

# How Can We Raise Strategic Dictionary Use in the Classroom: The Effect of a Dictionary Awareness Program on Dictionary Use Strategies

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**Abstract:** This study investigates the impact of an explicit and integrated dictionary awareness program on primary school pupils' dictionary use strategies. The survey involved a total of 150 participants, aged 10–12 years old, from mainstream and intercultural schools. Data was collected before and after the implementation of the program using the Strategy Inventory for Dictionary Use (SIDU), a reliable and validated self-report tool that accurately profiles paper dictionary users' reported use in real-life contexts (Gavriilidou 2013). The dictionary awareness program consisted of targeted activities and was implemented to a group of 75 students, including 50 from mainstream schools and 25 from an intercultural school. The findings suggest that there is a lack of dictionary culture among students attending Greek schools, as evidenced by the moderate strategic use of dictionaries and the incomplete integration of dictionaries as reference tools in the educational process. Additionally, the comparison of the percentage of each strategy category before and after the implementation of the program showed a significant effect of the program on all categories of Dictionary Use Strategies (DUS) employed by the experimental group. This study contributes to the discussion of the "teachability" of dictionary use strategies by highlighting the effectiveness of dictionary awareness programs in promoting a dictionary culture.

**Keywords:** DICTIONARY USE STRATEGIES, DICTIONARY AWARENESS PROGRAM, EXPLICIT AND INTEGRATED STRATEGY INSTRUCTION, DICTIONARY CULTURE, CALLA, STRATEGY BASED INSTRUCTION, LOOK UP STRATEGIES, LEMMATISATION STRATEGIES

**Opsomming:** Hoe strategiese woordeboekgebruik in die klaskamer verhoog kan word: Die uitwerking van 'n woordeboekbewusmakingsprogram op woordeboekgebruikstrategieë. Hierdie studie ondersoek die impak wat 'n eksplisiete en geïntegreerde woordeboekbewusmakingsprogram op primêreskoolleerders se woordeboek-

gebruikstrategieë het. Die opname het altesaam 150 deelnemers, 10–12 jaar oud, van hoofstroom- en interkulturele skole betrek. Data is versamel voor en ná implementering van die program wat van die Strategie-inventaris vir Woordeboekgebruik (SIWG) gebruik gemaak het. Dit is 'n betroubare en bewese selfrapporteringshulpmiddel wat gebruikers van papierwoordeboeke se gerapporteerde gebruik binne die konteks van die werklike lewe akkuraat profileer (Gavriilidou 2013). Die woordeboekbewusmakingsprogram het uit doelmatige aktiwiteite bestaan en is deur 'n groep van 75 studente, insluitende 50 uit hoofstroomskole en 25 uit 'n interkulturele skool, geïmplementeer. Die bevindings dui daarop dat daar onder studente wat Griekse skole bywoon 'n gebrek aan woordeboekkultuur is soos duidelik blyk uit die matige strategiese gebruik van woordeboeke en die onvolledige integrasie van woordeboeke as verwysingshulpmiddels in die opvoedkundige proses. Daarbenewens het die vergelyking van die persentasie van elke strategiesekategorie voor en ná die implementering van die program aangetoon dat die program 'n beduidende uitwerking op alle kategorieë van Woardeboekgebruikstrategieë (WGS) wat deur die eksperimentele groep geïmplementeer is, gehad het. Hierdie studie lewer 'n bydrae tot die bespreking van die leerbaarheid van woordeboekgebruikstrategieë deur die effektiwiteit van woordeboekbewusmakingsprogramme in die bevordering van 'n woordeboekkultuur te beklemtoon.

**Sleutelwoorde:** WOORDEBOEKGEBRUIKSTRATEGIEË, WOORDEBOEKBEWUSMAKINGS-PROGRAM, EKSPLISIETE EN GEÏNTEGREERDE STRATEGIE-ONDERRIG, WOORDEBOEK-KULTUUR, CALLA, STRATEGIEGEBASEERDE ONDERRIG, NASLAANSTRATEGIEË, LEMMATISERINGSTRATEGIEË

## 1. Introduction

The dictionary is an important tool that may be used not only for looking up words, but also during writing. It is considered a valuable educational material that enhances literacy, the development of speech and language (Zarei and Gujjar 2012). Some scholars consider its use an effective learning strategy (Nation 1990, 2001; Gu and Johnson 1996; Scholfield 1997; Gu 2003), while others acknowledge its importance in vocabulary acquisition, reading or writing (Jackson 2002; Wingate 2002; Mohamad 2003; Fuertes-Olivera and Pérez Cabello de Alba 2012). The efficient use of a dictionary depends on the familiarity with dictionary using skills and knowledge of when using a specific dictionary or other tool, in other words dictionary culture (Gouws 2013), the reference skills (Hartmann and James 1998) and the dictionary use strategies (DUS) (Gavriilidou 2013), which refer to efficient dictionary users' decisions, behaviours and techniques regarding the internal processes they adopt, in order to perform successful dictionary searches. Previous research (Gavriilidou and Konstantinidou 2021) has shown that DUS are objective, observable, discoverable, amendable and teachable. Taking it as a given that DUS are teachable and building on previous research, the purpose of this study is to answer the question of which type of dictionary awareness program would be more beneficial for raising DUS of dictionary users. To do so, we investigated the effect of an explicit and integrated to language course dictionary familiarization program

on primary school pupil's DUS. This article reports results of this investigation, starting with a literature review focusing on the construct of DUS and its inclusion in the recently reformed curricula for Greek Language Teaching in elementary and secondary schools in Greece (Magoula et al. 2022) and Cyprus (Mitsiaki 2020), followed by the research aims and hypotheses, methodology, results, discussion and conclusion of the study.

