

*Full Length Research Paper*

# Vocabulary developing strategies applied to individuals with hearing impairments

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Received 12 April, 2016; Accepted 13 July, 2016

The general purpose of this research was to investigate the strategies utilized for vocabulary development of ten individuals (first year college students) in Graphic Art Department, School for The Handicapped, Anadolu University with hearing impairment. The reflective and cyclical data were consisted of videotape recordings of the actual lessons, audiotape recordings of the meeting of the validity committee, lesson plans, archival data, students' artifacts and test results. During the instructions, based on the Balanced Literacy Instructional Approach (BLIA), direct and indirect vocabulary developing strategies were applied meaningfully, functionally and purposefully. The research findings indicated that the individuals with hearing impairment improved in their vocabulary and the application of combinations of direct and indirect vocabulary developing strategies repeated in various contexts is beneficial for the students' vocabulary development.

**Key Words:** Vocabulary, vocabulary developing strategies, individuals with hearing impairments, Balanced Literacy Instructional Approach.

## INTRODUCTION

Vocabulary knowledge constitutes the basis of reading comprehension. There is a significant relationship between reading comprehension and vocabulary of an individual (Graves, 1986; Stahl and Nagy, 2006).

Principles such as the integration of new words with previous knowledge, repetition, and the meaningful usage of words in different contexts should be taken into consideration during the planning and implementation of studies concerning effective vocabulary development (Karatay, 2007; Nagy, 1988; Paul, 2001). Several

vocabulary developing strategies included in the subject matter of effective vocabulary instruction exist and they are based on these principles. In general, strategy is a way of doing things that should be done regarding any subject (Richek et al., 2002). Reading and writing strategies aim at the acquisition of reading and writing habits through methods such as questions and answers, defining, the use of graphic organizing, anticipation, understanding the text format, and summation. Strategies are used within certain activities that are prepared in

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order to support the subjects to be learned in accordance with the instructional purposes and requirements (Carnahan et al., 2012; Gambrell et al., 2007; Tompkins, 2007).

The Balanced Literacy Instructional Approach (BLIA), a combination of the Skill Based Approach of the behaviorist theory and the meaning-based Whole Language Approach of constructionist theory, is commonly used in literacy instruction (Bingham and Hall-Kenyon, 2013; Pressley et al., 2002; Schirmer, 2000; Tompkins, 2007). BLIA provides students functional, purposeful and meaningful literacy activities. Various activities and strategies fostering literacy development could be designed based on the principles of the BLIA. The principles of the BLIA are: all forms of expressive and receptive language work together; focus is on meaning of written language in authentic context; classrooms are communities of learners in which literacy is acquired through use; students are motivated when given choice and ownership; literacy development is part of an integrated curriculum; reading behaviors of skilled readers reveal what instruction should accomplish; processes and products are equally important; meaningful, functional and purposeful literacy activities must be instructed in authentic contexts (Schirmer, 2000; Gambrell et al., 2007) It is found that integration, repetition and meaningful usage principles required by effective vocabulary instruction are consistent with the principles of BLIA (Fountas and Pinel, 1996; Pressley et al., 2002).

### **Vocabulary development strategies**

Vocabulary acquisition includes the direct or indirect usage of vocabularies and vocabulary instruction strategies, and the learning of the meaning of a word through various activities (Diamond and Gutlohn, 2006; Nagy, 1988). Definitions and classifications regarding vocabulary instruction can be examined under two headings: direct and indirect vocabulary developing strategies (Cramer, 2004; Johnson and Johnson, 2004; Rupley et al., 2009).

Direct vocabulary instruction includes both the direct interpretation of a word and instruction in word learning strategies in order to find the meaning of words (Bennet et al., 2014; Baumann and Kameenui, 2004; Cramer, 2004; Johnson and Johnson, 2004). Direct vocabulary instruction is significant, in that it helps the learning of words or terms within complex contexts, and words that are not used in daily life (Diamond and Gutlohn, 2006). Direct vocabulary instruction strategies in common usage are: a) defining, b) direct instruction of the strategies, c) matching the words with their synonyms and definitions, and d) use of graphic organizing.

Indirect vocabulary instruction is defined as the indirect learning of the meaning of words by performing conversations and reading in different contexts. In studies concerning vocabulary acquisition, it is stated that the number of words learned indirectly are more than the number of words learned directly (Beck et al., 1983; Hiebert and Kamil, 2005; Rupley and Nichols, 2005; Stahl, 1999). Vocabulary developing strategies that are commonly used during reading are: a) guessing the meaning of words from the clues in the text, b) asking and answering questions, and c) filling in the blanks.

Research highlights the necessity of the combined implementation of direct and indirect vocabulary studies in vocabulary instruction (Nagy, 1988; Stahl and Fairbanks, 1986; Stahl, 1999). Again, in the literature, it is stated that a great majority of words are learned indirectly, while some words should be learned directly. However, both strategies should be used together, or according to the needs of the students, and the characteristics of the words, as direct or indirect vocabulary instruction strategy is not considered to be effective alone (Bauman and Kameenui, 2004; Blair, Rupley and Nichols, 2007; Diamond and Gutlohn, 2006; Hiebert and Kamil, 2005; Nagy, 1988; Rupley and Nichols, 2005; Stahl and Fairbanks, 1986; Stahl, 1999; Stahl and Nagy, 2006; Taylor et al., 2009).

