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INNOVATIVE AND SUPORTIVE STRATEGIES IN BILINGUAL EDUCATION: THE CASE OF SECONDARY EDUCATION IN GREECE

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Abstract

This paper investigates whether, in intercultural secondary schools in Greece, some specific innovative forms of bilingual education are applied and additionally examines the degree of their effectiveness. These forms refer to the use of new technologies, the use of illustration and surveillance material in recalling previous knowledge, the combination of learning the subject in conjunction with language learning, the techniques of condensing, developing or modifying texts, the use of electronic dictionaries, in use of text organizers (prologue, italics), use of conventional words, use of multimodal material, use of text organizers (prologue, italics), dramatization, role play, simulation, and finally experimentation.

130 Greek secondary teachers participated in the study. Implicative Statistical Analysis was employed for data analysis.

Among the most important findings is that dramatization drives respondents to use role play and it is the role play that motivates them to use illustration and surveillance material as well as simulation. In addition, the results showed that the use of multimodal material leads to the use of a combination of learning the cognitive object in conjunction with learning the language of both illustration and supervisory material. Finally, equally important was the finding of the unambiguous relationship between experiment and pre-notation.

Introduction

Bilingual education is of a major importance nowadays. The issue of bilingual education has occupied educators, policymakers, researcher for a long time. Policymakers, educators and teachers are seeking to develop innovative strategies and learning approaches. Creese & Blackledge (2010) and Cumimins (2005) argued that it is necessary a rethinking and reevaluation of constructions of traditional pedagogy. Researchers claimed that language polices should take into account students language rights that are connected to social cohesion (Coleman, 2015; Pinnock, 2015; Perera,

2015). As Milani (2008) stated language is considered as a significant social identity indicator both for the individual and for the nation state.

Researchers suggested that multilingual language approaches should be in a line with curricula, pedagogies and teachers' experiences (Erling et al., 2016; Erling et al., 2017) due to the fact that teaching in a language unknown to students as well as difficult and different regarding mother language could be lead to students discrimination and drop out (Brock-Utne, 2017; Manocha & Panda, 2017). According to Lundberg (2017) bilingual education can be a means of creating racial and social margins as well as shrinking social and cultural consistencies between groups.

There are educational, linguistic and sociolinguistic factors that affect multilingual and consequently bilingual education. Linguistic factors can be distinguished in three categories 1. Transitional, 2. Maintenance and 3. Enrichment (May, 2008; Baker, 2011). Bilingual education around the world is grounded on a number of different models. Most of these indicate that languages had better be strictly isolated in teaching and teach (Schwartz & Asli, 2014). Heugh et al. (2007) and Heugh (2013) claimed that learning it's better to be taken place in mother language for the long period. In addition Heugh et al. (2007) and Heugh (2013) claimed that learning it's better to be taken place at least six to eight years in abundant resourced, operational learning backgrounds. Mother language can offer students with the sense of cultural, social, national, ethnic and racial identity (Morcom, 2017). Furthermore bilingual education is seen as an important political issue (Koyama & Bartlett, 2011). Bilingual education can create a community without strong social, political, racial and economic inequalities (Koyama & Bartlett, 2011). Consequently mother language and can increase wellbeing thus is important for students to be taught their mother language (Morcom, 2017).

Arthur & Martin (2006) claimed that in the research literature was an interactional methodology to the teaching of two languages. Arthur & Martin (2006) also argued that the teaching of two languages allows a flexible transfer between languages that is essential for operational and effective learning. Blackledge and Creese (2009) also advocated for the flexible use of languages. In addition Lasagabaster & Garcia (2014) and Guzula et al., (2016) advocated for the flexible multilingual approaches.

There is also the code-switching approach in bilingual education (Arthur & Martin, 2006; Freeman, 2007; Schwartz & Asli, 2014) whereas all students get teachings in both languages, but separately, using the 'language-time' strategy. In addition there is the two-way system (Lee, 2007) that is a mixture of languages or code-switching

approaches, whereas an emphasis is given in order the languages to be kept detached, isolated, discrete, and distance. The two-way system, bilingualism is accepted as double monolingualism (Schwartz & Asli, 2014).

