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Using Internet Resources in Teaching English Subsystems: An Autonomous Approach

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***Abstract*—The paper presents the results of a *quasi-experimental study* related to the development of English subsystems, such us vocabulary and grammar through Internet resources in an autonomous learning environment. The study comprised two classes making up an experimental and control group, each of which received different type of instruction. The data were collected by means of a lexico-grammatical test, learners' logs, an observation and group and individual interviews and subjected to quantitative as well as qualitative analysis. The results show that the use of Internet resources and independent learning were not only welcomed by the experimental students but also contributed to their enhanced command of English vocabulary and the passive voice.**

***Index Terms*—teaching English subsystems, computer technology, Internet resources, autonomy**

I. Introduction

According to Benson (2001), almost all research in the field of autonomy is based on and has implications for the following three hypothesis: (1) the concept of autonomy is based on a natural tendency for learners to take control over their learning, (2) students who lack autonomy are able to develop it provided they are given appropriate conditions and preparation, and (3) autonomous learning is more effective than non-autonomous learning. Benson (2001) further claims that "for both practical and theoretical reasons, (…) there is a pressing need for empirical research on the relationship between the development of autonomy and the acquisition of language proficiency" (p. 189). For the researcher, the hypothesis that practices dedicated to fostering autonomy result in better language learning can be confirmed empirically at two levels. As regards the first level, research can demonstrate that a particular form of practice connected with autonomy produces gains in proficiency that are the same or greater than other forms of practice by measuring gains in terms of traditional quantitative indicators of proficiency. When it comes to the second level, research can attempt to show the ways in which proficiency develops due to the distinctive qualities of practices associated with promotion of autonomy by developing indicators of proficiency characteristic of autonomous learning and description of the ways in which the development of autonomy and proficiency interact. Following Benson (2001), we can conclude that the need for research that investigates the connection between the development of autonomy and the growth of language proficiency is justified from both a theoretical and a practical perspective. As for the theoretical point of view, research can assist us in testing and elaborating upon the theoretical hypothesis that autonomy in language learning is equivalent to better language learning. When it comes to the practical perspective, such research can attempt to validate forms of practice that are intended to foster autonomy in terms of language-learning gains.

II. The Relationship between the Development of Learner Autonomy and Language Achievement

One of the earliest research projects that aimed to demonstrate that autonomous learning was effective in terms of language proficiency was called *The Language Acquisition in an Autonomous Learning Environment* (LAALE) (Dam & Legenhausen, 1996). LAALE was a longitudinal study in which each phase of the project focused on different language skills and subsystems. However, what follows is a discussion of vocabulary learning as an example of the areas investigated. In the first two stages of the study, the researchers investigated the words introduced into the classroom and the development of the target language vocabulary among 21 Danish students of English taught in an autonomous way. The vocabulary development of the students was then compared with the vocabulary development of two parallel classes instructed in a more traditional manner. As far as the lessons are concerned, the students in the autonomous class studied new English words by bringing samples of the target language they came across in their everyday life into the classroom and then learned them through group work or displayed them on the walls so as other students were able to study it. In addition, new vocabulary was also presented to them by the teacher by means of songs, rhymes or fairy tales. When it comes to the conventional classes, the new words were introduced through coursebooks or by the teacher. The procedures of data collection employed two vocabulary tests administered to the participants of the study after 7.5 and 15 weeks of learning. The first test was an informal elicitation of all the words the students were able to evoke and the second test was a long-term passive retention of dozens of words with the focus on receptive skills and spelling. The results of the study indicated that the students (weak ones in particular) in the autonomous group were

able to better recall words presented in songs or rhymes than their traditional counterparts. It was also found that the autonomous group scored generally better on both tests, although the learners in the traditional groups were better in writing and spelling the words. Moreover, the students in the autonomous group worked on a greater number of words in comparison with the other two groups, and, also the vocabulary represented a different distribution of semantic fields (see Benson, 2001).

An interesting contribution to our understanding of the relationship between autonomy and language achievement was made by Mystkowska-Wiertelak (2008). In her research project, the researcher attempted to find out whether the *European Language Portfolio* (ELP) was an effective tool for the development of grammatical accuracy by investigating the correlation between the level of autonomy and the results of grammar tests obtained by her students. Twenty-nine third-year university students participated in the research project, a piloting stage of the *European Language Portfolio for students and language learners in institutions of higher education (ELP 16+)*. The data were collected by a questionnaire that consisted of two parts. The first part contained a questionnaire developed by Pawlak (2004) devoted to determining autonomous behaviors of the respondents and included statements such as 'I know what I need to work on as far as my English is concerned' or 'I mostly study English when a test is approaching'). When completing the second part of the survey, the respondents were requested to define their weak and strong points in learning English or describe their out-of-school contacts with the English language. What is more, the part of the *ELP 16+* related to the *Language Biography* was used so as to determine the strategies that aid students in learning grammar. The results of the study indicated that all the participants declared various autonomous behaviors being the direct outcome of working with the *Portfolio* and the reflection upon the idea of the project itself. In addition, the study revealed that the participants of the research project employed only a few techniques and strategies connected with studying English grammar. On a more optimistic note, however, the study showed that there was a connection between high levels of autonomy and good results achieved by the students on grammar tests.