### **Individual with hearing impairments and vocabulary development**

It was determined that strategies implemented according to the principles of BLIA contributed to literacy skills of hearing and individuals with hearing impairments (Fountas and Pinel, 1996; Bingham and Hell-Kenyon, 2013; Karasu et al., 2012; Pressley et al., 2002; Schirmer, 2000; Uzuner, 2007a; Uzuner et al., 2011).

Reading skill requires visual and audio competences, deductive and predictive skills, extensive vocabulary, language development, and a certain cognitive level. Walker et al. (1998) and Ewoldt (1982) suggested that individuals with hearing impairments failed to develop reading comprehension strategies on their own since they could not acquire the necessary reading comprehension at a specific age. It has been said that these students cannot generalize and use skills such as comprehension, and the analysis and assessment of emotions and notions that comprise reading skills, with new content and in different contexts (Lombardi, 2015; Richek et al., 2002).

Reading comprehension and vocabulary strategies should be taught to individuals with hearing impairments in the same way as with their hearing peers (Charlesworth et al., 2006; Kyle et al., 2016; Schirmer and Woolsey, 1997; Walker et al., 1998). However, more activities,

repetition and revision strategies should be conducted and employed along with the combined usage of direct and indirect vocabulary instruction strategies (Karasu and Girgin, 2007; Luckner and Cooke, 2010; Paul, 1996; Schirmer and McGough, 2005). Nevertheless, individuals with hearing impairments acquire only a small amount of the vocabulary knowledge when indirect instruction strategies are used (Beck et al., 1983; Paul, 2001). For this reason, it is emphasized that direct vocabulary developing strategies should be used more than indirect vocabulary developing strategies in order to develop the vocabulary of individuals with hearing impairments (Beck et al., 1983; Kelly, 1996; Luckner and Cooke, 2010; Taylor et al., 2009).

### Significance

It was determined that research on vocabulary developing strategies is related to the indirect vocabulary development strategy (Bauman and Kameenui, 2004; Stahl and Nagy, 2006). When, why and how strategies are used in teaching vocabulary development has been researched; however, there has been insufficient research regarding vocabulary development in college students, either in Turkey or around the world. Furthermore, the acquisition of professional terminology is very important for students with limited vocabulary and language skills in both their academic and professional lives (Lombardi, 2015). Moreover, supporting the professional education of individuals with hearing impairments via language lessons, would achieve better results, and would be significant. Students with hearing impairments receive professional education at the School for the Handicapped (SfH), where the present study was conducted. It is thought that this study, which aims to develop the teaching of professional terms to individuals with hearing impairments through BLIA will be a model for instructions to be provided to individuals with hearing impairments, and will enable them to become more literate individuals.

There is a need to determine exactly what strategies are employed and their effects on education, together with a consideration of some variables such as the classroom environment and student characteristics (Karatay, 2007; McShane, 2005; Schirmer and McGough, 2005; Trussell and Easterbrooks, 2016).

It is seen that most of the research conducted with hearing impaired students has been related to indirect vocabulary development strategies. Therefore, further research concerning direct and indirect vocabulary developing strategies should be conducted for the vocabulary development of hearing impaired students (Bauman and Kameenui, 2004; Beck et al., 1983; Blair et al., 2007; Cramer, 2004; Diamond and Gutlohn, 2006; Hiebert and Kamil, 2005; McKeown, 1993; Nagy, 1988;

Rupley et al., 2009; Rupley and Nichols, 2005; Stahl and Fairbanks, 1986; Stahl, 1999; Stahl and Nagy, 2006; Taylor et al., 2009).

For these reasons, the overall purpose of this research was to examine the vocabulary developing strategies hearing impaired college students in accordance with the principles of BLIA. Thus, the following questions were asked within the present research: 1) How did the vocabulary development process occur? 2) What were the components of the vocabulary development model that emerged during the research period, and how did the model work? 3) Which direct and indirect vocabulary developing strategies were used and how were they implemented? and 4) What were the effects of the implemented strategies on the vocabulary development of the students?

### METHODS

The present study used the action research method, including both qualitative and quantitative data collection techniques in order to improve the educational activities conducted in an educational environment and to examine the process (Fraenkel and Wallen, 2003; Yildirim and Simsek, 2006). Within the study, a vocabulary development process used for hearing impaired students and the effects of this process were determined, and action plans were prepared. The action research method provided significant and practical applications for the students, and contributed to the development of the researchers as instructors. Moreover, as a result of this research, the action research model was considered to be useful as it responds to the purposes of the program of the School for the Handicapped at Anadolu University.

### Setting

The School for the Handicapped began providing education in the 1993-1994 academic year. The main objective of this school is to enable the handicapped who require special education to be productive and successful individuals in the society by providing education in occupational programs that are appropriate to their handicap. At the SfH, hearing impaired students are educated in accordance with the BLIA principles of the Undergraduate Program of Graphic and Ceramic Arts, and Associate Degree Programs of Computer Operating and Architectural Drafting. In this study, data from the language courses were collected in the "Literacy Language Classroom" and data of the "Page Design-QuarkXPress Desktop Publishing" were collected in the "Computer Laboratory." The classrooms were equipped with the educational requirements of individuals with hearing impairments (Girgin, 2003).

