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THE EFFECT OF AN EXPLICIT AND INTEGRATED DICTIONARY AWARENESS INTERVENTION PROGRAM ON DICTIONARY USE STRATEGIES

Abstract There is a growing interest in pedagogical lexicography, and more specifically in the study of dictionary users' abilities and strategies (Prichard 2008; Gavriilidou 2010, 2011; Gavriilidou/Mavrommatidou/Markos 2020; Gavriilidou/Konstantinidou 2021; Chatjipapa et al. 2020). The purpose of this presentation is to investigate dictionary use strategy and the effect of an explicit and integrated dictionary awareness intervention program on upper elementary pupils' dictionary use strategies according to gender and type of school. A total of 150 students from mainstream and intercultural schools, aged 10–12 years old, participated in the study. Data were collected before and after the intervention through the Strategy Inventory for Dictionary Use (SIDU) (Gavriilidou 2013). The results showed a significant effect of the intervention program on Dictionary Use Strategies employed by the experimental group and support the claim that increased dictionary use can be the outcome of explicit strategy instruction. In addition, the effective application of the program suggests that a direct and clear presentation of DUS is likely to be more successful than an implicit presentation. The present study contributes to the discussion concerning both the 'teachability' of dictionary use strategies and skills and the effective forms of intervention programs raising dictionary use awareness and culture.

Keywords Dictionary use strategies; explicit and integrated intervention program; dictionary culture; pedagogical lexicography

1. Introduction

Dictionary use strategies (DUS) are 'techniques' used by the effective dictionary user, in order to decide whether to use or not an appropriate type of dictionary and make a quick and successful search in it (Gavriilidou 2013). The author classifies DUS for paper dictionaries in four categories: 1) Dictionary awareness strategies which refer to the critical awareness of the value and shortcomings of the dictionary that lead to the decision to use a dictionary in order to resolve a specific problem encountered during learning inside or outside the classroom, 2) Dictionary selection strategies which allow the choice of an appropriate dictionary depending on the problem to be solved and guarantee the familiarity with one's own dictionary, 3) Lemmatization strategies, which help dictionary users find the citation form of inflected forms found in the text by relying on morphological indices (stems, prefixes, suffixes, inflectional morphemes) of the unknown word they come across in the/a text in order to make hypotheses about the look-up form of that word. Lemmatization strategies also include skills in alphabetical sequencing, otherwise lemmatization is not possible, and 4) Look-up strategies, which control and facilitate the localization of the correct section of the entry where different meanings of the same polysemous word form are included. Gavriilidou/Mavrommatidou/Markos (2020) propose the following DUS for digital dictionary use: 1) strategies familiarizing with different types of electronic dictionaries and the conditions of their use; 2) strategies for lemmatization and acquaintance with dictionary conventions; 3) navigation strategies; and 4) look-up strategies in new electronic environments.

Depending on the type of processing involved, these strategies can be further classified into metacognitive, cognitive, memory or compensating. Metacognitive DUS include self-man-

agement, self-monitoring, self-reflection, decision making, planning, etc. and can be applied in receptive or productive dictionary use for conflict resolution or evaluating dictionary use success. They raise dictionary users' awareness of what they are doing and help them setting look up goals and deploying alternative plans when the goals are not met. Cognitive DUS include inferencing or alphabetization. Memory DUS include use of mnemonics to remember the word to be searched. Finally, compensation DUS, such as paying attention to headwords, signposts or example sentences enable dictionary users to better navigate in the dictionary and are intended to make up for inadequate information or skills.

A growing body of research has focused on the close relationship between dictionary use strategies and effective dictionary use (Chatjipapa et al. 2020; Gavriilidou/Mavrommatidou/Markos 2020), while Gavriilidou/Konstantinidou (2021, p. 735) showed that DUS are teachable. The authors also highlighted that

strategic dictionary instruction should be an integral part of language education (first, second, foreign or heritage), since it helps students acquire dictionary culture, gain greater proficiency and confidence in dictionary use, and self-awareness about when and how we chose to use a dictionary in an autonomous way. (Ibid.)

While the literature on training reference skills and DUS is not overwhelming, there are already some useful findings focusing on the need to teach how to (strategically) use a dictionary effectively (Campoy-Cubillo 2002; Carduner 2003; Herbst/Stein 1987; Krieger/Müller 2017; Lew/Galas 2008; Zingano Kuhn 2019). Furthermore, Walz (1990) and Bishop (2000) are among the very few researchers who designed learning activities for training students how to use a dictionary.