Quite interesting are also the results of a study conducted by Dafei (2007) who investigated the relationship between learner autonomy and English proficiency. The subjects were 129 nineteen-year-old Chinese college students who had studied English for seven years. The data were collected by means of a standardized test, a questionnaire and an interview. The standardized test (Practical English Tests for Colleges Level B) was used to identify the participants' English language proficiency; the questionnaire and the interview were employed to investigate the participants' level of autonomy. The results of the study showed that the students' English proficiency was significantly related to their autonomy. Based on such outcomes, the researcher concluded that the more autonomous a learner became, the more likely she or he was to achieve high language proficiency. In addition, Dafei implied that teachers should, for example, develop learner autonomy by making students more responsible for learning strategies, promoting positive attitudes and encouraging them to reflect upon their learning. Moreover, the researcher recommended that in order to facilitate the process of learning a foreign language students should be informed of the importance of learner autonomy. Thus, for instance, students need to be allowed to make decisions about their learning schedule and design lessons and materials so as to present them in the classroom. Although the implications were mostly related to the Chinese educational context, it could be argued that the conclusions also seem to be relevant to other educational settings since students' responsibility for their own learning and the ability to control this learning are prerequisite for learner autonomy.

Yet another study conducted by Pawlak and Kruk (in press) presents the findings of a quasi-experimental study which was conducted with a view to determining the effect of a pedagogic intervention in the form of the application of Internet-based resources on the development of English pronunciation among 45 Polish senior high school learners. The targeted structure was the final -ed sound of the simple past tense of regular English verbs. Three groups, two experimental and one control group, participated in the research project, which spanned the period of two weeks. In addition, the learners in the experimental group 1 were provided with access to Internet resources and were thus allowed to exercise more freedom in learning English pronunciation. As for the students in the experimental group 2, they were taught in a traditional way. With regard to the students in the control group, they did not receive any pronunciation instruction. The data were collected by means of perception and production tests administered before (pretest) and after (immediate and delayed posttests) the treatment, and subjected to quantitative analysis. The results of the study indicated that the students who received innovative instruction outperformed their counterparts on both perception and production tests not only immediately after the intervention but also in the long run. At the same time, however, the researchers emphasized the fact that substantial and statistically significant improvement was also observed in the group that was taught in a conventional way, although the gains were smaller and the differences between the experimental group 2 and the control one failed to reach significance in some cases. Such findings provided a rationale for using computer technology as a tool for enhancing pronunciation instruction with the caveat that old ways of teaching pronunciation should not be abandoned altogether and that the best solution could be a combination of the traditional and innovative approaches.

As can be seen from this brief account of the research projects, there seems to be a relationship between the development of learner autonomy and language attainment. However, due to the design of the studies, caution has to be exercised about making definite pronouncements. This is because the first of the studies, although experimental in design, did not include comparable groups of learners, and the second research project employed a questionnaire to measure the growth of autonomy, a research instrument that might provide unreliable and superficial information

(McKay, 2006). It could be argued that in order to provide more reliable results research projects should be designed in such a way as to include at least two comparable groups in terms of the level of autonomy and language proficiency as well as to employ more data collection instruments.

III. Methodology

A. Research Questions

The aim of the study was to determine the effect of the use of Internet-based resources and independent work on the development of English subsystems, such us vocabulary and grammar. In more specific terms, the study sought to address the following research questions:

1. Did the use of Internet-based resources and independent work result in better vocabulary learning and studying of the passive voice?
2. Was the application of Internet-based resources and independent work more effective than the use of more traditional instructional techniques?
3. Were the effects of the pedagogic intervention durable?
4. What were the subjects' perceptions of the Internet lessons as a learning opportunity?

B. Participants

The subjects were 46 grade two Polish senior high school students attending two parallel classes of senior high school. The experimental group consisted of 28 learners and the control group comprised 18 students. Furthermore, the curricular policy of the school provided both the experimental and control students with two 45-minute English lessons per week and divided the experimental learners into two groups each of which consisted of 14 students for their English lessons in accordance with the alphabetical order.

The analysis of the data obtained by the background questionnaire revealed that the two classes were comparable in terms of the learners' overall proficiency level, as indicated by the fact that the grade point average which amounted to 2.47 in the experimental group and 2.38 in the control group. In general, the students in both groups could be best described as weak but it has to be kept in mind that they also comprised a few more successful students. In addition, the learners in both groups were comparable in terms of the duration of English instruction they had received in the past, the amount and type of out-of-school exposure, their self-assessment of the level of advancement in English and their attitudes to language learning. On average, the learners in the experimental group had been learning English for 5.48 years while the subjects in the control group for 5.27 years. What is more, the analysis of the data revealed that the experimental subjects most frequently pointed to vocabulary (82.14%) as the most favorite thing to learn whereas grammar was considered to be the most difficult for them to study (75%). As for the control students, they indicated learning vocabulary as the easiest to learn (66.7%) while grammar (72.2%) was the most difficult for them to study.