### Participants

#### *The students*

Prior to this research, a literacy model was developed within the framework of the project titled "Investigation of Literacy Instructions Applied Based on the BLIA to Hearing Impaired Students," which is

**Table 1.** The demographic characteristic of the students.

Names	Age/gender	Degree of hearing loss (better hearing ear)	Age of onset of hearing impairment	Age of diagnosis	Age of onset of hearing aid	Secondary education environment	Types of hearing loss
Orhan	18/ M	102 dB HL	Congenital	0.6	1.5	Vocational High School	Sensorineural Bilateral
Esma	25/ F	85 dB HL	3	3	3.5		
Sevil	20/ F	65 dB HL	4	11	13		
Sonay*	21/ F	108 dB HL	Congenital	3	3.5	Public High School	Sensorineural Bilateral
Ahmet	18/ M	100 dB HL	Congenital	1	1		
Arda	23/ M	55 dB HL	19	19	21	Research Center for Pre-school Education of Hearing Impaired Children	
Dilek	19/ F	115 dB HL	Congenital	0.6	0.8		
Deren	20/ F	110 dB HL	Congenital	1.5	1,5		
Gizem	19/ F	107 dB HL	Congenital	1	1		
Gulden	19/ F	107 dB HL	Congenital	1	1.5		

supported by Anadolu University at the school. In this model, a school newspaper was published as a product, and the typesetting and layout of this newspaper were prepared in the "Page Design" course. Being a follow-up of the mentioned project, this study determined students who took the Page Design course through the purposeful sampling method, as this method profoundly investigates cases that are thought to have enriched information (Yildirim and Simsek, 2011). This study was conducted with ten bilateral sensorineural hearing impaired students who took the "Page Design" course in the first year of 'Graphic Arts' within one academic semester.

The students were informed about the purpose and process of the study and each student signed a consent letter. In the reports, the names of students were changed. All the students, seven females and three males, were communicated with verbally. Educational background and the hearing impaired status of students are presented in Table 1.

#### **Language levels of the students**

Information about language use and literacy performance of the students were determined by applying criteria referenced tests prepared and validated by language and

literacy experts. In addition, the students were observed and interacted with during the instructions. Based on these data, all the students were in the multi-word period. Although they made some developmental grammar mistakes in writing and speaking skills, most of them could express the message using language complexities.

#### **The researchers**

Research data were collected by the instructors who are first and fourth authors of this article. While the first one was the instructor of the "Page Design" course that teaches a desktop publishing program, the fourth author was the instructor of the "Written and Verbal Expression Practices" and "Profession Language" courses at the School for the Handicapped. The researchers had at least 13 years of professional experience in the training hearing impaired students. All the researchers took courses on qualitative research, participated in relevant conferences, and took part in action research projects as researchers.

#### **The validity and trustworthiness committee**

The research process, the collected data, and quality of the

practice were regularly and systematically audited by two specialists who are experienced in qualitative research and training of the hearing impaired and work in the Computer and Teaching Technologies Education Department (Creswell, 2005; Fraenkel and Wallen, 2003).

#### **Data collection techniques and analysis**

Various quantitative and qualitative data collection techniques were utilized when necessary (Creswell, 2005). In this research, the qualitative data collection techniques are as follows: videotape recordings of the actual classroom interactions (30 h and 54 min), audio recordings of the validity meetings (14 h and 40 min), 16 lesson plans and reflective journal entries, students' artifacts (portfolios, notebooks and indexes), archival data, (audiograms, the official records of the students) and various interviews with the stakeholders.

The quantitative data were collected by Criterion Referenced Test. The purpose of this test was to determine effects of the applied strategies on the vocabulary development.

Ongoing data analysis was conducted during the research process, the data were analyzed either decriptivly or indictivly when necessary (Bogdan and Biklen, 2007;

**Table 2.** Dates and general scope of the research.

The research process	Dates	Fall semester	Spring semester
Preparation	2006–2007 Academic Year	Literature review Measurement tool development	Pilot application Overall Assessment
Implementation	2007–2008 Academic Year	Overall Assessment	The implementation of the research
Enrichment	2008 Summer	Enrichment application	

Creswell, 2005; Fraenkel and Wallen, 2003; Gay and Airasian, 2005; Johnson, 2002).

## RESULTS AND DISCUSSION

In this section, qualitative and quantitative results were examined. How the vocabulary development process occurred and the operation of the vocabulary development model that emerged during the research are the qualitative body of the results. Following this section, the criterion referenced test results, quantitative data, was examined.

### The qualitative data results

The research consisted of three stages and was conducted over a long period (Table 2). The first, because vocabulary development requires a long period of time, and hearing impaired individuals have difficulties learning vocabulary (Luckner and Cooke, 2010; Paul, 1996; Paul, 2001). Another reason for the length of time taken is the nature of effective vocabulary instruction (Bauman and Kameenui, 2004; Stahl and Nagy, 2006). Figure 1 shows the present research consists of the preparation process, implementation process and enrichment process.

### Preparation process

This process consists of developing a Criterion Referenced Test (CRT) and the pilot study. Developing a Criterion Referenced Test (CRT) was prepared in order to determine the vocabulary of the students and to scale the vocabulary development (Gay and Airasian, 2003; Uzuner, 2008). This test was applied as a pre-test and post-test in the first and ninth weeks of the process.

