire collectif, celui des élèves et du/de la professeur(e) à la fois, un débat se déroule dans la classe avec pour but la genèse du scenario, ce qui renvoie à la fois à la procédure de l’écriture créative ! D’après mon expérience, l’imagination créative des élèves qui participent activement à la construction du scenario, à la mise en scène ou à l’approche vestimentaire des « acteurs », est impressionnante !

Dans cette optique, la mise en œuvre d’un tel scénario d’apprentissage-action « vise à développer et à construire l’apprentissage de la langue en lui donnant du sens » (Claire Bourguignon, 2007). Car les élèves ont le plaisir de communiquer uniquement en français et de vivre sur la scène les mots et la langue, fonctionnant en fait comme un espace “ « in vitro » de ce qui se passe dehors, en milieu francophone” (Payet, 2014).


La pratique didactique théâtrale: une tâche difficile

Pourtant la mise en place des activités théâtrales FLE dans la classe s’annonce en premier lieu une tâche difficile et comporte en second lieu quelques dangers. La réaction des élèves est dans un premier temps négative, ensuite réservée et finalement dans plusieurs cas positive ! Le fait de parler en public et même s’exprimer en FLE leur fait peur et le plus souvent ils pensent qu’ils ne sont pas capables de s’en sortir, qu’ils ne peuvent pas en fait se débrouiller! Dans ce stade préliminaire, l’enseignant(e) doit renforcer l’estime de soi des élèves et les encourager à y participer! Le but est d’impliquer dans cette procédure actionnelle un grand nombre d’élèves et d’inciter même les élèves les plus faibles à y participer!

Pourquoi intégrer l’activité théâtrale en classe de français ?

En outre, le/la professeur(e) doit avant tout leur expliquer pourquoi il/elle veut intégrer l’activité théâtrale dans la classe ; pourquoi il/elle veut les impliquer dans l’action théâtrale ! C’est parce qu’il/qu’elle envisage de les transformer en élèves actifs et créatifs de sorte qu’ils évoluent plus tard en citoyens actifs et créatifs ! C’est parce qu’il/qu’elle se propose de leur faire apprendre à mobiliser leurs savoirs à bon escient et à être capables de les relier dans leur vie future aux situations dans lesquelles ceux-ci permettent d’agir, enfin d’utiliser concrètement ce qu’ils ont appris à l’école dans des tâches, l’utiliser aussi plus tard dans des situations nouvelles et complexes, bref, à l’école tout comme dans la vie.
Payet confirme à son tour, en tant que comédien de formation, que « le professeur utilise le théâtre pour rendre les apprenants actifs, les transformer en « acteurs sociaux » sur une scène, pour qu’ils sachent s’adapter à toutes les situations et développer leurs savoir-faire communicatifs ». Car comme il le souligne, apprendre une langue étrangère, « ce n’est pas accumuler une source infinie de connaissances mais savoir les mettre en pratique » (ibid. Souigné par Le Café du FLE). On ajoutera que les élèves apprennent aussi à prendre une décision par rapport à un problèmeposé en utilisant la langue à la fois de manière correcte, pertinente et spontanée.

Établir un contrat d’apprentissage

D’autre part, une fois les élèves persuadés, il y a certains risques qui guettent menaçant l’ensemble de cette procédure actionnelle ! Car le plus souvent, les élèves considèrent l’activité théâtrale comme un processus purement récréatif ou comme un moyen de paresser : autrement dit, c’est ce que les élèves disent dans leur propre code linguistique quotidien, la « planque » ! C’est pourquoi le/la professeur(e) doit commencer par établir un contrat d’apprentissage comportant un certain nombre de règles que les élèves doivent à leur tour respecter. Il faut que ceux-ci comprennent que l’activité théâtrale « ouvre de nouvelle perspective pour leur apprentissage » (ibid). En animant, dans le domaine du FLE, un atelier théâtre à l’Alliance Française de Limassol, à Chypre, Payet précise également qu’il est indispensable au cours de cette approche didactique actionnelle, de délimiter, loin du « contrat d’apprentissage », « une scène (même très petite) et un espace public. Les règles découlent de ces deux espaces : sur scène on joue, dans l’espace public on écoute » (ibid. Souigné par Le Café du FLE). Quoi qu’il en soit, il propose aux enseignant(e)s de donner les premiers/les premières l’exemple en s’impliquant directement et sans complexe dans l’activité sans se limiter à expliquer seulement (ibid). Grâce à ce type d’activité, ils vont augmenter les interactions au niveau d’enseignement avec emphase sur les savoir-être et les savoir-faire communicatifs des élèves !

Prendre la parole ou réciter une poésie devant toute la classe ou devant tous les élèves de l’école n’est pas chose aisée pour la majorité des élèves. Dans notre cas, la prise de parole en public et même en Français Langue Étrangère implique une difficulté supplémentaire du fait que l’apprenant doit s’exprimer en public dans une langue qui n’est pas sa langue maternelle. Il est à souligner qu’à l’âge adulte aussi, la prise de parole en public fait du coup peur presque à tout le monde ! Car cette compétence n’est pas en fait travaillée dès le plus jeune âge. C’est plutôt dans les pays anglo-saxons où cette compétence est développée et fait partie du système éducatif national ! (Voir, petitetestetes.com, 2015).

L’approche didactique théâtrale ou une approche par compétences actionnelle

Dans cette perspective, l’approche didactique théâtrale est une approche actionnelle communicative qui permet de développer de nombreuses compétences ! En mettant l’accent sur la réception inhérente à la production écrite au moment de la découverte du scénario, à l’interaction orale ou à la diction au cours de la mémorisation du texte ou des répétitions, en renforçant également le passage à la compétence et même à la
compétence se réalisant dans l’action, l’approche didactique théâtrale s’harmonise avec les objectifs du CECRL (Cadre Européen Commun de Référence pour les Langues, 2001) qui remet sur le devant de la scène l’approche par compétences. Il est à noter que cette approche par compétences tout en devenant la finalité principale de l’éducation en général concernant toutes les disciplines et tous les systèmes éducatifs européens, se trouve en fait au cœur de l’approche communicative (Voir, Jean-Claude Beacco, 2007).

Avec les activités théâtrales, on peut travailler sur toutes les compétences, cela dépend de ce que l’on souhaite faire. L’exemple d’une courte mise en scène, inhérente à l’improvisation théâtrale, est une approche actionnelle communicative qui permet de développer de nombreuses compétences et notamment :

- Être présent ici et maintenant avec la mobilisation de toutes les ressources pour être là, à chaque seconde.
- Apprivoiser le risque : oser l’inconnu, faire différemment, s’exposer, mais aussi apprendre à renoncer à la toute puissance.
- Accueillir : prendre en compte, faire avec, s’adapter.
- Développer la confiance : en soi et en l’autre (a priori positif), le respect et la coopération.
- Créer : explorer, s’aventurer, jouer avec la contrainte et le stress, s’ouvrir.
- Savoir se lancer : avec énergie, générosité et enthousiasme, apprendre à s’affirmer et à prendre la parole en public! Du fait que cette compétence n’est pas travaillée, comme il est mentionné ci-dessus, dès le plus jeune âge, on fait apprendre à nos élèves à développer cette compétence, à travers l’improvisation théâtrale ! (Voir, petitesetes.com, 2015).
- Développer son sens de l’écoute qui est en permanence sollicité : accepter le silence, observer, prendre le temps avant de répondre, apprendre à être discipliné (voir, ibid, Payet, 2014).
- Développer : une typologie de compétences culturelles et interculturelles ! En outre, « la première chose qu’il faut [...] garder à l’esprit, c’est que langue et culture sont indissociables et que nous devons éveiller les élèves aux différentes cultures (...) » (Bourguignon, 2007, CECRL, 2001).

**Le théâtre FLE: une pédagogie d'enseignement interculturel**

En effet, le spectacle du théâtre ou bien le théâtre FLE, inhérent au jeu ou à l’improvisation, obéit par définition aux principes d’une pédagogie d’enseignement interculturel. Dans cette perspective, des habitudes culturelles concernant la gastronomie et l’habillement, les fêtes de noël et du premier jour de l’an ou celles du carnaval, même des faits historiques comme celui de la révolution grecque de 1821 ou de l’École Polytechnique peuvent se situer dans un contexte théâtral interculturel en fonction de la langue cible, bref du FLE.

Ainsi le théâtre FLE peut-il devenir un lieu d’osmose interculturelle non en présentant “la culture de « manière frontale » à travers un texte où l’étude d’un thème a peu de chance de susciter l’intérêt de la majorité des élèves” (Bourguignon, 2007) mais d’une manière empirique, directe et actionnelle! « Il n’y a de compétence que de compétence en acte » (Guy Le Botref 1994, 4). En effet, à partir des slogans des étudiants grecs du 17 novembre 1973 prononcés en grec et en français à la fois et
situés sur scène, le théâtre FLE privilégie.

L’enseignement/apprentissage des compétences interculturelles donnant accès au contact avec la culture et l’Histoire du pays cible. Les événements de mai de 1968 où les étudiants français se sont révoltés contre la crise, le Chômage et le gouvernement conservateur de Charles de Gaulle peuvent se comparer par exemple avec les événements de l’École Polytechnique de 1973 où les étudiants grecs se sont révoltés contre la junte de Papadopoulos.


Conclusion

Pour conclure, il est à noter que, malgré les risques qui guettent au début mais aussi pendant la pratique de cette approche actionnelle, malgré les premières craintes ou hésitations des élèves, dans plusieurs cas, ce sont les élèves eux-mêmes qui demandent l’intégration de l’activité théâtrale FLE dans la procédure de l’enseignement. On doit aussi souligner qu’au début de tout événement théâtral, il y a toujours une Introduction en langue grecque, afin d’avertir le public non francophone qui suit le spectacle : les collègues, les parents, s’il y en a, les élèves qui n’apprennent pas le français. Ainsi la communication et l’interaction ne sont-elles pas limitées seulement au niveau linguistique. Elles s’ouvrent également, à travers l’exemple de l’adaptation théâtrale, à l’interculturalité appliquée en introduisant même dans le domaine du FLE toute la communauté éducative

Références

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PRINCIPALS’ VIEWS OF THE EFFECTS OF SOCIO-ECONOMIC CRISIS ON PRIMARY EDUCATION

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Abstract

This study investigated principals’ understanding of the issues faced in early childhood and primary education as an effect of the socio-economic crisis in Greece and discusses differences in their reasoning of the perceived effects on education. While international and national reports have documented the effects of economic crisis in education, there is little research regarding teachers’ views in this context. 50 semi-structured in-depth interviews with school principals were conducted in Thessaloniki, Athens and Volos. Data were analysed both qualitatively and quantitatively. All participants were informed about the purpose of the study and took part voluntarily. Results describe commonalities regarding the described effects of crisis on four different levels: children, parents, teachers and school function. However, the

1 This is a qualitative study, part of a research programme (TOCSIN) that was funded by eea grants 2009-2014 (Project Contract n° 3708) and operated by the General Secretariat for Research and Technology (GSRT).
reasoning of these effects varies, some giving emphasis on the structural constraints arisen from the crisis, others to the parent’s responsibility and ability to come up to the newly confronted circumstances in the context of the crisis, while some acquiring a mixed approach referring to both.

Keywords: social inequalities, socio-economic crisis, effects on education, principals’ views, qualitative research

1. Introduction

It is important to note that in most studies crisis is understood in terms of the changes that occur due to austerity and poverty increase such as shrinking incomes, increased taxes, unemployment rates and financial inability to come up to everyday needs. This understanding of crisis is reflected on many studies that focus on a quantitative description of the effects of crisis based on specific items that they measure (Douglass 2010, KANEP-GSEE 2016, OECD 2011, UNICEF 2014). These studies show that some countries, included Greece, have experienced a major impact of the social and economic crisis reflected in poverty and its consequences upon children, parents and teachers (Damme & Karkkainen 2011). The effects of poverty have been described in relation not only to financial issues (income decrease and unemployment) but also with reference to physical and mental health problems, low educational attainment and lack of skills, inhibiting and anti-social behavior, social relational issues (family and personal relationships) and subjective well-being (Griggs & Walker 2008). In a recent report about education in Greece, it is noted that the underfunding of education and its unequal distribution among schools has led to school insufficient infrastructure (especially in early childhood education), lack of educational resources and inadequate support in teaching basic subjects such as maths, language and science (KANEP-GSEE 2016). The effects of neo-liberal policies on education create challenges both for families and teachers. Parents and children have to confront among other things malnutrition, personal and work stress, lack of solidarity and co-operation. Teachers have to cope with the deterioration of their labour rights and limited resources, all of which threaten the function of the public school (Charamis & Kotsifakis 2015).

The effects of crisis described above make evident that human rights for equal access to a dignified living, health and education cannot be guaranteed. It is therefore important to study the social inequalities produced by the socio-economic crisis as these are reported by the principals of primary and kindergarten schools. As we have already explained, most of the studies report upon the effects of crisis based on a measurement of its effects by comparing specific facts before and after the crisis. Despite our acknowledgement that these facts are important, it is our epistemological belief that humans are not passive recipients of the world they live in and that their experience and understanding of this world is important to explore. Thus we wanted to seek school principals’ experience of crisis and their understanding of its effects on education. We found few studies that report on teachers’ understanding of crisis and their opinions about its effects and even less that seek for the different reasoning underlying these opinions.

Such studies show different results concerning teachers’ opinions about the effects
of the economic crisis on education. For example, secondary school teachers relate the changes in their professional lives to the effects they have experienced due to the economic crisis on a personal level (i.e. loss of income and psychological pressure) and on an institutional level (i.e. change of regulations, unstable work status). These experiences have to be understood by taking into account that teachers were asked to perform a great range of top-down initiated changes in their work (i.e. evaluation of educational work) without in-service education and support. Most secondary teachers have experienced negatively these changes and felt disappointed about their support to ensure a high quality educational provision (Kontogeorgiou et al. 2015). The results of the economic crisis on the quality of education may vary according to primary and secondary teachers’ views, as shown in a recent study, in which some teachers gave emphasis on the deterioration of educational quality due to income loss and state cuts in education, while others seemed unaffected by these (Ziontaki 2014). In the same study, teachers also stressed the effects of crisis on children’s academic achievement and behavior problems. Last, another recent study (Tsakiridou et al. 2014) showed that primary and secondary education teachers understood the economic crisis in terms of its relation to the economic and labor field that had effects on the formal school function, the organization and administration of education, the psychological field, the educational process and the relations among teachers and pupils. In the same study, some teachers related the increase of student population and the reduction of educational programs and activities to the quality of education provisions. However, the reduction of teachers’ salaries did not seem to affect most teachers’ efforts to improve their courses or the time devoted for the preparation of their courses and their willingness to participate in training programs.

Apart from studying teachers’ perceived effects of the crisis on education, we aimed to explore teachers’ reasoning of the relation between crisis and education. This included an understanding of how research has so far highlighted these relations. Our review of the literature indicates two trends in relating perceived effects of crisis to education. One set of studies relates changes in children’s social and academic education to the structural constraints that cause consequences upon children and parents in various ways. Specifically, structural constraints relate to families’ financial inability to respond to everyday needs due to unemployment and low income and to consequent parents’ stress and tension in family relations (Ridge 2009, Shafiq 2010) as well as lack of parents’ time to support their children. Financial difficulties are therefore related both to material deficits related to nutrition, health, clothing, school materials (Griggs & Walker 2008, Horgan 2009, Ridge 2009, Shafiq 2010, Sutton et al. 2007) and to emotional deficits related to children’s and parents’ stress and insecurity feelings (Elliott & Leonard 2004, Griggs & Walker 2008, Horgan 2009, Ridge 2009, Sutton et al. 2007). These material and emotional deficits as an effect of structural constraints are related to children’s academic achievement and behavior (Andrews & Wilding 2004, Drydakis 2014). On the other hand, some studies relate deterioration or lack of children’s social and academic development to lack of family guidance, encouragement and support for their children in order to reach to the maximum of their abilities (Crowley & Vulliamy 2007, Doliopoulou 2015, Pugh 2010, Sylva 2014). In
this way, a powerful and supportive family setting, where parents provide a secure, loving and sensitive to the needs of their children environment, can be an important factor that protects children against the risks that low socio-economic background children face (Pugh, 2010). These studies stress the individual responsibility of parents as this is reflected upon their practices at home, their obligation to find a way to adjust to the new situation and support their children. Critique of such an approach relates to its underlying logic that “tends to slip from an engagement with structural inequalities to a reinforcement of individual as well as parental responsibilities” (Shiettecatt 2016: 36-37).

Therefore, our research wanted to add upon existing research that focuses on teachers’ understanding of crisis and its effects on education.

The research questions of the study were:

▪ How do school principals describe the effects of crisis in education?
▪ How do school principals reason the effects of crisis on education?

Methodology

We chose to give voice to school principals’ by researching their perspectives of crisis and its effects on education, since we perceive that individuals are not passive recipients of structures and events but have their own perspectives that at the same time shape these structures and events (Pourkos & Dafermos 2010). In addition, this methodological approach “opposes viewing citizens as consumers, as depersonalised, technically controlled objects of the financial and political system” (Koutselini, 2010:26) that relates to crisis and aims to highlight their perspectives and understanding of the effects of the financial crisis on education. Thus, we chose a qualitative approach to understand principals’ perspectives on the effects of crisis on education (what they are and why they have occurred).

2.1 Semi-structured interviews

We chose the semi-structured interview as the method for our study since it allows a specific focus in the discussions with principals and can also include questions that come up during this discussion. There were four basic axes of questions in the interview: a) effects of crisis on children, parents, teachers and schools and reasoning of these effects, b) strategies and activities that schools select to confront these effects and a description of their effectiveness, c) help that principals need in order to better confront the described effects of crisis and d) proposals for the development of a supportive educational platform. This study reports findings coming from the first axis of the interview. Interviews lasted from 40 to 90 minutes and were all recorded.

2.2 Participants

34 primary school principals and 16 kindergarten principals participated in the study. From these 50 interviews, 20 came from principals in Athens, 20 from principals in

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2 This study was funded by eea grants 2009-2014 (Project Contract n° 3708) and operated by the General Secretariat for Research and Technology (GSRT).
Thessaloniki and 10 from principals in Volos. Principals were chosen because of their overall knowledge of the pupils’ and parents’ population, the school’s function and the strategies they employ as a school unit to confront the effects of crisis. Principals were selected after communication with school advisors that proposed schools that were recorded to suffer more from the crisis as well as after communication with schools that the research team knew that they had issues related to crisis due to their special characteristics (i.e. neighbourhood with low socio-economic status population or/and immigrants). In this way, the selection of the principals was focused and aimed to cover schools from different areas of the cities (center, east and west), mainly in socially deprived areas and in many cases having immigrants or Roma pupil population.

2.3 Data analysis

In the beginning we codified principals’ responses and inductively developed a system of categories based on content analysis. Second, by selecting the constant comparative method (Glaser & Strauss 2016), we constructed a subtractive set of themes emerging from the data that functioned as interpretative lenses of principals’ opinions. For example, concerning the reasoning of the effects of crisis upon children, the first codification of principals’ responses included 17 codes organized in 5 categories according to content analysis: structural difficulties, parents’ psychological state, parents’ behavior, parents’ inability to offer help at home, lack of parents’ communication with the school and lack of parents’ education and interest. Constant comparative analysis across the interviews in the same city and also across different cities highlighted basic themes that interpreted how principals understood the effects of crisis by attributing responsibility to a) structural constraints (i.e. parents’ unemployment) and structural changes (i.e. changes in family structure), b) parents’ behavior and choices (i.e. relationships among family members, parents’ time and occupation with their children), c) a mixed approach (principals referring to both structural and family context), d) an unclear stance with no specific attribution of the effects and e) reference to no change observed because of the crisis. In the results section both a qualitative and quantitative account of the content analysis is shown as well as a presentation of results based on the themes that interpreted principals’ reasoning.

2.4 Limitations of the study

This study focuses upon principals’ views and not parents’ or children’s views, thus not allowing for a triangulation of data and a more holistic understanding of the issue under study.

Results

The effects of crisis were described in relation to children, parents, teachers and school function.

3.1 Crisis effects on children

Principals’ description of the effects of crisis on children is made with reference to five
categories as shown in table 1 with more than half of principals in Athens referring to all categories of effects, while more than half of principals in Thessaloniki referring to three out of five categories and more than half of principals in Volos referring only to the effects of crisis on children’s daily routine. Overall, the great majority of principals referred to changes in children’s daily routine, academic achievement and changed psychological and emotional state. A little more than half of the principals also referred to changes in children’s behavior and social relationships. Specifically, principals described lack of children’s needs fulfillment related either to their nutrition, material conditions, emotions of safety and joy and deficits related to their school achievement as well as social behavior and relationships. Examples of principals’ statements about the effects of crisis on children are presented in the next section.

Table 1: The effects of crisis on children

<table>
<thead>
<tr>
<th></th>
<th>ATHENS</th>
<th>THES/NIKI</th>
<th>VOLOS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Schools</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Children’s daily routine</td>
<td>20</td>
<td>17</td>
<td>9</td>
<td>46</td>
</tr>
<tr>
<td>1.1. Malnutrition – everyday living</td>
<td>16</td>
<td>13</td>
<td>8</td>
<td>37</td>
</tr>
<tr>
<td>1.2. Inability to respond to schools’ material needs</td>
<td>11</td>
<td>7</td>
<td>8</td>
<td>26</td>
</tr>
<tr>
<td>1.3. Changes in children’s daily routine (i.e. less out of school activities)</td>
<td>16</td>
<td>6</td>
<td>5</td>
<td>27</td>
</tr>
<tr>
<td>2. Children’s achievement</td>
<td>19</td>
<td>17</td>
<td>3</td>
<td>39</td>
</tr>
<tr>
<td>3. Children’s behavior</td>
<td>13</td>
<td>11</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td>4. Children’s psychological-emotional state</td>
<td>18</td>
<td>9</td>
<td>4</td>
<td>31</td>
</tr>
<tr>
<td>5. Children’s social relationships</td>
<td>17</td>
<td>8</td>
<td>2</td>
<td>27</td>
</tr>
</tbody>
</table>

3.2. Principals’ reasoning of the effects of crisis on children

It is interesting that for most principals the effects of the crisis on children were related to changes in the family environment. These changes were either attributed to structural constraints (loss of income, unemployment and changes in family structure - divorced parents, one-parent families) or attributed to parents’ psychological state, behavior, lack of communication or difficulties in communication with the school and lack of parents’ education or interest. Specifically, the majority of principals referred to structural constraints as well as to parents’ behavior towards their children. Less principals referred to parents’ psychological state and inability to offer help to their children at home. Very few principals referred to lack of parents’ education / interest and difficulties in parents’ communication with the school because of their cultural background and inability to speak the Greek language.

“...I happen to have parents that do not speak..Greek is not their mother tongue,
these (parents) cannot help their children in school performance”.
“This is a deficit, a cultural deficit and this has as an effect their (children’s) inability
to come up to the school’s needs. They (children) do not have the appropriate
educational experiences. This will certainly have an impact on their education and
their personality, it will nail them down on this level and will also determine their
future”.