According to researchers four main categories of language-teaching strategies regarding bilingual students named 1. Bilingual resource strategies (Ernest-Slavit and Maulhern, 2003; Manyak, 2004; Kenner et al., 2008), 2. Metalinguistic strategies (Cumimins, 2000; Kenner et al., 2008; Creese & Blackledge, 2010), 3. Nonlinguistic strategies (Nikolaidis, 2002) and finally 4. Tanslanguaging strategies (Cumimins, 2005; Arthur & Martin, 2006; Cumimins, 2008; Creese & Blackledge, 2010).

Lundberg (2017) argued that previous research indicated serious obstacles in bilingual education. These obstacles includes different parameters of the educational system rely on nationalistic ideologies, dominant language discourse, political positions etc (Lundberg, 2017). Consequently bilingual strategies is of a major impotence in order the goals and aims of bilingual education to be successful.

Thus this study is searching the existence of innovative forms of bilingual education are applied in Greek educational system and additionally examines the degree of their usefulness. These forms are related to the use of new technologies, the use of illustration and surveillance material in recalling previous knowledge, the combination of learning the subject in conjunction with language learning, the techniques of condensing, developing or modifying texts, the use of electronic dictionaries, in use of text organizers (prologue, italics), use of conventional words, use of multimodal material, use of text organizers (prologue, italics), dramatization, role play, simulation, and finally experimentation.

Purpose

This paper investigates whether, in the intercultural secondary schools in Greece, some specific innovative forms of bilingual education are applied and additionally examines the degree of their effectiveness.

Participants

Regarding 130 respondents ' gender, 105 are women, (80.8%) and 25 men (19.2%). Of the 130 respondents, 95 (73.1%) are education executives and 35 (26.9%) are not. In terms of years of service, 16 have from one to five years of service, 20 (15.4%) from 6 to 10 years of service, 19 (14.6%) from 11 to 15 years of service, 28 (21.5%) from 16

to 20 years, 30 (23.1%) from 21 to 25 years and finally, 17 (13.1%) from 26 to 30 years. For 53 (40.8%) respondents their school or schools in their area of responsibility belong to an urban center area, for 25 (19.2%) in a suburb area, for 28 (2.5%) in a semi-urban area, for 16 (12.3%) in rural and 8 (6.2%) in inaccessible.

Research methodology

This section is dedicated to the presentation of a main type of clustering methods: Statistical Implicative Analysis (SIA). Statistical Implicative Analysis (SIA in the Didactic of Mathematics (Gras, 1979). Since Régis Gras' doctoral dissertation, a great deal of research has been published exploring the different paths of theory development (Gras et al., 1997; Gras, & Couturier, 2013; Gras et al., 2004; Gras, et al., 2008; Gras, Regnier, & Guillet, 2009; Gras, Régnier, Marinica, & Guillet, 2013; Anastasiadou et al., 2007; Anastasiadou & Panitsides, E. 2014; Nikolaou et al., 2017a; Petridou et al., 2017b). Thus, the method rests on implication intensity which measures the degree of astonishment inherent in a rule. For example, the set of items B, then it is legitimate and intuitive to expect that the counter part is and the set of non-B items is strongly associated with the set of non A-items (Anastasiadou et al., 2007; Anastasiadou et al., 2008; Anastasiadou et al., 2010a; Anastasiadou, 2018a; Anastasiadou, 2019a; Anastasiadou, 2019b; Anastasiadou & Gagatsis, 2017; Anastasiadou & Giossi, 2018; Anastasiadou, & Papadaki, 2019; Anastasiadou & Pappa, 2019; Christodoulou, et al., 2017; Ntotsi, & Anastasiadou, 2019; Fotiadis & Anastasiadou, 2019).

The implicative representation of the associations is presented in Figure 1 by a weighted graph without cycle where each edge responds to a rule, and in Figure 2 by an ascending hierarchy oriented by meta-rules (Anastasiadou, 2018; Anastasiadou, 2019a).