A content validity was secured in order to identify to what extent the prepared questions served the purposes of the test, whether the questions were appropriate for the ages, interests and language levels of the students, and whether the sentences and text structures used were appropriate (Tekin and İftar-Kircaali, 2001). T-unit calculations were made in order to identify the appropriateness of the texts to the levels of the students,

and the equivalences of the texts (Gillet and Temple, 1990; Uzuner, 2008). Reliabilities of the T-units of the texts were calculated via a Consensus/Consensus x Dissensus x 100 formula (Tekin and İftar-Kircaali, 2001). The pilot study included different students. The second grade graphic art students were chosen for the pilot study as they had received the “Page Design” course in the spring term of the 2006-2007 academic year during which the pilot study data was collected.

Direct and indirect vocabulary developing strategies were used in five lessons during the pilot study in which seven lessons were conducted cyclically. Pre-test and post-test data were collected before and after conducting the pilot study. The type of the hearing loss, its level, and the ages and communication types of the students in the pilot study were similar to those in the application group. The positive aspects and the problems of the pilot study were determined. The positive aspects were directly used in the implementation process, while certain measures were taken in order to remove the problems. Instructors did not encounter any problem regarding the activity cycle or during the sharing of lesson plans and materials on the internet. Moreover, the Criterion Referenced Test (CRT) was determined to be valid for the purposes of the research.

According to the pre-test and final test results of pilot study, the students had low performance in strategies of defining, answering questions, and listing words. Regarding this result, the decision was made to inform students that definition would be focused and definitions that express the word completely would be accepted and to conduct studies on how to make definitions previous to the research. As the period of pilot activity was short, it was decided to conduct the activities of asking questions, repeating and editing more intensely (Girgin, 2003; Graham and Wong, 1993; Harrel and Jordan, 2002). In the lesson plans, there were many words regarding the features of the course within language related purposes. It was decided to write five words within plans and increase this number to eight with words to be reinforced.

### Implementation process

The Balanced Literacy Instruction Model was developed

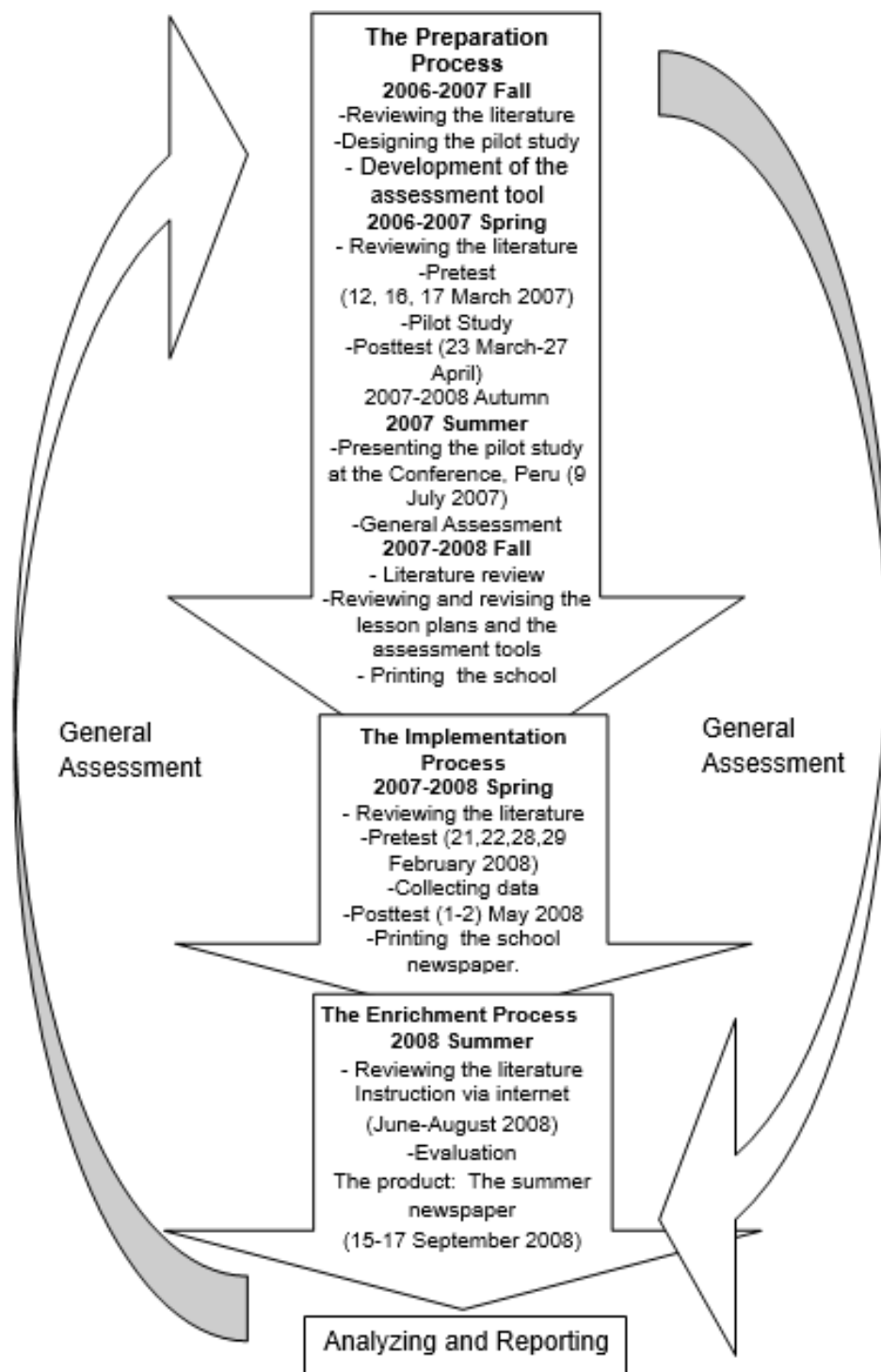
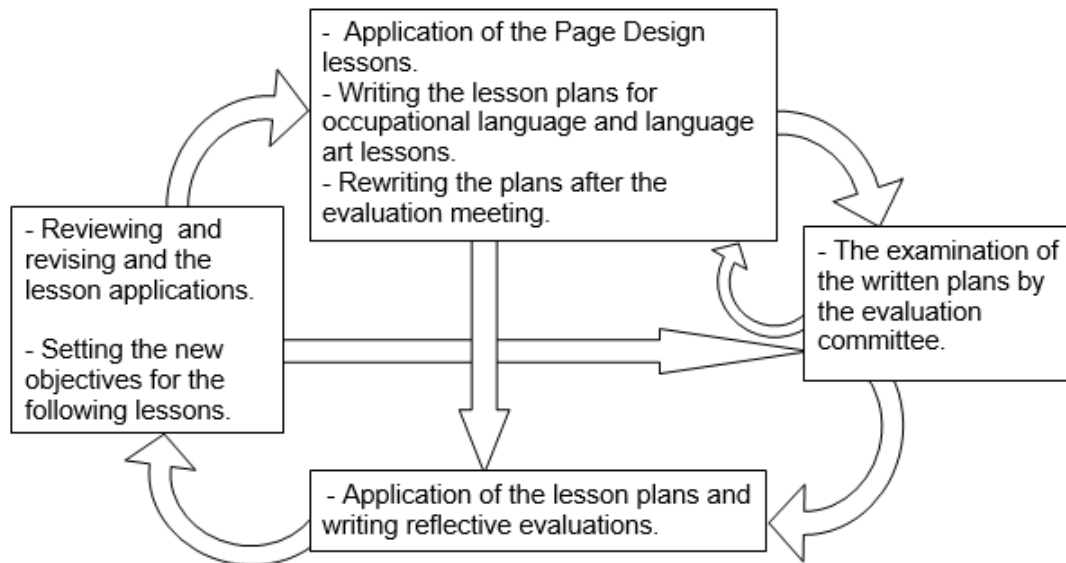


