Play activities in second language teaching metacognitive writing strategies to struggling bilingual writers: an empirical study

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Abstract
This study combines a well established teaching approach, based on play activities in the form of an educational proposal to raise struggling writers' metacognitive awareness and promote strategy use focusing on teaching effective metacognitive writing strategies, such as planning, monitoring, self-regulation and self-evaluation. The sample consisted of 67 successive bilingual, elementary students coming from various linguistic backgrounds learning Greek as a second language. Eight projects were implemented for a span of eight weeks within a game-based learning environment. The evaluation of the study reveals the positive effect of the program on students' metacognitive skills in terms of writing production, textual organization and processing of writing in the second language. At the same time, new potential is suggested in integrating less-competent writers in the teaching of languages.

Keywords: Playing activities, Second language, teaching metacognitive strategies, struggling bilingual writers, play activities

1. Introduction

Writing is a complex activity (Hayes, 2012), involving cognitive, metacognitive, and affective processes and demanding the mastery of different types of knowledge (De Smedt et al, 2013). Writing is conceived as a social activity, rather than solitary, in which coparticipation and guided instruction are essential (Boscolo & Hidi, 2007). Producing a text requires both high levels of self-regulation (e.g. planning, revision, and composition strategies) (Harris et al, 2011) as well as low-level transcription skills (e.g. handwriting) (Graham & Harris, 2000).

Metacognitive strategies are regarded the most crucial strategies which affect learners' skills (Anderson, 2005). Veenman et al. (2006) argue that the term 'metacognitive' indicates an executive function or a group of strategies which consists of planning for learning, reflection upon the learning process while it takes place, self-assessment of production or comprehension, self-

correction of mistakes and evaluating learning after completing an activity. According to this classification, directed attention, selective attention, self-management, functional planning, self-monitoring, delayed production, and self-evaluation comprise the metacognitive strategies (Oxford, 2016; Gavriilidou & Psaltou-Joycey, 2010). The essential nature and general function of metacognitive strategies is planning, organizing, and evaluating one's own learning (Ellis et al, 2014).

The employment of metacognitive teaching approaches is oriented to creating autonomous language learners (Hauck, 2005). Research has shown that the employment of metacognitive strategies enhances learning, while some field studies relate the efficient use of metacognitive strategies with successful writing (Panahandeh & Asl, 2014; Srinivasan & Pushpam, 2016). Metacognitive strategies (e.g., planning and organizing) are beneficial in learning unfamiliar content by low-proficient learners (Ching, 2002). These strategies are related to the control of learning and are referred to processes that are deliberately applied in order for the cognitive processing and action or behavior to be regulated (Psaltou-Joycey & Gavriilidou, 2018). Research reveals that proficiency level determines differential strategy use (Chamot, 2004), with the less competent bilingual students employing a limited range of strategies (Griva et al, 2009), they hold a limited view of their own writing process and poor strategic awareness, they display lower-level processes and strategies, they seldom plan for the writing task, pay no selective attention to the language elements while writing, rarely review, are less accurate when they are self-evaluated (Griva & Chostelidou, 2013). Furthermore, less skilled writers rarely engage in the pre-writing (drafting, setting writing goals) or post-writing (monitor the final product as regards the writing goal, revise) phases of writing (Goddard & Sendi 2008; Graham et al, 2005).

Students with low linguistic background or difficulties are faced with hinders in the organization and control of the writing processes when they try to compose a text mainly because (Geladari & Mastrothanasis, 2014; Goddard & Sendi, 2008; Griva et al, 2009; Mastrothanasis et al, 2018): a) they are seldom involved in such total control and final assessment processes, and b) their use of metacognitive strategies is not sufficient enough to produce a coherent text. Englert (2001) confirms that an area of difficulty is limited metacognitive knowledge and control. Learners may lack awareness of appropriate strategies, or have insufficient control over implementing and monitoring them.