## **2. Literature review**

### **2.1 Dictionary use strategies**

Gavriilidou (2013) and Gavriilidou and Konstantinidou (2021) provide a comprehensive framework of DUS, that outlines the techniques and behaviors employed during dictionary look-ups. Gavriilidou (ibid.) explores the relationships between various variables, such as the task at hand, the type of dictionary used, and personal characteristics of dictionary users. The objective is twofold: to explain the complexity of dictionary use strategies and to offer a practical understanding of how these strategies contribute to the success or failure of dictionary searches.

Gavriilidou (2013) also aims to elucidate the actions taken by individual dictionary users to effectively complete their look-ups and to predict the role of DUS in improving look-up outcomes. For paper dictionaries, she (ibid.) classifies DUS into four categories: (1) Dictionary awareness strategies: These involve a critical awareness of the value and limitations of the dictionary, as well as an understanding of when and why to use a dictionary in specific circumstances; (2) Dictionary selection strategies: These enable users to choose an appropriate dictionary based on the problem they need to solve, ensuring familiarity with their chosen dictionary; (3) Lemmatization strategies: These assist dictionary users in finding the citation form of inflected words encountered in a text. Users rely on morphological indicators of the unknown word to make hypotheses about its look-up form. This category also encompasses skills in alphabetical sequencing; (4) Look-up strategies: These strategies facilitate the localization of the correct section of the entry where various meanings of a polysemous word form are included (for a detailed classification and definitions of DUS, see Gavriilidou and Konstantinidou 2021). This theory was extended in Mavrommatidou et al. (2019) and Gavriilidou et al. (2020) to cover digital dictionary use strategies.

DUS are problem-oriented as they are closely tied to specific learning tasks in language learning. They are action-based, requiring users to undertake specific actions to ensure successful word look-ups. Moreover, DUS are teachable and their selection is influenced by variables such as gender, motivation, learning style, educational and proficiency level, school type, task purpose, career orientation, and general reference skills (Gavriilidou et al. 2020; Gavriilidou and Konstantinidou 2021).

A growing body of research has emphasized the close relationship between

DUS and effective dictionary use (Chadjipapa et al. 2020; Gavriilidou et al. 2020). Effective dictionary use has, in turn, been found to correlate with successful performance in reading, writing, and vocabulary acquisition. Students who employ dictionary use strategies achieve more successful look-ups compared to those who do not strategize. Previous research has shown that effective dictionary users demonstrate better performance in reading comprehension (Knight 1994; Tono 1992; McCreary and Amacker 2006; Ma and Cheon 2018) and vocabulary acquisition (Hulstijn et al. 1996; Fraser 1999; Laufer 2000; Prichard 2008; Pousi 2010; Welker 2010; Hamilton 2012). A smaller number of studies have investigated the errors in dictionary use made by students during writing (Nesi and Meara 1994; Christianson 1997; Harvey and Yuill 1997; Hulstijn and Atkins 1998; Santos 2006; Elola, Rodríguez-García and Winfrey 2008). Additionally, some researchers (Harvey and Yuill 1997; Chun 2004) have compared the use of monolingual and bilingual dictionaries during writing and found a significant impact of dictionary use on the quality of the produced text. Overall, these studies highlight the importance of effective dictionary use and its impact on various language skills, including reading comprehension, vocabulary acquisition, and writing quality.

Unfortunately, many dictionary users are unaware of the complexity of their DUS. Alternatively, they may not develop sufficient mastery of the strategy repertoire independently, hindering their ability to conduct successful searches. Therefore, systematic training is necessary to enhance users' awareness and proficiency in employing a broad range of DUS for any task that requires the use of a dictionary. The question at hand is determining the most effective type of instruction for increasing students' awareness of DUS.

## 2.2 How to teach DUS?

A recent reform in the education system in Greece and Cyprus led national policy makers to acknowledge the value of cultivating dictionary culture and the importance of including dictionary training in classroom. This policy is mirrored in two national curricula recently compiled for teaching Greek as a second language in Cyprus (Mitsiaki 2020) and Greek as first language in Greece (Magoula et al. 2022: 15) which highlight every dimension of vocabulary knowledge, by promoting the creative use of dictionaries, both print and digital, and providing, for this purpose, targeted learning activities. As can be seen, from the learning outcomes/can do statements cited below, in these curricula dictionary use is closely connected to vocabulary acquisition:

*Upon successful completion students will be able:*

- *To get in touch with the children's dictionary.*
- *To identify words that acquire special meaning in the context or identify words that are important in the context of the specific vocabulary.*
- *To compare the content of entries from different types of printed and print media electronic dictionaries.*

- *To identify the thematic vocabulary of the texts in the teaching unit.*
- *To know how to search for words in printed or electronic (school) dictionaries school dictionaries.*
- *To extend their vocabulary with less frequent words by following the vocabulary of the school.*
- *To use dictionaries in order to verify their assumptions, to improve their production of spoken and written language.*
- *To identify the relationships of words based on their meaning: synonym or pronoun.*
- *To link their lexical choices to different levels of style and varying communication contexts.*
- *To form compound words based on thematic vocabulary.*
- *To create word families based on similar subject matter and focusing on meaning.*
- *Distinguish etymologically related words.*

(Mitsiaki 2020; Magoula et al. 2022)

Another relevant initiative in the Greek setting is the community-based *Curriculum for teaching Greek as a heritage language: a framework for teachers* (Gavriilidou and Mitsiaki 2022), compiled to be used as a framework for systematizing Greek heritage language teaching and testing in the USA with the purpose to empower Greek heritage speakers from pre-school to high school, so that, as teenagers, they will have gained a good knowledge of the varieties of Greek, of basic academic skills, and familiarized themselves with the Greek culture. In the four syllabi of the curriculum, dictionary awareness activities lead students to compile their own personal dictionary with the words they don't know so that they self-regulate their vocabulary learning and also train them to use efficiently DUS such as inferencing, self-monitoring, self-evaluation during receptive or productive use.