Figure 1. Research process.

during the implementation process. The implementation data were collected in the spring term of the 2007-2008

academic year, and the research data were collected simultaneously in the “Written and Verbal Expression,”



**Figure 2.** The weekly instructional cycle.

“Professional Language,” and “Page Design” courses in the curriculum. In the “Written and Verbal Expression” course, a “Newspaper Terms Instruction” and a “Preparing an Advertisement” lesson for the SfH newspaper were conducted.

Teaching newspaper terms and “advertising” courses were prepared within the “Written and Verbal Expression” course. In the “Professional Language” course, the content and terminology of the course “Page Design,” which teaches the QuarkXPress desktop publishing program with theory and practices were supported by additional courses. As presented in Figure 2, a model that reflects BLIA principles was used by supporting professional courses with language courses (Bingham and Hell-Kenyon, 2013; Jacops, 1989; Lombardi, 2015; Schirmer, 2000; Policastro, 2015).

In the Professional Language lesson, supportive lessons were conducted for the content and terminology of the “Page Design” lesson in which a QuarkXPress desktop publishing program was taught on a theoretical and practical basis (Jacops, 1989; Schirmer, 2000). The lessons were supported via language lessons, thus enabling a model that reflected the principles of the balanced literacy instruction (Bingham and Hell-Kenyon, 2013; Fountas and Pinel, 1996; Pressley et al., 2002)

Direct and indirect vocabulary strategies were implemented together for the instruction of terminology during the lessons (Bauman and Kameenui, 2004; Beck et al., 1983; Blair et al., 2007; Cramer, 2004; Diamond and Gutlohn, 2006; Hiebert and Kamil, 2005; Mc Keown, 1993; Nagy, 1988; Rupley et al., 2009; Rupley and

Nichols, 2005; Stahl and Fairbanks, 1986; Stahl, 1999; Stahl and Nagy, 2006; Taylor et al., 2009). These include: defining, question-answer, map of meaning, direct instruction of strategies, making comparisons and matching the words with their synonyms or definitions. Examining the reading texts, preparing the classroom book and the control list, solving puzzles, conducting variable reading and writing studies were the activities conducted in this regard. A total of 71 lessons were conducted, each lasting for 45 min. Instruction on the newspaper terms and the preparation of an advertisement for the college newspaper took six weeks. Enrichment activities regarding the terms of the QuarkXPress desktop publishing program continued throughout the spring term. At the end of the term, the fourth issue of the college newspaper, Integrated News, was published.

The students’ writings collected from all the classes of the College were examined at the “Editor’s Table Meeting,” held by the student representatives and faculty members, and articles to be published in the newspaper were determined. The layout and printing of the school newspaper were carried out by the students using the QuarkXPress desktop publishing program.