An extensive body of literature (Schraw, 1998; Wenden, 1998) recommends that students are modeled metacognitive strategies by a teacher, and have explained the "conditions under which these strategies are most useful" (p. 119). Instruction should include: a) explicit, direct teaching of the phases of the writing process; b) targeted feedback that supports revision and self-regulation; and c) the teaching of text structures and writing genres (Baker et al, 2003; Mastrothanasis & Geladari, 2016). Graham (2006) confirms other researchers' conclusions (Rogers & Graham, 2008), adding that such intervention programs promote the quality and the better structure of the final texts, increasing their size and the use of revision strategies by students. Fidalgo et al (2007) compared students who had received instruction on the strategies of planning and revising among students of similar academic levels. The intervention group displayed greater tendency to pre-plan their texts, produced reader-focused and qualitatively better writings, and were more likely to be aware of the importance of the text structure. These findings suggest that strategy-focused writing instructions may have persistent benefits.

Learning while playing is a popular strategy to motivate as well as engage poor writers in writing activities. Multisensory teaching through game tasks and role-plays stimulates all pathways simultaneously to enhance memory and acquire strategies. The sequence begins with the easiest and progresses gradually to the more difficult material including frequent review sessions. Physical

activities, games and drama activities can contribute to the development of children's problem solving skills, as well as to the development of a positive attitude towards the language and the learning process (Hutchinson as cited in Griva, Semoglou & Geladari, 2010; Fleming et al, 2010; Rothwell, 2011). Introvert children are provided with more opportunities to express their opinions and feelings (Griva & Semoglou, 2012; Shin-Mei Kao et al, 2011) contributing to self-esteem buildup (Griva & Kasvikis, 2015; Stinson & Winston, 2014). In the specific projects, children participated in a variety of games, some of them requiring more physical activity (such as constructions, chases, pantomime, role-play games, singing) while other games were rather sedentary (such as memory/word games, hand-on activities etc).

2. Purpose of the study

The present study is an attempt to investigate the effect of teaching metacognitive strategies within a game-based context (play activities) in the production and processing of writing of bilingual poor writers. The main hypothesis is focused on whether the implementation of an intervention program of development and regular use of metacognitive strategies based on game activities will have a positive effect on the writing performance of bilingual poor writers. The research questions that form the null and alternative hypotheses concern the effect of direct teaching of metacognitive strategies in terms of spelling accuracy, textual organization, restoring degraded sentences, restoring a degraded text, editing and improving writing skills.

3. Method

3.1. Participants

A total of 67 students enrolling the 5th and 6th grade of Greek Primary schools, in Central Greece, aged between 10 and 12 (11,21 ± 0,32 m.s.), from immigrant families of Albanian and Romanian origin, participated in the study. All students moved to Greece the last 4 to 8 years. They can read and write in their L1 and attend Greek as their L2 at school. The focus of the study was to provide a strategy training program, which will help the less-competent bilingual writers, become metacognitive strategic writers while raising cultural awareness through the crossthematic content of the projects.

The participants were selected from twelve classrooms in eight primary schools, with a total of 124 bilingual students, according to their lower writing ability in Greek based on the scores of a group administered screening writing test (standard score≤ 7) and their language competence based on the classroom teachers' judgments. As research data imply, teachers' reports about their students' performance are typically valid and correlate with the results of standardized performance tests (Martínez et al, 2009). For the needs of the study the students were divided into two groups of equalized gender and age. 34 (50,3%) of the participants enrolled the intervention group and 33 (49,7%) the comparison group.

3.2. Instrument

The study collected and analyzed both qualitative and quantitative data. The "Diagnostic tool for the investigation of difficulties in writing for Pupils of C-F grade" (Porpodas et al, 2007), a standardized writing test, was used to identify writing strengths, weaknesses and the level of students' writing skills in Greek of the two groups.

The purpose of the instrument is the systematic investigation and identification of the learning difficulties faced by pupils enrolling the 3rd to 6th grade of primary school concerning the production of writing. It constitutes a valid, reliable and simple diagnostic tool, appropriate for use by special educators, school psychologists and educators who work with students with difficulties in writing.