Table 2: Reasoning of the effects of the crisis on children

<table>
<thead>
<tr>
<th></th>
<th>ATHENS</th>
<th>THES/NIKI</th>
<th>VOLOS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF SCHOOLS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Structural constraints (unemployment, lack of income, changes in family structure)</td>
<td>17</td>
<td>16</td>
<td>5</td>
<td>38</td>
</tr>
<tr>
<td>2. Parents’ psychological – emotional state</td>
<td>12</td>
<td>5</td>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>3. Parents’ behavior (towards their children and regarding their relationships)</td>
<td>17</td>
<td>11</td>
<td>3</td>
<td>31</td>
</tr>
<tr>
<td>4. Parents’ inability to offer help to their children at home</td>
<td>12</td>
<td>5</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>5. Parents’ lack of /difficulties in communication with the school due to cultural background</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>6. Parents’ lack of education and interest</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

In their reasoning of the family environment as the basic factor causing the effects of crisis on children, principals sometimes related structural constraints to parents’ psychological state and available time for their children. Thus, reasoning of the effects of crisis upon children was in some cases understood as a systemic crisis. In this way, while principals talked about the effects of crisis upon children, they also explained the effects of crisis upon parents.

‘As I said before the economic crisis is a systemic crisis. When there are... there is a psychological and emotional upheaval in the family, right? The parents’ behavior changes, the school achievement changes...the family relations are affected, there is no way for these changes not to happen, unfortunately. You can see this in the child’s daily routine, you can see that in the way the child expresses, you can see the way the child interacts in the classroom, it certainly influences, the discussions at home, the broader social environment, it affects children inseparably, thus we had cases of children that have already started not to play with other children, or not to
smile...”.

“Pupils whose parents face financial difficulties have problems in their school achievement. The same applies for pupils with unemployed parents continuously struggling for a day’s work. Such parents are always absent from home and there is no one there to guide the children. ... We found out all these by talking to the parents. One of these parents asked me “how do you expect us to help our kids? We are trying to earn some money every day at the open market...”

“... due to their problems, they spend all their time looking for a job... as a result they do not pay attention to their children”.

The above excerpts from the interviews show that the effects of crisis upon children are interpreted in many cases as an interaction among structural constraints that lead to material and emotional deficits for both parents and children. For example, principals related parents’ struggle to earn their income to their bad psychological state and unavailability to spend time with their children that has effects on their relationship with their children and their academic achievement. Or they related reduction of family income to inability to respond to material needs that in turn changes the daily routine of the family and leads to changes in children’s behavior, psychological state and achievement.

Having recognised that some, but not all, principals made connections between structural constraints and parents’ actions, we wanted to re-examine more closely if principals attributed the effects of crisis on structural constraints or to the individual responsibility and choices of the parents, since this is an important point in order to understand their perspectives as discussed in the introduction section. Thus we re-read the whole transcribed texts of the 50 interviews and classified principals’ responses according to four emerging models.

The first one was named ‘structural model’, because it discussed the effects of crisis according to the structural constraints related to a) loss or type of job (unemployment, uninsured or underpaid jobs) and b) the state’s financial policy (reducing income, increasing taxation and cost of living). The basic characteristic of this model is that principals attribute to these structural constraints the various changes they observe in the family daily routine (material and emotional deficits, tensions in family relationships, lack of children’s academic achievement and so on) and the family structure (divorced families, one –parent family) as this is evident in the following excerpt. More than half of the principals used this model to explain the effects of crisis.

“We came across various problems mainly related to the behavior and the learning difficulties of pupils. We attempted a systemic approach to these problems by looking at their family context. Thus, we came across many issues such as poverty, neglect, etc. ... If we do not pay attention to the overall context, the family, we may arrive to the wrong conclusions ... It is important to look at their past, to detect the many faces of poverty in the family, single parent families and so on.”

The second model was named the ‘family model’, because it clearly attributed the effects of crisis on parents’ responsibility and related parents’ behavior (indifference for their children, loose tights with their children, lack of parents’ occupation with
their children) to children’s social, psychological and academic deficits. The basic characteristic of this model is that principals stressed the parental responsibility to fulfill obligations related to the physical and emotional care of their children, their academic support and effort to ensure a “stable” family environment unaffected no matter what by the financial crisis. Only 8 principals attributed the effects of crisis solely on parents’ behavior and choices.

“The first and foremost important thing for me beyond the financial matters is if there are the appropriate conditions in the family, if there is love and the right base in the family, everything can be treated. Thus, it is not the poverty and the financial difficulties that make us have a problem, but there are other things that are created again because of the crisis and financial problems that parents face and have an impact on children and we see violent behaviors, many times children draw their dad angry”.

“... I was thinking of all these parents who do not pay attention to their children… There is the case of a father who sends his child to school unwashed for a whole week…”

Table 3: Accounting for responsibility concerning the effects of crisis upon children

<table>
<thead>
<tr>
<th></th>
<th>ATHENS</th>
<th>THESS/NIKI</th>
<th>VOLOS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Structural model:</td>
<td>11</td>
<td>12</td>
<td>3</td>
<td>26</td>
</tr>
<tr>
<td>the effects of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>structural constraints</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Family model:</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Parents’</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Mixed model:</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>(reference to both 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and 2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Unclear</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>5. Similar to before</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>the crisis effects</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>20</td>
<td>20</td>
<td>10</td>
<td>50</td>
</tr>
</tbody>
</table>

The third model was named mixed model because principals referred both to structural constraints and parental responsibility to account for the effects of crisis. 12 out of 50 principals fell into this model.

“I have the feeling that for some (family) couples the financial crisis was the spark to take out what they already had (in mind). These (behaviors) were already existing. Thus, I do not think that crisis itself is the cause. O.K., in a more general context, the crisis has had negative effects. Because if a parent becomes unemployed and after a little bit the other one is also unemployed, the situation at home gets worse”.
For two principals it was unclear where they attributed the effects while one principal explained that the school’s neighbourhood had already many problems before the crisis so the crisis did not cause any changes regarding children’s social, educational and financial status.

3.3 Crisis effects on parents
As we mentioned before, when principals talked about the effects of crisis upon children they also referred to the effects of crisis upon parents, since they understood children to be affected by the family background. The main effects on parents described by the majority of principals referred to structural changes (unemployment, change of family structure, financial difficulties), changes in parents’ behavior as this is affected by structural constraints and objective difficulties because of the lack of adequate knowledge of Greek. These effects were mentioned with greater frequency from the principals of the Athens’ schools. Principals also referred to changes in parents’ psychological state with the same frequency as structural constraints. They said that parents who have financial difficulties feel embarrassed, stressed and often tired, disappointed and fearful of both social comments about their situation and of possible psychological effects of this situation upon their children. These are also evident in the examples from excerpts in the previous section.

Table 4: Effects of crisis on parents

<table>
<thead>
<tr>
<th></th>
<th>ATHENS</th>
<th>THES/NIKI</th>
<th>VOLOS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NUMBER OF SCHOOLS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Structural issues:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1. Structural constraints:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment – family structure</td>
<td>19</td>
<td>10</td>
<td>8</td>
<td>37</td>
</tr>
<tr>
<td>A2. Financial difficulties</td>
<td>19</td>
<td>11</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>A3. Parents’ changed behavior due to structural constraints</td>
<td>12</td>
<td>6</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>A4. Objective difficulties (inadequate knowledge of the Greek language, lack of residence permit, change of housing)</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>B. Issues related to parents’ psychological state</td>
<td>16</td>
<td>14</td>
<td>8</td>
<td>38</td>
</tr>
</tbody>
</table>

3.4 Crisis effects upon teachers and related reasoning
Principals also talked about the effects of crisis on teachers as they have observed them in their school. Most of them stressed that the lack of infrastructure, materials and equipment as well as the inability for an on time function of the reception classes were main issues for the daily educational work of teachers. These issues acted as obstacles in teachers’ professional daily educational work. Despite, this common
reference by the majority of the principals, there were a few references that these structural constraints might affect teachers’ will to perform well in their classrooms:

«I have heard colleagues, I am not sure if they do this, but I have heard it, ‘I’m not going to struggle, since they have cut my salary’…thus they are themselves disappointed, stressed in their personal life and financial situation and they do not come to school with the best disposition and feelings. I think it (crisis) is expected to have an effect”.

However, there were also principals’ references to teachers who perceived these structural constraints as a starting point for taking initiatives and actions to improve their educational work or insisted that teachers forgot their personal difficulties when they entered the classroom.

«But school, I insist about that, school is a place which if someone has not lived it, whatever problems one has when he enters the classroom, he forgets everything, the children drift you away, you cannot function otherwise…I do not have any colleagues that are indifferent …the classroom is magical, you forget everything”.

«I have not observed that teachers have made any discount in their educational work. They are more alert and more sensitive, they are searching for modern parameters to take into account”.

“Teachers are very experienced and they try through children friendly ways to provide individualised differentiated teaching, to bring children closer to learning, that is avoid a rigid teaching through memorisation…programmes of innovative teaching that motivate their interest, so as not to be bored, to do things that they are not trivial”.

Principals’ amount of references to crisis as an obstacle and as a creative factor concerning educational work was almost similar.

Table 5: The effects of crisis on teachers

<table>
<thead>
<tr>
<th></th>
<th>ATHENS</th>
<th>THES/NIKI</th>
<th>VOLOS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. EFFECTS ON EDUCATIONAL WORK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1. Crisis as a creative factor in efforts for better educational work (creating new)</td>
<td>9</td>
<td>10</td>
<td>4</td>
<td>23</td>
</tr>
<tr>
<td>A2. Crisis as an obstacle in educational work</td>
<td>13</td>
<td>4</td>
<td>2</td>
<td>19</td>
</tr>
<tr>
<td><strong>B. EFFECTS ON TEACHERS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1. Psychological-emotional effects</td>
<td>15</td>
<td>10</td>
<td>1</td>
<td>26</td>
</tr>
<tr>
<td>B2. Financial effects</td>
<td>20</td>
<td>12</td>
<td>12</td>
<td>44</td>
</tr>
<tr>
<td>B3. Family issues</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>B4. Problems in their professional work</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>
The majority of principals (38 out of 50) stressed the effects of crisis on teachers themselves as individuals. These mainly refer to financial shortcomings that are then related to the negative psychological and emotional state of the teachers. Some principals related financial and psychological difficulties to constant changes of educational policy concerning teachers’ work status (insecurity, stress), their salaries’ reduction and the increase of financial obligations.

Last, principals discussed the relationships between teachers and parents that sometimes had positive characteristics, since parents addressed the school for help and the school responded positively by taking initiatives and providing help. These positive relationships were built based upon trust and solidarity.

“… It is interesting to note that parents now understand that they can rely on the support of the school to overcome their problems. They are not any more reluctant to talk about their problems to us... they approach the school... we try to find donations and resources for them”.

“Many parents, certainly not all, perceive the school as a kind of head rest. They share with us their family and financial problems”.

However, with the same frequency, principals also mentioned confrontations between teachers and parents that were framed within a context of tensions, parents’ aggressiveness and interventions as well as parents doubting the important role of the school’s and teachers’ work.

“…sometimes parents hold a hostile attitude towards the teachers and occasionally they quarrel with us... They perceive us as those having permanent state employment…”

“... many parents identify teachers as representatives of the state... As a result we face their reactions…”.

As shown in the examples above and in table 5.a most principals understood these tensions as a result of structural difficulties that parents were facing and the competitiveness parents felt towards teachers who had a steady job. Teachers were sometimes perceived by parents as representatives of the state in matters concerning education and this also influenced they way they were addressing them. Some principals explained these tensions in communication due to a lack of agreement between parents and teachers about the school’s role that led to different expectations and understandings of the teachers’ role and thus created relevant conflicts. These two reasons are mentioned most often from schools in Athens rather in the other two cities. Only two principals referred to the lack of in-service education and relevant support that is needed to deal with these difficult situations in school-family
relationships.

Table 5a: Reasons for teachers-parents’ communication difficulties

<table>
<thead>
<tr>
<th>Reason</th>
<th>ATHENS</th>
<th>THES/NIKI</th>
<th>VOLOS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Structural causes related to parents: Financial issues have effects on parents’ behavior (i.e. competitiveness, aggression).</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>2. Lack of teacher in-service education for confronting difficult relationships with parents</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>3. Different estimation of the school’s role and needs</td>
<td>6</td>
<td>3</td>
<td>0</td>
<td>9</td>
</tr>
</tbody>
</table>

3.5 Crisis effects upon school function and related reasoning

The great majority of principals (39 out of 50) described difficulties concerning the daily function of the school as this was related to adequate funding, adequate infrastructure, equipment and everyday materials. This lack of resources was related to a deterioration of the school’s autonomy to function well and respond to educational and managerial needs adequately.

Table 6: The effects of crisis on the school function

<table>
<thead>
<tr>
<th>Source of crisis</th>
<th>ATHENS</th>
<th>THES/NIKI</th>
<th>VOLOS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial level</td>
<td>17</td>
<td>13</td>
<td>9</td>
<td>39</td>
</tr>
<tr>
<td>Structures</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>15</td>
</tr>
</tbody>
</table>

“We have inadequate infrastructure. This is for me the bigger problem, that the municipality cannot respond to simple needs and that includes the state off course, they cannot cover anything, the school is left on its own…”

“«We work here from 2000. Thus there was no kitchen. A place for children’s rest is not existent. There is one space for everything. A child that you keep from eight a.m. to four p.m. in the same space...there is no place to lie down, to sleep”.

Half of Athens’ schools and some more from the two other cities also stressed the inadequate supportive institutions or structures that aimed to assist schools to respond well to the pupils’ needs such as reception classes, supplementary classes for children with special needs and the existence social workers and psychologists in the schools.
4. Conclusions – Discussion

Principals identified the effects of crisis in relation to children, parents, teachers and the function of the school. In relation to children, principals’ descriptions of the effects of crisis on a social, academic and daily routine level are in agreement with other research that highlights the multiple ways that the financial crisis may cause effects on children (Griggs & Walker 2008, Horgan 2009, Ridge 2009, Shafiq 2010, Sutton et al. 2007). Parents were affected by the crisis both on a structural-material and on an emotional level both stressed equally by principals. It was interesting in principals’ interviews that some of them made relations among the different factors affecting children and families, thus providing a systemic understanding of the effects of crisis. In this case, structural constraints also affected behavioral and emotional aspects of parents’ and children’s lives and had further effects on their social relations and academic achievement. Concerning the reasoning of the effects of the crisis on children, most principals related them to changes in the family background. However, they did not all agree why these changes in the family background occurred, with more than half of the principals attributing the observed changes to structural constraints, thus acknowledging the structural social inequalities and their effects on people’s lives. Few principals attributed the effects of crisis only to parents’ behavior and choices stressing their responsibility for their children’s well being and development, while almost one in four principals understood the effects of crisis based on a mixed approach, thus attributing the effects both to structural constraints and parents’ responsibility. Thus, apart from the two main trends discussed in the literature (Griggs & Walker 2008, Pugh, 2010) we found a third trend in the reasoning of the effects of crisis which is a mixed model, drawing from both of the previous models in order to reason the effects of crisis.

Teachers are mentioned to be affected both on a professional level regarding their educational work and on a personal level as mentioned in other research (Kontogeorgiou et al. 2015, Ziontaki 2014, Tsakiridou et.al. 2014). However, there are two new findings: one relates to the different ways principals describe teachers to respond regarding the objective difficulties faced during their educational work because of the crisis. Thus, our study showed not only that most teachers are not affected regarding their efforts to respond well in their educational work (Tsakiridou et. al. 2014), but also that the financial crisis was in some cases a creative factor for teachers’ sustained efforts to improve the quality of education by taking initiatives to adapt the educational process according to children’s background or be responsive to their needs. The second finding concerns the tensions and difficulties teachers face in their relation with parents, a matter that has not been stressed in the relevant literature. These tensions co-exist with good relationships between teachers and parents, and this shows that the dominant situation regarding school-family co-operation is a mixed one.

Last, the majority of the principals referred to financial difficulties related to the function of the school and only some principals to the need for educational structures that can support the compensatory education provided in schools. Overall, our research showed that there are commonalities in the ways principals describe the
effects of crisis on children, parents, teachers and school function. However, there are different explanatory models employed by principals to account for the effects of crisis, showing in many cases the understanding of structural constraints, in a few cases the parents’ responsibility, while some employ a mixed model. A further study would be interesting in order to relate the ways principals understand and reason the effects of crisis to the strategies they employ to confront these effects.

References


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RELIGION, EDUCATION AND THE CONFIGURATION OF NATIONAL IDENTITY IN THE OTTOMAN MILLET’S CONTEXT: A CASE STUDY OF THE BLACK SEA ORTHODOX COMMUNITIES (1453-1923)

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Abstract

The present research focuses on the relationship between religion, nationalism and education in the Greek-Orthodox communities of the Rum millet during the period 1453-1923, within the framework of the Ottoman Empire. The research period extends until the Treaty of Lausanne (1923), when the visions and high expectations of modern Greek nationalism were lost. The choice of the ottoman Black Sea area as a field of research is related to the fact that it is one of the few areas where it is possible to follow the conversion process of the Rum millet’s identity into a national one on a broader scale. The present study uses the historical interpretive method. Finally, the study discusses the conversion process of the “Rum millet’s” identity into a Greek national identity through the mechanisms of education, and attempts to interpret the impact on the goals of Orthodox education, within the Black Sea communities.

Keywords: religion, education, national identity, Greek Orthodox community, millet

1. Introduction

This research is based on the rational assumption that both nations, and the elements of their cohesion and continuity, are structures that characterize modern societies (Anderson 1991, Gellner 1983, Hobsbawm 1990). Therefore, we do not use nations as instantiated entities but prefer to use identities as a research tool (Brubaker 2004: 115-127). When referring to identities, it is worth noting that these are treated as social constructions (Jenkins 1994: 197-223, Brubaker & Cooper 2000: 1-47) and as a subject of negotiation concerning their constitutive elements, that is to say their values, symbols and stereotypes. Consequently, our historical process refers to the identities’ construction, reconsideration, reconfiguration and reconstruction, since it is assumed
that the latter are in constant redefinition, according to the prevailing circumstances.

The main objectives of this research are: a) the interpretation of education’s structures and functions within the ottoman context of the millet, with a focus on the Greek-speaking Black Sea communities b) the monitoring of the processes that led to the establishment of the Greek-Orthodox communities and to the development of Greek-Orthodox education during the Tanzimat period c) the description of the nationalization process within the Greek-Orthodox communities that paved the way for the conversion of the Rum millet’s identity into a Greek national identity and consequently strengthened the demand for a Greek national school to be established in the Black Sea region d) the identification of the main parameters (as regards social strata, their influence and their strategic choices) that contributed to the dissemination of the demands and claims of Greek nationalism among the various levels of organized society in the early 20th century.

Thus, according to the above, the structure of this study is organized as follows: at first, we refer to the Orthodox Grecophone education promoted by the Greek-speaking Orthodox ethnie of the Rum millet; next, we describe the education of the Greek-Orthodox communities during the Tanzimat period; and finally, following the Young Turks’ revolution (1908), we examine Greek national education within the Greek communities (Exertzoglou 1996).

As regards our focus on the Black Sea Orthodox communities, it is important to note that they were chosen in order for us to observe the relationship between religion, education and identity formation on a wider scale (Scott 1991, Brunder & White 1997: 161-208). In fact, it is accepted that in the case of the Black Sea communities, this review can cover the period from the establishment of the Byzantine Empire of Trebizond (1204) to the Treaty of Lausanne (1923), when the Black Sea refugees began their journey back to the Greek state burdened with their “traumatic memories” (Agtzidis et al. 2010).

By the Empire of Trebizond, we refer to the successor state of the Eastern Roman Empire (Byzantine Empire) founded in 1204, as a result of the capture of Constantinople by the Fourth Crusade, which later fell into the hands of the Ottomans in 1460. An attempt to identify the most famous intellectuals of the Empire of Trebizond from the 11th to the 15th century leads us to the following few names: John Xifilinos from Trebizond (Miller 1969), who was the most famous intellectual of the Empire during the 11th century, and Patriarch Georgios Xifilinos, who was its best known representative in the 12th century (Balsamon). In addition to these, the scholars that left their mark on the 14th century were Georgios Chrysokokkes, an astronomer and physician (Pingree & Scarborough 1991), and Michael Panaretos, “the chronicle writer” (Vasiliev 1940-41: 333-338).

After the capture of Trebizond and the dissolution of the Empire, serious dilemmas faced the scholars who originated from the Empire of Trebizond, since they had to choose between the eastern or western model of Christianity and culture. The most renowned scholars of the 15th century were Georgios Amiroutsis (Chasiotis 1974: 248-253), Cardinal Bessarione (Geanakoplos 1962), who was born in Trebizond, and Georgios of Trebizond. It is a fact that the process of assimilating the millet’s values was rejected by the last two scholars, who chose to embrace the Catholic doctrine and serve the
values of western humanism. Their choice is worth noting as of particular interest, but requires no elaboration, since it bore no further consequences.

2. The Education of the Rum Millet’s Greek-speaking Ethnie (1453-1856)

Right after the fall of Constantinople, conditions were ripe for the foundation of Greek schools. More specifically, Sultan Mehmed II, also known as the Conqueror, granted the veratia, i.e. privileges (Runciman 1968), to the Orthodox Patriarch, and the latter was recognized as the highest religious and political leader of all Orthodox subjects (Hammer-Purgstall 1834, Kardaras 1996, Karpat 2001). Consequently, the fact that the religious communities of the millet all lived together under the framework of ottoman legality, meant that the populations of the former Eastern Roman Empire acquired the identity of Rum (Daniilidis 1934, Yannaras 1992, Vakalopoulos 1961), that is to say the identity of the Orthodox population who were subject to the religious jurisdiction of the Ecumenical Patriarch (Turczynski 1971: 468-486). The Rum millet included large segments of people who belonged to different ethnies (Clogg 1982: 114-134, Roudometof 1998: 1-48, Smith 1986, Smith 1991).

As a result, from the 15th to the 19th century, religion was the essential criterion for the Christians’ differentiation, following their enslavement to the ottoman throne (Horowitz 1985, Kitromilides 1996” 163-169). It is of course taken for granted that, within this framework, the Word of God and the Holy Books had created the conditions for the establishment of an ‘imagined’ Orthodox community, which one could only join with the mediation of the Orthodox clergy, who were part of a secularized social hierarchy.

In fact, regarding the field of ideology, from the 15th to the early 19th century, it is important to note that the western version of Christianity had already acquired the dimensions of a sect, while Greek-speaking scholars had come to the conclusion that the survival of “Orthodoxy” presupposed the context of an ottoman millet, which would not only preserve the religious identity of the Rum millet, but the principles of Greek-speaking Orthodox education as well. Consequently, within this spiritual context, Orthodox scholars were raised according to a secular education based on Orthodox values that accepted the millet’s structures, and which awarded the role of head of the Orthodox millet to the Ecumenical Patriarch.