### Enrichment process

The period of the research was extended on account of the fact that vocabulary develops further when sufficient time is provided through studies conducted on an active

basis in different contexts (Nagy, 1988; Palicastro, 2015; Paul, 1996). It was decided to continue the process on the internet, as the period after the application process coincided with the summer holiday. In the enrichment process, the students were provided with a ten-week study concerning the newspaper, QuarkXPress terms, and the general subject matter. The students were informed about the summer study program and the aim, scope and application scheme of the study were explained to them prior to the process. The students and faculty members shared their e-mail and MSN addresses. During the study period, which was based on weekly assignments, the students were asked to respond to the activities sent on the second day of the week, via the internet within a week, and daily feedback was obtained during the process.

Strategies and activities performed to enrich QuarkXPress and journalism terms are as follows: answering questions, filling in the blanks, asking questions, meaning map, predicting the meaning of words, finding the lexical meaning and writing a relevant text, summarizing a report, matching definitions with words, listing terms and processing the function of a command into a computer program. Activities for preparing news for the school newspaper are as follows: interviewing; introducing a favorite singer, movies and series; describing college; and writing introductory text about a holiday photograph or any kind of photograph.

As the study was conducted during the summer holiday, it was considered that the motivation of the students might be low. The opinions of the research team were sought, and the necessary precautions were taken in light of the relevant literature (Black et al., 1983, Glynn et al., 2005; Keller, 1987; Moore and Kearsley, 1996). These precautions are collected under following titles: a) determining a purpose and information about the process, b) motivational expectations and needs of students, c) the use of appropriate materials for academic levels, needs and ages of students, d) giving accurate feedback to their activities immediately or as soon as possible, e) giving the right to choose the appropriate material for the course subject, f) emphasizing strengths in addition to correcting mistakes, g) giving feedback without comparing with friends, h) making students feel the expectation of high success, i) offering weekly activities in different formats, j) making students feel a bit concerned when necessary, and k) using various communication ways through internet (e-mail and MSN).

Through this process, the students were enabled to conduct studies on the school newspaper and prepare news for it. The examination, measuring the vocabulary knowledge of the students regarding journalism and QuarkXPress, was reapplied at the beginning of the 2008-2009 academic year, on September 17 and 19,

2008, and at the end of the enrichment studies. Corrections of the text sent during the enrichment studies were completed with the help of the students in September and October of the 2008-2009 academic year and the "Summer Newspaper" was published.

### **Strategies used in the development of vocabulary**

The strategies used within the written and verbal expression application lessons were as follows: defining the newspaper terms (March 6, 2008), creating a map of the meaning of the newspaper terms (March 6, 2008), and comparing the headlines and main copy words (March 20, 2008). The strategies used while teaching the terms of QuarkXPress in the occupational language lessons are as follows: filling the gap concerning the advertising process (March 14, 2008) and matching the function of the command with the computer command (March 21, 2008). Implemented vocabulary developing strategies will be explained below under the headings of direct and indirect vocabulary development strategies.

#### ***Direct vocabulary development strategies***

**Definition:** Over the course of the entire research process, definitions were made in all the lessons. It was determined that 81 definitions were made in the lessons examined. During the research, it was observed that determining the time allocated to define a word, deciding whether the teacher should give the definition directly or create it together with the students, enabling the students to come across the definitions over and over again during different activities and drawing their attention to the definition of the words in a correct manner contributed to the success of the students in defining a word (Karasu et al., 2012; Silliman and Wilkinson, 2004; Stahl and Fairbanks, 1986).

**Use of graphic organizers:** Semantic mapping and comparison strategies, namely the graphic organizers that are direct vocabulary development strategies, were used during the research. With graphic organizers, the students were provided with an appropriate environment in which they can remember important terms regarding the subject matter, associate and group the terms, discuss the relationships between them, and read and write (Luckner and Cooke, 2010; Schirmer, 2000).

**Matching the word with its definition:** This strategy was used three times during the research process. While matching the words with their definitions, students were able to see the spelling and sounds of English terms in



written forms, and they were asked to write and repeat them verbally (Hieber and Kamil, 2005; Paul, 2001; Searfoss and Readence, 1989).

**Direct teaching of the vocabulary learning strategies:**

During the research, the strategic teaching of how to apply the following direct and indirect vocabulary developing strategies was conducted, finding the meanings of the unknown words from the dictionary, the student explaining how he/she found the word from the dictionary verbally, explaining what features a definition should possess, and estimating the content of the text from the title of the text. It is thought that these applications are helpful for the students in using vocabulary development strategies, and contribute to their vocabulary development (Bennet et al., 2014; Strassman et al., 1987; Paul, 1996; Schirmer, 2000; Taylor et al., 2009; Trussell and Easterbrooks, 2016).

***Indirect vocabulary development strategies***

**Question-answer:** Used for the purposes of asking the meaning and/or synonym of the word and determining the words the students know about the subject during the lessons. During the research, it was seen that there was a variety of question types, and applications were carried out regarding how to answer these questions.