Previous research has also highlighted that two crucial questions have to be taken into consideration when designing a syllabus or an intervention program for training DUS: the explicitness of purpose while teaching and the effectiveness of integrating strategy instruction into language class. However, no previous research investigated so far the impact of specific characteristics of an intervention program (such as explicitness of purpose and integration in the language course) nor the effect of variables such as gender, school type, multilingualism or dictionary use at home on DUS.

To bridge this gap in previous literature, this paper reports findings from a quantitative study conducted in Greek mainstream and intercultural schools for investigating the effect of an explicit and integrated dictionary awareness intervention program on upper elementary pupils' dictionary use strategies according to gender and type of school. The intervention was held within the class of Greek Language teaching and was based on the school dictionary distributed to all pupils by the Greek Ministry of Education. The research questions underlying this research were the following:

RQ1: What is the frequency of self-perceived DUSs of the sample and the individual dictionary use strategies that participants report they use the most/the least during digital dictionary consultation? Considering previous research (Chadjipapa et al. 2020) we expect a moderate overall strategy use and low to moderate strategy use to the four different types of digital dictionary use.

RQ2: What is the effect of the intervention program on DUS by gender and type of school?

This study extends previous research by offering additional arguments about the importance of teaching dictionary use skills and strategies and the teachability of DUS. It also offers useful insights about parameters affecting DUS.

2. Study

2.1 Participants

The sample consisted of 150 students with approximately equal numbers of males (49,3%) and females (50,7%). The participants attended in two different types of schools (mainstream and intercultural) in two Greek cities (Komotini and Ierapetra of Crete) and they were selected using convenience sampling. The participants attended the 5th and 6th grade of elementary school (upper elementary). The students were divided into two groups as follows: the control group consisted of two classes of grade 6 and one class of grade 5 with 25 students each (total of 75) and the experimental group consisted of two classes of grade 5 and one class of grade 6 with 25 students each (total of 75). The students in both groups participated in the diagnostic (pre-test) and evaluative (post-test) tests at the same time periods, but only the students in the experimental group participated in the teaching intervention activities. In terms of gender, the students are almost equally distributed in each group (Table 1).

Group	Gender	<i>n</i>	%
Experimental Group	Male	38	25,3
	Female	37	24,7
Control Group	Male	36	24,0
	Female	39	26,0
Total		150	100

Table 1: Distribution of students in the two groups by gender

2.2 Procedures and instrumentation

A quasi-experimental research method with a “pre-test-post-test control-group design” was adopted in the present study. The study was carried out in three stages. In the first stage, all the participants filled in the Strategy Inventory for Dictionary Use (SIDU) (Gavriilidou 2013) which is a valid and reliable self-report tool for the strategic use of dictionary. It consists of 36 five-point Likert-scale items, ranging from 1 (= never or almost never true of me) to 5 (= always true of me), belonging to four different subscales: (1) Dictionary awareness strategies; (2) Dictionary selection strategies; (3) Lemmatization strategies; and (4) Look-up strategies. At the end of the questionnaire there was an additional appendix that provides personal information on students’ profiles such as gender, type of school, multilingualism and dictionary use at home. Cronbach’s Alpha coefficient for the overall instrument was .93 suggesting an excellent degree of internal consistency. The value of the Alpha coefficient was: a) .87 for dictionary use awareness skills; b) .77 for dictionary selection strategies; c) .82 for strategies used in lemmatization and acquaintance with dictionary conventions; and finally d) .84 for look-up strategies. These values indicate a high degree of internal con-

sistency in the overall instrument and all sub-scales, showing that the instrument provides internally consistent scores.

In the second phase, strategy-based training was carried out with the experimental group, while the control group received the standard FL instruction. The intervention program was applied to the students in the experimental group for a period of 4 weeks (2 hours per day) and finally, after the completion of the program, the measurement of the frequency of use of the strategies was repeated in the same time periods in both experimental and control groups.

In the final stage, which followed the completion of the treatment, strategy use was measured for both groups with the same instrument. Cronbach's Alpha coefficient for the overall instrument at the second measurement was .96 suggesting an excellent degree of internal consistency. The value of the Alpha coefficient was: a) .93 for dictionary use awareness skills; b) .85 for dictionary selection strategies; c) .87 for strategies used in lemmatization and acquaintance with dictionary conventions; and finally d) .86 for look-up strategies. The frequency of strategy use overall and for each of the strategy categories represents the dependent variable, expected to be influenced by the independent variables, which are the following: the intervention (experimental and control group) and the measurement (before and after the intervention).