More specifically, the Patriarch’s privileges included his competency to organize the Orthodox Grecophone education that served the purposes of the Orthodox Church. This Orthodox Grecophone education (Exertzoglou 2010) would ensure the successful operation of the Orthodox Church, since not only were the members of the Orthodox clergy trained in the schools founded, but also the teachers who would teach future generations to read, i.e. the New Testament written in Hellenistic Koine (Sidney 1987, McLean 2014) or who would train the clergy and cantors in performing their ecclesiastical duties.

In what concerns the prevailing conditions in our area of research, namely in the Black Sea region, what we also need to include are the flourishing schools of the Black Sea monasteries that promoted the intellect and contributed to the creation of educated men, such as clergymen, scholars and priests (Kyriakides 1897, Paranikas 1867). More
specifically, thanks to the schools founded at Virgin Mary’s Soumela monastery (Sümela Manastırı) (Kyriakides 1898, Talbot 1929-1930: 72-77, Filippides 1933: 468-480, Janin 1975, Bryer & Winfield 1932, Lymeropoulos 1999, Russell & Cohn 2012), Vazelon monastery (Alexakis & Mavromatous 2009:151-166), Panagia Theotokos monastery, Goumera monastery, Saint George Peristereota monastery (Kuştul Monastery) (Bryer & Winfield 1985) and Houtoura monastery (Bryer 1980), young people living in the Black Sea region were educated and trained, and later worked at the schools and Orthodox churches of the area, thus forming a class of intellectuals with a Greek Orthodox education who contributed to the spiritual progress of the region (Kyriakides 1897).

As regards the parameters that favored the operation of the Greek Orthodox schools in the Black Sea region, we should also take into account the adjacency of the area with the intellectual centers of the Danube Hegemonies, that had been ruled by Phanariots (Greek officials of the Rum Patriarchate), who had established, supervised and encouraged the operation of the Greek Orthodox schools under their jurisdiction. This fact, in conjunction with the financial growth of the empire, had shaped the prospects for the development of the educational system.

Furthermore in the 18th century, of particular importance was the economic rise of Chaldea’s Greek Orthodox community (Fotiadis & Iliadou-Tachou 2007), which was owing to the privileges granted to the local metallurgists, who contributed to the economic support and dissemination of education to the urban centers of the Black Sea and its neighboring communities (Triantafyllides 1961). This regional elite was under the spiritual influence of the Ecumenical Patriarchate, which had acquired the dimensions of an intellectual Orthodox version of Christianity, known as the “Orthodox commonwealth” (Kitromilides 2007), and had begun to spread throughout Asia Minor.

The first form of primary education, established between the 17th and 19th century, were the monks’ elementary schools (Monasteries of Peristereota, Houtoura and Soumela), which used a specific curriculum in order to achieve three goals: practice the alphabet using wooden plates, teach the holy books (the Apostles and the “Gospel”) and provide training on the liturgical books (“Octoihos”, “Psaltiri”). In contrast to the lower classes, the bourgeois class used to provide home tutoring to their offspring. The level of study and the subjects taught varied greatly. Prior to 1870, primary schools (named “Paidagogeia” or “Grammatodidaskalia”) were founded in the Black Sea in order to socialize Greek Orthodox students and teach them the Greek language. These first elementary schools did not have any pre-defined structure or qualified teachers. The primary schools in the region were ‘mutual instruction” schools and bore the burden of elementary education for over 10 years in the towns and cities, while providing a low-cost educational system.

2.1. From Orthodox Grecophone Education to the Education of the Greek Orthodox Communities (1830-1908)

According to Anthony Bryer, the re-opening of the ‘Trebizond-Tabriz” route in 1830 and the resulting favorable impact on external trade can be considered far more significant than the reforms, since the former were the primary factors that contributed to a change in circumstances for the Greeks of the Black Sea: thanks to the new state of affairs, a bourgeois class began to take shape, and by 1856 the region had already
emerged from the rather feudal conditions of the previous century and had started to enter the modern world (Bryer 1980).

A few years after 1830, a period of reforms, also known as the Tanzimat period, began for the Black Sea Greek Orthodox communities (1860-1908). Through legislative provisions, such as Hatj-serif (1839) and Hatj- Houmagjoun (1856), special privileges were given to non-Muslims by the Sultan, who was economically dependent on the west (Lafi 2007). In essence, the ottoman reforms aimed to integrate the various cultural and religious millet communities under the umbrella of “ottomanism”, in order to discourage the creation of any future nationalist movements within the Empire (Reid 1999: 173-208). In the case of the Black Sea communities, which were subject to the ecumenical throne of Constantinople, the institutional educational framework was defined by the National Regulations. According to the latter, the educational structures of the Greek Orthodox community would be determined by the Sublime Porte, which exercised a supervisory role, by the Patriarchate, which would oversee compliance with the National Regulations and, by the local elites, who would enforce the implementation of the regulations voted within the framework of the organized communities (Papastathis 1984).

More specifically, the role of the Sublime Porte could be considered an administrative one, since it was responsible for the appointment of the regional administrators. On the other hand, the Patriarch’s intervention in the communities of the Black Sea was mitigated, whenever the bishops, who belonged to the intellectual milieu of the Patriarchate, had the required influence to take their own initiatives to support their flock. Moreover, on a social-community level, the bishops of the Black Sea acted jointly with the middle and higher social strata, and served the objectives of modern Greek nationalization.

During the Tanzimat period, societies responded to the demand for a modern educational system through the emergence of a variety of schools and administrative models (Dalakoura 2011). Moreover, the implementation of the relevant reforms within the recognized communities required the support of the whole of society. The middle class of the Black Sea communities played a decisive role in this direction. The establishment of the middle class should be attributed to its members’ migration to Russia, who went there to find work. The money they saved was then sent back to the families they had left behind, through the Greek banks of Kapagiannidis, Theophylaktos or Fostiropoulos. Thanks to these savings, the middle class created a strong social presence (Fotiadis & Iliadou 2007). Within this context, it should be noted that the social and economic context of the Black Sea communities was characterized by a constant downward mobility. Nevertheless, the middle class very quickly managed to develop its social consciousness, build its national self-determination and strengthen its position within the community (Triantafyllides 1961).

An equally decisive role in the organization of Greek Orthodox education was played by the upper class. It consisted of those who had settled earlier in tsarist Russia and had made money through trade, the exploitation of raw materials and productive resources, or by renting land. The contribution of its members involved sponsoring the establishment of schools, churches, charitable institutions, and also undertaking special large-scale initiatives for charity, that added to the prestige of the members’ families.
(Kanner 2004). It is believed that during the era of nationalism, the upper class within the Greek Orthodox communities agreed to cooperate with the lower classes in the management of the educational system and in all other community functions.

During the period 1860-1870, the number of ‘mutual instruction’ schools grew rapidly. These schools were later transformed into primary schools for boys, thanks to Konstantinos Xanthopoulos, a scholar of the Trebizond community who studied at Athens University and applied the ‘lecture model of instruction’ for the first time at the Frontistirion of Trebizond in 1846. Another example is the ‘mutual instruction’ school which operated at Akritas monastery (Kandilaptis-Kannis 2002) before 1866, and was financially supported by the local residents. The final category includes the Black Sea seminary schools. During the first period (1872), Theoskepastos Seminary was founded by an association and directed by Chrysanthos N. Hierocles (Hierocles 1883). The school operated until 1876. Another seminary also operated in 1910 at the monastery of Prasareos (Fotiadis & Iliadou 2007: 284, 287) and had four grades, according to the regulations.

Schools in rural areas were divided into two categories: a) central schools established at the centre of an extensive area, and b) schools which were sponsored and supervised by associations and fraternities, like Xenophon (Fotiadis & Iliadou 2007: 230-237), where the supervision was carried out by inspectors from Trebizond.

During this period, most of the primary schools in the Black Sea were community schools. Their functions were defined by community regulations, and they were supported by associations and fraternities or by wealthy individuals who belonged to the Greek Orthodox community. For example, the Frontistirion of Trebizond operated according to the new community regulation, which resulted from the opposing parties' reconciliation in the community in 1897 (Chrysanthos 1933: 468-480) and later in 1909 (Fotiadis & Iliadou 2007: 119-120). The regulation of 1909 dictated the establishment of the following community institutions: a) a 12-member School Council, which was responsible for the school programme, the school regulations, the budget and for hiring school personnel, and b) the School Board, which was elected annually. The School Board was in charge of the schools’ administration. Most were urban schools founded after 1880, when the Greek Philological Association of Constantinople (Stavrou 1967, Giannakopoulos 1998, Vassiadis 2007) decided to abolish the intermediate level of the Greek schools (which consisted of the first 3 grades of present-day Gymnasium) and to establish the conditions for a self-reliant elementary education. In the period 1884-1885, during a meeting of Petros Konstantinidis and Konstantinos Xanthopoulos, the creation of a full 6-grade urban school was decided (Grammatikopoulos 1885c). This school first operated at the Frontistirion of Trebizond in October 1885, aiming to prepare students to join the production system after completing the first 3 grades. It also provided its graduates with the option of entering secondary education after the initial 6 years of schooling.

Certain primary schools of that period were charity schools: These schools were sponsored by wealthy Greek patrons, associations or fraternities (Triantafyllides 1961: 134). For example, Psomiadios School in Ordu (Kotiora) was one of the best known schools of this type (Fotiadis & Iliadou 2007: 126, 479). The institutional framework of this school was determined by a Patriarchal sigillum, as regards its supervision and
administrative status. Another example was the Girls’ School of Sinop (Sinopi) founded by a merchant named George Souvaltsis (Fotiadis & Iliadou 2007: 194). There were also private schools operating in the region. To this category belong the Catholic school of Freris in Trebizond and the American College of Merzifon (Merzefounta) (Erhan 2015: 49-89, Iliadou-Tachou 2005: 23-47) which was established in 1867 and was renamed Anatolia College of Thessaloniki after 1922. It was a primary and secondary school that also included a primary school for girls (Anonymous 1901).

The first model of a secondary school was the tuition center of Trebizond (Frontistirion of Trebizond). The term “tuition center” is given to a primary school which includes some grades of secondary school, with the aim to operate as a full six-grade Gymnasium. This school type was replaced by a four-grade Gymnasium in the period 1880-1883 and only reached a six-grade status in 1883 (1885c). A full six-grade Gymnasium was established in Samsun (Amisos) in the first decade of the 20th century, when the bourgeoisie decided to develop the “urban school” model, in order to address the practical requirements of everyday life. In contrast, the tuition center of Gümüşhane (Argyroupolis) never became a full 6-grade Gymnasium, but included instead a primary school, a secondary “Greek school” and some grades of high school (Kandilaptis-Kanis 1970). The number of grades increased or decreased depending on the local community’s financial situation. In 1863 (Kyriakides 1895: 199), the tuition center of Giresun (Kerasounta) was established, which consisted of 5 grades in 1870 and a 6-grade High School. In 1880, the gradual abolition of Greek schools in the Black Sea region began, since the model of the 6-grade urban primary school and 6-grade Gymnasium model prevailed. The reasoning behind the Gymnasium being instituted was that, along with curriculum courses, schools should also teach essential vocational skills to children, such as foreign languages and commercial courses. The pragmatic orientation of secondary education was noted by the Greek Philological Association of Constantinople. After the abolition of the Greek schools, 3-grade (semi-) high schools were maintained, particularly in areas where it was impossible to create a 6-grade Gymnasium (Grammatikopoulos 1880a). The former tuition center of Trebizond was also downgraded to a 3-grade (semi-) Gymnasium in 1880-1881, and remained a 5-grade Gymnasium due to the downgrading and decline of trade (Grammatikopoulos 1880b). In Samsun (Amisos), the secondary School was a 6-grade school; the first 3 grades functioned like a Greek school and the other three were Gymnasium grades (Fotiadis P.A.). This special type of 6-grade high school was known as “Greek school”, according to the school regulations of Samsun (Amisos) for the year 1890.

Pre-school educational institutions were founded in the Black Sea area around 1880: i.e. in Sinop (Sinopi) in 1875-76, in Trebizond in 1880, Theofylakteio Nursery in the same area in 1897, and one in Gümüşhane (Argyroupoli) in 1906. Nursery schools proliferated in the late 19th and early 20th century. So, while in 1880 there were only nursery schools in Trebizond in the parish of Jesus Christ and Exoteichon (Ierocles 1880), in 1897 the Theofylakteio nursery school was established there at K. Theofylaktou’s own expenses, while a nursery school was founded in Gümüşhane (Argyroupoli) only in 1906. It is stated that this nursery school operated according to a system used by relevant schools in Greece, namely the methods of Frobel; it is unknown who and under what circumstances brought these methods to the Black Sea. The disadvantages of pre-school
education in the Black Sea were the housing of many infants in an inappropriate environment and the use of memorization as a teaching method. The expansion of pre-school education took place from the late 19th to the early 20th century (Christakou 1919).

The necessity for women to be educated became clear in the second half of the 19th century and served the social and cultural needs of the community’s urban class. Indeed, by providing education for young girls, the Greek urban class attempted to strengthen its ethnic Greek identity (Dalakoura 2011). The first period of girls’ education in the Black Sea was influenced by the economy’s growth and western principles concerning gender equality and social progress. Within this framework, the Greek Orthodox millet was transformed into a state mechanism which was self-administrative, decentralized and autonomously organized. As a result, a girls’ school network was founded (Kami 1964: 378-380). Girls’ schools were named Parthenagogea and were established between 1846-1870 in the urban centers of the Black Sea, such as Trebizond (1846), Gümüşhâne (Argyroupolis) in 1873, Giresun (Kerasounta) prior to 1873, while educational fraternities were founded in remote communities, whose objective was the establishment and maintenance of girls’ schools (Greek Philological Association of Constantinople 1872-1873). Through the 1870s, the girls’ schools evolved into secondary girls’ schools and prevailed in the urban centers of the Black Sea. The second period of the girls’ schools’ operation began in 1870.

The central girls’ schools of Trebizond, Sinop (Sinopi) and Gümüşhâne (Argyroupolis) represented examples of secondary girls’ schools. The structure of the secondary girls’ schools in the Black Sea first included a preparatory class, which both boys and girls attended. It was in fact a kind of nursery school for students to prepare for the Greek language courses taught at primary school. Next, the secondary girls’ schools included a primary four-grade ‘mutual instruction’ school for girls, which after 1880 was replaced by a six-grade primary school; it also included a secondary Greek school ranging from one to three grades, depending on the circumstances (Triantafyllides 1961: 134). In some cases, a boarding house was added to the girls’ school, where the interns were not only taught their lessons according to the curriculum but also learned dressmaking and embroidery. At times of crisis, as happened in the case of Gümüşhâne (Argyroupolis), the boys’ and girls’ schools were consolidated and they all attended classes together.

A secondary girls’ school was never established in the Black Sea area in the common sense of the word, i.e. as a school that included a six-grade Gymnasium and pedagogical training classes. Consequently, the secondary girls’ schools in the Black Sea region included a pre-school level, a primary school level and the first level of secondary education, namely a Greek school.

In terms of the administration and management of the girls’ schools in the Black Sea, we can distinguish them into two main categories: a) community schools, run by organized community bodies, i.e. the girls’ school in Argyroupoli and the girls’ school in Trebizond were both community schools, as their operation was determined by community regulations, and b) private schools, founded mainly by foreign religious missions, such as the American College of Anatolia for girls in Merzifon (Merzefounta) (Mc Grew 2015:49-89).

Greek national press first appeared in the Black Sea in the late 19th century.
Between 1880 and 1920, twenty-nine newspapers, seven magazines and some annual calendars were issued (Agtzidis1996: 267-293). Various pedagogical considerations, frequently noted in the newspapers of the Black Sea, reflected what was expected of education. These can be grouped into the following thematic categories: a) the purpose and objectives of schools b) the language issue and “educational demoticism” (the use of popular Greek in the framework of the school curriculum) c) the meaning of “educational demoticism” d) the training of teachers in the East e) educational textbooks f) the social question in relation to school textbooks g) education and the ideal of the modern Greek. The most crucial views concerning the purpose and goals of the schools were influenced by modern Greek nationalism and used the popular Greek language as an instrument to achieve their objectives. These arguments corresponded to the ideological movement that dominated the modern Greek state, which was represented by a large number of progressive intellectuals.

More specifically, Efxinos Pontos magazine had already published in successive issues, from 2 August 1880 (Grammatikopoulos 1880a) to 11 October 1880(Grammatikopoulos 1880e), articles on primary schools, on welfare for the schools of the Homeland (Grammatikopoulos 1880d), on girls’ schools (Grammatikopoulos 1880c), on the Greek Tuition Center (Grammatikopoulos 1880e), which were attributed to Theodoros Grammatikopoulos, and also suggested that children’s education begin from infancy. Such training, according to the writer, would enable a young person to fulfill their highest destination in life. This statement should be interpreted within the context of the Greek nationalism of that period. The primary school curriculum, promoted by the authors of these newspaper articles, included reading, writing and mathematics, ‘language technology’, the memorization of elementary geography and indoctrination in religious education and Greek history. These suggestions were also linked to modern Greek nationalism, since the said courses belonged to those described by the relevant literature as national configuration courses (Ranum 1975).

For a long period –almost until 1880- the mutual instruction system, also known as the Bell-Lancaster method, was implemented in the Black Sea due to its low cost. However, in 1880, the Greek Philological Association of Constantinople expressed the view that the former should be abolished in favor of the lecture model of instruction, delivered to passive students grouped into classes by age, without regard to differences in aptitude (Grammatikopoulos 1880a). The considered advantages of this system were: on the one hand, the creation of more jobs for professional teachers and, on the other, its correspondence to the needs of the new urban-nationalized strata, as regards their higher education prospects and the establishment of a national elite. According to the Association, the introduction of six-year primary education and six-year secondary education were necessary preconditions for achieving the educational objectives set by the nationalized Greek Orthodox communities. Consequently the abolition of the first level of secondary education, namely the Greek school, which operated until that time, was deemed essential. The result of this intervention to the community’s education was the introduction of ancient Greek language courses in the sixth grade of primary school and a review of the secondary education curriculum towards a more practical dimension, through the introduction of both commercial and foreign language courses. However, according to the surviving primary sources, the goals of the nationalized Greek
Orthodox communities were thwarted by the lack of suitable teachers and textbooks.

At the same time, we should also mention the particular importance of Bishop Chrysanthos Filippides’ references to the objectives that must be achieved through primary and secondary education, as reflected in Comneni newspaper, which he published in Trebizond (Filippides 1916b) The special significance of his views is attributed to his dual capacity as religious and political leader of the Greek Orthodox Black Sea communities (Lampsides 1995-1996: 239-265). In reference to the purpose and character of secondary education in his article High schools and the Greek language (Filippides 1916a), Chrysanthos argued that a redefinition of secondary education’s objectives should be taken seriously into account, based on the connection between the ancient Greek language and culture and the modern achievements of western civilization. In addition to his views regarding the need to adapt to the western model of development, the professors and students of the American College also envisioned the establishment of a Greek western elite in a modernized Ottoman society (Cage 2015).

Furthermore, the association between the progress in education and the modernization of the economic structures of Ottoman society was expressed in the Greek-speaking press of the Black Sea and went along with the demands of the nationalized groups within Orthodox society. More specifically, Theodoros Grammatikopoulos (Grammatikopoulos 1880a) believed that developments in education were dependent on the growth of trade, since economic prosperity could create the necessary conditions to provide financial support for schools (Grammatikopoulos 1880a).

Moreover, as regards the prevalent views on the nature and importance of early childhood education, it is worth highlighting a relevant article in Astir of Black Sea (1885) magazine. The article underlined the contribution of nursery schools to children’s development, while stating that there was a need for nursery schools to be established in the Black Sea region; a precondition for this, however, was to secure adequate and stable resources (Grammatikopoulos 1885a).

Also of particular interest were the various discussions on the character and purpose of women’s education in the Black Sea Greek Orthodox communities. An insight into the educational discourse and pedagogical philosophy related to women’s education in the Black Sea is provided in the following documents on education: a) the texts of great male educators who taught in the schools of the Black Sea (K. Xanthopoulos, George Kyriakides, P. Triantafyllides), b) indirectly through the anniversary addresses of women educators (Aspasia Zisis, Zoi Melisova Helen Efstratios), c) directly through the pedagogical positions expressed in lectures conducted by professors of the American College of Anatolia (Miss Cage, Krikorian) (Krikonian 1914) d) through articles concerning women’s education published by the newspapers of the Black Sea; such as the original texts of N. Kapetanides, Theodoros Grammatikopoulos, Ioannis Parcharides or reprinted articles focusing on Greek pedagogical thinking and philosophy.

Of particular importance were the pedagogical aspects of women’s education. The views expressed in 1885 in the article Women’s education (Parcharides 1885) concerning the nature of women’s education belonged to the director and editor, I. Parcharides. According to him, female education was necessary both to achieve harmony between men and women, as well as husbands and wives, and in order for
future generations to be well-educated. Similar attitudes were reflected in Pontos magazine, and represented the ideas put forward by the Professors of the American College of Merzifon (Mc Grew 2015: 49-89) during their lectures. According to them, the education of women should differ from that of the men in order to conform to the different social roles that have to be performed by women and men in the urban community. Their ideas can be summed up into one sentence: women have to be educated according to their destination in life (Iliadou-Tachou 2008: 153-172).

Consequently, according to the schools’ regulations and pedagogical discourse, the main objective of women’s education was to focus on moral issues and their national integration, according to the dominant stereotypes in society. The teaching staff were also selected and checked according to specific criteria. As a result, women’s education in the Black Sea aimed to encourage an appropriate conduct, characterized by modesty, commitment to family values and respectfulness. During the nationalization period in particular, women’s education had to take into account the indoctrination of girls in Greek Orthodox ideals in order to prepare future generations to construct their national identity. According to the women educators’ point of view, the girls’ schools in the Black Sea were national schools that should not be operating as store window displays (Kapetanides 1919).

2.2. From the Education of the Greek Orthodox Communities to Greek National Education

After 1908, the ideological movement of Turkism evolved into a dominant ideology in the Ottoman Empire; under this ideological framework, the conditions were created for the pursuit of Turkish nationalism (Arnakis 1960: 21-32, Berkes 1959, Georgeon 1980, Zurcher 1984). Turkish nationalism was considered a top priority in order to deal with other emerging nationalisms within the empire; it targeted the non-Muslims in an attempt to force them to become integrated.

These changes had an impact not only on the field of ideology but also on state structures. The promotion of a modernized model of westernization by the Young Turks led to a secular constitutional state, which attempted to re-define the Orthodox millet’s status (Anagnostopoulou 1998) and contributed to the direct questioning and progressive suppression of the Patriarch’s privileges, which were related to the millet’s traditional ethno-religious differentiation. In fact, the process of institutionally restricting the Patriarch’s jurisdiction began in 1910, through the establishment of legal provisions concerning the operation of schools and teachers’ professional rights (Anagnostopoulou 1998: 462-464). Within the new state, education had to be claimed as the civil right of each individual nation.