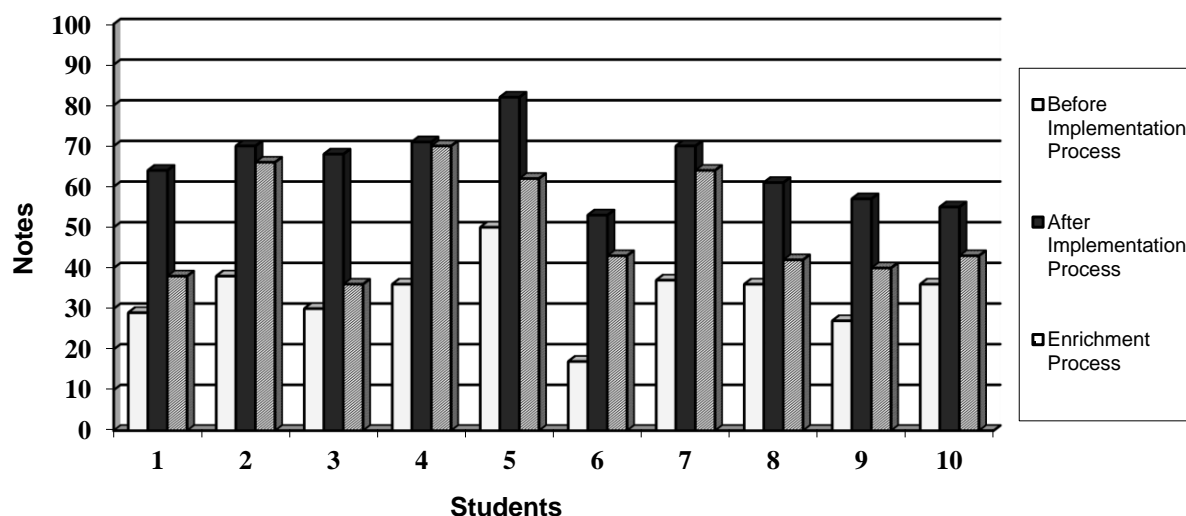
Being one of the indirect vocabulary improvement strategies, the question-answer strategy was used by the researcher during courses in order to ask about the meaning and/or synonymous of words and determine other words related to the subject. During the research, activities related to various question types and how to answer these questions were performed with students. In 2003, Girgin's study indicated that questions asked by teachers play an active role in the hearing impaired students' reading comprehension. This finding is compatible with the fact that students should know about question types. No research was found in the literature on question types to be asked for vocabulary improvement with the question-answer method, which is the most traditional method in teaching and its effectiveness.

During two question-answer activities performed following the text reading-analysis activities, students were trained on strategies directly related to question types and how to answer questions. In the study by Uzuner et al. (2005), investigated the contribution of asking questions on text structure on students' text structure learning within courses based on BLIA for hearing impaired university students. Accordingly, it was found that verbal and nonverbal strategies applied by the teacher and the questions asked following the reading have a positive contribution to students' text

comprehension. Questions positively improve the comprehension skills of students and this improvement in reading indirectly affects the improvement of vocabulary. In activities conducted with the teaching of question types, it was reported that the literacy skills of students and hearing impaired students positively improve (Graham and Wong, 1993; Harrel and Jordan, 2002; LeNoir, 1993).

At the end of the research, it was determined that the verbal and non-verbal strategies implemented by the teacher, and the students' questions after reading, made a positive contribution to the students' understanding of the texts. The questions asked developed the reading and comprehension skills of the students in a positive way. This development in reading and comprehension indirectly affects vocabulary development (Girgin, 2003; Graham and Wong, 1993; Harrel and Jordan, 2002; Le Noir, 1993; Uzuner et al., 2005).

**Filling in the blanks:** During the filling in the blanks activities conducted two times in the research, the teacher asked the students to read the entire text and then to determine the correct word to be used in the blanks with suffixes. The students were informed about strategies to be used to determine these words. In literacy activities or other activities that aim to reinforce the learned words, texts with advertising words were given to students. These activities provided an environment for students to repeat the advertising words they had previously learned. They also ensured the performance of activities on determining and using clues in the same text. They discussed the word and issue while determining the words to be in the blanks. All these strategies and methods used during the filling in the blanks activity positively affected the vocabulary improvement of students. Searfoss and Readence (1989) reported that an explanation of the filling in the blanks process by the teacher and the process itself created a reasonable usage environment for vocabulary improvement of students. McAnally et al. (2007) reported that filling in the blanks is one of the major strategies to be used in the vocabulary improvement of impaired children and reading while determining words to fill in the blanks improves both reading comprehension and vocabulary. Stewart and Kluwin (2001) considered the filling in the blanks activity as an assessment tool for the reading comprehension of impaired children. However, it is also reported that activities to find clues within the text to find the appropriate word for the blank will contribute to the improvement of reading comprehension and the vocabulary of students. Many other studies also indicate that filling in the blanks activities contributed to hearing-impaired students (Reutzell and Cooter, 1999; Marschark and Spencer, 2003; Schirmer, 2000).



**Figure 3.** Effects of the applied strategies on vocabulary development.

It was found that filling in the blanks performance of students who participated in this research were below average. It is assumed that this finding resulted from the fact that filling in the blanks is a challenging strategy requiring the use of multiple skills (Mcloughlin and Lewis, 2004). The study by Girgin (2006) evaluated the reading comprehension of hearing-impaired students with error analysis inventory. She found that hearing impaired students had difficulty in writing the existing words in the text into the blank; yet they wrote different words that did not change the meaning of the sentence.