The majority of the experimental and control students reported limited contact with the English language outside school, since some referred to watching films as the most frequent form of out-of-school exposure to the target language. As regards access to the Internet and its use in connection with learning English, 26 (92.8%) students in the experimental group had Internet connection at home compared with only 12 (66.7%) students in the control group.

C. Research Design

The research project took the form of a *quasi-experimental study* involving two intact senior high school classes. The decision as to which class would be the experimental group and which class would be the control group was based on two technical requirements of the experiment. Since the experiment was conducted in the computer classroom equipped with 14 multimedia computers with access to the Internet, only a group of 14 students could work there at a time. This condition was met by the class of 28 students which was divided into two groups of 14 learners. Another requirement was related to the learners' logs, which had to be completed after each lesson electronically and sent to the teacher by e-mail. As indicated in section B above, in the class of 28 students almost all learners had access to the Internet at home in comparison with the other class, in which only about 65% of students could use the Internet in their houses.

It should also be noted that the adoption of a quasi-experimental design with its experimental and control groups designated in the manner described above was also feasible for a number of reasons. Firstly, the classes were comparable in many respects as expounded in detail in the section B above. Secondly, the researcher had been the regular English teacher in both classes since grade 1, he knew the learners well, and was familiar with the type of English instruction they had received. Thirdly, being the classes' English teacher, the researcher was in a position to make sure that the data-collection procedures in the two groups were identical. Furthermore, he was able to make sure that the innovative manner of instruction would cease in the experimental group between the posttests and that the instruction would remain the same in the control group in the six weeks separating the two measures.

As regards the research schedule, it spanned the period of 12 weeks. The pretest and the background questionnaire were administered in the first week and were followed by eleven 45-minute lessons in the experimental and control group. At the end of the treatment, the subjects in the experimental group were requested to take part in a group interview as well as in individual interviews. After the treatment, the immediate posttest was administered and the students were also asked to complete the evaluation sheet. After that, traditional instruction was resumed in the

treatment group. It has to be noted that careful attention was given not to teach the items that were covered during the treatment lessons between the posttests, which would have unduly affected the findings. Finally, the subjects completed the delayed posttest.

It has to be pointed out that neither of these two groups was informed that they were involved in an experiment so as to avoid the fallacies inherent in the *Hawthorne effect* (Brown, 2006). In addition, there were some ethical considerations related to providing the best instruction to the students as well as protecting their identity. In order to overcome those ethical problems, the students in the control group gained access to the Internet and similar instruction to the one used in the experimental group was implemented after the experiment was over. As for protecting the participants' identity, no real names were used in the paper when reporting the results, some research instruments such as questionnaires were completed by the subjects anonymously, and before the interviews all the participants were asked for permission to be recorded.

D. Instructional Treatment

At the start of the treatment, the students in the experimental group were informed that the next several lessons would be based on Internet resources. Moreover, they were notified of the teacher's website (http://anglik.neostrada.pl) which included all the necessary information, tools and activities in the form of hyperlinks. In addition, the learners were told that after each lesson they would be required to write a student's log in the form of an electronic text document at home. The instructional materials utilized by the students in the control group were taken from unit 12 of the coursebook and activity book *New Opportunities Pre-Intermediate* by Michael Harris et al. and were accompanied by materials taken from other sources.

The instructional treatment for both groups spanned 6 weeks and was divided into 11 lessons. The students in the experimental group were allowed to direct their own learning as they, for instance, could choose from a variety of tasks and decide how much time to spend on each. In a word, they were encouraged to try to "take control of their own learning" (Holec, 1981). Conversely, the treatment employed in the control group obliged the learners to do exactly what the teacher had planned and demanded from them and they had to follow his instructions and assessment.

The first four lessons in both groups were devoted to studying vocabulary. During the first lesson, the students in the experimental group could choose from a variety of websites with relevant weather vocabulary in order to learn new words or practice the ones they already knew. The activities presented on the websites varied and included such exercises as word search, multiple choice questions, scrambled letters, spelling or crosswords. The aim of the second lesson was to further practice the words related to the weather, however this time the students were asked to create their own activities by means of websites such as *Puzzlemaker* (http://puzzlemaker.discoveryeducation.com) or *QuizMaker JavaScript Wizard* (http://www.edict.biz/quizMaker/quiz.htm). Throughout the third class the experimental students were requested to use online dictionaries in order to find and learn new words related to winter sports and provide their definitions in English. At the beginning of the fourth lesson, the students were presented with a matching exercise and asked to solve it. The main purpose of the activity was to show the students an example of an exercise they were going to create on their own by using the *QuizMaker JavaScript Wizard*. The exercises produced by the subjects were then published on their teacher's website.

When it comes to the control group, the first and the second lessons were related to weather vocabulary and the learners were presented with new vocabulary and its Polish translation and requested to write everything down in their notebooks. In each lesson they were also asked to make sentences with the new words, write them down and then present the sentences to the whole class, which also allowed the teacher to correct the mistakes the students made. As in the case of the first two lessons related to weather vocabulary, the third and the fourth classes began with the presentation of various kinds of winter sports and their Polish translation. The learners were also requested to record the new language in their notebooks. Next, the students were presented with an exercise in which they read some encyclopedia extracts and were asked to match them with the appropriate type of winter sports. Both lessons finished with the completion of a writing activity which required them to write short definitions of the different kinds of winter sports presented during the lessons. After that, some of the students were asked to read their definitions out loud with the intention that the remaining students could provide the correct names of the sports.