Right after the emergence and spread of Turkish nationalism, the defense reflexes of modern Greek nationalism were activated. Within organized communities, initiatives were undertaken to rally all Greek Orthodox members, and for this purpose, various competences were also assigned to people belonging to the lower social strata. The increased number of community members who undertook educational responsibilities contributed significantly to strengthening the national cohesion and solidarity of the community. The educational and charity associations founded during this period could be considered an outcome of this cohesion.
Within the field of ideology and under the influence of the concepts of nationalism, the idea of a Greek national school was born. The principal representative of the idea of founding a national school was Nikos Kapetanides and his newspaper “Epohi” (Trebizond 1919). Kapetanides seemed to be influenced not only by modern Greek nationalism but also by the Greek educational reformists, as he took into account the issue of reforms in education and particularly in the language of education.

3. Conclusions

This research focuses on the relationship between religion, education and the shaping of national identities within the Black Sea Greek Orthodox communities in the Ottoman framework of the millet. It is obvious that in this context, the relationship between religion, nationalism and education is particularly important. This is because the religious cultural identities of the Rum millet in the Ottoman Black Sea determined the nature of the type of education established in that area; its main components were Greek-speaking culture and Orthodoxy in its cultural and religious dimension. Consequently, at the outset, primary schools were founded in the region by officials of the Orthodox Church or intellectuals who belonged to its spiritual environment and mainly served its liturgical needs. Furthermore, the secondary schools established in the urban centers of the Black Sea region created a useful, popular and clerical elite, which was integrated within the millet’s context and also served the goals of the Church.

While the conditions for the institutionalization of the reforms were being created, the schools’ responsibilities were assigned to representatives of all social strata within Orthodox society. It is obvious that the needs of modern Greek nationalism required the participation of the lower classes also in all community functions, and especially in community education. By referring back to ancient times, this education strengthened the concept of national continuity, which could be considered as the most crucial factor in the nationalization process. Within this new framework, the nationalized communities supported the demand for a national school to be established that would not serve the purposes of the Church but those of Greek nationalism.

The regional or local elite in the communities of the Black Sea, which could be considered the product of the Greek Orthodox education system established during the reform period, were primarily responsible for this nationalization process. In fact, the members of this elite took a critical view of the past and created a national self-consciousness, while accelerating developments not only on an ideological but also on a political level and in the diplomatic field.

It is therefore easy to reach the conclusion that the main supporters of modern Greek nationalism in the Black Sea communities were: a) the bourgeoisie, whose financial interests coincided with the potential foundation of a Greek state in the region b) the elite of teachers, scholars, journalists and columnists who had been influenced by Greek educational demoticism and could bring contemporary ideological content and historical depth to the ideology of modern Greek nationalism, and c) political authority figures, such as Bishop Chrysanthos, who considered the foundation of a Greek state in the Black Sea region as the most important goal of modern Greek nationalism, and envisaged himself as its potential leader within the new state of affairs.
Based on the above, we must accept that the educational system of the Greek Orthodox communities in the Black Sea and in the Ottoman Empire was broadly transformed into a national Greek system during the Tanzimat period and became a product of modern Greek nationalism, until the end of the Asia Minor campaign. Nevertheless, the Treaty of Lausanne (1923) put an end not only to such strategies shaped by Greek nationalism, but also to the education of the Greek Orthodox communities of the Ottoman Empire as a whole.

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STUDENTS’ INTERPRETATION OF VARIABLES AND THE PHENOMENAL SIGN OF ALGEBRAIC EXPRESSIONS

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Abstract

Students face a series of difficulties understanding the concept of variable when introduced to algebra. This study focuses on one of these difficulties namely students’ tendency to think of literal symbols, which stand for variables in algebraic expressions, to represent only natural numbers. The study tested the students’ understanding of the numerical values of variables in algebra, and its relation with the way they interpret the sign of the algebraic expressions. 110 10th graders were asked to assign numbers to the variables of two given functions, in order to make their graph, and also to determine the sign of algebraic expressions that appeared in inequalities and functions. The results supported the hypothesis of the study, that students have a strong tendency to interpret variables as standing for natural numbers only, and this tendency appeared to be related with their tendency to misinterpret the phenomenal sign of the algebraic expressions as always being identical with their actual one. The phenomenal sign is the sign an algebraic expression appears to have as a superficial characteristic of its form, i.e. students tended to think of -2x-1 as a negative quantity, and 4+3x as a positive one.

Keywords: literal symbols, variables, number concept, natural number bias, phenomenal sign

1. Introduction

In the transition from arithmetic to algebra students face many difficulties with the new concepts and symbols introduced to them. The students seem to struggle understanding especially the concept of variable, which is literal symbols that are used in algebra to represent any real number; this is also called real variable. This study tested some aspects of the students’ difficulties with the concept of variable in algebra, namely the kinds of numbers students tend to think that the variables represent, and the consequences this tendency may have in the way the students interpret the sign of the algebraic expressions that contain literal symbols.

1.2 Previous studies

There is an extensive research that focus on students’ difficulties to understand the concept of variable, in their transition from arithmetic to algebra, which usually takes place at the end of primary school. In general, many researchers agree that algebra is more structural and abstract, where transformations take place with/on algebraic expressions, and not with/on specific numbers as it is in arithmetic, which is a system
that is more procedural and concrete and where transformations take place in specific numbers resulting in numerical responses (Booth, 1984; Carpenter, Corbitt, Kepner, Lindquist, & Reys, 1981; Herscovics, 1989; Kieran, 1992; Nathan & Koellner, 2007). Such fundamental differences between arithmetic and algebra are often characterized as the “cognitive gap” (Herscovics & Linchevski, 1994), “cut point,” or “didactic cut” (Filloy & Rojano, 1989), and they may account for a series of mistakes and difficulties in students’ learning of algebra (Hart, 1981; Stacey & MacGregor, 1997). These differences are reflected in the systems of notations that are used, i.e., specific numerals in arithmetic vs literal symbols that stand for any number in algebra, and students refer explicitly to the use of literal symbols as their main problem with algebra, saying that they understood mathematics until literal symbols appeared (Sackur, 1995). The concluding remarks of a selected review of the studies that focused specifically on how students understand variables when they are introduced to algebra could be summarized in the following.

Initially, students tend to interpret literal symbols not as representations of numbers but as abbreviated names of objects, i.e., “b stands for bananas.” Students appear to accept quite easily the notion that literal symbols are used in algebra to represent numbers; however, they show a tendency to interpret them as symbols that represent a specific unknown number and not as any number within a given set, which is often called as generalized number. Only later students appear to accept variables as generalized number, and even later that variables could also stand for other variables or even relations between variables (Booth, 1984; Collis, 1975; Kieran, 2007; Knuth, Alibali, McNeil, Weinberg, & Stephens, 2005; Kuchemann, 1981).

There are many theoretical frameworks that have been used in the past to explain students’ ways of constructing the concept of variable, such as those that focus on the duality of mathematical ideas (Sfard, 1991) i.e., as a process and as a product of this process that can also stand on its own right as a self-existent entity. Other researchers have proposed similar models such as the process/concept duality (Gray & Tall, 1991), the process/structure distinction (Kieran, 1992), and the APOS theory, which is an acronym of the sequence: action, process, object, and schema (Dubinsky, 1991). According to these approaches, students initially understand mathematical ideas procedurally and only after practice on the procedural level students may develop a higher level of understanding, that is, the structural aspect of a mathematical idea.

However, until recently the research had not systematically questioned the kinds of numbers students tend to think literal symbols may represent after the notion of generalized number has been achieved, although acknowledged by some researchers in the past (Booth, 1984; Graham & Thomas, 2000; Malara & Iaderosa, 2000). The issue at hand is whether the students are willing to accept any number as a possible substitution for variables by the time they have accepted variables to stand for the generalized number - as they have been instructed - or whether there are certain number hierarchies in the students’ minds, which allow specific kinds of numbers to be more preferable substitutions for the literal symbols than others. Is this development a one step procedure, or is it a gradual procedure, characterized by intermediate steps in which, for example, students tend to think of literal symbols as natural numbers only or positive numbers only? Also, what might be the consequences to the students’ everyday mathematical activity if they understand variables as representations of
numbers within a restricted range, and not as any real number, as they have been instructed? This tendency would of course reflect on certain domains of mathematical activity such as in interpreting the sign of algebraic expressions.

Based on the framework theory approach to conceptual change (Vosniadou, Vamvakoussi, & Skopeliti, 2008), that is mainly adopted here, it would be expected that when students are introduced to the concept of real variable, they would be reluctant to accept any real number as a possible substitute for the literal symbols, due to the deep-rooted constraints of their prior knowledge of numbers in arithmetic. In other words, a natural number bias would influence students’ substitutions of literal symbols in algebra causing further difficulties, even after the notion of generalized number has been achieved. The framework theory approach to conceptual change has been successfully used in the past to explain students’ difficulties when the number concept changes in fundamental ways from natural to rational and real numbers, from positive to integers, etc. (Vamvakoussi & Vosniadou, 2010; Vamvakoussi, Vosniadou, & Van Dooren, 2013; Vosniadou et al., 2008). Real variables as generalized numbers can be approached as another step in developing the number concept. From this perspective, the framework theory approach to conceptual change could be fruitfully used for examining the issue raised above of the way prior knowledge of numbers in arithmetic may affect the way students interpret the number values that variables can represent.

1.3 Students’ prior knowledge and the framework theory approach to conceptual change

Research in the development of the number concept has indicated that from early on students have organized their conceptions about numbers into a framework theory of the number, which resembles the mathematical concept of the natural number (Vamvakoussi & Vosniadou, 2010). The term theory is used to denote analytical tools for understanding, explaining, and making predictions about a given subject matter. From this perspective, the students’ framework theory of the number is a relatively coherent system of ideas, beliefs and background assumptions about numbers, organized into an integrated network of concepts, together with their notations and properties. The students’ alternative framework for the number provides an answer to the question: How is a number supposed to look like and how is it supposed to behave? (Vamvakoussi, Christou, Mertens, & Van Dooren, 2011)

The students’ tendency to use their alternative framework of numbers (which is organized around natural numbers) in situations where non-natural number reasoning is required, is often characterized as whole number bias (Ni & Zhou, 2005). This bias results in certain misconceptions and difficulties on the part of the students, which appear very frequently in the mathematics classroom. For example, students tend to think that numbers in general are discrete - meaning that every number has a unique successor (Vamvakoussi & Vosniadou, 2010) - and they can be ordered by means of their position on the count list (Gelman, 2000); that the more digits correspond to bigger numerical values (Resnick et al., 1989); that the bigger the nominator and the denominator of a fraction are, the bigger the fraction is (Mack, 1993); that addition and multiplication always make a bigger number, whereas subtraction and division
always make a smaller number (Christou, 2015; Fischbein, Deri, Nello, & Marino, 1985; Greer, 1994; Vamvakoussi, Van Dooren, & Verschaffel, 2013).

Considering that the students’ knowledge of numbers in arithmetic defines their background knowledge base, upon which they are supposed to construct their understanding of the concept of variable we would expect that there would also be a *natural number bias* which would affect the students’ tendency of thinking variables as representations of natural numbers only. This happens because the students’ tendency to use their alternative framework for numbers (which is organized around natural numbers) when reasoning about numbers, appears as far back as the 11th grade (Hodgen, Kuchemann, Brown, & Coe, 2010; Vamvakoussi & Vosniadou, 2010), long after they have been introduced to the concept of variable. Counting on these findings it would be logical to assume that the students would tend to construct their knowledge of variables as representations of natural numbers only. In addition, variables are not exclusively related by definition to the numbers they stand for, but also by association. A way for assigning meaning to variables and algebraic expressions which contain variables is by associating it with their references to numbers and relations between quantities (Resnick, 1987). Those issues were investigated in a series of empirical studies preceding the present one.

**1.3.1 Previous findings**

Previous studies have tested the hypothesis that the students’ framework theory of numbers, which is organized around natural numbers, would prohibit the students’ understanding of the mathematical concept of real variable, and would affect students to think that they stand only for natural numbers or specific kinds of non-natural numbers. This specific hypothesis was tested using different methodologies, i.e., open-ended and forced-choice questionnaires, and also individual interviews (Christou & Vosniadou, 2012; Christou, Vosniadou, & Vamvakoussi, 2007). The results from those studies provided evidence in support of this hypothesis. More specifically, the majority of students interpreted algebraic expressions such as $4g$ to represent mostly integer multiplicatives of 4, and fraction-like expressions such as $a/b$ to represent almost exclusively positive fractions, and they said that $-1, -2, -3$ etc. could not be assigned to $a$, and $-1/-2, -2/-3$, could not be assigned to $a/b$.

When students appeared willing to accept non-natural numbers as possible substitutions for the algebraic expressions, which contained literal symbols, in most of the cases, those numbers had the same sign with the *phenomenal sign* of the algebraic expressions. As phenomenal sign it is called the sign an algebraic expression appears to have as a superficial characteristic of its form (Christou and Vosniadou 2012). For example, the students appeared to think of algebraic expressions which did not have negative signs, such as $k+3$, to stand for positive values only, while, on the other hand, that algebraic expressions such as $-b$ to stand only for negative values. This tendency indicated another bias on the part of the students, named the *phenomenal sign bias*, which affected students to interpret the phenomenal sign of the algebraic expression to be the actual sign of the only numbers they can represent (Christou & Vosniadou, 2012).

The findings briefly reported above provided some indications that the phenomenal sign bias may be related to the natural number bias, meaning that the
students’ tendency to think of literal symbols as natural numbers may reflect on their tendency to think of the phenomenal sign of the algebraic expressions to be the actual sign of the only numbers they can represent. This kind of interpretation is in line with the theoretical framework of this study. When it comes to numbers, indeed, a minus sign denotes negative number value; this, however, does not apply in variables and algebraic expressions. This notwithstanding, the above-mentioned assumption, namely that the natural number bias and the phenomenal sign bias are interrelated, lacked strong empirical support.

1.4 Present study
The purpose of the present study is to test whether the phenomenal sign bias is related with the students’ tendency to think of literal symbols as natural numbers only. An additional purpose was to further test the students’ natural number bias when variables are presented in a specific mathematical context, that of functions. Our hypothesis is that students would tend to assign only natural numbers for the variables of the given functions, and that this would result in certain mistakes and incomplete graphs of the given functions.

In order to test the above research questions, specifically designed tasks that could measure the students’ natural number bias and also their phenomenal sign bias were administered to a sample of 10th grade students. The natural number bias was measured using tasks from the domain of functions and their graphs. The students were asked to fill in a table of values for two given functions in order to make the graph of each function. This was an indirect way to examine the kinds of numbers the students would tend to assign to the literal symbols, when they appear in a specific mathematical context, that of functions.

The phenomenal sign bias was also measured in an indirect way, using tasks from the domain of square root functions and of transformations with algebraic inequalities, which both offer a real and meaningful mathematical context for algebraic expressions to appear. The sign of the algebraic expressions defines the concept of the square root and also affects in significant ways the transformation process of solving algebraic inequalities. More specifically, the design of the tasks took under consideration that square roots are defined only for non-negative radicands, and that if both sides of an inequality are multiplied or divided by a negative quantity, the inequality sign has to change. Students who would show the phenomenal sign bias they would make specific mistakes on these tasks.

2. Method

2.1 Participants
The participants were 110 10th grade students from Athens, Greece. The age of the participants ranged from 14.5 to 15.5 years. The sample was almost equally divided to boys and girls (60 boys and 50 girls).

The participants have been introduced to the concept of variable in the 7th grade, and since then they have gained extensive experience using it in different mathematical domains such as in algebraic expressions to express relations between
quantities (7th grade), in algebraic equations, inequalities, and functions (in 8th, 9th and 10th grade).

2.2 Materials
In the first two tasks of the questionnaire the students were asked to make the graph of two functions: \( f_1(x) = 2x + 1 \), \( f_2(x) = \frac{1}{x} \) \( x \neq 0 \) in a provided empty frame after filling in a table of values with seven empty cells; Cartesian axes were not provided in the frame. In those two tasks the students had the opportunity to assign any number they wished to the variables of the given functions.

In the three items that followed, which asked students to evaluate the given solutions of three inequalities, students were presented with three algebraic inequalities completely solved by a hypothetical solver, who had followed a sequence of algebraic transformations. Students were given the following instruction: “One student at about your age solved a series of inequalities the way they are presented below. Watch carefully at all the steps he followed and see whether there were any mistakes.” Each transformation step was rationalized in accompanying comments, next to each step. The mistake was that when both sides of the inequality had been multiplied with the algebraic expression which appeared in the denominator of a fraction, the inequality sign changed (or did not change) according to the phenomenal sign of this expression. An example of such a task is presented in Figure 1.

**Figure 1: An example of a task concerning an inequality with a positive phenomenal sign solved with a deliberate mistake**

\[
3 < \frac{1}{2x} \\
\text{Step 1: } 6x < 1 \quad \text{(because } 2x \text{ is positive and we can multiply with a positive without changing the inequality sign)} \\
\text{Step 2: } x < \frac{1}{6} \quad \text{(because } 6 \text{ is positive and we can divide by a positive without changing the inequality sign)} \\
\text{Do you think this inequality was correctly solved? } \quad \text{YES } \quad \text{NO} \\
\text{If not, what was the mistake and in which step? } ... 
\]

In order to be more confident that the students’ mistakes were caused by the phenomenal sign bias and not by their inadequate knowledge of the aforementioned rule, it was specifically mentioned that: “The inequality sign does not change when we multiply or divide both sides of an inequality with a positive quantity.– On the other hand, the inequality sign changes when we multiply or divide with a negative quantity.”

Almost at the same line was the design of the three tasks that included square root functions. The students were presented with three square root functions, and also with accompanying statements commenting about the validity of each one of them in the set of real numbers. The false statements were arguing about the validity of the square root function in the set of real numbers on the basis of the phenomenal sign of
the radicands. Students were asked to agree or not with the given statement, and to provide an explanation for their response. An example of such a task was:

\[ f(x) = \sqrt{-2x-1} \text{ is never defined for any real number that could be substituted for } x, \]

\[ \text{because -2x-1 is always negative. Do you agree or disagree, and why?} \]

As in the case of the inequalities tasks presented above, in order to be more confident that students’ mistakes would be due to their misinterpretation of the phenomenal sign of the algebraic expressions in the radicands, it was explicitly mentioned that: “We know that any function that includes a square root is only defined in the set of real numbers for a non-negative radicand.”

For methodological reasons the algebraic expressions that were used in all the given tasks had a clear either positive (i.e., 4+3x) or negative (-2x-1) phenomenal sign, and one task in each domain was presented correctly solved and the other two contained one deliberate mistake each.

In order to test whether the students’ better performance in one domain would affect their performance in the following tasks, two types of questionnaires were designed, which both included the same items but was arranged in different order. In both questionnaires the first two items were the ‘make the graph’ tasks. In the first type of the questionnaires, the inequalities were presented before the square root functions while, in the second type, the square roots functions were presented before the inequalities. In case there was an order effect there would be statistical significant differences in students’ performance in each questionnaire type. All the items used in these domains are presented in Table 1.

<table>
<thead>
<tr>
<th>Table 1: The items used in the questionnaire in each task domain</th>
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</thead>
<tbody>
<tr>
<td>positive phenomenal sign</td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>Inequalities</td>
</tr>
<tr>
<td>3 &lt; ( \frac{1}{2x} )</td>
</tr>
<tr>
<td>Square root functions</td>
</tr>
<tr>
<td>( \sqrt{4+3x} )</td>
</tr>
</tbody>
</table>

2.3 Procedure

The students completed the questionnaire in their classrooms, in the presence of their mathematics teacher and one of the researchers. The two questionnaires were randomly distributed to the students of the sample, and as a result the students were equally divided to those who completed the first and the second type of the questionnaire (53 and 57 students respectively). Only clarification questions were allowed which were answered. Students were given 45’ to complete the questionnaire, which was enough time.

3. Results

In the ‘make the graph of the function’ tasks, as expected, the majority of the students (81.8% of students’ responses in \( f_1 \), and 78.2% in \( f_2 \)) substituted only natural numbers.
for the variables of the given functions. Those students calculated the values of the function only for those natural number inputs, and as a result they drew graphs which were incomplete and extended only in the first quadrant of the Cartesian axes. An example of such a dominant answer is presented in Figure 2.

**Figure 2: An example of a dominant response in the ‘make the graph of the given function’ task**

In the remaining tasks that included inequalities and square root functions, a first analysis focused not on students’ explanations but on their responses in the forced-choice questions and these responses were coded in a right/wrong basis. More specifically, the responses who found no mistakes in the incorrect tasks were considered as ‘incorrect’ (coded as zero). Responses that indicated the deliberate mistake was considered as ‘correct’ (coded as 1). Responses without indicating the specific step and non-responses were coded as missing values. Frequencies and percentage of students’ responses in each category of tasks is presented on Table 2.

The students’ responses in the correctly given tasks were not taken under consideration in the analysis, because those questions were only used for methodological reasons, as a means to change the routine of responding all questions in the same way. According to that, the reliability test showed that those questions
were not contributing to the measurement of the phenomenal sign bias. More specifically, the test of reliability for this part of the questionnaire showed a raise in reliability after the exclusion of these two questions (Cronbach’s Alpha= .606 before and Cronbach’s Alpha=.660 after the exclusion). This was further strengthened by students’ responses in these questions which showed a ceiling effect (see Table 2).

<table>
<thead>
<tr>
<th>Table 2: Frequencies and percentage of students’ responses in each item</th>
</tr>
</thead>
<tbody>
<tr>
<td>correct</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Incorrect positive inequality</td>
</tr>
<tr>
<td>25</td>
</tr>
<tr>
<td>Incorrect negative inequality</td>
</tr>
<tr>
<td>Incorrect positive square</td>
</tr>
<tr>
<td>Incorrect negative square</td>
</tr>
<tr>
<td>Correct inequality</td>
</tr>
<tr>
<td>Correct square</td>
</tr>
</tbody>
</table>

As it appears in Table 2, the students’ tendency to misinterpret the phenomenal sign of the algebraic expressions as being the sign of the only numbers they can represent resulted in low performance both in the domain of inequalities and square root functions. Students did better in the square root functions ($M = 1.18, SD = .86$) than in the inequalities ($M = .36, SD = .7$), $[F(1,107)=83.197, p<.001]$, but analysis of variance with repeated measurement indicated no interaction between the questionnaire type and the students’ performance in the two different domains $[F(1,107)=.581, p=.448, n.s]$. This showed that students did better in the domain of square root functions independently of their order in the questionnaire.