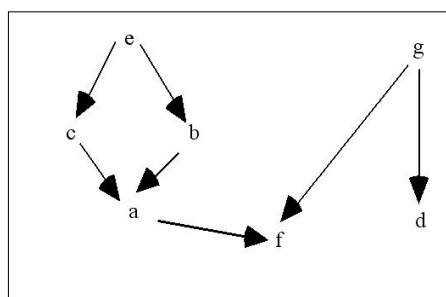


Figure 1

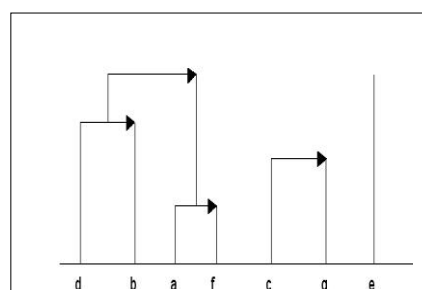


Figure 2

Similarity: a symmetrical analysis, according to the algorithm proposed by I.C. Lerman (Lerman, 1978), is a link that brings practically all items together in a large class, whatever their a priori taxonomic classification may be (Gras & Bodin, 2017). The

Similarity indices are used in data analysis to study objects described by binary variables (Anastasiadou, 2019). According to Blanchard (2009), they allow one to assess the likeness between two objects and two variables.

SIA is used for data analysis. Specifically Similarity tree (widely known as dendrogram) (Lerman, 1981) and Implicative graph ranked by CHIC Software (Couturier, 2008).

Results

Descriptive statistics: From the following table, Item Statistics Table 1, we observe that the supportive strategies that respondents estimate that teachers use to a large extent in teaching or suggest to the teachers they work with are the use of new technologies ($M = 3.69$, $sd = 1.011$), the use of illustration and supervisory material ($M = 3.73$, $sd = 1.116$), the recall of previous knowledge ($M = 3.73$, $sd = 1.079$), the combination of learning the subject in combination with language learning ($M = 3.62$, $sd = 1.061$) and finally, the techniques of condensing, developing, modifying texts ($M = 3.54$, $sd = 1.421$).

Table 1: Item Statistics

Item Statistics			
Items: E9: Which are the supportive strategies that teachers use to a large extent in teaching or suggest to the teachers that you work with?	Std.		
	Mean	Deviation	N
E9.1: Usage of conventional words	3.23	1.107	130
E9.2: Usage of multimodal material	3.15	1.156	130
E9.3: Usage of new technologies	3.69	1.011	130
E9.4: Usage of electronic dictionaries	3.46	1.140	130
E9.5: The sage of illustration and supervisory material	3.73	1.116	130
E9.6: The recall of previous knowledge	3.73	1.079	130
E9.7: Combination of learning the subject in combination with language learning	3.62	1.061	130
E9.8: Usage of text organizers (preface, italics)	3.42	.987	130
E9.9: Techniques of condensing, developing, modifying texts	3.54	1.421	130
E9.10: dramatization	3.12	1.275	130
E9.11: Game roles	3.19	1.357	130
E9.12: Simulation	3.19	1.234	130
E9.13: Experiment	3.00	1.265	130

Moderate / satisfactory is the extent that respondents expatiate that supportive strategies is related in terms of the usage of conventional words (M = 3.23, sd = 1.107), the usage of multimodal material (M = 3.15, sd = 1.156), the usage of electronic dictionaries (M = 3.46, sd = 1,140), the usage of text organizers (preface, italics) (M = 3.42, sd = 0.987), the dramatization (M = 3.12, sd = 1.275), the game roles (M = 3.19, sd = 1.357), the simulation (M = 3.19, sd = 1.234) and finally, the experiment (M = 3.00, sd = 1.265).

Implicative Statistical Analysis: The similarity graph presents the groupings of statements based on consumer behavior when completing the questionnaire. The similarities with the intense black color are significant in terms of 99% importance. The similarity diagram (Figure 1) shows three distinct similarity groups (Group A, Group B, Group C). The first similarity group (Group A) refers to similarity relationships between variables ((E9.1 E9.6) (E9.9 (E9.12 E9.13))) (similarity: 0.0442223).

In particular, the similarity (E9.1 E9.6) (similarity: 0.623455) demonstrates the similar tactic of respondents adopting as assistive strategies in their teaching or suggesting to the teachers they work with both the use of conventional dictionaries and recall prior knowledge.