2.3 The intervention program

The intervention program includes 12 units of targeted paper DUS instruction for pupils attending the two classes of upper elementary schools in Greece. Each unit corresponds to and is closely connected to a different chapter of the school textbook for teaching Greek as L1. The program may be conducted over a minimum of a 4-week period. However, the duration may be extended depending on the classroom needs, level and interest. The specific intervention includes activities that promote dictionary use strategies, which are listed in the SIDU and follows the principles of strategy-based instruction. Strategy-based instruction (SBI) enables learners to take an active role in the learning process by helping them to monitor and evaluate the way they learn. It is explicit and integrated, since the students learn the way, the reasons and the instances under which they can use the appropriate dictionary applying the suitable strategies during its implementation, and enables the learners to correct themselves and their mistakes during the learning process. It adopts differentiated learning and proposes adapted activities in order to respond to the needs of users with disabilities (learning difficulties, blindness, etc.). It is based on the textbooks and school dictionary distributed free of charge by the Greek Ministry of Education in Greek upper elementary schools, and finally, it clearly states the learning outcomes of each activity (for a detailed presentation of the intervention program see Gavriilidou/Konstantinidou 2021).

3. Statistics

Data elicited from students' responses to the SIDU questionnaire were analysed with SPSS version 23. Descriptive statistics (means and standard deviations) were calculated, in order to investigate the central tendency and dispersion of the student answers to the SIDU items. Furthermore, a two-way repeated measures ANOVA with group (experimental, control) as a between-subject factor and time (pre-test, post-test) as a within-subject factor was used to investigate the effect of the intervention on the frequency of strategy use between groups.

Finally, a post-hoc Bonferroni test was carried out where significant p-values (< 0.05) were found to determine which groups were significantly different. The level of statistical significance was set at $p < 0.05$. To determine the effect of gender and school type on the frequency of use of dictionary strategies by the sample students, a one-factor analysis of variance (One-way ANOVA) was performed. The significance level of the statistical tests was set at $\alpha = 0.05$.

4. Results

4.1 Descriptive statistics

The overall mean score of dictionary strategy use was found to reflect a moderate level of use ($M = 2.86$, $SD = 0.76$). Moreover, students reported low to moderate strategy use with regard to the four individual types of strategies, with look-up (LU) strategies having the highest mean score ($M = 3.28$, $SD = 0.90$), followed by lemmatization (LM) strategies ($M = 3.01$, $SD = 0.98$), dictionary selection (DS) ($M = 2.77$, $SD = 0.90$), and dictionary awareness (DA) strategies ($M = 2.58$, $SD = 0.76$), which were the least used strategies.

Tables 2 and 3 offer respectively an overview of the most least frequently reported strategies.

Strategy type	Mean	SD
When I look up a word, I constantly bear it in my mind during the search. LU	3,66	1,263
Before I buy a dictionary, I know the reason why I need it. DS	3,63	1,397
When I look up a word, I bear in mind its initial letter and then I search where I believe this initial letter is in the dictionary. LU	3,45	1,383
When I come across an unknown word in a text, I try to think in what form I should look it up in the dictionary.	3,41	1,457
When I look up a word beginning with E, I search in the first quarter pages as E is one of the first letters of the alphabet	3,41	1,381

Table 2: The most frequently reported strategies

Strategy type	Mean	SD
I know what an etymological dictionary is and what it is used for	2,37	1,308
I use a dictionary when I read a text	2,3	1,273
I use a dictionary to find antonyms	2,27	1,085
I use a dictionary to find the syntax of a word	2,19	1,191
I know what a terminology dictionary is and what it is used for	2,09	1,212

Table 3: The least frequently reported strategies

4.2 The effect of the intervention program on DUS

Means (and standard deviations) of the students' use of DUS in total for each group before and after the intervention are presented in table 4. The application of 2 x 2 ANOVA showed

that the two groups (experimental and control) were not statistically significantly different before the intervention in terms of the frequency of using the strategies overall (Mean Difference = 0.426, $p = 0.07$). Thus, the two groups can be considered equivalent before the implementation of the syllabus. The interaction between group and measurement was found to be statistically significant ($F(1, 148) = 35.997$, $p < 0.001$, $\eta^2 = 0.196$). The value of η^2 indicates that 19.6% of the variability in the use of strategies overall can be attributed to the statistical effect of group and measurement, which corresponds to a large effect size. In particular, before the intervention, students in the control group report low to moderate use of strategies overall and this frequency does not change significantly after the intervention (Mean Difference = 0.074, $p = 0.298$). In contrast, after the intervention, students in the experimental group state that they use the strategies to a significantly greater degree overall (M.D. = 0.676, $p < 0.001$).