Because there were not significant differences between the students’ responses in the two types of questionnaires, in the analysis that follows the sample is considered unified. In order to test whether students’ phenomenal sign bias is related with the students’ tendency to think of literal symbols as natural numbers we created a new variable that counted the number of the functions (that is 0, 1 or 2) in which each student substituted at least one non-natural number for the variable of the two given functions. Regression analysis showed that the way students responded to the tasks concerning substituting numbers for the variables of the function contributed significantly to their overall performance in the remaining tasks that were measuring the phenomenal sign bias [$\beta=.318$, $t=3.472, p<.001$]. In other words, it appeared that the students who were willing to substitute at least one non-natural number to any of the given variables in the first two ‘make the graph of the function’ tasks, were less likely to make mistakes due to the phenomenal sign bias in the tasks that followed. No other possible covariates such as gender, questionnaire type or school were significant predictors of the students’ performance in the tasks that measured the phenomenal sign bias.

In the following analysis we elaborate more on the effect of the phenomenal sign bias in the students’ responses in both the task domains by calculating the mean scores for the tasks that contained algebraic expressions with a positive phenomenal
sign, and also for those with a negative. Students did significantly better in the tasks that included expressions with positive phenomenal signs ($M = .89, SD = .69$) than in those with negative ($M = .66, SD = .68$), $[t(108)]=4.315, p<.001$.

Those results were further supported by the analysis of students’ responses within each task domain. Both for the inequalities (see Table 3) and also for the square root functions (see Table 4) the frequency of students’ responses was calculated for the tasks that included either positive or negative-like algebraic expressions. In Table 3 it appears that only 2.4% of the students who failed in the positive phenomenal sign inequality task succeeded in the negative phenomenal sign one. On the other hand, 40% of the students who responded correctly in the positive-like inequality failed in the negative-like inequality, and those differences were statistically significant $[\chi^2(1, N=110) = 49.133, \text{McNemar Test value } p<.05]$.

**Table 3: Percent of students’ responses in the inequalities that included a deliberate mistake**

<table>
<thead>
<tr>
<th>Incorrect Inequality</th>
<th>negative phenomenal sign</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>wrong</td>
</tr>
<tr>
<td>positive phenomenal sign</td>
<td>97.6</td>
</tr>
<tr>
<td></td>
<td>right</td>
</tr>
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<td></td>
<td></td>
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</tbody>
</table>

The same was the case also for students’ responses in the task domain of square root functions. As it appears in Table 4, only 11.1% of the students who responded successfully in the negative-like square root function failed the one with a positive-like radicand. On the other hand, 28.8% of the students who responded successfully in the positive-like square root function failed in the negative-like one $[\chi^2(1, N=109) = 34.886, \text{McNemar Test value } p<.001]$.

**Table 4: Percent of students’ responses in the Square Root Function that included a deliberate mistake**

<table>
<thead>
<tr>
<th>Incorrect Square Root Function</th>
<th>negative phenomenal sign</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>wrong</td>
</tr>
<tr>
<td>positive phenomenal sign</td>
<td>88.9</td>
</tr>
<tr>
<td></td>
<td>right</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These results showed that students were less likely to be affected by the positive phenomenal sign than by the negative phenomenal sign of an expression. In other words, the students appeared more willing to accept that positive-like expressions could also stand for negative numbers than to accept the reversed.

Students did not offer explanations for their answers very often, even though it was specifically asked in every question. In most of the cases the students provided one explanation in one question (usually the first one for each set of tasks) and in the remaining questions they were repeating the phrase “the same as above,” or they
would leave it blank. A dominant incorrect answer was for students to express on their own words the incorrect argument of the given question. For example, that “-2x-1 can never be positive” or that “2x is always positive.” In some cases the students also provided examples of number values that they substituted for the literal symbols which were used in order to “show” that the phenomenal sign of the given expression is the actual sign of the numbers it can only represent. For example, they substituted x by 1 or 2 to conclude that the expression -2x-1 stand only for negative numbers. On the other hand, students who gave the mathematically correct response together with an explanation, they argued that the algebraic expression used in the specific task could represent either positive or negative numerical values depending on the numbers substituted for the literal symbols.

4. Discussion

The results of this study supported our main hypothesis, that there is a natural number bias which affect students to think that the literal symbols that are used to represent variables in algebraic expressions are symbols that represent natural numbers only and not any real number as they have been instructed. The majority of them, when they had the chance to substitute any number they wished in order to make the graph of a function, they substituted only natural numbers and this resulted in incorrect and incomplete graphs, restricted only to the first quadrant of the Cartesian axes.

Of course, substituting natural numbers for literal symbols is quite an easy alternative, in most of the cases, as it entails easier calculations. However, especially in the case of \( f_2(x) = \frac{1}{x}, x \neq 0 \) unit fraction substitutions for the variable x, i.e., \( \frac{1}{2}, \frac{1}{3} \), would not raise the difficulty of the calculations needed, and also the representation of the pair of values in the Cartesian axes would not be much harder for 10th grade students compared to natural number substitutions. In addition, specifically in the task domain of making the graph of a function, the students of this age are strongly instructed to try with as many different kinds of numbers as possible, as a strategy to avoid incomplete graphs. However, this does not reflect on the majority of their substitutions for the variables of the functions. These remarks further support that there is a natural number bias which reflects on the students’ substitutions of literal symbols with natural numbers, which goes beyond the fact that natural numbers are easier for calculations.

An important contribution of this study is that these results offer empirical evidence that the natural number bias is related with the students’ tendency to interpret the phenomenal sign of algebraic expressions to be identical with the actual sign of the numbers values they may represent. Students who tended to substitute at least one non-natural number for the variable of the given functions were less likely to show the phenomenal sign bias. This was further supported by the students’ explanations, in which they clearly expressed their phenomenal sign bias and they rationalized their erroneous ideas by using natural number substitutions for the literal symbols of the given expressions.
As expected, the phenomenal sign bias resulted in specific mistakes and low performance in certain mathematical tasks such as in transformations with inequalities and when arguing about the domain of square root functions. Another important finding of this study was that it appeared that students were more likely to be affected by the negative phenomenal sign of the given expressions than by the positive phenomenal one. The students tended to misinterpret seemingly negative algebraic expressions such as -2x-1 to represent exclusively negative values more strongly than to interpret 2x+1 as standing exclusively for positive values. This agrees with findings from earlier studies, where students appeared to show a stronger case of phenomenal sign bias in the case of the negative-like algebraic expression –b than to any other positive-like expressions such as the 4g, or k+3 (Christou and Vosniadou 2012). This could also be interpreted as another aspect of the students’ tendency to misinterpret the negative sign as the symbol of negativity, something already mentioned by other researchers (Gallardo, 2002). Of course further research need to place in order to examine whether all algebraic expressions have a phenomenal sign. For example, an interesting question is what would be the phenomenal sign of algebraic expressions such as 2-3x, or -2x+7, or in more complicated cases, where both the positive and the negative signs appear in different combinations.

Another by-product of this study was that the mathematical domain in which the algebraic expression appeared, does matter. The students appeared less likely to be affected by the phenomenal sign in the domain of square root functions than in the transformation with inequalities. A possible explanation for this would rely on the different characteristics of each task domain. In the square root function tasks the students were asked to argue about the domain of a function which considers the actual question of which numbers can or cannot be assigned for the variables in order for the notion of square root to be defined. On the other hand, in the inequality tasks the students were asked to use the algebraic expressions in the transformation processes, in which the determining role of the actual sign of these expressions was suggested in an indirect way. In the later tasks the students could imply the rules of transformation without paying special attention to the actual sign of the quantities that were involved in those transformations (Resnick, 1987).

4. Educational implications

Based on the main finding of this study that the phenomenal sign bias appears to be related with students’ natural number bias, we could presume that exceeding the barriers of the natural number bias, which restricts students to think that numbers represented by the variables in algebra are mostly natural numbers, might help the students to also remedy the phenomenal sign bias. Taking a conceptual change perspective we would argue that the students’ understanding of certain concepts such as the mathematical concept of real variable, is a knowledge-revision kind of learning. For students to think of real number substitutions for the variables, they would need to reorganize their initial framework for numbers, within which, numbers are essentially natural numbers, and in that way to extend their conceptual fields beyond natural numbers (Greer, 2006). It is argued before that this is a difficult and time-consuming process which requires a lot of motivation on the part of the learner and
special instructions on the part of the educators and the designers of learning materials (Christou & Vosniadou, 2012; Vamvakoussi & Vosniadou, 2010; Vosniadou et al., 2008).

The role of educators and curriculum designers is indispensable at this point. In order to find ways to help students achieve the necessary re-organization of the number concept and the strategies to inhibit their phenomenal sign bias, mathematics teachers should be familiar with this phenomenon. Specifically designed teaching interventions directed on certain biases on the part of the students, such as the phenomenal sign bias, which use suggestions for teaching for conceptual change, such as the cognitive conflict strategy and the refutational argumentation methodology, could be profitable used in this direction (Christou, 2012).

References


**Brief Bio**

I am currently working as Assistant Professor of Mathematics Education in the Department of Preschool Education, University of Western Macedonia, in the field of mathematics teaching and learning. My main research focus lies on learning difficulties when developing the number concept and ways to help students to overcome them.
THE INFLUENCE OF TUTORED DRAMATIC PLAY ON THE SOCIAL RELATIONS OF STUDENTS IN THE FIFTH GRADE OF PRIMARY SCHOOL

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Abstract

The present study examined the influence of tutored dramatic play on the social relations of students in the Fifth grade of primary school, as regards peer acceptance and group cohesion. Two methodological tools were used: sociometry as a quantitative approach and observation as a qualitative approach. Research findings were in accordance with previous similar applications of drama education activities. Specifically, they indicated improvement of group cohesion, increase of social acceptance tendencies, as well as of social rejection ones, improvement in particular of cross-sex relationships and increase of expressed liking among pupils.

Keywords: Dramatic play, social relations, peer relations, social acceptance, group cohesion, observation, sociometry.

1. Introduction


The research presented here examined its influence on the social relations of students in a fifth grade class of primary school. In particular, the research tested its contribution to the change of the unidirectional acceptance that each member of the

The presentation will at first focus on the influences of applications that fall within the general conceptual range the term ‘tutored dramatic play’ may include. Quite a few references concern various applications related to tutored dramatic play or, often indeed, to untutored dramatic play (Mellou 1994: 119-130).

More relevant to the theme under discussion is Leyser’s research (1979: 156-166) focusing on schoolchildren. It showed moderate results in encouraging acceptance and limiting rejection among peers. The reason for that was suggested to be, mainly, the subjects' insufficient time exposure to the influence of the experiment's independent variable.

Following, a research of considerable significance is that by Tsiaras (2003) in a primary school; he found improvement of peer relations, as the inter-personal relations mentioned by students increased and special care was taken to include isolated students, patterns that according to the researcher were the result of the application's influence at a personal and group level. Further, looking into the views of the class teachers he found they all shared a positive feeling concerning the improvement of inter-personal relations, firstly among peers, same-sex and cross-sex, as well as teacher-student relations. Nevertheless, he did not notice a decrease in the number of rejected students or of cliques, but only a slight decrease in the number of popular students. The researcher connected the overall results of his intervention at an individual level to the strengthening of self-knowledge, self-esteem and social skills. At a group level, he connected pupils to the widening of a net of group communication and interaction, within a more general democratic framework.

In a subsequent research, Tsiaras (2007: 75-101, 259-272) found that teacher-student communication improved, and that children who tended to be class clowns, captious or generally rejected, joined the student group; moreover, the attitude of children who tended to be overbearing, careless or over talkative improved. He suggested those patterns to be the result of using specific techniques, some borrowed from the discipline of psychotherapy.

Kontogianni’s research (2000: 143-150, 247-286) also focused on primary education or, more precisely, on special education and, in particular, on students with learning disabilities. She found that promotion of social skills transcended the time and space of the workshops, as well as an improvement in linguistic and cognitive-perception skills. She basically suggested that the results of intervention were due to application of game techniques where children improvised dramatic roles, which offered opportunities for self-expression, mutual communication, cooperation, acceptance of a common set of rules and the creation of shared experiences.

Pavlidou’s research (1998: 196-210) focused on preschool children. She integrated dramatic play into a more general program where the basic element was rhythm. She found general improvement of social relations and particular improvement of cross-sex communication and acceptance. She considered the findings to be the result of self-improvement, due to the application of expressive arts, children's natural inclination towards drama play and the use of an appropriate educational approach.
In another research, realized in a sampled primary school class, Hortaria (2003: 140-154, 206-208) found development of trust within the group, decreased isolation, improvement of communication and cooperation, encouragement of self-discipline and in general promotion of peer relations, including cross-sex ones. She associated those specific results with cultivating trust, politeness and maturity as well.

Following, Koudigeli, (2004: 81-95) examined the influence of tutored dramatic play on coping with stress in primary school children. She noted different levels of communication skills, as well as self-discipline and the ability to take decisions and initiatives. She suggested those benefits to be the result of the influence of tutored dramatic play, and, in particular, of its contribution in distinguishing between fiction and reality, as well as of acquiring skills of harmonious social interactions and acceptance of others in general.

Kouretzis, (1991: 43), does also mention a research attempt realized with a sample of teachers from almost all districts of Greece. Overall, it was proposed that the systematic application of tutored dramatic play had a positive effect on and sensitized the children’s behavior, their artistic expression and their relations with each other.

The next paragraphs present in brief research that is related to the objectives of the present study but to a lesser extent than the above mentioned.


A brief mention follows, on the influences of applications that fall within the broader framework of drama education but do not nevertheless fit exactly to the term tutored dramatic play. Those specific influences concern improvement of interaction, social skills and student group cohesion (Kintigh 1999: 41-73, Bayliss & Dodwell 2002: 43-60), stimulation of group leading skills (Seidel 1996: 3-5), change of attitude (Greenwald 1970: 214-219) and decrease of prejudices that cause student group members in an intercultural environment getting rejected (Gay & Hanley 1999: 364-370); moreover, decrease of aggravating behavior and stimulation of confidence (Bernstein 1985: 219-223, Sheldon 1996: 115-116), reinforcement, in particular, of
cross-sex relations (Ollif 2001: 223-229), but also cultivation of language in combination with the promotion of communication (Moudatsakis 1997: 23-27, Papadopoulos 2007: 240-244) have also been related to drama education.

However, during the applications of similar programs there have been insufficient results concerning the encouragement of self-perception and emotion, the improvement of social skills and the decrease of troublesome behavior (Jackson 2000: 26-28, Conard & Asher 2000: 78-84). Similar discrepancies have been identified in relation to cultivating ethical assessment skills (McCambridge 1998: 69-74), discouraging the creation of cliques, and experiencing manifestations of dominance (Schultz 1994: 153-196), as well as to having children with special needs being accepted by the rest and consequently included in mainstreaming classes (Miller 1989: 3-4).

Finally, it seems that dramatic play and pertinent drama education activities have a positive influence on the improvement of peer relations through the increase of acceptance and group cohesion. Yet, such a promotion is not absolute and there isn’t always sufficient disruption of cliques or decrease of aggressiveness, conflicts or manifestations of dominance.

2. Research objective and hypotheses

The present research aims to investigate the potential of tutored dramatic play in improving the social relations of pupils as regards the development of mutual acceptance and the cohesion of primary school classes.

In particular, the following hypotheses have been made:

Systematic application of tutored dramatic play can contribute to:

a) The improvement of social relations between students from the aspect of acceptance, through
   a1) increasing tendencies of acceptance
   a2) reducing tendencies of rejection or neglect
   and a3) stimulating cross sex relations
b) The improvement of cohesion of the school class as social group.

3. Methodology

3.1. Sample

The subjects of this research have been fifth grade pupils and more specifically the students of class E2 of Thessaloniki's 61st Primary School.

There were 17 persons in total in the class, 8 boys (47%) and 9 girls (53%).

<table>
<thead>
<tr>
<th>SAMPLE</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>8</td>
<td>47</td>
</tr>
<tr>
<td>Girls</td>
<td>9</td>
<td>53</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>100</td>
</tr>
</tbody>
</table>

Table I. Sample gender composition
3.2. Process
The chosen method falls under the category of before/after controlled experiments (Filias 1996: 39-42). The subjects were submitted to the influence of the application of tutored dramatic play through a series of 10 sessions/workshops, each lasting 45 to 60 minutes, taking place approximately once a week.

3.3. Research tools
Two research methodological tools were used: within a quantitative approach, sociometry was selected and, in particular, the sociometric nominations (CDC) system. In accordance with it, the subjects were grouped in 5 provided categories, based on the times each one was chosen or rejected by the rest: a child met with high acceptance levels was ranked as popular, while in the opposite case the child was ranked as rejected. If the case was something in between, the child was ranked as average and if the case was a combination of acceptance and rejection as contradictory. Finally, a child that got neither particularly accepted nor rejected was considered to be neglected, whether the child was ignored against its will or it chose to withdraw (Coie, Dodge & Coppotelli 1982: 557-570, Bikos 2004: 137-143). In order to facilitate the comparisons needed to be made, those five categories were assigned respective numbers as follows: popular: 5, average: 4, contradictory: 3, neglected: 2 and rejected: 1 (Grigoriadis 1999: 58). The sociometric criterion was the choice of partner in the play (Lockheed 1986: 617-628, Terry 2000: 27-53), given unlimited within the group choices, positive or negative. Moreover, the group cohesiveness index, based on the number of realized peer choices within the group divided by the maximum possible number of such choices, was examined (Gronlund 1959: 79-81, Evans 1962: 34-38). Two more questions were added considering the estimated influence of tutored dramatic play on the improvement or deterioration of peer relations.

Within a qualitative approach, observation was used, in a systematic, semi-
structured, participatory and explicit way, with the help of audio and video recordings as forms of technical mediation. Attitudes related to acceptance, rejection or indifference, as well as attitudes indicating high or low levels of group cohesion were at the core of observation. The critical events approach was adopted for the evaluation of the material (Fassnacht 1982, 88-90; Papadopoulou 1999: 52, Wragg 1997: 62-64, Flick 2000: 75-92). More specifically, 6 events during the early stages of the applications of tutored dramatic play were identified and another 6 towards the last ones. All events, representative of the whole situation, were analysed and interpreted with the help not only of the total recording material but also of the quantitative data. Then, a comparison was attempted of the elements that were relevant to the investigated qualities which occurred during the early stages and at the end of the application.

In any case, for reasons of discretion, the research subjects were codified based on the alphabetical order of their surnames as follows: B1 to B8 for boys and G1 to G9 for girls.

4. Findings

The following paragraphs present the research findings in three units, by comparing data before and after the experiment's application. The first unit elaborates on acceptance and the consequent popularity within the student group, the second on group cohesion and the third on statements or conclusions of a more general nature. In the context of each unit quantitative results precede the qualitative ones.

4.1. Acceptance and popularity within the group

4.1.1. Quantitative approach

The total number of times each member of the student group was chosen from the rest, during the first count, prior to introducing the experiment’s variable, was 83 and during the second count, after the subjects’ exposure to tutored dramatic play, the total number increased by 62.6%, rising to 135, a statistically significant change (Wilcoxon Signed Ranks test, Z: -3,424, Asymp. Sig.: 0,001).

|       | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | G9 | TOTAL |
|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1st COUNT | 9  | 2  | 1  | 5  | 1  | 6  | 1  | 7  | 11 | 2  | 3  | 3  | 1  | 9  | 7  | 10 | 5  | 83   |
| 2nd COUNT | 13 | 6  | 3  | 5  | 3  | 12 | 3  | 7  | 12 | 7  | 5  | 5  | 8  | 14 | 8  | 13 | 11 | 135  |

(Wilcoxon Signed Ranks test, Z: -3,424, Asymp. Sig.: 0,001)
The total rejections recorded were 30 during the first count and 48 during the second count; there was in other words an increase of about 60%, a change that is also statistically significant (Wilcoxon Signed Ranks test, $Z: -2.097$, Asymp. Sig.: 0.036).

Table III. Total number of rejections per student

|     | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | G1 | G2 | G3 | G4 | G5 | G6 | G7 | G8 | G9 | TOTAL |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|------|
| 1st COUNT | 0  | 1  | 5  | 1  | 3  | 3  | 0  | 3  | 0  | 4  | 2  | 3  | 0  | 0  | 0  | 1    | 30    |
| 2nd COUNT  | 2  | 6  | 7  | 0  | 6  | 2  | 5  | 6  | 2  | 0  | 3  | 4  | 3  | 0  | 2  | 0    | 48    |

(Wilcoxon Signed Ranks test, $Z: -2.097$, Asymp. Sig.: 0.036)

Diagram III. Comparison of rejection numbers per student

The comparison of the sociometric classifications before and after the application showed signs of group bonding during the second classification, in the average
category (Wilcoxon Signed Ranks test, Z: -1.271, Asymp. Sig.: 0.204).

Indeed, half the children originally classified as rejected (35.3% of total) switched finally to the average category (17.6% of total). A similar pattern occurred with children originally classified as contradictory (5.9% of total) or popular (29.4% of total). The percentage of the children originally classified as contradictory dropped to zero, reinforcing the average category. A part of the children originally classified as popular (5.9% of total) switched as well to the average category, which finally turned out stronger, increasing from 23.5% to 35.3% of total. Reinforced, to a lesser extent, turned out in the end the popular category as well, increasing from 29.4% to 35.3% of total. The percentage of children classified as neglected did not change (5.9%).

Table IV. Correlation of 1st & 2nd classification percentages

<table>
<thead>
<tr>
<th>1st CLASSIFICATION</th>
<th>2nd CLASSIFICATION</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17.6%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>5.9%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>0.0%</td>
<td>5.9%</td>
<td>0.0%</td>
</tr>
<tr>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>23.5%</td>
<td>5.9%</td>
</tr>
</tbody>
</table>

Diagram IV. Correlation of 1st & 2nd classification percentages

Considering the above changes overall, it is clear a tendency among girls to improve their sociometric scores more, as opposed to boys ($X^2$: 4.289, df: 4, Asymp. Sig.: 0.368, Phi: 0.502, Asymp. Sig.: 0.368, Cramer’s V: 0.502, Approx. Sig.: 0.368). Indeed, 33.3% of girls improved their scores by 3 points, 11.1% by 1 point, 44.4% did not change, while only 11.1% dropped by 1 point. On the contrary, 12.5% of boys dropped by 2 points, another 12.5% by 1 point, 50% did not change and 25% increased by only 1 point.
Table V. Correlation of classification change and sex

<table>
<thead>
<tr>
<th>POINTS OF CLASSIFICATION CHANGE</th>
<th>SEX</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BOYS</td>
<td>GIRLS</td>
</tr>
<tr>
<td>2</td>
<td>12,5%</td>
<td>0,0%</td>
</tr>
<tr>
<td>1</td>
<td>12,5%</td>
<td>11,1%</td>
</tr>
<tr>
<td>0</td>
<td>50,0%</td>
<td>44,4%</td>
</tr>
<tr>
<td>1</td>
<td>25,0%</td>
<td>11,1%</td>
</tr>
<tr>
<td>2</td>
<td>0,0%</td>
<td>0,0%</td>
</tr>
<tr>
<td>3</td>
<td>0,0%</td>
<td>33,3%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100,0%</td>
<td>100,0%</td>
</tr>
</tbody>
</table>

\(X^2: 4.289, \text{ df: } 4, \text{ Asymp. Sig.: } 0.368, \)  
\(\Phi: 0.502, \text{ Asymp. Sig.: } 0.368, \)  
\(\text{Cramer’s V: } 0.502, \text{ Approx. Sig.: } 0, 368)\)

Diagram V. Correlation of classification change and sex

4.1.2. Qualitative approach

When first exposed to tutored dramatic play, the students of that specific class, riddled with discipline problems and particular displays of aggressiveness, at least as far as the boys were concerned and showed a tendency to reject or even isolate some of the group members. For example, student B3 had been repeatedly rejected and neglected during activities that required pairing up.