The tool incorporates some criteria: a) The criterion of creative writing and test-driven writing, where the student is asked to write a text, usually a narrative or descriptive, which will serve as the basis of the diagnostic investigation. The produced text will then be evaluated by the examiner on the basis of a series of principle elements, the existence or absence of which is coded in the student's test booklet. These elements relate to various aspects of the process of writing, such as words, sentences, grammatical correctness, spelling accuracy, intonation, punctuation, use of capital letters, cohesion etc. b) The criterion of guided writing, where the student is asked to complete a series of activities requiring the application of grammar rules, syntax and punctuation in a sentence and paragraph level. The activities aim the student to: (i) restore degraded sentences, placing words in their correct position in the sentence, and (ii) restore a degraded paragraph, putting the sentences in the right order to form a paragraph.

In addition to the instruments mentioned above, students kept portfolios for their work per week while teachers' observations and field notes were used to assess students' performance. The data that derived were valuable in supporting the quantitative results of the study.

3.3. Procedure

As part of the initial (pre-test) and final evaluation (post-test), the participants accomplished writing tasks (Porpodas et al, 2007) of 100-150 words so that the researchers configurate the evaluation indicators concerning the variables of a) textual organization, b) orthographic correctness, c) degraded sentence restoration, d) degraded text restoration and assessment scales referring to a) the writing production, b) writing processing and c) writing difficulties.

An eight-week experimental intervention program was designed. According to the sequence of steps for teaching learning strategies suggested by Chamot and O'Malley (1999), students who enrolled the intervention group received metacognitive strategies-based writing instruction with play activities for two hours per week, whereas the comparison group attended the writing instruction in their regular school class by their teachers.

The multisensory method of teaching was advocated, since it integrates visual, aural, tactile and kinesthetic modalities to consolidate the learning experience. The projects were carried out in a task-based framework (Ellis, 2003; Ellis, 2000; Nunan, 2004; Willis & Willis, 2007) based on game activities. In such a context, peer interaction, meaningful exploitation and communication of ideas and concepts and active participation in the learning process can be promoted. The themes derived from various school subjects (see Table 1), students' multicultural and multilingual background diversity, adjusted to the needs of the students, as well as the metacognitive writing strategies on focus.

The eight projects were carried out through three stages:

a)   Pre-stage: The focus of this stage is to determine the current linguistic proficiency level of the students and the already acquired knowledge of metacognitive strategies as well as the background knowledge for the thematic content of each project. Then, the teacher introduces the main topic of each project through advance organization, brainstorming and selective attention. At this stage, a particular metacognitive writing strategy is demonstrated to students, highlighting its significance and explained.

b)   Task-circle: Students are offered time to practice in groups with the new strategy using authentic writing activities and interacting with each other in problem solving tasks and play activities. They are required to recall the writing strategy that was presented in the previous stage; then students begin to plan their writings according to planning strategy and focus on using it correctly. Teachers offered support by providing a vocabulary list, sentence starters, or a writing frame. They also ensure that the students talked through their writing at the word, sentence and text level, with each other, probably in L1, before they write.

After the completion of the tasks, the students present their work to other groups. The teacher supports students' attempts in producing language as well as in adapting the appropriate communication style and development of vocabulary. Moreover, teacher incites discussion among students as a form of gaining creative feedback.

c) Follow-up stage: In this phase, teacher invites students to reflect upon their level of acquisition of the strategies they elaborated on and what they need to review. This stage allows recycling of certain vocabulary, where students are involved in a number of game activities, crosswords and puzzle constructions. Self-evaluation includes checklists of the strategies used and open-ended questionnaires in which students express their opinions about the usefulness of particular strategies. Three types of evaluation activities were carried out: self-evaluation, peer-evaluation and teacher evaluation. It is noteworthy that not all writing mistakes are corrected. Students' writings are evaluated in terms of adopting metacognitive strategies effectively in a meaningful context.

This phase provides the participants with opportunities to exercise higher order thinking skills (Chamot & O'Malley, 1999). Namely, students are inspired to apply the strategies that they consider to be most effective; to transfer new strategies to different context; and to construct their own individual combinations and interpretations of metacognitive strategies. This phase aims to help students practice, consolidate, evaluate, automate and internalize the strategies that they have just elaborated on which mainly includes planning, monitoring, self-regulation and self-evaluation.

The lessons were planned to be structured, sequential and cumulative, in order for all skills and metacognitive strategies be thoroughly practiced, periodically be revised and help vocabulary maintenance of the bilinguals. After the completion of the eight weeks projects, exactly the same procedure was repeated a few days later, and the same instruments were used to collect data for students' writing processes and strategies in L2.