All the efforts described above promote a strategy-based instruction model in training DUS. Strategy training is defined here as any pedagogical approach and set of activities which provide language teachers with what they need to support dictionary users in enhancing their DUS by focusing on readily operationalizable strategies to be adopted and used by them to develop their reference skills, to improve particular task performance, or both.

DUS instruction is held explicitly, integrated into the language course content. This theoretical choice was based on previous literature which found, on the one hand, that explicit instruction is more effective because it cultivates students' metacognition by helping them reflect on their own learning and thinking (Anderson 2002; Chamot 2005; Sarafianou and Gavriilidou 2015) and, on the other, that "explicit teaching of DUS results in appropriate knowledge and skill development to successfully use a dictionary, raises the independence and confidence of students as dictionary users, increases their motivation to use a dictionary, which may be negatively affected by unsuccessful look ups, and develops their awareness of the positive strategies to be adopted while navigating in dictionary entries." (Gavriilidou and Konstantinidou 2021: 6). Furthermore, the integration of DUS instruction into the language course con-

tent helps dictionary users realize the usefulness of DUS used in connection with specific activities (reading, writing, listening, etc.), which facilitates retention. Students experience the advantages of systematically applying DUS to perform successful dictionary look-ups while engaging in different tasks during language learning. In addition, they have opportunities to share their own preferred DUS with the other dictionary users in the class and to increase their strategy repertoires within the context of the typical language tasks they are asked to engage in.

### 3. Aim and research questions

Numerous researchers have emphasized the importance of teaching effective dictionary use and have suggested training as a means to enhance users' reference skills and DUS (cf. e.g. Herbst and Stein 1987; Gavriilidou 2017). Additionally, several studies have examined the impact of dictionary awareness programs on the development of reference skills and the overall improvement of dictionary use effectiveness (Głowacka 2001; Carduner 2003; Chi 2003; Gavriilidou and Sfyroera 2004; Gavriilidou 2017). Considering the need for more focused studies investigating teacher-led approaches with diverse language students in different learning contexts worldwide (Cohen and Macaro 2007; Plonsky 2011), our primary objective is to investigate whether an explicit and integrated dictionary awareness program can lead to changes in self-reported strategy use among primary school Greek students.

By conducting this study, we aim to contribute to existing research and address the gap in the literature regarding the impact of teacher-led dictionary awareness programs on dictionary use strategies.

The research questions guiding this study are:

1. What is the level of strategic dictionary use of the participants before the implementation of the program? Previous research (Bensoussan et al. 1984; Neubach and Cohen 1988; Beech 2004; Chadjipapa et al. 2020) suggests that the participants in the study are anticipated to exhibit moderate engagement with DUS.
2. Does a comprehensive strategy instruction program influence the self-reported dictionary strategy use of upper elementary Greek students? While a significant portion of existing literature on program implementations focuses on their impact on overall language proficiency or distinct linguistic skills (Sengupta 2000; Macaro 2001; Carrier 2003), several studies have explored the efficacy of these programs in enhancing reference skills, thereby improving dictionary use (Głowacka 2001; Carduner 2003; Chi 2003; Gavriilidou 2017).

Through these research objectives, this study seeks to deepen our understanding of the impact of an explicit and integrated strategy instruction program on

the self-reported use of DUS among upper elementary Greek students.

#### **4. Methods**

##### **4.1 Research design**

The study employed a quasi-experimental design, specifically a "pre-test-post-test control-group design." This design, rooted in the quantitative paradigm, leverages the sample survey technique, apt for gathering data via structured questionnaires to discern opinions, perceptions, attitudes, and beliefs. This methodological choice is congruent with the study's overarching aim, specific objectives, and research inquiries.

##### **4.2 Participants**

The study involved 150 students, roughly balanced between males (49.3%) and females (50.7%). These participants hailed from two distinct school types (mainstream and intercultural) in Komotini and Ierapetra of Crete (Greece). Convenience sampling was the method of choice for participant selection. The students were from the 5th and 6th grades of elementary school. The control group comprised two 6th-grade classes and one 5th-grade class, each with 25 students (75 in total). Conversely, the experimental group had two 5th-grade classes and one 6th-grade class, each with 25 students (75 in total). Both groups underwent diagnostic (pre-test) and evaluative (post-test) assessments simultaneously. However, only the experimental group experienced the teaching implementation. Gender distribution was nearly equal across both groups. Specifically, the experimental group comprised 38 males (25.3%) and 37 females (24.7%), whereas the control group consisted of 36 males (24.0%) and 39 females (26.0%).

##### **4.3 Procedure**

The research unfolded in three phases. Initially, all the participants detailed their typical strategies during dictionary look-ups using the Strategy Inventory for Dictionary Use (SIDU) (Gavriilidou 2013). Subsequently, the experimental group, which consisted of three sections, underwent an experimental dictionary awareness program (detailed in section 4.5), spanning four weeks (2 hours daily). The control group did not undergo any specific training. During the concluding phase, both groups revisited the SIDU immediately following the program's completion. The retention measure, originally planned for three months after the intervention, was expedited due to the lockdown enforced amid the COVID-19 pandemic. The pre-test responses were compared with the post-test ones to identify potential differences in DUS between the two measurements.