The next seven lessons in both groups were devoted to grammar and dealt with the practice of the passive voice. The first two classes concerned the present simple passive, the second pair of classes was related to the past simple passive, and the last pair of lessons dealt with the present perfect passive. In addition, the eleventh class was devoted to the practice of all the passives. Hence at the beginning of the fifth, seventh and ninth lessons, the learners in the experimental group were asked to search the Internet and use web pages of their own choice in order to find information related to the topic of the lessons and fill in the tables prepared in advanced by the teacher. Thus, they were requested to provide such information as the use of the passive, sentence formation and examples of positive and negative sentences as well as questions. The Internet websites *English Grammar Online* (http://www.ego4u.com), *Szlifuj swój angielski* (http://www.ang.pl) and *Learning English Online* (http://www.englisch-hilfen.de/en) made up the material for the sixth, eighth and tenth lessons which were entirely devoted to grammar practice. The activities presented on the web pages were of the following types: writing sentences from the given words, rewriting sentences in the passive voice, introducing the correct passive forms of the verbs or completing the sentences in active or passive voice. In addition, the last of the grammar lessons was devoted to the creation of the students' own activities by means of the above-mentioned

web pages such as *QuizMaker JavaScript Wizard* with the purpose of providing the learners with the opportunity for further grammar practice in a more innovative manner as well as creating materials to be utilized by the subjects in the next classes or for self-study at home. The students' exercises were then published on the teacher's web page.

When it comes to the control group, the fifth, seventh and ninth classes commenced with the teacher's presentation of the use, sentence formation and relevant examples related to the present simple passive, the past simple passive and the present perfect passive and during each lesson the students were told to write everything down in their notebooks. The remaining parts of these lessons and the sixth, eighth as well as tenth classes were devoted to doing exercises which were similar to those used in the experimental group. The eleventh lesson was in its entirety devoted to the revision of the passives and a similar set of exercises was planned in advance by the teacher. As in the case of the lessons related to vocabulary, the grammar activities were checked by the teacher who always asked at random several students to read their answers or requested them to write the responses down on the board.

E. Data Collection Tools, Procedures, Scoring and Analysis

The research instruments which provided the data to be analyzed were identical in the experimental and control group and included *the background questionnaire, the lexico-grammatical test* as well as *the evaluation sheet*. In addition, *the learners' logs*, *the observation* and *the group* and *individual interviews* were used in the experimental group only in order to provide more data as the group was of particular interest to the researcher.

The data were analyzed quantitatively and qualitatively and, in some cases, a combination of both approaches was used. Thus, the numerical data which originated from the test and some parts of the background questionnaire as well as the evaluation sheets containing close-ended questions were subjected to quantitative analyses which were performed by the *Statistical Package for the Social Sciences* (SPSS version 17). As for the data which emerged from the learners' logs and the interviews, they were subjected to qualitative analyses which were executed by means of the data analytical software *NVivo version 8*. In addition, the process of analysis of the qualitative data involved four stages described by Dörnyei (2007), which included: (1) the pre-coding stage, (2) the initial coding stage, (3) the second-level coding stage and (4) the final coding stage.

The background questionnaire consisted of 4 open-ended questions and 14 close-ended items. The purpose of this questionnaire was to obtain general information regarding the participants which encompassed the duration of English education and its type, the level of English advancement, the attitudes to English language learning, the amount of out-of-school exposure as well as their access to the Internet and its use with regard to English study. Moreover, the questionnaire was presented in Polish and filled out anonymously by the participants of the research project before the experiment.

The lexico-grammatical test comprised two tasks. The first task concerned vocabulary and required the students to write twenty words of their own choice, ten of which had to be related to weather and ten to winter sports. The second task was a typical grammar exercise and required the learners to provide the correct form of the given verbs in the correct passive form. The task contained 15 sentences, five in the present simple passive, five in the past simple passive and another five in the present perfect passive. Moreover, the grammatical task included from 6 to 7 irregular verbs. On each occasion the test was administered, it was possible to score a total of 35 points for it. More precisely, it was possible to score a maximum of 20 points (i.e. one point for each correct answer) for the first part and for the second one the maximum possible score equaled 15 points (i.e. one point for each correct answer, i.e. for the correct provision of both form of the verb *to be* and the *past participle*). It should be noted that three different versions of the lexico-grammatical test were created and administered on the pretest and the posttests since the deployment of the same instrument on the tests "would have inevitably increased the likelihood of the practice effect, a confounding variable that could have influenced the results and made their interpretation difficult" (Pawlak, 2006, p. 379). It should be emphasized that the three versions of the lexico-grammatical test were different in their content, although they were identical in format and contained comparable tasks and levels of difficulty.