Group	Before		After	
	M	S.D.	M	S.D.
Experimental Group ($n = 75$)	3,07	0,71	3,75	0,59
Control Group ($n = 75$)	2,65	0,66	2,72	0,62

Table 4: The effect of the intervention program on the level of dictionary use strategies

4.3 The effect of the intervention programme on DUS by gender and type of school

The means (and standard deviations) of the use of vocabulary strategies overall by boys and girls in each group before and after the intervention are presented in Table 5. The $2 \times 2 \times 2$ ANOVA showed that the interaction between group, gender and measurement was not found to be statistically significant ($F(1, 146) = 0.862$, $p = 0.355$). Given that the interaction between group and measurement is statistically significant we conclude that the intervention had a statistically significant effect on both boys and girls in the experimental group.

Group	Gender	Before		After	
		M	SD	M	SD
Experimental Group ($n = 75$)	Male ($n = 38$)	2,77	0,69	3,62	0,59
	Female ($n = 37$)	3,38	0,59	3,88	0,58
Control Group ($n = 75$)	Male ($n = 36$)	2,48	0,73	2,65	0,70
	Female ($n = 39$)	2,79	0,55	2,78	0,5

Table 5: The effect of the intervention program on DUS according to gender

The means (and standard deviations) of the use of vocabulary strategies in general and intercultural schools in each group before and after the intervention are presented in Table 6. The $2 \times 2 \times 2$ ANOVA showed that the interaction between group, school type and measurement was not found to be statistically significant ($F(1, 146) = 0.067$, $p = 0.797$). Given that the interaction between group and measurement is statistically significant we conclude that the intervention had a statistically significant effect for both general school students and those in the intercultural school in the experimental group.

Group	Type of school	Before		After	
		M	SD	M	SD
Experimental Group (<i>n</i> = 75)	General (<i>n</i> = 50)	2,97	0,67	3,77	0,58
	Intercultural (<i>n</i> = 25)	3,27	0,77	3,70	0,63
Control Group (<i>n</i> = 75)	General (<i>n</i> = 25)	2,53	0,64	2,81	0,53
	Intercultural (<i>n</i> = 50)	2,70	0,66	2,67	0,66

Table 6: The effect of the intervention program on DUS according to school type

5. Discussion and conclusions

The purpose of the present study was to investigate strategic dictionary use and the effect of an explicit and integrated dictionary awareness intervention program on upper elementary pupils' dictionary use strategies according to gender and type of school.

It was found that students attending Greek schools reported moderate overall use of DUSs and a more frequent use of look-up and lemmatization strategies. This result is in line with previous research (Chatjipapa et al. 2020; Gavriilidou/Mavrommatidou/Markos 2020) indicating that school-aged students in Greece consider that they use DUSs to some degree, and also that they are more familiar with look-up and lemmatization strategies. This finding suggests that more needs to be done in order to raise the moderate use of all types of DUS, cultivate a dictionary culture among elementary and secondary pupils and increase the awareness of the benefits of dictionary use and its potential in improving students' lexical knowledge. Of course, teachers' staff development through constant in-service training is necessary in order to gain expertise and be able to systematically incorporate DUS into the Greek educational setting.

The results also showed a significant effect of the intervention program on DUS employed by the experimental group. This finding provides additional support to the 'teachability' of dictionary use strategies and skills; It also suggests that the effective forms of intervention programs may raise dictionary use awareness and culture and support the claim that increased dictionary use can be the outcome of explicit strategy instruction. In addition, the effective application of the program suggests that a direct and clear presentation of DUS is likely to be more successful than an implicit presentation.

Furthermore, a statistically significant interaction was found between "group" (experimental vs. control) and "measurement" (pre-measurement vs. post-measurement). No statistically significant interaction was found between 'group', 'gender' and 'measurement', suggesting that both girls and boys of the experimental group increased their scores in DUS. This finding offers further support to Chatjipapa et al. (2020) who maintained that gender is not a strong predictor of DUSs. Moreover, it is in line with previous research that indicated that, in upper elementary, male and female students use DUSs equally (Chatjipapa et al. 2020).

Similarly, no statistically significant interaction was found between 'group', 'type of school' and 'measurement'. Given that a statistically significant interaction was found between "group" and "measurement", the above finding suggests that pupils of the experimental group attending both mainstream and intercultural schools benefited equally from the intervention program and that the intervention is a strong predictor of DUS.

6. Limitations

There are certain restrictions in the present study. First of all, the study was based on a quantitative research design that included a questionnaire survey. The combination of quantitative and qualitative methods could lead to more reliable conclusions. In addition, the study was based in a convenient sample, so the results should be interpreted with caution. Finally, the post-test was conducted shortly after the intervention and may have only measured short-term results in dictionary use strategies.

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