Before the students completed the questionnaire, they were informed about its purpose and content. This information was provided either by the researcher or by the responsible teacher of the experimental group. In the two sections where the researcher was not present, the teachers received clear instructions on how to present the research's purpose and how to administer the questionnaire. The study was approved by the Ethics Committee of the Department of Greek of Democritus University of Thrace. Written consent was obtained from the legal guardians of minors.

Throughout the process of completing the questionnaires, either the researcher or the assigned teacher was present to offer clarifications whenever required by the students. The allocated time for each section of the experimental group to complete the questionnaire was one school hour, equivalent to 45 minutes, which proved sufficient for smooth completion. None of the sections exceeded half an hour to complete the questionnaire, and no delays occurred due to time-consuming explanations.

#### 4.4 Instrumentation

The SIDU (Gavriilidou 2013) was the primary tool to gauge dictionary strategy usage before and after the implementation of the program. This 36-item self-report questionnaire delves into dictionary strategy utilization across four strategy categories: (a) Awareness strategies (Questions 1–14), e.g., "6. I use a dictionary to find the origin of a word." (b) Selection Strategies (Questions 15–21), e.g., "18. I know what an etymological dictionary is and what it is used for." (c) Lemmatization Strategies (Questions 22–29), e.g., "25. When I can't locate a proverb or a set phrase in the entry where I thought I would find it, I begin a new search." (d) Look-up Strategies (Questions 30–36), e.g., "35. When I find the word that I was searching for, I return to the text to confirm that the word matches the context" (Gavriilidou 2013).

Developed meticulously, its validity has been previously established (Gavriilidou 2013). Every item of the instrument was reviewed by multiple experts for clarity and content validity. During pilot measures, SIDU was rigorously assessed for social desirability response bias, revealing a range of DUS among respondents. Importantly, these strategies were not concentrated at either the extremely high or median levels, providing evidence that SIDU did not produce socially desirable results.

The SIDU employs a five-point Likert scale to measure the frequency of strategy use (e.g. "never or almost never" was coded 1, "usually never" was coded 2, "sometimes" was coded 3, "usually" was coded 4, and "always or almost always" was coded 5). The English version of the instrument can be found in **Appendix A**.

Compared to other data collection protocols utilized in the study of reference skills or dictionary use, self-report composite rating scales like SIDU offer notable advantages. They are simple and swift to administer, providing a



broad assessment of each student's typical self-reported dictionary use strategies. Additionally, they facilitate the collection of data from large samples in a cost-effective and time-efficient manner. Moreover, self-report instruments are commonly employed in the study of Language Learning Strategies.

While alternative methods of investigating dictionary use also yield valuable insights, they possess inherent limitations. For instance, observation during dictionary look-up is straightforward but fails to capture data on unobservable dictionary use strategies. Interviews offer personalized information but are labor-intensive. Think-aloud protocols provide detailed insights, contingent upon users' willingness and ability to articulate their internal behaviors. Eye-tracking methods offer meticulous information but are typically limited to one-to-one settings, time-consuming, unsuitable for large-scale studies, such as the one presented here, and lack summative capabilities across students for group analysis (for a detailed report on data collection methods for the investigation of users' dictionary consultations see Tono 2001 and Lew et al. 2013).

Consequently, SIDU was chosen as the primary instrument for reliably gathering large-scale self-reported data, which can be complemented and triangulated with data obtained through other data collection methods.

#### 4.5 The dictionary awareness program

The program, executed with the experimental group, adheres to Cognitive Academic Language Learning Approach (CALLA) principles and unfolds through five phases: (a) **Preparation:** Here, students discuss their dictionary usage habits and cultivate metacognitive understanding of the connection between DUS and effective look-ups. (b) **Presentation:** In this phase, teachers demonstrate DUS, elucidating their features and applications. (c) **Practice/Scaffolding:** Students engage in exercises involving the DUS discussed, within genuine learning contexts. (d) **Self-evaluation:** Students reflect on the application of their DUS and the associated metacognitive insights. (e) **Expansion:** Students transpose their chosen DUS across varied contexts (Gavriilidou and Konstantinidou 2021). The program is both explicit and integrated. Throughout its course, students are instructed on the optimal contexts and reasons for employing specific dictionary strategies. This approach ensures that learners can autonomously rectify their errors during their educational journey (Larsen-Freeman 2000; Richards and Rodgers 2007). Additionally, the program embraces differentiated instruction and integrates intercultural learning dimensions. It offers tailored activities catering to users from diverse linguistic or cultural backgrounds. Spanning 12 units, the program offers focused instruction on DUS in a printed format, tailored for 5th and 6th-grade students. It incorporates exercises that enhance vocabulary strategies, drawing from relevant sections of the prescribed textbook. The program aligns with the curriculum set by the Ministry of Education, themes in the 5th and 6th-grade Greek textbooks, and accompanying teacher resources. While the implementation of the pro-

gram spanned four weeks (equating to 40 school hours), its duration can be adapted to suit the unique requirements, levels, and interests of individual classes.