The results of the test were each time subjected to quantitative analysis. It involved computing the mean score, the percentages of the mean score and the standard deviation. Furthermore, the statistical significance of the differences in the means of the experimental and the control group on the consecutive tests was evaluated by means of paired-samples *t*-tests and independent-samples *t*-tests. The former was used when the changes in the performance of one group on the tests were assessed whereas the latter was employed whenever the experimental and control groups were compared.

In order to make sure that the tests were scored consistently, a randomly chosen sample of the data originating from the tests was marked by a qualified English teacher using the scoring criteria described in this section. The results were then compared to those obtained by the researcher with the purpose of determining interrater reliabilities which proved to be quite high since the lowest value of Pearson Correlation Coefficient amounted to 0.992. In addition, the researcher reanalyzed a sample of randomly selected data derived from the tests so as to control for consistent scoring of the test over time. The intrarater reliabilities computed in this manner were also high since the lowest value of Pearson Correlation Coefficient equaled 0.995.

The purpose of the evaluation sheet was to obtain the subjects' opinions on the presented materials and lessons and so it was filled out anonymously by the participants of the study after the treatment. The evaluation sheet was similar for both groups and the only difference was related to the question which dealt with the instructional materials used

during the pedagogical intervention which requested the experimental and control subjects to express their opinions on vocabulary and grammar resources.

When it comes to the learners' logs, they were designed in such a way that they contained nine prompts in the form of statements or questions (e.g. 'What have you learned during the lesson?' or 'What would you do better next time?'). The subjects were also encouraged to self-assess their own learning and assign their own homework. The main purpose of the learners' log was to obtain information on the subjects' impressions and perceptions about language learning as "diaries can yield insights into the learning process that may be inaccessible from the researcher's perspective alone" (Gass & Mackey, 2007, p. 48).

Yet another way of collecting data were semi-structured group and individual interviews. Since the group interview format is "based on the collective experience of group brainstorming, that is, participants thinking together, inspiring and challenging each other, and reacting to emerging issues and points." (Dörnyei, 2007, p. 144), it was conducted first. It was the belief of the researcher that the group interview would yield data to be further explored in the individual interview. Moreover, the semi-structured type of both interviews was also chosen deliberately since its open-ended format encourages the interviewees "to elaborate on the issues raised in an exploratory manner" (Dörnyei, 2007, p. 136). Each time the interviews were conducted, the researcher stimulated the students to delineate their learning experiences and perceptions of the lessons and activities. This was a form of introspection where the subjects were encouraged to examine their behaviors and thought processes as well as to provide a first person narrative of their experiences.

As mentioned above, the group interview preceded the individual interview and took place in the language classroom. The group interview was conducted during regular English classes and comprised two groups of learners, each of which included 12 and 13 interviewees, respectively, and each of which lasted approximately 20 minutes. As regards the individual interview, it was conducted after school lessons in a separate room of the school library and 10 randomly selected learners were chosen to participate in it. Each individual interview lasted approximately 10 minutes. In addition, the interviewees were informed that each interview concerned all the treatment lessons and permission to be recorded was obtained from the subjects.

IV. Results and Discussion

A. Lexico-grammatical Test

As mentioned above, the lexico-grammatical test comprised two tasks, each of which was intended to measure two different language areas before and after the treatment. The results of the test will be discussed for both groups and for each group separately. Throughout the discussion the following abbreviations will be used so as to indicate the three measures: PreT for the pretest, IPostT for the immediate posttest and DPostT for the delayed posttest.

As can be seen from Figure I, which graphically presents the mean changes for the experimental and control students on the successive vocabulary tasks, the experimental subjects scored slightly higher at the beginning of the experiment in comparison with the control learners, although the difference was small (0.35 points or 1.75%) and did not reach statistical significance ($t = 0.44$, $p = 0.66$). In addition, the experimental subjects outperformed the control ones by 4.49 points or 22.45% right after the experiment was over, a difference that reached statistical significance ($t = 3.39$, $p < 0.001$). Moreover, the results of DPostT administered six weeks after IPostT revealed that the experimental learners again scored higher than their control counterparts and the difference in the mean score amounted to 4.83 points (24.15%), being highly statistically significant ($t = 3.53$, $p < 0.001$).

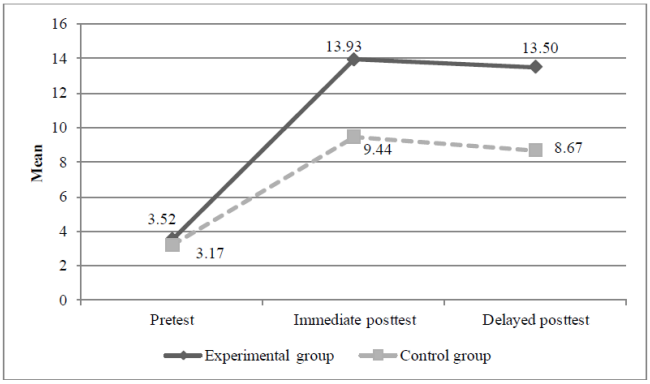

Figure I: The mean scores for the experimental and control groups on the vocabulary task

As can be seen from Figure I and Table I, a highly statistically significant gain of 10.41 or 52.05% from the pretest to immediate posttest could be observed in the experimental group. In spite of the slight decrease on the delayed posttest, the IPostT advantage remained high and the IPostT-DPostT difference in the mean score amounted to only 0.43 or 2.15%. Also, the pretest-delayed posttest difference in the mean score in the experimental group equaled 9.98 (49.9%) and reached statistical significance. When it comes to the control group, a similar pattern could be observed, the only exception being that the differences in the mean scores from PreT to IPostT and PreT to DPostT were less noticeable.