3.4. Analyses

The data of the initial (pre-test) and final evaluation (post-test) were transferred to the linear array of tables of subjects of the statistical package SPSS 22 and were analyzed quantitatively. With regard to determine the differentiations between groups, the non-parametric test Wilcoxon Signed-Ranks Test was chosen. The level of statistical significance (p) was set to 5% as well as the findings with p-value < .05 were considered statistically significant. The effect sizes calculated through the r proposed by Cohen (1988). Cohen's guidelines for r are that a large effect is .5, a medium effect is .3, and a small effect is .1 (Fritz et al, 2012, p. 12).

Table 1 Schedule and main features of the eight projects

Project topic	Content	Metacognitive strategy	Method	Educational material	Play Activities	Final text generated/ Genre
1st week Our planet system	Sciences	Planning	Multimodal pedagogy Hands-on tasks	Planetary model, Video Pictures	Role-play	Letter to an astronaut/ letter
2nd week Seasons	Sciences Environment	Monitoring	Multimodal pedagogy Task-based	Poster, Realia, Herbarium	Dramatization	Poster / informational
3rd week Recycling	Environment, Art	Planning, Monitoring (Revision of strategies)	Multimodal pedagogy Hands-on tasks	Waste material, Recycled material, Posters	Dramatization Races	How to re-use wasted material/expository
4th week My country's national anthem	Geography History Music	Self-regulation	Multimodal pedagogy, Hands-on tasks, Task-based	Flags, Globe, Map, Songs, Encyclopedia	Sing, Find the country on the map	My country's national anthem explained in TL / informational
5th week Children's rights	Multi/ Crosscultural	Self-regulation	Multimodal pedagogy Hands-on tasks	Video, Posters, Clay, Songs	Make clay dolls Role-play	My rights /expository
6th week Olympic games	History, Athletics	Evaluation	Multimodal pedagogy Game-based	Outdoors games	Race, Obstacle-course, Long jump	Article for the school journal/Informational
7th week Picasso	Art, Heritage, History	Evaluation (Revision of strategies)	Multimodal pedagogy Task-based	Pictures, Video	Abstract Drawing Role-play	My Guernica explained/ Creative
8th week A fairy tale from my country	History, heritage, Literature	Planning, Monitoring Self-regulation, Evaluation (Revision of strategies)	Multimodal pedagogy Task-based	Poems on video, Songs	Role-play, Dramatization	Narration/creative

4. Results

The comparisons between performance in pre-pilot and post-pilot test for each of the two groups were estimated using the criterion Wilcoxon Signed-Ranks Test. The groups were evaluated separately in order to analyze the effect of the teaching of metacognitive strategies on indicators of textual organization, orthographic correctness, degraded sentence restoration, degraded text restoration and assessment scales such as the writing production, writing processing and writing difficulties.

Table 2 Comparison of differences of mean scores between the performance on the pre-pilot and post-pilot test for the intervention and the comparison group, Cohen's r and effect sizes

Criteria	Group	Pre-test	Post-test	Z	r	Effect sizes
Textual organization	Intervention	82,59 ± 11,80	84,60 ± 10,11	-2,28*	0,28	small
	Comparison	83,55 ± 12,69	83,61 ±11,13	-1,10		
Orthographic correctness	Intervention	28,91 ± 10,18	35,39 ± 6,48	-5,80***	0,70	large
	Comparison	33,17 ± 7,52	33,05 ± 7,59	-1,39		
Degraded sentence restoration	Intervention	5,58 ± 2,64	6,98 ± 2,63	-3,82***	0,46	medium
	Comparison	6,38 ± 2,32	7,48 ± 2,81	-3,87***	0,48	medium
Degraded text restoration	Intervention	15,70 ± 11,02	18,48 ± 8,97	-3,29**	0,40	medium
	Comparison	19,65 ± 9,54	20,11 ± 9,41	-1,90		