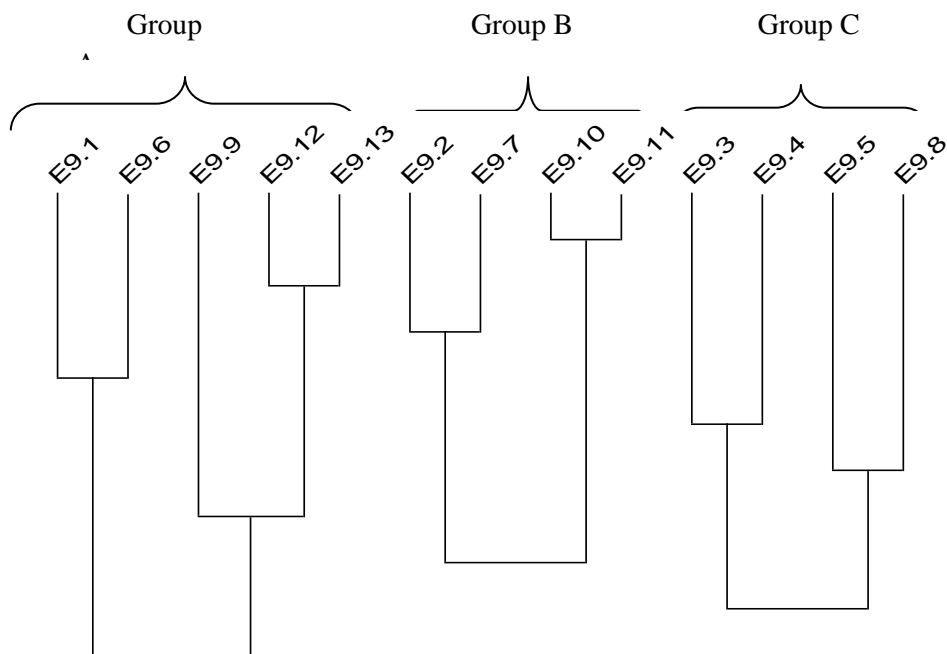
The similarity (E9.12 E9.13) (similarity: 0.704774) which is the strongest similarity within Group A refers to the way in which they adopt simulation and experimentation as supportive teaching strategies. This group (E9.12 E9.13) (similarity: 0.704774) joins a third variable third E9.9 and creates the similarity (E9.9 (E9.12 E9.13)) similarity: 0.373423) referring to the technical densities, development or modification of texts. This similarity is moderately important. However, the first similarity group (Group A) refers to similarity relationships between variables ((E9.1 E9.6) (E9.9 (E9.12 E9.13))) (similarity: 0.0442223) is almost zero, which demonstrates that respondents generally differentiate between the techniques of using conventional dictionaries and recalling prior knowledge, with simulation, experimentation, and techniques of condensing, developing, or modifying texts as helpful teaching strategies.

The second similarity group (Group B) refers to similarity relationships between variables ((E9.2 E9.7) (E9.10 E9.11)) (similarity: 0.196121). More specifically, the similarity (E9.2 E9.7) (similarity: 0.654923) demonstrates that the way in which respondents adopt the usage of multimodal material and the combination of learning the cognitive object in conjunction with language learning is important.

Even the similarity (E9.10 E9.11) (similarity: 0.786626) demonstrates the similar tactics of respondents to choose dramatization and role play and is almost 0.80, ie it has

a very strong similarity. This similarity, (E9.10 E9.11) (similarity: 0.786626), is not only stronger in the second group but also the strongest in relation to all other similarity groups. The second group (Group B) of similarity ((E9.2 E9.7) (E9.10 E9.11)) (similarity: 0.196121) has marginally significant similarity.