More precisely, the control students improved by 6.27 points (31.35%) from PreT to IPostT and 5.5 points (27.5%) from PreT to DPostT and, as was the case with the experimental group, the PreT-IPostT and PreT-DPostT differences proved to be statistically significant (see Table I).

TABLE I:
THE NUMBER OF STUDENTS, MEAN SCORES, STANDARD DEVIATIONS AND LEVELS OF STATISTICAL SIGNIFICANCE ON THE VOCABULARY TASK FOR THE EXPERIMENTAL AND CONTROL GROUP

	Number of students	Mean	%	SD	Significance (two-tailed paired *t*-test)
Experimental group					
Pretest	25	3.52	17.6	2.51	
Immediate posttest	27	13.93	69.65	3.30	PreT → IPostT: $t = 13.12$, $p < .001$
Delayed posttest	28	13.50	67.5	4.42	IPostT → DPostT: $t = 0.10$, $p = .915$ PreT → DPostT: $t = 12.40$, $p < .001$
Control group					
Pretest	18	3.17	15.85	2.66	
Immediate posttest	18	9.44	47.2	5.56	PreT → IPostT: $t = 4.99$, $p < .001$
Delayed posttest	18	8.67	43.35	4.69	IPostT → DPostT: $t = 0.80$, $p = .433$ PreT → DPostT: $t = 5.39$, $p < .001$

Although the two groups apparently benefitted from the instruction they had received, the differences in the mean score of the test after the treatment constitute evidence that the online lessons might have contributed to better vocabulary learning not only immediately after the intervention but also in the long term. What is more, the results of the evaluation sheet demonstrated that the lessons and tasks devoted to learning vocabulary were regarded by the learners in the experimental group as the most interesting, which, in turn, could have aided acquisition of new words and motivated the students to learn them. It should be noted, however, that the extent of variation in the performance of the experimental learners on the vocabulary task as is visible in the high values of standard deviation kept increasing from PreT to DPostT. This shows that the whole group varied considerably on the test. By contrast, the SD levels in the control group increased from PreT to IPostT and decreased from IPostT to DPostT. What should also be stressed, however, is the fact that they were each time higher than those in the experimental group (see Table I).

Figure II graphically shows the mean changes for the experimental and control students on the grammar task. Similarly to the findings related to vocabulary, the experimental learners scored slightly higher on the pretest than the control students, although the difference in the mean score was small and amounted to 0.18 or 1.2%, which was not enough to reach statistical significance ($t = 0.75$, $p = 0.45$). The results of IPostT revealed that that the difference between the groups increased by 3.48 (23.2%) and reached statistical significance ($t = 2.80$, $p < 0.01$). However, the gap between the groups narrowed over time to 2.02 points (13.46%) on DPostT and this time the difference was not statistically significant ($t = 1.59$, $p = 0.11$).

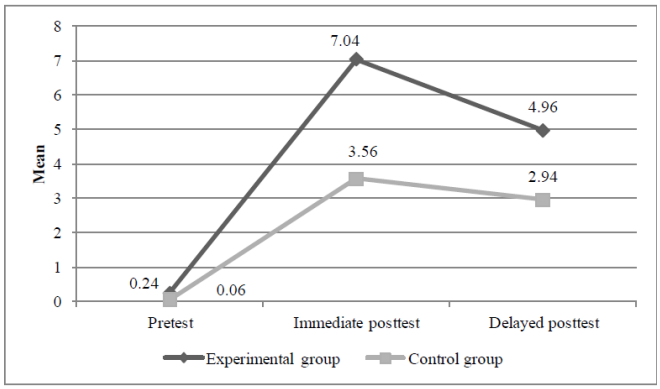

Figure II: The mean scores for the experimental and control groups on the grammar task

As can be seen from Figure II and Table II, the students in the experimental group improved considerably by 6.83 or 45.53% on the immediate posttest and the difference was highly statistically significant ($t = 8.28$, $p < 0.001$). Despite the fact that the PreT-IPostT advantage dropped by 2.08 or 13.86%, the ultimate increase of as much as 4.72 (31.46%) on the PreT-DPostT was observed and was still large enough to reach statistical significance ($t = 5.83$, $p < 0.001$). When it comes to the control subjects, they also improved from the pretest to the immediate posttest, although the gain was smaller than in the case of the experimental learners and amounted to 3.5 (23.33%), reaching statistical significance ($t = 4.08$, $p < 0.001$). In addition, the control learners scored fewer points on DPostT in comparison to IPostT. More precisely, the mean difference between the two tests was 0.62 (4.13%) and did not reach statistical significance ($t = 1.08$, $p = 0.29$). Moreover, the improvement from pretest to delayed posttest amounted to 2.43 or 16.2% and was considerable enough to be statistically significant ($t = 3.87$, $p < 0.001$).