#### 4.6 Data analysis

The internal consistency reliability of the four types of DUS was assessed using Cronbach's alpha. To validate the factor structure of the SIDU questionnaire, a Confirmatory Factor Analysis (CFA) was conducted on the proposed four-strategy model. The model's goodness-of-fit was assessed using several fit indices: Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Standardized Root Mean Square Residual (SRMR), Root Mean Square Error of Approximation (RMSEA). The CFI and TLI values, both exceeding 0.90, along with the SRMR value below 0.08 and the RMSEA value below 0.05, collectively indicate a satisfactory fit of the model to the data. Subsequent analyses involved computing the average scores for each strategy type based on individual items, to evaluate the level of strategic dictionary use before and after program implementation. To investigate the effects of the program on the frequency of strategy use, a two-way repeated measures Analysis of Variance (ANOVA) was conducted. This analysis was chosen to account for the two independent variables: group type (Experimental vs. Control) and time (Pre-test vs. Post-test). The dependent variable was the frequency of strategy use. By employing this statistical approach, we aimed to discern any significant interactions between the group type and time, which would indicate the program's differential impact on strategy usage frequency across the two groups. Eta squared ( $\eta^2$ ) was used as a measure of effect size to quantify the magnitude of the observed effects. Conventionally, values of 0.01, 0.06, and 0.14 are considered to represent small, medium, and large effect sizes, respectively (Cohen 1988). All statistical analyses were executed in R, utilizing the `aov` function from the base package and the `cfa` function from the `lavaan` package (Rosseel 2012).

### 5. Results

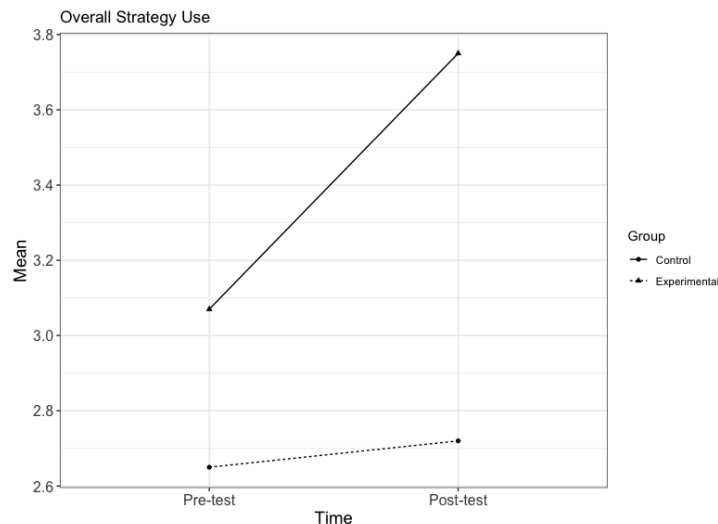
The four-strategy CFA model demonstrated a satisfactory fit. Fit indices included CFI (0.921), TLI (0.918), SRMR (0.0555), and RMSEA (0.0421; 90% CI: 0.0349–0.0491). These values indicate a strong and close fit of the model to the observed data. Factor loadings for all categories were significant at  $p < 0.001$ : awareness (0.43–0.69), selection (0.45–0.73), lemmatization (0.51–0.74), and look-up (0.57–0.74). For internal consistency, the Cronbach's alpha values were 0.87 for awareness, 0.77 for selection, 0.82 for lemmatization and 0.84 for look-up strategies, indicating the SIDU questionnaire's reliable measurement of each strategy type.

**Table 1:** Comparison of strategy use in experimental and control groups before and after the program's implementation

| Strategy type        | Group        | Pre-test |      | Post-test |      |
|----------------------|--------------|----------|------|-----------|------|
|                      |              | Mean     | SD   | Mean      | SD   |
| Awareness            | Experimental | 2.83     | 0.79 | 3.60      | 0.64 |
|                      | Control      | 2.33     | 0.65 | 2.48      | 0.68 |
| Selection            | Experimental | 2.97     | 0.90 | 3.66      | 0.80 |
|                      | Control      | 2.56     | 0.86 | 2.63      | 0.76 |
| Lemmatization        | Experimental | 3.22     | 0.98 | 3.77      | 0.80 |
|                      | Control      | 2.80     | 0.94 | 2.77      | 0.84 |
| Look-up              | Experimental | 3.44     | 0.93 | 4.05      | 0.62 |
|                      | Control      | 3.12     | 0.85 | 3.17      | 0.79 |
| Overall strategy use | Experimental | 3.07     | 0.71 | 3.75      | 0.59 |
|                      | Control      | 2.65     | 0.66 | 2.72      | 0.62 |

As illustrated in Table 1, the mean scores and standard deviations for each strategy type — awareness, selection, lemmatization, and look-up — were compared between the experimental and control groups both before and after the program's implementation.

*Overall strategy use:* Table 1 and Figure 1 present the overall dictionary use strategies employed by students in each group, both before and after the program's implementation. Prior to the implementation, an ANOVA analysis found no significant difference in strategy frequency between the experimental and control groups (Mean Difference = 0.426,  $p = 0.07$ ), suggesting that both groups were on a similar footing before the program's onset. However, a significant interaction emerged between the group and the time of measurement ( $F(1, 148) = 35.997$ ,  $p < 0.001$ ,  $\eta^2 = 0.196$ ). This effect size, as denoted by the  $\eta^2$  value, implies that nearly 19.6% of the variance in overall strategy use can be attributed to the combined influence of the group and the time of measurement, which is indicative of a large effect size. Before the program's implementation, students in the control group reported employing the strategies with a low to moderate frequency — a pattern that remained relatively unchanged after program's implementation (Mean Difference = 0.074,  $p = 0.298$ ). Conversely, the experimental group students exhibited a marked increase in the frequency of overall strategy use after the implementation of the program (Mean Difference = 0.676,  $p < 0.001$ ). This is also illustrated in Figure 1. Such findings emphasize the program's potential effectiveness in bolstering strategic dictionary use, especially within the experimental group.