On the other hand, there was a counter tendency to avoid isolation, both from the students mostly rejected as well as from the rest who would finally agree playing with someone they didn’t particularly like just to avoid ending up alone. An illustration of the first case was the incident where, during the second event, G4 student, usually rejected, kept clinging on student G3 with striking persistence, while G3 remained more neutral. An illustration of the second case was identified in the third event, where student B7, during a pairing up activity, started playing with student B3, though he was
evidently not particularly pleased in doing so.

During the experiment and as far as marginalized children were concerned, there were signs of increased eagerness and confidence, but also signs of relatively higher levels of acceptance by the rest. A similar illustration of that occurred in the eighth event with the particularly vivid, considering the task at hand, manifestations of the quite distant till that point students B3 and G4, manifestations that were welcomed by the rest. Towards the end of the sessions two members of an isolated subgroup of boys did indeed show increased participation tendencies. Special attention should be made in the case of student G2, who displayed particular talents in various activities of drama expression and at the same time boosted her status and popularity in general, according to the sociometric data of the second classification.

In total, there was evidence of a slight increase in eagerness and participation of the student group members, which was attributed to increased tendencies of accepting marginalized, rejected or neglected children.

4.2. Group cohesion

4.2.1. Quantitative approach

Group cohesiveness index increased from 0.2 to 0.3 in the first count; there was in other words an increase of about 50%.

| 1st COUNT | 0,2 |
| 2nd COUNT | 0,3 |
| INCREASE | 0,1 |
| INCREASE PERCENTAGE | 50% |

4.2.2. Qualitative approach

Early during the applications there was evidence in general of conflicts and problems in group coordination, but also a tendency of subgroup formations: one comprising of several girls and one of two boys. Indeed, the latter showed tendencies of evolving to a
clique, defying in other words the objectives of the performed activities, which was also identified in the sixth event and involved students B7 and B8 in specific.

Later on, there was evidence of the dynamics of the class as social group growing, in mainly two ways: The first way concerned the growing of discipline within the group, with the class showing a tendency to correct themselves as a group, without always the need of the animator's interference. A similar occurrence, among others, took place during the seventh event where G4 scolded B1 who, without being disruptive, was moving beyond the agreed boundaries. The second way concerned the stimulation of solidarity through support interventions, towards members that needed it, especially in the girls' subgroup, like during the ninth occurrence when G5, G9, G2 and G8 rushed, in that order and without verbal communication, to comfort G6 who was sad with how the game had developed.

In brief, then, during the research realization there was evidence of growing discipline within the group of the school class comprising the relevant sample and a respective increase of solidarity between the group's members, especially among girls. These specific findings led to the conclusion that group cohesion improved.

4.3. General statements and conclusions

4.3.1. Quantitative approach

The positive influence of tutored dramatic play on peer relations was acknowledged by 88% of children or, more specifically, 87.5% of boys and 88.9% of girls.

Table VII. Acknowledgement of positive influence of tutored dramatic play on peer relations

<table>
<thead>
<tr>
<th>ANSWERS</th>
<th>BOYS</th>
<th>GIRLS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>7 (87.5%)</td>
<td>8 (88.9%)</td>
<td>15 (88.0%)</td>
</tr>
<tr>
<td>NO</td>
<td>1 (12.5%)</td>
<td>1 (11.1%)</td>
<td>2 (12.0%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>8 (100.0%)</td>
<td>9 (100.0%)</td>
<td>17 (100.0%)</td>
</tr>
</tbody>
</table>

Lastly, 30% of children stated negative influence of tutored dramatic play on
their relations with each other (boys: 25%, girls: 33%).

Table VIII. Acknowledgement of negative influence of tutored dramatic play on peer relations

<table>
<thead>
<tr>
<th>ANSWERS</th>
<th>BOYS</th>
<th>GIRLS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>2 (25%)</td>
<td>3 (33%)</td>
<td>5 (30%)</td>
</tr>
<tr>
<td>NO</td>
<td>6 (75%)</td>
<td>6 (67%)</td>
<td>12 (70%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>8 (100%)</td>
<td>9 (100%)</td>
<td>17 (100%)</td>
</tr>
</tbody>
</table>

Let us also note that the cross sex pairs of mutual preference were 5 (18% of total) during the first count, while during the second increased by 160%, rising to 13 (30% of total).

Table IX. Appearance of cross sex pairs of mutual preference

<table>
<thead>
<tr>
<th></th>
<th>PAIRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st COUNT</td>
<td>5</td>
</tr>
<tr>
<td>2nd COUNT</td>
<td>13</td>
</tr>
<tr>
<td>INCREASE</td>
<td>8</td>
</tr>
<tr>
<td>INCREASE PERCENTAGE</td>
<td>160%</td>
</tr>
</tbody>
</table>

Diagram IX. Appearance of cross sex pairs of mutual preference
4.3.2. Qualitative approach

The development of more positive tendencies in the group and the stimulation of solidarity, mentioned in a previous sub-unit, did not mean the group spared its members. On the contrary, in a constructive yet manifest way the group criticized the exhibited behavior of some of its members while not hesitating to punish others by temporary rejecting them. An illustration of the first case was identified in the eleventh event relating to the reactions of B1, G1 and G7 towards the sociometrically classified as contradictory student B2 for his interventions, which were at least untimely and at most annoying. Reactions towards the specific student ranged from playful pretence of indignation all the way to direct, corrective advice. An illustration of the second case occurred during the twelfth event, when B8 was asked by the rest to leave for a period of time for not respecting the rules of a given activity, after which he was allowed by the group to return in the next activity.

The overall findings of the previous paragraph are associated to another phenomenon, particularly evident towards the end of the applications: a more overt expression of emotions, undoubtedly including negative ones also, as for example in the seventh event when B2 gave vent to his anger against G2.

Also, despite the tendency mentioned earlier to avoid isolation, there was at first reluctance to create sub-groups of mixed gender, which is to be expected to a certain extent in that age range. For instance, in the fourth event, student G7 was found to prefer staying alone rather than pairing up with the last remaining student B5 who, likewise, did not show any particular desire to do so. Gradually, that tendency seemed to disappear, as illustrated in the twelfth event when B1, G1 and G9 cooperated.

Overall, then, there was evidence of a tendency to express both positive and negative emotions in a more uninhibited way, as well as to restore justice even if in a potentially strict way. Also, children of both genders participated together, now, in sub-groups that performed the tutored dramatic play's fun activities in collaboration.

5. Discussion - Conclusions

Combining the findings of quantitative and qualitative approaches, the research recognizes, at first, positive influence of tutored dramatic play on the improvement of peer relations.

Indeed, there was evidence of increased acceptance levels among the group, with girls showing greater improvement and bonding among the subjects in an average
sociometric classification of popularity. The girls' superiority could be explained by the fact that they made better use of the communicative framework that tutored dramatic play offers, as they appear to be more capable in emotional perception (Goleman 1998: 190-195), in decoding and sending non verbal messages (Pease 1991: 137, Papadaki-Mihailidi 1998 152-158, 199), and especially in the implicit expression of aggressiveness (McGuire 1973, 542-549); as a result, they become more popular since they can respond better. However, there are objections as to the general cross-sex differentiation concerning communication skills (Antonopoulou 1996, 153), by virtue of the different kind of socialization that each gender experiences (Dwyer 2000: 106-109).

The overall experiment was nevertheless considered undoubtedly positive, since there was a decrease in the percentages of the extreme categories, which are not in general desired for a school class to work properly. Moreover, there was improvement in cross-sex relations. To the specific changes contributed the increase of participation and a certain improvement in the way students approached each other during shared playful activities, as well as the confidence that some members developed, after having been rejected several times during the first count.

Thus, the pertinent research hypotheses (parts a1 and a3) were confirmed.

Still, there was a simultaneous increase of rejections that could be attributed to the intensification and a more overt expression of emotions during the applications. There is possibly an association between the above and a clearer realization by each child of the expectations it had as regards to the behavior of the rest, which led to providing constructive criticism as well as passing rigorous judgement when necessary. It is possible that if the program introducing the experiment's variable was applied over a longer period of time the group would have been able to overcome the phase of conflict and move on to a phase of a more solid cooperation by combining and working out the differences (Caple 1978: 470-476, Tuckman & Jensen 1977: 419-427). To this direction, forming a group of activities more focused in relation to the desired objectives so to give the research a more specific intervening nature, would also contribute (Renshaw & Asher 1982: 380-382, Rubin 1982: 369).

Overall, the research condition indicating a decrease in rejection tendencies (part a2) was not confirmed. The pre-existent intense rivalries, controversies and tensions among the members of the peer group were responsible to a certain degree for the hypothesis in question being disproved, yet further investigation of the reasons behind it was out of the current research's given framework.

Also, group cohesion changed for the better, with a particular increase in mutual acceptance among children, improvement of group bonding, especially in the girls' subgroup, as well as gradual development of discipline within the whole group. The overall condition confirms the second part of the hypotheses.

Finally, a significant statement made by the students has been recorded, that the experimental application of the tutored dramatic play helped improve their relations; additionally, a significant statement that, on the other hand, it did not damage them.

Certainly, the limited sample did not allow, during the quantitative approach, statistically significant conclusions to be drawn, but only certain tendencies to be identified. Specific cases have been investigated further, during the qualitative approach.

In conclusion, there was evidence that the application of tutored dramatic play increased peer acceptance, but to a certain extent peer rejection as well, within the group. Also, it improved the group's cohesion.

It would be purposeful for future researchers to focus on investigating the criteria with which students are chosen or rejected by the rest and which are associated to the students' participation in tutored dramatic play activities; moreover, future research should be applied over a longer period of time so to follow the development stages of the student group or co-form them as intervention attempts.

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THE INFLUENCE OF TUTORED DRAMATIC PLAY ON THE SOCIAL RELATIONS OF STUDENTS IN THE FIFTH GRADE OF PRIMARY SCHOOL

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THE LAKATOSIAN HEURISTIC METHOD AFFECTS POSITIVELY ON THE HIGHER ORDER THINKING OF BLOOM’S TAXONOMY LEVELS ON STUDENTS’ ACHIEVEMENT COMPARED TO THE EUCLIDEAN METHOD

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Abstract
This paper reports a main study on the effect of using the Lakatosian heuristic method to teach the surface area of a cone (SAC) on students’ achievement according to Bloom’s taxonomy levels. Two groups of students (the experimental and the control groups) participated in the study. The experimental group (n=98) was taught using the Lakatosian heuristic method while the control group (n=100) was taught using the Euclidean deductive method. Both groups were given a pre-test, a post-test and a delayed test. Data analysis using two-way Anova shows that both groups increased their scores within times (Pre-to Post and Delayed test). However, the experimental group scored higher than the control group within all times and also displayed more positive higher order thinking than the control group. It was concluded that the Lakatosian heuristic method will most likely help students to learn the SAC better than the Euclidean method.

Keywords: Lakatosian heuristic method, higher order thinking, surface area of a cone, Cyprus secondary school.

1. Introduction
In Cyprus secondary schools, geometry teaching follows the deductive method. This method conforms to the rationalist epistemological tradition that characterizes the Euclidean theory. It promotes a lecturing teaching method which does not encourage in-depth mathematical discourse or the development of critical/creative mathematical thinking (Chazan, 1990) that it will be discussed in this section. In the Euclidean method, each step is right and leads to the proving of a theorem through rational mathematical proposals without having the students question the process. This gives the teacher the reassurance that the lesson has been “taught properly”, whereas the students remain unquestioning receivers of information.
According to Sriraman & Umland (2014), Lakatos believed that the Euclidean method is “detrimental to the explanatory spirit of mathematics” (line 129 because not only may an overreliance on deduction inhibit the discovery aspect of mathematics; it might also ignore the needs of students as they learn about argumentation that constitutes a proof.

For students to develop higher order thinking and become efficient problem solvers, which are of great value in the workplace, it is essential that they are exposed to situations that enable them to think out of the box. Such exposure will enable them explore alternative views that apparently contradict their previous thinking. Mathematics is one subject that enables students to develop higher order thinking. Hence, in recent years major efforts have been made to focus on what is necessary for students to become mathematically proficient.

Mathematical proficiency is related to conceptual thinking as well as perceptual thinking, both of which are equally essential for mathematics learning (Duval, 2002). Hence, for one to solve any mathematical problem one has to undertake double analyses: mathematical analysis as well as cognitive analysis. According to Kotsopoulos (2007), “to become proficient in mathematics, students need to participate in mathematical discourses and conversations” characteristics of semi-empirical methods like Lakatosian that help students, working in group, be able to overcome their misconceptions and leading them to “foster model eliciting activity skills” (Mousoulides et al., 2007). The Lakatosian method of teaching could be a way of achieving this as it gives opportunity to students to be engaged in discourse in the classroom.

In Euclidean method, the teacher does not give the student a chance to create a hypothesis or to criticize a conjecture. Therefore, the student is not encouraged to refute the conjecture, to come up with counter-examples, or use strategies of problem solving. As a result of this, the inductive method, which requires carefully chosen examples to introduce a concept or to prove a theorem or a mathematical statement, does not exceed the deductive method. This method encourages the up-down scenario of the Euclidean axiomatic system - “A deductive system with injections of infallible truth that inundate the whole system from the top” (Koetsier, 2002, p.193).

Therefore, in the Quasi-empirical method the teacher encourages the student “to discover the solution to problems”, such as a certain proof or a certain formula, in contrast to a traditional method where a “suitably programmed Turing machine could solve [the problem] in a finite time” (Lakatos, 1976, p. 4). The teacher’s aim is to encourage students who are used to working in small groups to come up with counter-examples or use strategies of problem solving in their attempt to discover the path(s) toward the solution(s) of their problem or a conjecture. Both the teacher’s and students’ aim is to elaborate the point of informal, quasi-empirical mathematics that does not grow through a monotonous increase of the number of indubitably established theorems but through the incessant improvements of guesses by speculation and criticism, by the logic of proofs and refutations (Lakatos, 1976, p. 5).

During modelling cycles involved in model eliciting activities skills, students are engaged in problem posing, i.e. they are repeatedly revising or refining their
conception of the given problem. During the model eliciting activities skills, students find ways to judge strengths and weaknesses of alternative ways of thinking and whether a given response is appropriate and adequate. In this study, a model eliciting activity skill was used to develop a model of the SAC that described why the cone with the smaller base circle was the tallest one.

In contrast, direct method of teaching like Euclidean supports guidance direct instructional (Kirschner et al., 2006) which are characterizes of minimal feedback were students often become lost and frustrated, and their confusion can lead to misconceptions even more if their prior knowledge is “incomplete or disorganized” (Kirschner et al., p.84, 2006).

This study explores the effect of using the Lakatosian heuristic method to teach the surface area of a cone on students’ achievement according to Bloom’s (1956) taxonomy levels by answering the research question: is there any difference in students’ achievement according to Bloom’s taxonomy levels between the students taught the SAC by the Lakatosian heuristic method and those taught by the Euclidean one?

2. Theoretical background

This study is framed within the Lakatosian heuristic of Lakatos (1976) paradigm. Lakatos (1976) explores the contrast between Euclidean theories, such as the traditional foundationalist philosophies of mathematics, and quasi-empiricist theories that regard mathematics as conjectural and fallible (Hersh, 1978). Lakatos’ main quest is summed up in the question: “what are the ‘objects’ of informal mathematical theories?” (p.150). Lakatos's argument is that mathematics, like the natural sciences, is fallible; not indubitable. Mathematical theory develops by the criticism and correction of theories, which are never entirely free of ambiguity or of the possibility of error or oversight. Starting from a problem or a conjecture, there is a simultaneous search for proofs and counterexamples. “New proofs explain old counterexamples, while new counterexamples undermine old proofs” (Lakatos, 1976).

The Lakatosian heuristic paradigm is in line with the constructivist theoretical model which believes that learning is an active process of knowledge construction where cognitive conflicts must have been engendered by the students themselves in trying to cope with different problem solving strategies (Mikropoulos & Bellou, 2013), in order to achieve higher order thinking.

3. Methodology

To undertake this study a quasi-experimental research design (Creswell, 2012) was found suitable. Two intact classes (11-grade 16-17 years old were studying optional mathematics of seven teaching periods per week) of 98 students and 100 students were used as the experimental and the control groups in different schools respectively, of the same demographic characteristics and socioeconomic backgrounds (in the same district). The experimental group was taught by the researcher using the Lakatos heuristic method (in small mixed ability groups of 5-6 students), while the control group (all classroom as a whole group) was taught by the teachers using the Euclidean
method. All of the optional mathematical classes in each school were chosen. Each teacher taught in her/his classes as well as the researcher who planed in advance the teaching in each case, so as to all apply the specific teaching practices to the specific group.

The researcher maximized objectivity and minimized her involvement with the respondents during the progression of the study. This is influenced by the principles of the positivism paradigm. The researcher was aware of the fact that she was part of the world and that posed a challenge in detaching herself from the research. Hence, to eliminate bias the research study used the quantitative approach. Quantitative research methods are deductive in nature, in the sense that inferences from tests of statistical hypothesis lead to general inferences about characteristics of a population (Harwell, 2012). The same cognitive test (Appendix A) was the main instrument of data collection and statistical analysis (which is independent of the researcher) was used to answer the research questions within time (pre- to post and delayed) in both groups.

The research design of **pre-to post-test quasi-experimental design** is symbolically presented below:

\[
N_1: \quad O_1 \quad X_1 \quad O_2 \quad \text{Experimental Group I (Lakatosian heuristic method)}
\]
\[
N_2: \quad O_3 \quad X_2 \quad O_4 \quad \text{Control Group II (Traditional method)}
\]

The first row represents the experimental group while the second row is the control group. \(O_1\) \(O_3\) represent pre-test; \(O_2\) \(O_4\) represent post-tests; \(X_1\) is the Lakatosian heuristic method used to teach the experimental group; \(X_2\) is the traditional method used to teach the control group.

Both experimental and control groups’ pre-tests were examined to see if they were significantly different. It was also important to examine the pre to post tests before and after the intervention not only within the groups, but also between them.

The methodology concerning the data and the tools used in this study to examine the effect of Lakatosian method on the SAC were discussed. In particular, the process of the application in this study was developed under the following process, which signified that it was first necessary to identify students’ prior conceptions through the pre-test. The questionnaire, which followed immediately after the intervention, and the interviews that ensued the week after the intervention, helped the researcher to clarify students’ conceptions from alternative into scientific and they were explained according to Oh (2010) model. Therefore, the questionnaire survey and the interviews had to be refined as an auxiliary instrument.
4. The Lakatosian method

Lakatos’s heuristic method as briefly explained in Hadjichristou & Ogbonnaya (2015, pp.187-188) was applied in the experimental group by using a lesson plan (of a whole teaching period) that consisted of four sections (Appendix A). In section A, the teacher checked the students’ pre-existing knowledge about the concept of a cone regarding the following objectives:

- Pythagoras theorem
- Elements of a circle (radius, diameter, length of arc)
- Area and perimeter of a circle and the sector of a circle
- Area of a triangle $A=\frac{1}{2}absinC$
- Transformation of radians to degrees and vice versa.

The teacher showed on the whiteboard the following table of two columns to check the pre-existing knowledge by matching the results in (A) column to that of the (B) column (Appendix A-task 2) giving the chance to all of the students in the classroom to react as a whole group and to give the correct answer. The teacher’s role was to manipulate the students’ answers and to give reflecting thinking on all concepts about the notion regarding the area of a cone as mentioned before to cover the above objectives.

In section B (Appendix A-tasks 4-8) the teacher checked students’ knowledge about the notions of the surface area of a cone constructively by checking 1) if students knew how to rotate a shape (rectangle, square, triangle) about a line and if they could name the resulting solids; 2) if students knew the generalization of the premise that if an area or a line or a point turns about the line, then it will form the volume or a curved surface area or the curve/ line, respectively. In order to cover the above objectives, the teacher used an exercise (Figure 1).
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Figure 1: The rotation of the shapes about the vertical axis

Also in order to cover the objectives, the teacher in addition used the mathematical applets (Figure 2) to show the second objective, developed in the GeoGebra software as well as the digital educational programme of the Cyprus Ministry of Education (2010).

Figure 2: A math applet in GeoGebra software about the definition of a SAC

The role of the teacher in this section B was to declare the misconceptions/alternative conceptions between the two and the three dimensions of the constructive and deconstructive way students used regarding the SAC. By using the mathematical applet, as it is shown in (Figure 2), the lateral height (DE’) turns about the vertical axis (DZ) and students must realize the area formed—that is the SAC and they have to tell the locus of the point E-that is a circle centre Z and radius (ZE). With this activity they had to generalize the basic principle that is: if an area/line/point, turns about the axis of the rotation, then the volume/surface area/curve of revolution was formed. Also, it is important, for the students, to observe that this activity helps clarify the misconception that the SAC is formed when the hypotenuse (DE’) of a right angle triangle (DZE’) turns about the vertical axis (DZ) forms the curved SAC while the other vertical side (ZE) forms the base circle of a cone.

In section C (Appendix A-tasks 9-10) the teacher investigated the perceptions of the students about the construction/deconstruction of a cone from 3-dim to 2-dim and vice versa by posing the problem: A cone hat is given. Find the material needed to make it if its lateral height is l. The students had to imagine the shape of the sector of the cone hat when it is developed in 2-dim and then to measure its lateral height (l) and the in-centre angle of the sector in order to find/calculate the material needed to make it. According to Herron as cited in Mulford & Robinson (2002) “their level of understanding should be extended beyond the simple ability to use words to describe the concept”
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(p.734). Thus, the teacher was able to realize students’ understanding as well as their perceptions about the SAC from their explanations in their team work about how to construct/deconstruct a cone-hat.

Finally, in section D (Appendix A-tasks 11-12) the teacher examined their problem solving by posing a problem: “A cone-hat is given. Find the material needed to make it if its lateral height is l”. The “thought-experiment” started by asking the students who were working in small groups, first to solve the problem and then to prove the formula (S=πrl, r=base radius and l=lateral height) of the SAC. Students were given 25-30 minutes to prove the formula and to show their presentations to the whole classroom.

For example, in their attempt to prove the SAC, the students’ argumentation in the experimental group, was as follows, when they were asked:

_How was the cone constructed?_

By using the List as well as the video recording tapes, the following dialogue developed in the experimental group.

S1: It’s a circle!
S2: No! It’s a sector because the circle cannot make a cone hat.
Researcher: Bravo this is correct answer. How do you find its area?
S2: We have to divide the sector in triangles [primitive conjecture], however, what will be the base of the triangles?