The third similarity group (Group C) refers to similarity relationships between variables ((E9.3 E9.4) (E9.5 E9.8)) (similarity: 0.139605). In particular, the similarity (E9.3 E9.4) (similarity: 0.616031) demonstrates the similar tactics of respondents adopting as assistive strategies in their teaching or suggesting to the teachers they work with both the usage of new technologies and the usage of electronic dictionaries and text bodies. The second similarity within the third similarity group is between the variables (E9.5 E9.8) (similarity: 0.582029) and demonstrates the same way in which respondents approach the usage of illustration and surveillance material and the usage of text organizers (preface, italics). The third similarity group (Group C) ((E9.3 E9.4) (E9.5 E9.8)) (similarity: 0.139605) bears very little resemblance, indicating that respondents vary considerably in their usage of new ones. Technologies and the usage of electronic dictionaries and text bodies from the use of illustration and supervisory material and the use of text organizers



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Figure 1: Similarity graph

The hierarchical diagram: The hierarchical diagram (Figure 2) presents the inductive relationships between the variables in order of importance. In addition, in the hierarchical diagram the direction of these relationships can be seen.

Regarding the first hierarchy, the group refers to the items (E9.10 E9.11) (cohesion: 0.895) which is highly cohesive and shows that when respondents use dramatization then they also use role play. In addition, the hierarchy ((E9.10 E9.11) E9.12) (cohesion: 0.81) which is highly cohesive shows that when respondents use dramatization then they use role play and use simulation. The hierarchy (E9.13 (E9.10 E9.11) E9.12)) (cohesion: 0.723) which shows significant coherence shows that when respondents use the experiment then they use the role play and use simulation as well demonstrates the hierarchy ((E9.13 ((E9.10 E9.11) E9.12)) E9.8) (cohesion: 0.601) finally use text organizers (prologue, italics).

Hierarchy (E9.2 E9.7) (cohesion: 0.779), which is highly coherent, shows that when respondents use polytopic material then they use a combination of learning the cognitive object in conjunction with language learning and hierarchy ((E9.2 E9.7) E9.5) (cohesion: 0.686) demonstrates that respondents use multimodal material, a combination of learning the cognitive object in conjunction with language learning and illustration and supervisory material.

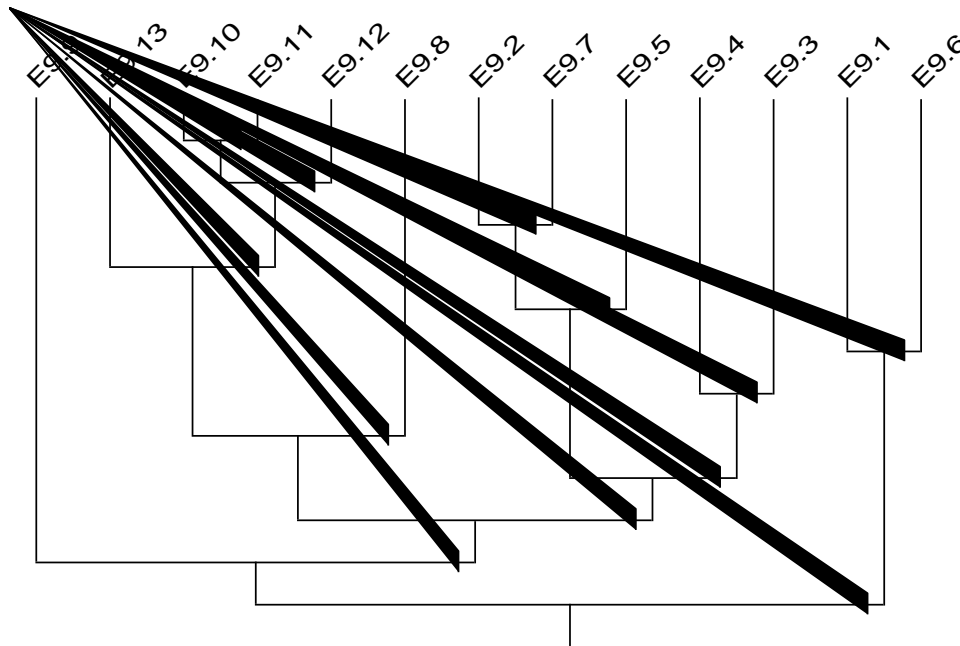
Hierarchy (E9.4 E9.3) (cohesion: 0.655), which is significantly consistent, shows that when respondents use electronic dictionaries they also use new technologies.