TABLE II:
THE NUMBER OF STUDENTS, MEAN SCORES, STANDARD DEVIATIONS AND LEVELS OF STATISTICAL SIGNIFICANCE ON THE GRAMMAR TASK FOR THE EXPERIMENTAL AND CONTROL GROUP

	Number of students	Mean	%	SD	Significance (two-tailed paired *t*-test)
Experimental group					
Pretest	25	.24	1.6	1.01	
Immediate posttest	27	7.04	46.93	4.31	PreT → IPostT: $t = 8.28$, $p < .001$
Delayed posttest	28	4.96	33.06	4.71	IPostT → DPostT: $t = 3.43$, $p = .002$ PreT → DPostT: $t = 5.83$, $p < .001$
Control group					
Pretest	18	.06	.4	.23	
Immediate posttest	18	3.56	23.73	3.69	PreT → IPostT: $t = 4.08$, $p < .001$
Delayed posttest	18	2.94	19.6	3.22	IPostT → DPostT: $t = 1.08$, $p = .29$ PreT → DPostT: $t = 3.87$, $p < .001$

As can be seen from the results of the grammar task, the experimental learners outperformed the subjects in the control group, which could be taken as evidence that the treatment did lead the experimental students to gain control over their learning of the passive voice. On the other hand, however, the results of the delayed posttest indicate that the pedagogic intervention did not have a permanent effect on the experimental learners' ability to generate results similar to the ones achieved on the immediate posttest. While there might be many reasons for such a state of affairs, two plausible explanations could lie in the fact that the experimental subjects could have simply lost interest in studying the passive and ultimately devoting it less time or no time at all when the traditional instruction was resumed. It also has to be added that similarly to the vocabulary task, the SD levels kept increasing from one measure to another in the experimental group, although, this time, they were much higher. Thus, also in this case the innovative treatment did little to alleviate individual disparities. With regard to the control group, the values of standard deviation increased from PreT to IPostT and decreased from IPostT to DPostT, however they were each time smaller than those in the experimental group (see Table II). In addition, the results show that the grammar task was quite demanding for the students since the mean score was never greater than 7.04 (46.9%). Nevertheless, the results of the test are comforting in view of the fact that the experimental students regarded learning grammar as the most difficult (see section II B above). Moreover, the analysis of the evaluation sheet showed, that the experimental subjects did not consider the online grammar tasks as very good in comparison with the control learners who regarded coursebook grammar activities to be more than satisfactory, and yet the experimental learners were able to perform better that their control counterparts.

B. The Results of the Learners' Logs and the Group and Individual Interviews

This section presents the results of the data which originated from the learners' logs, the observation and the interviews. The following abbreviations will be used to represent the different data collection tools: LL for the learners' logs, GI for the group interview and II for the individual interview.

The analysis of the data showed that the learners perceived the implementation of the Internet in their English classes to be beneficial since they frequently pointed to the richness of materials available on the Internet, a choice of interesting online activities or the unconventional way of practicing new knowledge that was not available to them in other classes. What is more, they often pointed to the fact that they could work in a relaxed, stress-free atmosphere. This is visible in the following comments:

- *We can do exercises that match our level (...) we have a choice (GI)*
- *Nowadays everything is based on computers and the Internet (...) it encourages us to study somehow (...) the coursebook is different not everyone wants to use it (II)*
- *I liked working at the computer today, because in this way you can combine business with pleasure and I don't work under pressure and I can learn much more (LL)*

In addition, the students liked the idea of looking for information on their own and use websites that presented it in the way that was understandable for them. Moreover, they liked the idea of learning from their own mistakes and self-check their answers by choosing appropriate options available on the web pages, which in turn might have resulted in better understanding and ultimately contributed to their language improvement. The analysis of the data also demonstrated that the subjects benefited from the opportunity to use their skills and imagination in order to generate their own activities and publish them on their teacher's website. Such tendencies can be seen from the following extracts:

- *I liked working on my own, because you can learn from your own mistakes (LL)*
- *I had the opportunity to repeat activities I had problems with as many times as I wanted to and thanks to that I learned better (...) sometimes I didn't know the correct form of some irregular verbs (...) I checked my answers and wrote it down in my notebook (...) (II)*
- *Working at the computer allowed me to use my knowledge to create my own activities on the Internet (LL)*

Although the subjects enjoyed the opportunity to work without constant supervision of the teacher, some of the exercises constituted a challenge for at least several learners. Thus, some students opted for more traditional way of

studying English and wanted the teacher to engage in the teaching process, especially when it comes to grammar. Other problems were related to some technical glitches the students encountered while using the Internet. This is evident in the following statements taken from the group interview and the log:

- *(…) I'd like the teacher to explain some grammar points just to be on the safe side (GI)*
- *Next time I can look for information on the Internet faster and better but I think it was because of some sort of technical problems connected with the access to the Internet which is sometimes very slow (LL)*