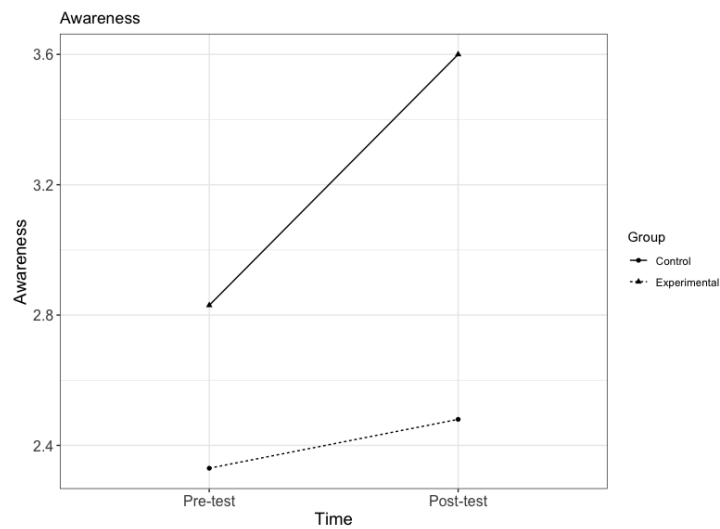
**Figure 1:** Overall strategy use before and after the implementation of the program in experimental and control groups

*Awareness strategy use:* As depicted in Table 1 and Figure 2, students' familiarity with dictionary use contexts was assessed before and after the implementation of the program. Initial comparisons revealed no significant difference in strategy frequency between the experimental and control groups (Mean Difference = 0.498,  $p = 0.06$ ). However, a significant interaction between group and time of measurement was observed ( $F(1, 148) = 30.506$ ,  $p < 0.001$ ,  $\eta^2 = 0.171$ ). The control group's use of awareness strategies remained consistent after the implementation of the program (Mean Difference = 0.146,  $p = 0.071$ ), while the experimental group showed a notable increase (Mean Difference = 0.771,  $p < 0.001$ ).

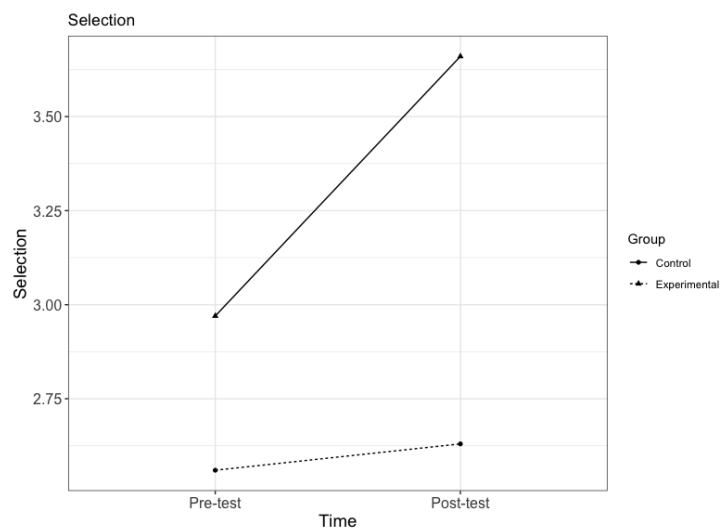
*Selection strategy use:* Both groups were initially comparable in selection strategy use with a Mean Difference of 0.410,  $p = 0.07$  (see Table 1 and Figure 3). A significant interaction between group and time was noted ( $F(1, 148) = 21.101$ ,  $p < 0.001$ ,  $\eta^2 = 0.125$ ). The control group maintained their strategy use after the implementation of the program (Mean Difference = 0.065,  $p = 0.500$ ), whereas the experimental group reported increased use (Mean Difference = 0.688,  $p < 0.001$ ).

*Lemmatization strategy use:* As presented in Table 1 and Figure 4, lemmatization strategies were consistent across groups before the implementation of the program (Mean Difference = 0.417,  $p = 0.07$ ). A significant interaction was detected after the implementation of the program ( $F(1, 148) = 19.744$ ,  $p < 0.001$ ,  $\eta^2 = 0.117$ ). The control group's strategy use remained stable (Mean Difference = 0.029,  $p =$

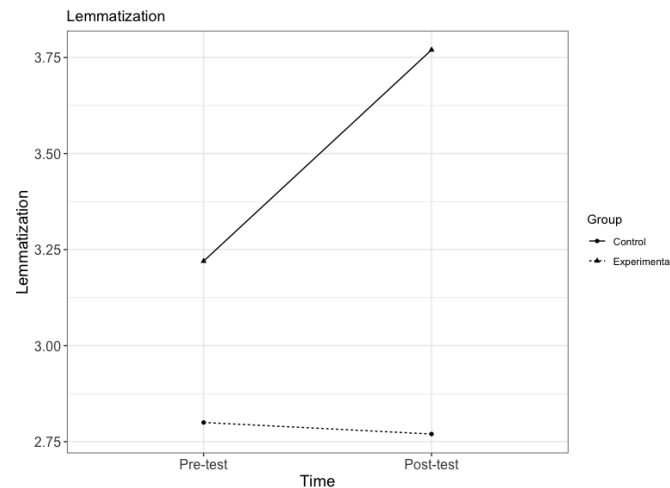
0.756), while the experimental group showed a marked increase (Mean Difference = 0.55,  $p < 0.001$ ).