After some hard thinking.

S1: The smallest the triangles the closest the height will reach the lateral height.
S2: Do you mean that the height of the triangle will be the lateral height?
(NB: she wrote down that the height of a triangle equals the lateral height of a cone (h=λ)).
S1: Yes! So the area of the sector will be the area of the SAC.
(NB: she found a counter example to alter S2’s process of thinking).

So, the area of the sector will be

$$E_{sector} = \frac{\pi \lambda^2 \theta}{360} = \frac{\pi \lambda^2}{360} = \frac{180}{\pi} \frac{\mu^\circ}{360} = \frac{\lambda^2 \mu^\circ}{2}$$

After some very hard thinking.

S2: But, the radius (r) of the sector equals the lateral side (λ) of a cone (r=λ). What about the in-centre angle μ of a sector?

[S3 was working silently by herself in S2’s primitive idea, in their team]
S3: Look! If we are adding the bases of the triangles, they are equal to the length of the arc of the sector. So, rμ^\circ=λμ.
(NB: she realized after some hard conceptualization that the radius of a sector (r) equals to the lateral height (λ) of a cone).

S2: So my idea becomes easy $$b_1 + b_2 + ... + b_v = \frac{\lambda \mu^\circ}{2}$$

S3: Yes! This is exactly the same as S2’s idea. However, it’s obvious that the length of the arc of a sector equals to the base circle circumference having radius ρ.
(NB: and she wrote down the statement λμ^\circ=2πρ).
S2: HMm! What is the radius ρ?
S1: It is the radius of the base of a cone, while the circumference of the circle is 2πρ.
S3: Yes, by connecting the two edges [meant radius] of the sector a cone in 3-dim a
cone hat is formed.

Researcher: Very well! Excellent! You have proved the formula.

5. The Euclidean method

In this teaching method, the teacher does not give the student a chance to create a hypothesis or to criticize a conjecture. Therefore, the student is not encouraged to refute the conjecture, to come up with counter-examples, or use strategies of problem solving. As a result of this, the inductive method, which requires carefully chosen examples to introduce a concept or to prove a theorem or a mathematical statement, does not exceed the deductive method. This method encourages the up-down scenario of the Euclidean axiomatic system - “A deductive system with injections of infallible truth that inundate the whole system from the top” (Koetsier, 2002, p.193).

The Euclidean method was applied (in 20 min of one teaching period) in the control group. As a direct instructional guided method is defined “as providing information that fully explains the concepts and procedures that students are required to learn as well as learning strategies” (Kirschner et al., p.74, 2006). The classroom was arranged (as a whole group) in the traditional manner, where the tables were arranged in a line; thus students were unable to collaborate with each other. After drawing a right angle triangle on the whiteboard, which was rotated on its vertical side, the teacher illustrated the properties of the cone on the whiteboard (lateral side, height, vertex, radius of a base circle) and asked students to name them. She verbally defined a solid cone and the curved surface area of a cone, by writing these definitions on the whiteboard. Then she took a cone shaped hat, opened it and by asking specific questions such as “what do you think the curved area of the cone is in the two dimensional space?” she demonstrated to students that the curved surface area of the cone is equal to the sector of the cone, after showing them its expansion. Afterwards, she took the marker and started writing the following proof on the whiteboard according to the textbook by Argyropoulos et al. (2010) as follows:

Teacher: Consider a vertical segment KO to be a plane circle and the side KA to be the hypotenuse (Figure 3) of a right angle triangle KOA with a right angle at O [the teacher first drew the side KO to be vertical on a plane circle and then she drew the sides KA and OA of the right angle triangle KOA]. The side KA is rotated around its vertical side KO to form the SAC. The hypotenuse KA upon rotation intersects a fixed point K and subtends a convex, side OA sustains a circular disk with centre O and radius OA that is the locus of the side OA which is in a plane perpendicular to KO at point O. The convex produced by the hypotenuse KA is called the lateral side of a cone. That is, the curved surface of the cone. The vertical side KO remains constant during the rotation and is termed the axis or height, while point K [is called] the peak and the circle - the locus of the side OA, is called the base of a cone having base radius OA called the radius of the cone.
[She continues to explain the process of proving the SAC by drawing on the whiteboard indicating that it was similar to the diagram (Figure 4) in the textbook used in class]

**Teacher:** If we call $\phi$ the in centre angle of the sector in degrees, we have the relationship $\frac{360}{2\pi \lambda} = \frac{\phi}{2\pi \rho} \Leftrightarrow \phi = \frac{\rho}{\lambda} 360^\circ$.
Therefore, the developed curved surface of a cone with a side of length $\lambda$ and a radius $\rho$ is a circular section of radius $\lambda$ and arc length $2\pi \rho$ or, in degrees, $\phi = \frac{\lambda}{\lambda} 360^\circ$.

From the above we consider that the SAC equals to $S = \pi \rho \lambda$.

[She also refers to the 2nd approach by using the limits of the area of a pyramid to prove the SAC.]

Teacher: We can also prove the SAC by using the limits of a pyramid such as:

$$S = \lim_{n \to \infty} (P_{\text{base}} \frac{h_{\text{slant}}}{2}) = \lim_{n \to \infty} (2\pi \rho \frac{\lambda}{2}) = \pi \rho \lambda.$$ 

[Then the teacher gave some exercises to the students until the end of the teaching period]

6. Data collection instrument and procedure

Data was collected using the same cognitive test (Appendix A) which was administered as a pre-test, post-test and delay-test. The **pre-test** was administered a week before the intervention. It was used to establish that both groups were at the same level of readiness. The **post-test** was administered two weeks after the intervention to obtain information on students’ achievement at the various levels of Bloom’s taxonomy. The **delayed test** was administered two weeks after the post-test. It enabled the researchers to assess the students’ retention of their learning after a period. The role of the delayed test is to provide students with the time needed to become familiar with the new concept.

**The test:** The test consists (Appendix A) of twelve questions (see the analysis of the test’s tasks in the following section) and is divided into four sections: 1) pre-existing knowledge of the cone; 2) notion of the construction/deconstruction of the cone and the creation of its surface area; 3) students’ perceptions of the construction of a cone; 4) problem solving

**Interviews:** The interview (Appendix C) was conducted in the experimental group only. In order to change their alternative conceptions the students needed to be exposed to discrepant events—that is, situations where their incorrect knowledge does not work (Mulford, & Robinson, 2002, p.743). The questions of the interview had a twofold goal: First, the students were asked to clarify if they changed or not any remaining misconceptions/alternative conceptions which were presented in the pre-test and then, to explain how they responded in their questionnaire. If the answers on the questionnaires concerning the pre-test as well as the questionnaire were not identical with the correct responses in the interviews, they were considered wrong in the analysis of the pre-test. The role of the researcher was not to give the correct answer to differentiate the experimental and the control group in the post-test results. The use of interviews was auxiliary. However, the role of interviews was to clarify and to support findings from other instruments such as the questionnaire and the pre-test results.
7. Analysis of the test’s task according to Bloom’s taxonomy

The tasks are based on the cognitive levels of Bloom’s Taxonomy (Abbott, et al., 2012). However, there are no clear boundaries between levels; each level is characterized by descriptive “process verbs”. The knowledge (K) level can be described by the verbs of the lowest level of cognitive skills, such as: define, label, listen, list, name, read, recall, record, relate and repeat, where this characterizes section A. The “process verbs” in the understanding (U) level include such actions as: solve, tell, describe, explain, locate, report and recognize, where this characterizes in particular the tasks of section B. The “process verbs” in the application (A) level are apply, demonstrate, illustrate and use, where these especially characterize the tasks of section C, and finally in section D the “process verbs” are mainly “calculate and solve” for the analysis level and “construct, create, design, compose” for the synthesis level.

The first section (section A) consists of the first three questions representing the Knowledge (K) level of the Bloom taxonomy. The first question is open, its aim being to identify whether the students possessed a basic knowledge of Pythagoras’s theorem. The second question requires matching column A to column B; the purpose being to identify whether the students had acquired the basic knowledge of the elements of a circle (radius, area and perimeter of a circle, area and perimeter of a sector, the relationship between radians and degrees). The third question requests students to complete sentences referring to the relationship between radius and degrees. (Appendix A)

Section B, investigating notions of the construction/deconstruction of the surface area of a cone, consists of five questions (tasks 4-8). Three of them (tasks 4-6) belong to the knowledge (K) level. Task 7 consists of 3 parts; parts “a” and “b” belong to the comprehensive/understanding (U) level of Bloom’s Taxonomy, whereas part “c” belongs to the application level (A). Its aim was to ascertain that the students knew about the geometrical meaning of the surface area and the volume of a cone (i.e. that the students were aware that volumes are formed by rotating areas and that areas are formed by rotating lines). Task 8 belongs to the application level (A) of the taxonomy; it examines the cross section of a cone. Tasks 7c and 8 are open-ended questions; whereas 7c refers to the shape that was formed in the previous tasks (7a and 7b), concerning the creation of the SAC, by rotating the hypotenuse of the right angle triangle about an axis.

Section C examines students’ perceptions of the construction of a cone. It consists of two multiple-choice questions, one question (task 9) in the Application level of the Bloom taxonomy with the aim of exploring whether the student knows how to construct a cone from 2-dim to 3-dim and the other (task 10) in the Understanding level, aiming to identify whether the student knows how to deconstruct a cone from 3-dim to 2-dim.

The fourth section D (tasks 11 and 12), problem solving, consists of two open-ended questions in the Analysis-Synthesis (A-S) level of the said Taxonomy (see Appendix A).
8. Data analysis

Two-way Anova was used to analyse the data. This was found suitable because it enables one to measure the effect of two or more independent variables (usually an intervention) on a dependent variable (Morrell & Carroll, 2010). The Lakatosian method was applied. Group mean scores of the experimental and control groups on the tests were compared using an ANOVA (2X3) to look for significant differences. These comparisons include pre-to post test and delayed differences for both groups, a pre-test between both groups and a post-test between both groups as well as a delayed test between both groups.

9. Findings

Results of the students’ achievement: As shown in Table 1 (Descriptive Statistics) both groups had higher means in the post-test and delayed test than in the pre-test. Furthermore, as shown in Table 1, the experimental group had lower means than the control group in the pre-test, 11.39(±5.12) versus 12.49(±3.91), and higher means in the post-intervention test, 16.91(±5.93) versus 15.07(±5.076), and in the delayed test 18.53(±4.96) versus 14.95(±5.17).

Table 1: Descriptive Statistics
(Experimental group:1, Control group:2)

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test</td>
<td>1</td>
<td>11.398</td>
<td>5.12069</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12.49</td>
<td>3.90673</td>
</tr>
<tr>
<td>Post test</td>
<td>1</td>
<td>16.9082</td>
<td>5.93102</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>15.07</td>
<td>5.0757</td>
</tr>
<tr>
<td>Delayed test</td>
<td>1</td>
<td>18.5306</td>
<td>4.9559</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>14.95</td>
<td>5.17058</td>
</tr>
</tbody>
</table>

Table 2 indicates the mean achievements of each group (the experimental and the control) as regards the correct task solutions of the test (pre- to post and delayed) after grouping the questions according to the Bloom’s taxonomy levels. The solutions were marked 1 for a correct answer and 0 for a wrong answer. For example, all the knowledge tasks (Tasks 1-6) of the test were added up, and they symbolize knowledge level K(1-6) is consisted of 62.5% (i.e. equals to 15/24 of the total test score) of the test. The same applies to the rest of the tasks in both the experimental and control groups. Tasks 1-3, referring to the pre-existing knowledge were included despite that both students in the experimental and the control groups achieved similar means, indicating that they had both started from the same level of readiness.
Table 2: Analysis of the Bloom’s Taxonomy levels (inclusive pre-existing knowledge)

<table>
<thead>
<tr>
<th>LEVELS</th>
<th>K(1-6)</th>
<th>U(7a,7b,10a)</th>
<th>A(7c,8,9a)</th>
<th>A-S(11-12)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental-group (n=98)</td>
<td>15marks</td>
<td>3marks</td>
<td>3marks</td>
<td>3marks</td>
</tr>
<tr>
<td>Control-group(n=100)</td>
<td>38,01(60,82%)</td>
<td>5,87(46,96%)</td>
<td>2,25(18%)</td>
<td>0,73(5,84%)</td>
</tr>
<tr>
<td><strong>Post test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental-group(n=98)</td>
<td>52,04</td>
<td>9,86</td>
<td>7,19</td>
<td>5,78</td>
</tr>
<tr>
<td>Control-group(n=100)</td>
<td>43,88</td>
<td>7,25</td>
<td>5,33</td>
<td>3,17</td>
</tr>
<tr>
<td><strong>Delayed test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Experimental-group(n=98)</td>
<td>50,68</td>
<td>10,54</td>
<td>7,36</td>
<td>6,72</td>
</tr>
<tr>
<td>Control-group(n=100)</td>
<td>48,58</td>
<td>8,46</td>
<td>3,54</td>
<td>3,08</td>
</tr>
<tr>
<td>Test (%)</td>
<td>62,5</td>
<td>12,5</td>
<td>12,5</td>
<td>12,5</td>
</tr>
</tbody>
</table>

**Within time scores of pre-to post and delayed tests:** In this study the dependent variable refers to students’ achievements within time (pre-to post and delayed) while the independent variable is the method of teaching. Within time measured each group twice (pre-to post-test and/or post-to delayed test) in examining the Bloom’s taxonomy levels.

Table 3 reports the descriptive statistics of the students’ achievements at these levels within times (pre-to post and delayed test). We are interested in the difference in the main effect, i.e. whether the main effect is significantly different within each group over time. Consequently, we wish to establish whether the students were able to achieve higher order thinking by examining the pre-to post and delayed test of the Bloom’s taxonomy levels.
Figure 5: The plot of mean scores of the Groups (1: experimental and 2: control) within time (pre-to post-test and delayed test noted on the horizontal axis as 1-2-3 respectively).

Figure 5 illustrates the plot of the mean scores of both groups. It shows how these groups performed on the pre-test, post-test and delayed test (noted on the horizontal axis as 1-2-3 respectively), with each line representing a group. From this graph it is clear that the performance of the experimental group (Group 1), that applying the Lakatosian method was better than the control group (Group 2) where the traditional Euclidean method was applied. Even though both groups’ performances were low in the pre-test, they showed increases in scores in the post-test and the delayed tests. However, the post-test and the delayed tests mean scores of the experimental group were higher than that of the control group (Figure 5) at all times (pre-to post-delayed test).

Table 3: Tests of Within-Subjects Contrast (pre-to post and delayed test)

<table>
<thead>
<tr>
<th>Source</th>
<th>factor1</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>Linear</td>
<td>2277.24</td>
<td>1</td>
<td>2277.24</td>
<td>186.826</td>
<td>0.001</td>
</tr>
<tr>
<td>Time and group</td>
<td>Linear</td>
<td>540.329</td>
<td>1</td>
<td>540.329</td>
<td>44.329</td>
<td>0.001</td>
</tr>
<tr>
<td>Error (time)</td>
<td>Linear</td>
<td>2389.06</td>
<td>196</td>
<td>12.189</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The interaction within groups & time was also statistically significant F(1,196)=44.329, p<0.001 (Table 3) as well as the main effect between groups within time (pre-to post and delayed test) F(1,196)=5.829, p<0.017 (Table 4). While all groups increased their scores within time (pre-to post and delayed test) the increase of means scores in the experimental group was much higher than the increase of means in the
control group within all times.

Table 4: Tests of Between-Subjects Effects (pre-to post-and delayed test)

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>131703,4</td>
<td>1</td>
<td>131703,4</td>
<td>2485,578</td>
<td>0,001</td>
</tr>
<tr>
<td>Group</td>
<td>308,859</td>
<td>1</td>
<td>308,859</td>
<td>5,829</td>
<td>0,017</td>
</tr>
<tr>
<td>Error</td>
<td>10385,46</td>
<td>196</td>
<td>52,987</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis of the Bloom’s taxonomy levels within time (pre-to post and delayed test)

Given the analysis of the results of the pre-to post and delayed tests (Table 5) a significant effect within all times in all of the Bloom’s taxonomy levels was observed, whereas a significant effect in between groups was not observed at the lower levels (Knowledge and Understanding) (F(1,196)=0,537, p=0.465 and F(1,196)=0,001, p=0.976) respectively (Table 6), as well as at the lower levels within time & group (F(1,196)=6,466, p=0,012 and F(1,196)=1,14, p=0,287) respectively (Table 5). This demonstrates that the Lakatosian method when compared to the Euclidean method is more effective within all time periods, signifying that the Lakatosian method positively affected the students’ achievement at all of the Bloom’s taxonomy levels, especially in the higher levels of application and analysis-synthesis.

Table 5: Tests of Bloom’s Taxonomy levels within time (pre-to post and delayed tests) in both experimental and control groups

<table>
<thead>
<tr>
<th>Dependent Variable Pre-post test</th>
<th>Source</th>
<th>TIME</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge Level</td>
<td>Time</td>
<td>Linear</td>
<td>1</td>
<td>379,132</td>
<td>44,377</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Time &amp; Group</td>
<td>Linear</td>
<td>1</td>
<td>55,243</td>
<td>6,466</td>
<td><strong>0.012</strong></td>
</tr>
<tr>
<td></td>
<td>Error (factor1)</td>
<td>196</td>
<td>8,543</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understand Level</td>
<td>Time</td>
<td>1</td>
<td>29,546</td>
<td>45,667</td>
<td>0,001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time &amp; Group</td>
<td>Linear</td>
<td>1</td>
<td>0,738</td>
<td>1,14</td>
<td><strong>0.287</strong></td>
</tr>
<tr>
<td></td>
<td>Error (factor1)</td>
<td>196</td>
<td>126,808</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application Level</td>
<td>Time</td>
<td>Linear</td>
<td>1</td>
<td>43,12</td>
<td>77,622</td>
<td>0,001</td>
</tr>
</tbody>
</table>
THE LAKATOSIAN HEURISTIC METHOD AFFECTS POSITIVELY ON THE HIGHER ORDER THINKING OF BLOOM’S TAXONOMY LEVELS ON STUDENTS’ ACHIEVEMENT COMPARED TO THE EUCLIDEAN METHOD
Chrysoula Demetriou-Hadjichristou, Ugorji I. Ogbonnaya

<table>
<thead>
<tr>
<th>Dependent Variable Pre-post test</th>
<th>Source</th>
<th>TIME</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time &amp; Group</td>
<td>Linear</td>
<td>1</td>
<td>11,443</td>
<td>20,599</td>
<td>0,001</td>
</tr>
<tr>
<td></td>
<td>Error (factor1)</td>
<td></td>
<td></td>
<td>0,556</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Analysis-Synthesis Level

| Time | Linear | 1 | 99,8 | 139,883 | 0,001 |
| Time & Group | Linear | 1 | 16,163 | 22,655 | 0,001 |
| Error (factor1)   |       |    | 0,713 |       |      |

Table 6: Tests of Between-Subjects Effects of Bloom’s Taxonomy levels within time (pre-to post and delayed tests) in both experimental and control groups

<table>
<thead>
<tr>
<th>Knowledge Level</th>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>71121,1</td>
<td>1</td>
<td>2393,82</td>
<td>0,001</td>
<td>0,924</td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>15,951</td>
<td>1</td>
<td>0,537</td>
<td>0,465</td>
<td>0,003</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>5823,22</td>
<td>196</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Understanding Level

| Intercept       | 1970,75 | 1 | 1268,88 | 0,001 | 0,866 |
| Group           | 0,001   | 1 | 0,001   | 0,976  | 0,001 |
| Error           | 304,416 | 196 |        |        |      |

Application Level

| Intercept       | 551,572 | 1 | 386,911 | 0,001 | 0,664 |
| Group           | 33,363  | 1 | 23,403  | 0,001  | 0,107 |
| Error           | 279,413 | 196 |        |        |      |

Analysis-Synthesis Level

| Intercept       | 339,171 | 1 | 234,618 | 0,001 | 0,545 |
| Group           | 57,945  | 1 | 40,083  | 0,001  | 0,17  |
| Error           | 283,343 | 196 |        |        |      |

Extra analysis between pre-to post and post–to delayed test was considered necessary aiming to observe the main effect of Bloom’s taxonomy levels within the specific time (pre-to post and post-to delayed-test).
However, the Lakatosian method had a significant effect between the groups in the hot levels (Table 6), as well as at all levels within time (pre-to post and delayed test) (Table 5). This was deeply supported in examined within both times (pre-to post and post-to delayed test) that the main effect was observed in the hot (application and analysis synthesis) level of the Bloom’s taxonomy. We can conclude that the method may function positively at the higher levels of Bloom’s taxonomy over a longer period of time, during which students can sustain their knowledge (Table 1), and that more time may be necessary to effect a change in their alternative conceptions.

Figure 6 depicts a comparison of the students’ achievements at all levels of Bloom’s taxonomy. The experimental group achieved better than the control group at all these levels.

Figure 6: Comparison Analysis of the Bloom’s taxonomy cognitive test results of the experimental group (Group 1) and control group (Group 2)

<table>
<thead>
<tr>
<th>Level</th>
<th>K(1-6)</th>
<th>U</th>
<th>A</th>
<th>A/S</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>62,5</td>
<td>12,5</td>
<td>12,5</td>
<td>12,5</td>
</tr>
</tbody>
</table>

The percentage average achievement of the students at the Bloom’s taxonomy levels (Table 2), as also illustrated in Figure 6, indicates that the ranges of the groups’ scores in the pre-test are similar in the Knowledge level: 38,05-50,68 and 39,96-48,58 (Table 2) for the experimental and control groups respectively. However, for the post-test and delayed test the ranges were 5,87-10,54 and 6,17-8,46 in the Understanding level, 2,25-7,36 and 2,96-3,53 in the Application level and 0,73-6,72 and 0,54-3,08 in the Analysis-Synthesis level respectively (Table 2). This demonstrated that the experimental group improved more than the control group.

10. Discussion of the findings

As it is referred in the introduction of this article students’ misconceptions are
overcoming easier from pre-to post test in the experimental than the control group. The main misconception of the students in the pre-test was their inability to construct/deconstruct the cone from 2-dim to 3-dim and vice versa (see task 9 and 10 pre-post test results respectively in Appendix A). Thus, they wrongly interpreted the analysis-synthesis (A-S) data of the test task 12: “A cone hat having a surface area the sector of a circle with in-centre angle of $60^0$ and radius $r=12cm$ is to be made using a material. Find the height of this hat” (Appendix A), indicating inability to achieve higher order thinking in both groups of pre-test.

For example, student S(D) by solving the pre-test, imagined it as an isosceles triangle that rotates $180^0$ about its axis (height of a triangle) to create the cone (misconception 1). When she tried to justify the answer of task 12, S(D) thought that the in-centre angle of the sector was the same as an in-centre angle of any shape trying to find a centre and a radius of a shape (i.e. triangle) as shown in Figure 7(I). Therefore, S(D) was wrongly led to believe that the foot of the perpendicular from the vertex of a triangle to its base was a centre of a ‘circle’ (in such a case triangle) with radius $\rho=12$. As a result, S(D) “saw” the in-centre angle as shown in the extreme case Figure 7(I) below. The great confusion that can be seen in this conceptualization shows her inability to visualize the SAC between the two spaces. As a result of this, students were not able to find relations between the two dimensions.