* $p < ,05$, ** $p < ,01$, *** $p < ,001$

As seen on Table 2, there is a statistically significant difference concerning the intervention group between the pre-pilot and the post-pilot test for the indicators of orthographic correctness (z= -5,80, p= 0,00, r= 0,70), textual organization (z= -2,28, p= 0,02, r= 0,28), degraded sentence rehabilitation (z= -3,82, p= 0,00, r= 0,46) and degraded text rehabilitation (z= -3,29, p= 0,001, r= 0,40). There is a large effect observed on the intervention group concerning the index of orthographic correctness, a medium in degraded sentence rehabilitation and in degraded text rehabilitation, and a small in texual organization. Regarding the comparison group, between the pre-pilot and post-pilot writing task, there is displayed statistically significant difference in the ratio of degraded sentence rehabilitation (z= -3,87, p= 0,00, r= 0,48) with a medium effect.

Table 3 Comparison of differences in mean scores between the performance on the pre-pilot and post-pilot test for the intervention and the comparison group, Cohen's r and effect sizes

Criteria	Group	Pre-test	Post-test	Z	r	Effect sizes
Writing production	Intervention	132,77 ± 24,36	145,50 ± 19,63	-4,83*	0,59	large
	Comparison	142,82 ± 22,54	144,19 ±11,42	-,89		
Writing processing	Intervention	21,27 ± 12,83	25,47 ± 10,28	-4,59*	0,56	large
	Comparison	26,03 ± 11,34	27,59 ±11,28	-6,92*	0,85	large
Writing difficulties	Intervention	132,77 ± 24,36	145,50 ±19,63	-5,79*	0,70	large
	Comparison	142,82 ± 22,54	144,19 ± 22,42	-,88		

* $p < ,001$

On Table 3 are shown some statistically significant differences in intervention group between the pre-pilot and post-pilot writing task concerning the assessment scales of writing production (z= -4,83, p= 0,00, r=0,59), writing processing (z= -4,59, p= 0,00, r=0,56) and writing difficulties (z= -5,79, p= 0,00, r=0,70). Especially for the scale of writing difficulties it is noted that the higher the score in the test, the less the difficulties faced by students in writing. There is a large effect observed on the intervention group in writing production, writing processing and writing difficulties, too. For the comparison group, and between pre-pilot and post-pilot test there was shown a statistically significant difference only in written language processing scale (z= -6,92, p = 0,00, r=0,85), with a large effect.

5. Implications & conclusions

The present study was carried out in order to investigate whether approaching metacognitive strategies in a game based teaching to bilingual students would improve their writing skills and metacognitive strategy employment. A practical approach was chosen as, while there is a strong theoretical basis for suggesting that teaching in a game-based context influence students' motivations as well as the quality of learning, there has been little work done on putting the ideas into practice.

Based on the findings, there are clear conclusions to be drawn on the direction that such interventions can support bilingual struggling writers' literacy development and improve performance in writing. The students in the intervention group, who received intervention, held better scores than the students in the comparison group. Their increased ability in different sub processes helped them spell more accurately, plan and organize their text more effectively and engage with the writing process conveying the desired meaning producing coherent texts. Furthermore, the positive impact of the metacognitive strategies intervention program is obvious in the gradual reduction of the difficulties students were facing towards the last weeks of the program. In like manner, performance in rehabilitation activities of deconstructed text and sentence is found significantly improved. Concerning the comparison group, the participants displayed some progress in restoring of degraded sentences and text, developed their writing production and processing, although not as radically as their peers in the intervention group. These results suggest that students who have metacognitive-strategy instruction showed significant improvements in the monitoring, directing and organizing their texts, and recalling the vocabulary over the comparison group.

These findings are in line with previous studies, suggesting that the employment and practice of metacognitive strategies contribute to the improvement of writing performance in assessment tasks of production and processing of students with difficulties, such as spelling, that affect their language development (Baroudy, 2008; Fidalgo et al., 2007; Gersten & Baker, 2001; Graham, 2006; Graham et al, 2005; Lane et. al., 2008; Mason & Graham, 2008; Rogers & Graham, 2008).

The implementation of more effective literacy practices to strengthen struggling bilingual students' development in L2 should be examined in larger samples. It is also suggested that additional intervention programmes should integrate the new technologies, a field that could reveal new potential to the writing capacity of less-competent bilingual students.

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