**Figure 2:** Awareness strategy use before and after the implementation of the program in experimental and control group

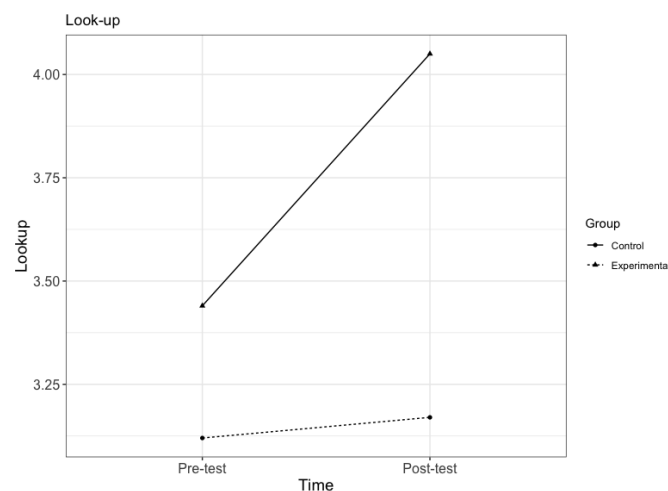


**Figure 3:** Selection strategy use before and after the implementation of the program in experimental and control groups



**Figure 4:** Lemmatization strategy use before and after the implementation of the program in experimental and control groups

*Look-up strategy use:* Table 1 and Figure 5 detail students' look-up strategies. Both groups were comparable in strategy frequency before the implementation of the program (Mean Difference = 0.320,  $p = 0.12$ ). A significant interaction was observed after the implementation of the program ( $F(1, 148) = 19.612$ ,  $p < 0.001$ ,  $\eta^2 = 0.117$ ). The control group's strategy use remained consistent (Mean Difference = 0.047,  $p = 0.605$ ), while the experimental group reported a significant uptick (Mean Difference = 0.61,  $p < 0.001$ ).



**Figure 5:** Look-up strategy use before and after the implementation of the program in experimental and control groups

## 6. Discussion

The first research question in this survey aimed to assess the level of strategic dictionary use among the participants in the study based on categories before the implementation of the program. Considering previous research (Bensousan et al. 1984; Neubach and Cohen 1988; Beech 2004; Chadjipapa et al. 2020), it was hypothesized that the participants would exhibit a moderate level of dictionary use strategies overall and within each category.

The statistical analyses conducted confirmed the initial hypotheses, as learners reported utilizing dictionary use strategies overall and within each category to a moderate degree. Therefore, it can be concluded that the users in the sample cannot be classified as "strategic" dictionary users, as they demonstrate only a moderate extent of strategy usage. This moderate level of use may be attributed to the non-conscious use of strategies by the survey participants or the lack of systematic and organized dictionary use in Greek general and intercultural schools, which lack targeted activities and appropriate motivation from teachers.

These findings underscore the need for increased awareness among teachers regarding the importance of supporting learners in becoming more proficient users of dictionaries. Enhancing this could be accomplished by engaging teachers in tailored professional development sessions focused on a strategic dictionary use program designed to cater to their unique requirements and challenges. These findings also suggest that further efforts are needed to enhance the moderate use of all types of DUS, foster a dictionary culture among elementary and secondary pupils, and increase awareness of the benefits of dictionary use and its potential to improve students' lexical knowledge. Consequently, continuous in-service training is necessary for teachers to develop expertise and effectively incorporate DUS into the Greek educational setting.

The second research question examined the effect of the dictionary awareness program on dictionary use among the students. The results indicate a significant effect of the program, with all students in the experimental group demonstrating an increase in the use of dictionary use strategies overall and within individual categories.

While before the implementation of the program, the students in the sample exhibited a moderate level of dictionary use strategies, after the implementation of the program, students in the experimental group reported a significantly higher use of strategies overall compared to the control group. The frequency of dictionary use within the control group exhibited no significant alterations following the program's implementation, maintaining a consistently low to moderate level comparable to pre-program levels.

Specifically, in the awareness strategies, selection strategies, lemmatization strategies, and look-up strategies, the two groups (experimental and control), which were considered equivalent before the implementation of the program, showed significant differences after its implementation. Before the imple-

mentation of the program, the control group reported low to moderate usage of the strategies, and this frequency did not change significantly after the implementation of the program. In contrast, the experimental group reported a significantly higher use of all categories of dictionary use strategies after the implementation of the program, with the most notable increase observed in the awareness strategies and selection strategies, which had the lowest rates of use before the implementation of the program.

The increase in the frequency of strategy use after the implementation of the program is a positive indication of the impact of the teaching approach in the context of Greek language teaching in primary schools. However, it is important to note that the success of this approach relies on redefining the role of the teacher and implementing student-centered methods that promote autonomy in dictionary use.

Overall, these findings provide additional support for the "teachability" of dictionary use strategies and skills, suggesting that well-designed dictionary awareness programs can heighten awareness and cultivate a dictionary culture. It further supports the claim that explicit strategy instruction can lead to increased dictionary use. Additionally, the effective implementation of the program indicates that a direct and clear presentation of DUS is more likely to yield success than an implicit approach and contribute to the development of autonomous learners in vocabulary acquisition.

## **7. Conclusions, limitations and further research**

This study investigated the effectiveness of a dictionary awareness program that focused on explicit and integrated strategy training for primary school students attending mainstream and intercultural schools in Greece. The findings revealed a moderate degree of dictionary usage, as reported by the students in the sample, indicating an incomplete integration of dictionaries as reference tools in the educational process. However, following the program's implementation, a notable surge in the overall adoption of dictionary use strategies was evident. This positive outcome provides encouraging evidence of the specific teaching approach's impact, aligning with the long-term goal of cultivating strategically autonomous learners proficient in using dictionaries.