Figure 7: Misconceptions of students S(D) about the construction of a cone in task 12

(I)  

(II)
However, experimental group student S(D), due to the Lakatosian method, overcame her misconceptions as the excerpt from the post test shows in Figure 7(II). She realised how to construct/deconstruct a cone as well as how to find relations between the two spaces \((2\pi R = \lambda \theta c)\). She could transform the angle of \(60^0\) into the radians of \(\pi/3\). However, she wrongly substituted it at the beginning in the formula \((r\theta c)\) of the arc of a circle, but afterwards she corrected it by \(\pi/3\). Therefore, she realized that the radius of the sector \((r)\) was equal to the lateral height \((\lambda)\) of a cone by substituting it on the true formula of the arc of a sector as \((\lambda\theta c)\). Despite the fact that she could not solve the problem posed in the correct way, she achieved higher objectives.

Consequently, the control group students, even in the post-test (instead of constructing a cone from a given sector) wrongly continued to draw it as a process creation by rotating \(360^0\) a right-angled triangle (Figure 8) about one of its vertical sides to create a cone. This misconception resulted from the method of teaching used in which they were “learning by heart” (Kotsopoulos, 2007). Therefore, they applied the theorem that the opposite side \((p)\) to \(30^0\) is half of the hypotenuse (Figure 8). They wrongly calculated the hypotenuse as well as the cone’s height by applying the Pythagorean Theorem in a right-angled triangle.

**Figure 8: Misconceptions of control group on the construction of a cone**

[Diagram showing misconceptions]

Judging by the interview (Appendix C) as well as by examining the questionnaire (Appendix B), the researcher noticed that Lakatosian heuristic method made students to acquire more “explanatory power” (Lakatos, 1970, p.137) than did the Euclidean method. For example, in the test’s task 7a the students were asked: *When a right-angle triangle is turned \(360^0\) about the vertical line, then a 3-dimensional solid is formed. Draw this solid and name it.* In the pre-test many students gave answers like *it is an isosceles triangle* by drawing a symmetrical triangle about its axis (vertical side) of symmetry with or without a base circle. Few students sketched a cone as a cross section of a cone (an isosceles or an equilateral triangle) in 2-dim arguing *it is a cone* and only one student tried to draw the locus of its hypotenuse, as a cone’s surface area (Figure 9), but she couldn’t name it. However, in the post-test, as well as the students’ interviews, the results of the experimental group showed a conceptual understanding by recognising a shape of a cone in a space as well as sequential apprehension (Duval, 2002) that was about how to construct or deconstruct a shape, such as a cone. They also gave reasons to distinguish the solid cone from the SAC.

**Figure 9: Student’s art of the SAC**

[Diagram showing student’s art of the SAC]
It is likely that the misunderstanding students do have concerning the definition of the notion of a cone and/or a SAC is due to the Euclidean teaching method which leads to a series of misconceptions (e.g. the belief that a cone, as solid cone, is constructed by (rotated) right angle triangles). This is exactly what many students see when a right angle triangle is rotated on one of its vertical sides. This way of imagining a cone gives rise to misunderstandings about the construction of a cone in 3-dim, as well as about the development of a cone (i.e. as a sector of a circle) on surface level (from 3-dim to 2-dim). Also, the responses of students in the experimental group included reasons such as the angle of the sector in task 9a was greater than that in the task 9b or the task 9a (Appendix A) is the correct answer because it depends on its base radius. Students in the experimental group improved better than the control group on task 7c: if the hypotenuse of the above shape is turned 360° over the vertical line, what is the difference between the new shape and the previous solid shape? By showing that they were realized the difference between the SAC and the solid cone.

The study has established that using the Lakatosian heuristic method to teach the surface area of a cone (SAC) has a more positive effect on students’ achievements at all levels of Bloom’s taxonomy than the Euclidean method. This could occur because the Lakatosian heuristic method causes students to develop deep understanding (see S(D)’s example in Figure 7) as they build new knowledge based on their previous knowledge. It allows students to progress as they justify a new concept based on prior knowledge. It, firstly, requires them to reflect on prior learning while, secondly, it allows them to explain and apply prior learning to a new scenario. It is considered to be positive for all students, not only for low achievers (see S(A)’s model eliciting activity Figure 10) but also for high ability students who are engaged in the solution of the problem.

According to Harris (2010) the high ability students, particularly, can pass through the first three levels of Bloom’s taxonomy quickly (see the analysis of table 5 and 6 were the first two levels of Bloom’s taxonomy was not statistical significant in both group (within times or between groups). Hence, such students will need to be exposed to tasks that will be more challenging beyond these levels, in order to keep them motivated to learn.

This method not only promotes catering for the needs of students at different levels of readiness, it also causes them to participate in knowledge construction through the discourses (Moore-Russo, et. al., 2013) with which the students engage in the process of collectively finding the solution to a given problem. The finding of this
study is in consonance with the view of Kulik (2003), that as students (low achievers as well as gifted students) work together in the same class, in small groups (Dhlamini & Mogary, 2013), “producing positive results and even dramatic improvements” (Kulik, 2003, p.274) in students’ learning can be achieved. Such an improvement showed by the student S(A) from Iran who was motivated by the intervention in the experimental group so as to engage in the following unique problem eliciting activity. Two weeks after the intervention, when students were solving the post-test, instead of doing his test, a low achiever student S(A) tried to answer task 9 in his group working alone:

A cone-shaped tall hat is requested to be made for the junior school carnival show. Circle only one of the following shapes that is the proper one to be used for the model of the hat.

S(A) had been a low-achieving student. He was inspired to develop a real model in his attempt to solve test task 9 (Appendix A). He first thought of how to create the SAC. He did so by visualizing the cone and reasoning about what he “can see” mentally as a “mental model” (Hersh, 2014, p. 20), inspired from the thought-experiment during the intervention. With this model he explained why the cone with the smaller base circle was the tallest and he described his model.

S(A) student showed the following model in order to explain why the sector formed the tallest cone, giving a clever model justifying his explanation. He cut two pieces of congruent right-angled triangles and by putting them vertically on his desk, as shown in Figure 10a, he first transformed them and then turned them around their vertical sides (Figure 10b). He was sceptical and then said:

When we transform these two same (he meant congruent) triangles we will have different heights as well as different base radii (Figure 10b). Then he continued saying: By rotating them around their vertical sides we will have a cone...so the tallest cone has a smaller circumference as well as smaller area (Figure 10b).
From that observation, in the post-test, they realized that the tallest hat depended also on the in-centre angle of the sector of a cone. Therefore, they could experience deductive learning (as shown in Figure 11) by justifying student S(A)’s model.

**Figure 11: Student’s deductive reasoning by using model eliciting activity skills**

Table 2 illustrates that the average achievements of the students at the application and analysis-synthesis level in both groups and within all times were the lowest in the taxonomy levels achievements. However, the students’ results on perception of the construction (task 9a & 9b in section C) of a cone were better than those of the notion of the creation of a SAC (task 7c in section B) within all times, in both groups, with the experimental group achieving higher than the control group. A great misunderstanding observed in the notion of a creation of the cone graphically, when a right angle triangle is rotated about one of its vertical sides (task 7a) compared to the perception of a construction of a cone from 2-dim to 3-dim (task 9a). However, the high test results about the notion of a cone (task 7a), compare to their perception of how a cone was constructed (task 9a) might be due to a pseudo-learning (Vinner, 1997, p.98). This was supported by the experimental group interviews (Appendix C) as well as from their questionnaires (Appendix B) which were conducted immediately after the intervention, in both groups. They had also a great confusion among the notion of the creation of a SAC (task 7c) compared to the creation of a cone graphically (task 7a). Their perception of how the solid cone) was constructed (task 9a & 9b) or deconstructed (task 10) was
THE LAKATOSIAN HEURISTIC METHOD AFFECTS POSITIVELY ON THE HIGHER ORDER THINKING OF BLOOM’S TAXONOMY LEVELS ON STUDENTS’ ACHIEVEMENT COMPARED TO THE EUCLIDEAN METHOD

Chrysoula Demetriou-Hadjichristou, Ugorji I. Ogbonnaya

also a main student’ misunderstanding.

The implication is that teachers as well as students should not view sense perception (Hersh, 2014, p.24) as being less important than mathematical intuition. It is the teachers’ role to use appropriate teaching methods, like the Lakatosian heuristic method, to give students opportunity to express their sense perception (Umland & Sriraman, 2014, line 89).

One major reason for the positive result of the Lakatosian heuristic method in this study could be the opportunity which it offered the students to discover solutions to problems (De Villiers, 2010; De Villiers, 2012). The said method of teaching engages them in problem solving which in turn helps them to develop creative thinking skills fundamental to development of higher order thinking.

For example, those students of the experimental group who were inspired by the first math applets used in the intervention were led to two different ways to prove the required SAC. These were by using: i) the pyramid as a solid (3-dim) and, ii) the development of the pyramid in (2-dim) as shown in the next two Figures 12a and 12b respectively.

**Figure 12: Proves of SAC from experimental group students**

![](image1)

Figure 12a

Figure 12b

Only one student S(B) from the experimental group, in her attempt to prove the SAC, discovered that by using the cut and paste method, he could make a parallelogram. She was cutting the sector of a cone, when it is developed in 2-dim, in several equal smaller sectors. By putting them one next to the other upside down (Figure 13), she transformed it (sector) in a new shape of a rectangle (or a parallelogram). Thus, she considered the base of a parallelogram as a half perimeter of the circle (considering a perimeter of a circle equals to the arc of a sector) and the height (υ) of a parallelogram to be the radius of a sector which equals the lateral height (λ) of a cone, that is (υ=λ).

**Figure 13: Proving the SAC by making a parallelogram**
It is very important to mention what a student S(B) wrote in her questionnaire when asked if the lesson was interesting:

*it is much easier to remember a formula, if you know where the maths formula is originated, and also you make yourself more able to invent formulas and solve problems in different ways. For example, when a problem cannot be solved using the traditional ways you become more able to discover new formulas to solve it.*

11. Conclusion

It has been observed that the Lakatosian method of teaching the SAC has a significant positive effect on students’ achievements at all levels of Bloom’s taxonomy especially at the higher order thinking (hot) level (i.e., application and analysis-synthesis) as compared to the Euclidean method of teaching. Students’ achievements in the understanding level demonstrated that they were capable of achieving the highest level of the taxonomy, that of analysis–synthesis. They also did so more easily when applying the Lakatosian method, compared to when they applied the Euclidean method.

An important step for learning mathematics and for conceptual understanding in mathematical communication is necessary for ideas to become objects of reflection, refinement, discussion and amendment (Truxaw, & De Franco, 2007 as cited in Wachira, & Pourdavood, 2013, p. 5). Therefore, teachers must seek teaching methods that will help students in their conceptual learning, by analyzing both mathematical and cognitive thinking when they introduce a new mathematical concept (Duval, 2002, p. 313). In this way “learning is considered to be easier due to changes in the brain at the level of neuronal connections, and the ease with which particular synapses are activated” (Goswami, 2008, p. 264 as cited in Taber, 2009) so that students can easily find the related concepts among related tasks (such as the related tasks of this test) and to change their level of readiness in achieving higher order thinking according to Bloom’s taxonomy levels.

However, teachers in the control group were graduated with honours degree, having special qualifications (master in mathematics and statistics), working in schools over 10 years, they are insisting in the same model of direct teaching as they were taught in their schools’ age.

As a result, students in the experimental group interpreted the data of the tasks...
overcoming the visual perception, more easily than the control group, which hides two major misconceptions: i) the confusion between constructive/deconstructive a cone and creating a SAC, ii) the confusion about visualizing the SAC between the two spaces. Both led students to the inability to find relations (verbal or mathematical) between the 2-dim spaces.

Thus, visualization and the implementation in discourses in group work played an important role in teaching the SAC using the Lakatosian heuristic method. Therefore, students were able to develop cognitive activities on their own as well, observed and discovered the mathematical relations (Duval, 1999, p.7) about a concept of a SAC and between the two spaces. Such relations are deemed to be the procedures that the students developed about their \textit{relative scientific concepts}, between \textit{naïve scientific} and the \textit{target scientific concept}. Through the \textit{relative scientific concepts}, students supported their \textit{alternative scientific concepts} so as to be led to the \textit{final stage} of the model (Oh, 2010) which was to prove the SAC. Thus, they acquired higher order thinking skills, especially in the hot levels of Bloom’s taxonomy.

Of great importance is the use of mathematical language and the sense of perception due to the Lakatosian method, in the experimental group compared to the control group.

12. Recommendations

The outcome of this study is promising; hence, we recommend that the Lakatosian heuristic method be made part of the curriculum of Geometry in Cyprus schools as it could help remedy the problems the students face in learning this subject. For this to be done effectively, teachers may need to be trained on how to effectively implement the said method.

We also recommend that this method be applied to teaching the students who study mathematics within the framework of the common core subjects; those who are not high achievers in mathematics and study it only because it is compulsory. Similarly, it should be used for teaching the students who have opted to study advanced mathematics. In this way, it will become clear whether the method yields comparatively better results when used to teach students who are low achievers or those who are high achievers.

13. Limitations of the study

The main limitation of this study concerns the number of schools and students used in the study. Only two schools took part in the study. The result would have been more convincing if the study had been conducted with a larger population of schools and students. Also, due to time constraints on the part of the participating schools, the post-test and the delayed test were administered two week and four weeks respectively after the interventions instead of \textit{at least} two weeks and four weeks respectively after the intervention as recommended by Niaz (1998). Hence, future studies on this topic should take these limitations into consideration.
THE LAKATOSIAN HEURISTIC METHOD AFFECTS POSITIVELY ON THE HIGHER ORDER THINKING OF BLOOM’S TAXONOMY LEVELS ON STUDENTS’ ACHIEVEMENT COMPARED TO THE EUCLIDEAN METHOD

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References


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Appendix A: The Test

The Surface Area of a Cone

| Name: .................................................................................. | Class: ..........
| School: .................................................................................. | Date: ........../ ........../ .......

1. It is given a right angle triangle of side’s l, h, r. Find the relationship between its sides if side l is the hypotenuse of a triangle.
Answer: ..........................................................

2. Match the correct answers of column A with those of column B.
A circle (O, r) is given and θ° or μc is the in-centre angle of a sector of the same circle with radius r and centre O.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter of a circle</td>
<td>2πr</td>
</tr>
<tr>
<td>Area of a circle</td>
<td>2r</td>
</tr>
<tr>
<td>Area of a sector</td>
<td>(\frac{r^2}{2} \mu^c)</td>
</tr>
<tr>
<td>60° corresponds to</td>
<td>(\pi r^2)</td>
</tr>
<tr>
<td>Perimeter of a circle</td>
<td>(\frac{\pi}{3}) radians</td>
</tr>
<tr>
<td>Length of arc</td>
<td>(\frac{1}{2}ab\sin C)</td>
</tr>
<tr>
<td>Surface area of a cone</td>
<td>(\frac{\pi r^2 g^0}{360})</td>
</tr>
<tr>
<td>Area of a triangle</td>
<td>(\frac{\pi r g^0}{180})</td>
</tr>
<tr>
<td></td>
<td>(r\mu^c)</td>
</tr>
<tr>
<td></td>
<td>(\pi r l)</td>
</tr>
</tbody>
</table>

3. Complete the following sentences:
   If angle θ=30°, then it corresponds to ................. radians.
   If angle φ=π, then it corresponds to ................. degrees.
   If an angle is θ° degrees, then it corresponds to ................. \(\mu^c\) radians.

4. If a square turns 360° over one of its sides then the shape/solid formed, will be a
   (a) cylinder
   (b) rectangle
   (c) square
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>If a right angle triangle turns $360^\circ$ over one of its vertical sides, then the shape/solid formed, will be a…………………</td>
</tr>
<tr>
<td>6.</td>
<td>If a line segment AB turns $360^\circ$ over a line $(\varepsilon) // AB$, then the shape formed, will be:</td>
</tr>
<tr>
<td></td>
<td>(a) infinite lines</td>
</tr>
<tr>
<td></td>
<td>(b) a Surface Area of a Cylinder</td>
</tr>
<tr>
<td></td>
<td>(c) a symmetrical segment of AB about the line $(\varepsilon)$</td>
</tr>
<tr>
<td></td>
<td>(d) a Surface Area of a Cone</td>
</tr>
<tr>
<td></td>
<td>(e)……………………………</td>
</tr>
<tr>
<td>7.</td>
<td>When a right-angle triangle is turned $360^\circ$ about the vertical line, then a 3-dimensional solid is formed. Draw this solid and name it.</td>
</tr>
<tr>
<td></td>
<td>(a) The name of the solid is……………………………..</td>
</tr>
<tr>
<td></td>
<td>(b) What kind of triangle turns $180^\circ$ about the above vertical line in order to form the same solid? Answer:………………………</td>
</tr>
<tr>
<td></td>
<td>(c) If the hypotenuse on the above shape is turned $360^\circ$ over the vertical side of a triangle (that is an axis of symmetry), what is the difference between the new and the previous solid shape?</td>
</tr>
<tr>
<td>8.</td>
<td>What is the shape of a cross-section of a cone and a plane that is passing through the vertex of the cone and the centre of its base? (Thomaides, et.al., 2000, p.349). The shape is………………………………………..</td>
</tr>
<tr>
<td>9.</td>
<td>What is the shape of a cross-section of a cone and a plane that is passing through the vertex of the cone and the centre of its base? (Thomaides, et.al., 2000, p.349).</td>
</tr>
</tbody>
</table>

(d) rhombus
(e) ………..
A 3-dim cone is given in the figure below.

If we cut it by one side from the top to the base and open the shape in a 2-dimensional shape, which one is TRUE from the following to be the Surface Area of the Cone?

(i) A right-angle triangle  
(ii) An isosceles triangle  
(iii) A circle  
(iv) A sector of a circle  
(v) ......................

An equilateral cone called the solid which is formed when an equilateral triangle side’s a is turned of 180° about its height. Find: 1) the surface area of this cone 2) the side of the middle cross-section of an equilateral cone having surface area S=2πcm².
12 A cone-hat having surface area the sector of a circle with in-centre angle of 60° and radius r=12cm is to be made using a material. Find the height of this hat. (Papanikolaou, 1975, p.368).
Appendix B: Questionnaire

Name: ____________________________  Class: ____________________________
School: ____________________________  Date: ____________________________

Information: This questionnaire is based on what you have learned from the current lesson. You are kindly requested to supplement it in 25-30 min giving clarified and precised answers in part B. Please answer all the following questions in part B and follow the instructions in Part A.

Part A

Instructions:
Please put x in the box next to each question which you consider to be right. If you don’t know the answer, leave it blank.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>When a right angle triangle turns over one of its vertical sides, then the solid formed, will be a cone.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When a line segment AB turns 360° over a line (ε)//AB, then the shape formed, will be a cylinder.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Surface Area of the Cone in 2-dim is a right angle triangle.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Surface Area of a Cone equals to the sector having radius the lateral high of a cone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Surface Area of a Cone equals to πrl, where r is the radius of a base circle and l the lateral height.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A vertical cross section of a Cone, passing through its vertex, is an equilateral triangle.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The arc of a circle (O, l) centre O and radius l equals to lθ=2πρ, ρ= base radius of a Cone formed by this sector. and θ rad is the incentre angle of a sector of the circle radius l.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The use of the experiment (cut and paste method) in this lesson helps you to prove the formula of the Surface Area of a Cone.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The teacher centered lesson helps you in comprehend the lesson

The use of the mathematical applet/videos in teaching method contribute in better understand it.

**Part B**

The lesson today has helped you to resolve your queries that concern the properties and the definition of the surface area of a cone.  

Yes/No

A) Please mark which one of the following definitions you consider more suitable to define the surface area of a cone. Put in a circle only one answer.

1. The surface area is formed by the rotation of the right angle triangle around one of its vertical sides.
2. The surface area is formed by the rotation of the plane of a right angle triangle around one of its vertical sides.
3. The surface area is formed by the rotation of the hypotenuse of a right angle triangle around one of its vertical sides.

B) 1. Write down briefly what you have learned in the current lesson about the rotation of a segment about an axis of symmetry?

2. The lesson today was interesting  
   Explain why. Give an example.

3. The current lesson has helped you to comprehend certain misunderstandings for the construction/deconstruction of the surface area of cone between 2-dim and 3-dim.  
   Yes/No

   Explain why. What makes you solve your misunderstanding? Give an example.

4. Write down briefly what you have learnt today about the proving of the surface area
of a cone, \( S=\pi rl. \)
Appendix C: Interviews Schedule based on the questionnaire (Experimental group)

<table>
<thead>
<tr>
<th>Student’s names in a group</th>
<th>Group: A, B, C, D</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ …………………………</td>
<td></td>
</tr>
<tr>
<td>✓ …………………………</td>
<td></td>
</tr>
<tr>
<td>✓ …………………………</td>
<td></td>
</tr>
<tr>
<td>✓ …………………………</td>
<td></td>
</tr>
<tr>
<td>✓ …………………………</td>
<td></td>
</tr>
<tr>
<td>✓ …………………………</td>
<td></td>
</tr>
</tbody>
</table>

**Introduction:** The researcher will cover the following in a congenial manner:

- The researcher will first warmly thank students for their participation in the intervention lasting two teaching periods under video recording situations. Also, the researcher will thank them for their good behavior trying to give the best effort during the intervention annoying any disturbing from the videotaping that may be doing them feel uncomfortable as their first participation in such an experience.
- The researcher will explain to them that she is using the voice/video recorder to capture the interview.
- The researcher will go through the whole information letter, drawing particular attention to the following:
  - the student may withdraw
  - his/her name will be kept confidential (i.e. known only to the researcher) but the researcher may anonymously quote the things she/he says.
  - The researcher will destroy the video/audio tapes after transcribing.
- The researcher will ask if they have any questions
- The researcher will ask them to discuss the questionnaire filling after the intervention just to justify some points deeply and by explaining their way of thinking in their groups especially those who write few lines.
- The researcher will start to ask them one by one all the students in each of the groups spending about 10min in each one beginning from the first question by comparing what they have written in their questionnaire (the researcher will have their questionnaire in front of her to have a look of their answers).
- Finally the researcher will thank each group.
Follow up the questions: (start with positive feedback)
The researcher wait from students to explain her what they meant exactly comparing the two methods i.e. what they mean by interesting lesson, not monotonous etc. and what made the lesson interesting for them.
If they want to repeat such a lesson and why?
(give points they like more /less).
What make them understand the lesson than previous lessons and trying to explain her what they have learn from a lesson.
Finally the researcher will ask them to explain what they write down, what they have learnt and to show her all the steps of the SAC if they remember the proves of the formula just to realize the points that remain unclear or not.