The hierarchy ((E9.2 E9.7) E9.5) (E9.4 E9.3)) (cohesion: 0.587), which shows significant coherence, demonstrates that the hierarchy ((E9.2 E9.7) E9.5) (cohesion: 0.686) demonstrates hierarchy (E9.4 E9.3) (cohesion: 0.655). It becomes clear that when respondents use multimodal material, a combination of learning the subject matter in conjunction with language learning and illustration and surveillance material they make use of electronic dictionaries and new technologies.

The hierarchy (((E9.13 ((E9.10 E9.11) E9.12)) E9.8) (((E9.2 E9.7) E9.5) (E9.4 E9.3))) (cohesion: 0.539) which is significant demonstrates that hierarchy ((E9.13 ((E9.10 E9.11) E9.12)) E9.8) (cohesion: 0.601) demonstrates hierarchy (((E9.2) E9.7) E9.5) (E9.4 E9.3)) (cohesion: 0.587). Similarly the hierarchy (E9.9 (((E9.13 ((E9.10 E9.11) E9.12)) E9.8) (((E9.2 E9.7) E9.5) (E9.4 E9.3)))) (cohesion: 0.495) with significant hierarchy demonstrates that when respondents use techniques to condense, develop or modify texts as teaching aids then they use experimentation, role play, notation and, finally, text organizers (preface, italics).

Hierarchy (E9.1 E9.6) (cohesion: 0.679) with significant hierarchy demonstrates that when respondents use conventional words they use recall of previous knowledge.

Finally, the hierarchy ((E9.9 (((E9.13 ((E9.10 E9.11) E9.12)) E9.8) (((E9.2 E9.7) E9.5) (E9.4 E9.3)))) (E9.1 E9.6)) (cohesion: 0.461) with significant hierarchy demonstrates hierarchy (E9.9 (((E9.13 ((E9.10 E9.11) E9.12))) E9.8) (((E9.2 E9.7) E9.5) (E9.4 E9.3)))) (cohesion: 0,495) implies hierarchy (E9.1 E9.6) (cohesion: 0.679).

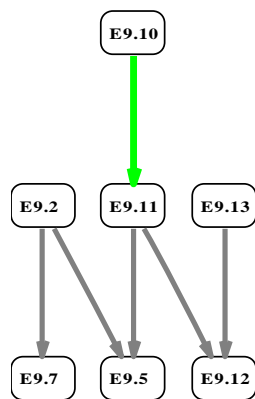


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Figure 2: Hierarchical diagram

The implicative graph: The implicative graph shows the inductive relationships between the variables (Figure 3). The diagram presents one and only chain E9.10-> E9.11-> E9.5, E9.12, E9.2-> E9.7, E9.5, E9.13-> E9.12.

In more detail, in the first part of the co-production chain E9.10-> E9.11-> E9.5, E9.12, the dramatization becomes apparent. Supervisory material as well as simulation. The part of the co-production chain E9.2-> E9.7, E9.5 makes it clear that the use of multimodal material leads to the use of a combination of learning the cognitive object in combination with learning the language of both illustration and supervisory material. The unambiguous part of the co-production chain E9.13-> E9.12 makes the relationship between experiment and pre-notation obvious.



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Figure 3: Implicative graph

The reliability of the instrument was related to items E9.1. to E9.13 was estimated by Cronbach alpha coefficient (α). The value of Cronbach's α coefficient for this instrument was equal to 0.949 and it is a very high value in terms of internal consistency (Anastasiadou et al., 2010b; Anastasiadou, 2011; Anastasiadou, 2018b; Anastasiadou, 2018c; Anastasiadou, 2018d, Anastasiadou, 2018e; Anastasiadou & Anastasiadis, 2011; Anastasiadou & Anastasiadis, 2019; Anastasiadou & Zirinoglou, 2014, Anastasiadou et al., 2016; Anastasiadou & Taraza, 2019; Anastasiadou & Taraza, 2020a; Anastasiadou & Taraza, 2020b).

Conclusions

From the analysis of the data it becomes obvious dramatization that it leads the questioners to use the role play and it is the role play that motivates them to use illustration and surveillance material as well as simulation. Even the use of multimodal material leads to the use of a combination of learning the cognitive object in combination with learning the language of both illustration and supervisory material. The gap between the experiment and the pre-note is obvious.

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