This study does, however, have a few limitations. First of all, the current study was based on a quantitative research design involving a questionnaire survey. The combination of quantitative and qualitative methods could have reinforced the internal validity of the study and could have provided further insights regarding the learners' ability in choosing appropriate strategies. Furthermore, the assignment of subjects to the experimental and control groups relied on the researcher's convenient accessibility rather than random sampling, thereby compromising the external validity of the research and constraining the generalizability of the findings. Third, in light of the lockdown enforced amid the COVID-19 pandemic, the retention measure initially scheduled for three months post-inter-



vention was expedited. Finally, although the indications of the results after the implementation of the program are very encouraging, the short duration (4 weeks) limits the possibility of a more complete assessment of the program.

A recommended approach for future research could involve replicating the survey while considering various age demographics and incorporating a retention measure to assess the sustainability of the observed effects over time. It would also be of particular interest to study the effect of further parameters on the strategic use of the dictionary, such as the socio-economic context, the performance of the student's performance, motivation and learning trajectory, since according to the literature, these variables influence the use of learning strategies (Lan and Oxford 2003; Chamot and Keatley 2004; Oxford et al. 2004; Gavriilidou and Petrogiannis 2016; Gavriilidou et al. 2017). A defining suggestion for future research could involve expanding the methodology to include qualitative techniques, such as observational studies, which could unveil nuanced insights into the efficacy and utilization of strategies. This approach would offer a deeper understanding of the topic by capturing real-time behaviors and contextual factors that quantitative measures may overlook. Lastly, an additional research recommendation would be to investigate the correlation between the dictionary strategies employed by teachers and those utilized by students. This comparative analysis could offer valuable insights into the dynamics of strategy transmission and adoption within educational settings, shedding light on potential influences and reciprocal effects between educators and learners.

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## Appendix A: English version of S.I.D.U (Gavriilidou 2014)

Name (not surname):

Gender:

Date of birth:

Mother Tongue:

Career orientation:

This questionnaire will be used for research purposes and your contribution is very significant. Thank you for your help. Please read the following statements carefully and circle 1, 2, 3, 4 or 5 according to what is most true for you.

- (1) Never or almost never true of me.
- (2) Generally not true of me.
- (3) Somewhat true of me.
- (4) Generally true of me.
- (5) Always true of me.

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| I use a dictionary to find the meaning of a word        | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to find the spelling of a word       | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to find synonyms                     | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to find antonyms                     | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to check how a word is used          | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to find the origin of a word         | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to help myself in translation        | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to find the syntax of a word         | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to find the derivatives of a word    | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to find word families                | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary to find the meaning of an expression | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary at home                              | 1 | 2 | 3 | 4 | 5 |
| I use a dictionary when I read a text                   | 1 | 2 | 3 | 4 | 5 |

|  |   |   |   |   |   |
|--|---|---|---|---|---|
| I use a dictionary when I write a text   | 1 | 2 | 3 | 4 | 5 |
| Before I buy a dictionary, I know the reason why I need it   | 1 | 2 | 3 | 4 | 5 |
| Before I buy a dictionary at the bookshop, I glance through it to see what information it provides                           | 1 | 2 | 3 | 4 | 5 |
| I choose a dictionary because it has a lot of entries and a lot of information in each entry                                 | 1 | 2 | 3 | 4 | 5 |
| I know what an etymological dictionary is and what it is used for  | 1 | 2 | 3 | 4 | 5 |
| I know what a general dictionary is and what it is used for  | 1 | 2 | 3 | 4 | 5 |
| I know what a bilingual dictionary is and what it is used for  | 1 | 2 | 3 | 4 | 5 |
| I know what a dictionary of technical terms is and what it is used for   | 1 | 2 | 3 | 4 | 5 |
| Before I use my new dictionary, I carefully read the introduction  | 1 | 2 | 3 | 4 | 5 |
| Before I use my new dictionary, I carefully study the list of abbreviations  | 1 | 2 | 3 | 4 | 5 |
| 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              | 1 | 2 | 3 | 4 | 5 |
| When I can't locate a proverb or a set phrase in the entry where I thought I would find it, I begin a new search             | 1 | 2 | 3 | 4 | 5 |
| When I hear a word I don't know, I consider various spelling possibilities and look it up accordingly                        | 1 | 2 | 3 | 4 | 5 |
| When I can't find a word where I thought I would find it, I begin a new search until I find it                               | 1 | 2 | 3 | 4 | 5 |
| To see how a word is used in spoken language, I use the usage labels provided in the entry                                   | 1 | 2 | 3 | 4 | 5 |
| 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 | 1 | 2 | 3 | 4 | 5 |
| When I look up a word beginning with L, I open my dictionary in the middle   | 1 | 2 | 3 | 4 | 5 |

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| When I look up a word, I bear in mind its initial letter and then search where I believe this initial letter is in the dictionary   | 1 | 2 | 3 | 4 | 5 |
| When I look up a word, I simply open the dictionary and see if I am near the specific initial letter  | 1 | 2 | 3 | 4 | 5 |
| When I look up a word, I constantly bear it in my mind during the search  | 1 | 2 | 3 | 4 | 5 |
| When I realize that the word I am looking for has various different meanings, I go through them all one by one, assisted by the example sentences                               | 1 | 2 | 3 | 4 | 5 |
| When I find the word that I was searching for, I return to the text to confirm that the word matches the context  | 1 | 2 | 3 | 4 | 5 |
| Before I use a word I found in the dictionary when writing a text, I read all the information on the grammar of that word (conjugation, syntax) to be sure of the correct usage | 1 | 2 | 3 | 4 | 5 |