#### **Estimating the meaning of the word from the text:**

During the research, two planned studies were conducted in order to determine the meanings of the unknown words from the text. Moreover, opportunities to use the above-mentioned strategies arose while examining the newspaper articles and other texts. The teacher became a model for the students in terms of the strategies and techniques regarding the estimation of the meanings of the words from the text and the usage of the clues (Gambrell et al., 2007; Raphael, 1986). During the application, it was seen that the meaning of some words could be estimated from the text, but some of them could not, which is an issue on which too much stress is placed. In addition, the students were asked to use this strategy in all other reading activities. It was determined that the students estimated the meanings of the words from the text (Bauman and Kameenui, 2004; Nagy, 1988; Pressley et al., 2002; Rupley et al., 2009; Taylor et al., 2009; Tompkins, 2007). These findings support the finding that students have trouble in estimating the meanings of the words in the text because the context

does not give sufficient clues in this regard and that the implementation of this strategy should be taught to the students (Black et al., 1983; Johnson and Johnson, 2004; Nagy, 1988).

#### **The qualitative data results**

##### **Effect of the applications on the development of students' vocabulary**

Considering the overall student achievement, all the students, except one, improved by 30 points or more in the examinations applied before and after the implementation process (Figure 3). This finding shows that implementing direct and indirect vocabulary developing strategies on the basis of the principles and components of BLIA is an effective contribution to the improvement of the vocabulary levels of these hearing impaired college students.

However, it was determined that all students, except one, could not obtain a score over 70 in all the examinations. This situation is thought to result from the fact that hearing impaired students require a longer period of time and more repetition in studies because of the limitations in their speech caused by hearing disabilities, and that they are unable to read a sufficient number of publications regarding professional language, added to factors concerning the quality of the education the students had received in the past. Research carried out on hearing impaired students also indicated that these students had difficulty in developing their vocabularies (Paul, 1996, Schirmer and McGough, 2005;

Trussell and Easterbrooks, 2016).

It was determined that students gained more benefits from studies carried out with formal education than from the studies carried out on the internet. In the education carried out on the internet, although many possible precautions were taken, limited reading comprehension skills, and not having face-to-face interactions were thought to negatively affect the performances of the students in the summer studies (Black et al., 1983; Glynn et al., 2005; Lederberg et al., 2000).

It is seen that the improvement of the students varied between 5 and 20 points in the examinations for filling in the blank and question-answer strategies. This situation is thought to result from the fact that question answering and filling in the blank strategies are complex strategies. It is thought that filling the blank and question answering strategies, which are indirect vocabulary developing strategies should be implemented intensively (Girgin, 2003, 2006)

It was determined that students made great progress in defining the terms related to the QuarkXPress desktop publishing program and to the newspaper. The reason for this is thought to be the fact that the students encountered the new terms related to a new subject for the first time. Moreover, it is thought that relating the definitions with prior knowledge, making a sufficient number of repetitions, and teaching the words in an environment that provides for their meaningful use affects the ability to make definitions positively (Karatay, 2007; Stahl and Nagy, 2006).

In the semantic mapping answers of the students, the results of almost all the students in the last test appeared to be above the pre-test scores. During the enrichment studies, question-answer, gap-filling and semantic mapping strategies were used intensively. It was determined that the students were not able to display the same performance in question-answer and gap-filling as in the performance they displayed in semantic mapping. This is thought to result from the fact that semantic mapping visualizes the information (Reutzel and Cooter, 1999).

In the final test, almost all the students achieved 100% success in listing the words. This is thought to be related to the effective use of vocabulary skills and the level of those skills. The students participating in the research had different language levels. When the effects of the instructions on the successes of the students were examined by taking students' language levels into consideration, it was determined that the education contributed to the students' language levels. However, it is seen that the students with better language levels were observed to be more successful (Marschark et al., 2002). Moreover, having background knowledge on the subject and using the information during the classes was found to

lead to better performances in that subject (Reutzel, 2002).

## Suggestions

Instructional environments organized according to the principles of BLIA instruction, and the teaching of vocabulary development in meaningful contexts with a sufficient number of repetitions and the integration of the information learned with the information in different areas, were found to be effective in the research process. During the research, a model based on an interdisciplinary approach and effective vocabulary development was created. When the direct and indirect vocabulary developing strategies were implemented according to the principles of balanced literacy instruction, it is seen that it has a positive effect on the individuals with hearing impairments college students' professional words.

The strategies to be used during the courses were determined according to attributes of students and features of words to be taught and courses were planned and applied in this way. Focusing on the importance of effective vocabulary development programs by considering the language levels of hearing impairments students and including the applications is a necessity. In the light of the findings of the present study, it is suggested that in-service training should be given to the teachers of hearing impaired students of all age groups within the scope of the effective teaching of vocabulary. Moreover, it is recommended to increase language course hours to conduct vocabulary improvement activities, to apply an inter-disciplinary study circle in vocabulary improvement activities, and to conduct improvement activities within the academic year.

For further research to be conducted, it is suggested that assessment tools should be developed in order to determine the vocabulary of hearing impaired students, and that informative texts, stories and booklets, including activities and strategies for improving vocabulary, should be written/prepared. Research should be planned to include new vocabulary development strategies. This action research should be conducted in different educational environments with different participants and by different researchers in order to generalize the findings. In addition, group and single-subject, quasi-experimental and experimental research should be conducted in order to determine the cause and effect of relationships between the variables in the development of vocabulary. Moreover, the teaching of English computer terms was supported, and enrichment studies were conducted within the scope of the present research. Therefore, it is suggested that vocabulary development

activities should be conducted on different subjects with the same age group.

### Conflict of Interests

The authors have not declared any conflicts of interest.

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