Given the fact that the sample consisted of rather weak learners, it is particularly comforting that almost all of them felt that they were making progress, specifically with regard to the passive voice. It should be pointed out that during the process of analyzing the data that originated from the learners' logs it was determined that most of the subjects noticed the improvement themselves. The same was observed during the group interview where the majority of learners claimed that they had progressed in English vocabulary and grammar. This is evidenced by the following comments gleaned from the learner's log:

- *Gradually I finally understood it went pretty well (LL)*
- *It doesn't matter that I did only three activities. I did them carefully and what's the most important I finally understood the passive (LL)*
- *Still not very well but I know now I understand more and more (LL)*

The analysis of the data revealed that some of the learners were aware of their weak points in learning English. While some students pointed to the fact that they had to study more in order to reduce a backlog, others referred to specific language problems such as the use of the past participle in the passive voice, sentence formation or spelling. The following excerpts exemplify some of the findings:

- *I could've done more exercises if I'd known exactly the past participle, because it took me most of the time to figured it out (LL).*
- *The most difficult thing for me was the spelling of some words, because I made mistakes in typing some of them (LL)*

Despite the fact that the vocabulary lessons required the students to use online reference tools, the researcher observed voluntary use of online dictionaries or online translators during lessons related to grammar. The subjects resorted to such tools in order to understand instructions connected with exercises and their content as well as they made use of websites providing past participle of irregular verbs. To illustrate:

- *I used the online translator and online dictionaries during grammar activities. (LL)*

From the outset of the treatment, the experimental students began to appreciate the fact of studying English in the computer classroom, working at their own pace during lessons or deciding on how much time to devote in doing exercises. It is quite an important finding, since the class consisted of rather weak students who were unmotivated and unwilling to take part in English lessons. As mentioned above, the subjects also liked the idea of learning from their own mistakes, which was quite unexpected, since, as observed before the experiment, the learners became quickly discouraged when confronted with more demanding exercises and always wanted their teacher to provide solutions and explanations. Thus, it could be argued that such findings are of vital importance for introducing modern technology during foreign language lessons since they show that despite the fact that the students might experience problems at some point, they are able to deal with them by being more committed and self-reliant. It can further be claimed that the intervention itself and the nature of such 'virtual lessons' to some extent modified the students' perceptions of the role of the teacher and learner and enabled them to learn independently of the teacher. This stands in contrast to the way the students typically work in other lessons in which they often wait to be told exactly what to do.

V. Conclusions and Pedagogical Implications

The paper reported the findings of the research project which sought to determine the effect of the application of Internet resources on the development of English subsystems in an autonomous learning environment. Although it appears that both groups benefited from the instruction they received, the differences in the mean score of the vocabulary task, both immediately and in the long run, constitute evidence that independent work might have contributed to superior vocabulary learning. Similarly, the results of the grammar task demonstrated that the treatment might have been a considerable factor in letting the experimental students gain control over their learning of the passive voice. On the other hand, the results of the delayed posttest indicate that the gains in performance turned out to be less durable, also in comparison with the control students. It should be pointed out, however, that the innovative instruction aided the experimental students in learning grammar despite the fact that they considered this challenge as the most difficult. Finally, the intervention proved to be beneficial for the experimental group as a whole, although it did not contribute to diminishing individual variation, which attests to the difficulties involved in teaching mixed-ability classes. Such findings could be interpreted as indicating that it might be premature to abandon the old ways of teaching these language subsystems altogether and the best solution could be a combination of the traditional and innovative approaches. In other words, computer technology and Internet-based resources could be used to heighten the efficacy of traditional techniques related to teaching vocabulary and grammar rather than replace them.

It is the belief of the author that some of the main strengths of this investigation were connected with methodological triangulation and the use of quantitative and qualitative data. The accumulation of the research tools was motivated by

the need of providing a thorough description of language development among the subjects and report their opinions and perceptions of the lessons and the activities. Other strengths concern the involvement of two intact classes making up two groups of learners and the fact that the intervention took place during naturally occurring English lessons. Nonetheless, the study also suffered from some limitations that should be addressed in future empirical investigations of the role of Internet resources in teaching language subsystems in an autonomous setting. One weakness is related to the small sample of participants, which reduces the generalizability of the results. Another weakness might be related to the completion of the lexico-grammatical tests, especially those administrated immediately after the treatment and after six weeks, which required the students to complete a similar set of activities in a relatively short time separating the measures, thus, making the learners bored and increasing the likelihood of the occurrence of the practice effect.

It should also be pointed out that the experimental subjects participating in this study responded positively to the treatment they received and most of them were willing to learn independently from the teacher. However, there is no guarantee that other learners would have responded in comparable ways to similar instruction. Moreover, the lessons in the experimental group were conducted in the computer classroom that was always available for that purpose, which is rather unusual in many schools, at least for now, in view of the fact that computer laboratories are mostly used for teaching other school subjects, such as computer technology. Last but not least, the research project required some sort of modification of the traditional roles of the teacher and certain computer expertise. It could be argued that the success of the implementation of modern technology and creation of autonomous learning environment in schools also lies in teacher training, their computer literacy as well as the ability and willingness of teachers to incorporate in their own teaching practices and language classrooms at least some autonomy and show students how to be more independent in their learning endeavors.

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