

## USING ONLINE RESOURCES IN THE DEVELOPMENT OF LEARNER AUTONOMY AND ENGLISH PRONUNCIATION: THE CASE OF INDIVIDUAL LEARNERS

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### **Abstract**

The paper presents the findings of a *quasi-experimental* study which sought to explore the effectiveness of online resources on the development of learner autonomy and to determine whether increased autonomy results in greater pronunciation gains as well as to compare it with the effects of traditional instruction when it comes to individual students. What is more, the study sets out to determine whether the gains in the two areas are maintained over time with respect to individual learners. The subjects were 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 study. The intervention spanned the period of two weeks. The learners in Experimental Group 1 were provided with access to the Internet and were thus allowed to exercise more freedom in learning English pronunciation. The students in Experimental Group 2 were taught in a traditional way (i.e. controlled by the teacher) and the learners in the control group did not receive any instruction. The data were collected by means of a pronunciation autonomy questionnaire, as well as pronunciation tests administered before and after the study was concluded. The results reveal that the majority of individual students in Experimental Group 1 showed more autonomy and they outperformed their counterparts on the tests, which provides a justification for using digital technology as a tool for promoting autonomy and teaching pronunciation.

**Keywords:** autonomy, pronunciation instruction, online resources, past tense *-ed* ending, individual learners

### **Introduction**

In the field of second and foreign language learning and teaching, the importance of supporting language learners in becoming more autonomous in their learning has become one of the most prominent themes. The majority of theorists, researchers and methodologists have been stressing the need for making learners capable of taking responsibility for their own learning. Equally important is the fact that autonomy is currently considered as a precondition for success in foreign language learning. The main aim of this

paper is to contribute to the ongoing discussion about the importance of autonomy in language learning and teaching by addressing the issue of the development of autonomy by means of online resources and its impact on English pronunciation. While the noble goal of extending our knowledge of how to promote autonomy and master the target language pronunciation at the same time constitutes sufficient justification for this undertaking, there are also several very practical reasons why a study of this kind is needed. First, there are still a lot of teachers who simply follow the coursebook, despite the fact that many schools are equipped with computers connected to the Internet. Other problems are related to the lack of understanding of autonomy by teachers, fear of the loss of authority, uncertainty about the role of students in directing their own learning, disorder in language classrooms and even less efficient instruction. At the same time, there is an urgent need to determine the effectiveness of specific ways of developing autonomy in real foreign language classrooms since only this will help us establish the most promising and beneficial ones. Such empirical investigations into autonomy should take into account the distinctiveness of educational contexts in order to avoid situations where teachers are encouraged to deploy innovations that are incompatible with their characteristics. In addition, the paper aims to provide teachers of foreign languages with several recommendations that should inform their approach to the development of autonomy in schools and encourage them to experiment in their own settings.

### **Approaches to the Development of Autonomy**

According to Gardner and Miller (1999), the most common approaches to supporting language learners by moving from teacher dependence to autonomy are presented in the literature under different headings such as *self-directed learning*, *self-instruction*, *independent learning* and *self-access learning*. However, the researchers claim that, despite the fact that the advocates of these approaches might emphasize differences between them, “there are more similarities than differences” (Gardner & Miller, 1999). Benson (2001) distinguishes six approaches to the development of learner autonomy that include *resource-based*, *technology-based*, *learner-based*, *teacher-based*, *classroom-based* and *curriculum-based* approaches. According to the researcher, resource-based approaches emphasize independent students’ interaction with learning resources. Here, language learners are provided with opportunities to exercise control over learning plans, choose educational materials and evaluate their own language progress. They are supposed to develop skills connected with these activities through “processes of experimentation and discovery, in which freedom of choice is a crucial factor” (Benson, 2001). Moreover, as Littlejohn (1997)

indicates, self-access centers may also be used in order to involve learners in constructing their own practice tasks (also for other students to perform them) with the purpose of creating “the learner as an *active* agent in the learner process, not simply the recipient of teaching” (Littlejohn, 1997). All of these can be accomplished through the implementation of self-access centers in language learning which, apart from providing learning resources in the form of traditional or modern language materials, can also offer counseling.

Resource-based approaches are closely related to technology-based ones, since, as discussed above, the former are often connected with self-access centers which frequently offer modern technology, while the latter, in its entirety, are based on Computer Assisted Language Learning (CALL) and Computer-Mediated Communication (CMC) that makes use of the Internet, and more emphasis is laid on learners’ interaction with educational technologies. According to Benson (2001), from the perspective of autonomy, the most important Internet-based activities include e-mail, on-line discussion and web authoring. Moreover, the researcher claims that the Internet provides opportunities for collaborative learning and also promotes learner control over interaction (Benson, 2001).

As regards *learner-based* approaches, the emphasis is placed on the behavioral and psychological changes in learners that enable them to take greater control of their learning in order to assist them with becoming better learners. The approaches have originated from two separate traditions, one connected with North American studies on learning strategies and strategy training, and the other representing European work on learner training (Benson, 2001). It should be pointed out that the overall aim of learner-based approaches is to change students’ view of the process of learning through reflection on learning materials and activities.

With regard to classroom-based, curriculum-based and teacher-based approaches, the key factor in the development of autonomy is the opportunity for students to decide on their own learning within a collaborative and supportive environment (Benson, 2001). When it comes to classroom-based approaches, they stress student control over the planning and evaluation of classroom learning, which, for instance, may increase students’ motivation.

With regard to evaluation, it might be introduced by requesting learners to write self-marked tests, progress cards, self-rating scales, diaries or learners’ logs (Benson, 2001). As far as curriculum-based approaches are concerned, they extend learner control to the curriculum as a whole, as is the case with process syllabuses in which students in collaboration with teachers can determine the content and procedures of learning. As regards teacher-based

approaches, they attach primary importance to the teacher's role and teacher education in the practice of fostering autonomy. Thus, the role of the teacher may involve providing support for learners, or teachers can be seen as a source of knowledge and expertise. What is more, if language teachers are to meet the challenges of autonomy, it is necessary that teacher education programs provide them with opportunities to examine and develop their personal theories of teaching (Hacker & Barkhuizen 2008). For Vieira et al. (2008), teacher education for autonomy should entail a *reflective approach* to teacher development, which implies that "reflective teacher education should involve teachers in *action-based inquiry into the development of pedagogy for autonomy* in schools".

The obvious conclusion that can be drawn from the exploration of such issues is that not only may autonomy enhance the overall effectiveness of classroom language instruction, but it may also be a necessity in some contexts, where learners, due to large number or students comprising a single language class and a scant amount of target language exposure, experience difficulties in meeting curricula requirements or going beyond them and attaining high accuracy levels. In addition, it could be argued that whatever approach to the development of autonomy, teachers and educators apply in their classrooms and practices, it has to involve a modification of traditional roles of both teachers and learners, allowing the latter to exercise more freedom regarding their learning (Kruk, 2009). However, it does not mean that all learners will be content with such a transition of power and some students might even try to resist this opportunity. It also has to be kept in mind that all students will not be able to display the same level of autonomous behavior at the same time. Thus, autonomy should be introduced gradually and teachers need to be well prepared for that enterprise and, as argued by some researchers in the field (e.g., Little, 1995; Sharle & Szabó, 2000), it is necessary for teachers to be autonomous as well.

## The Study

### Aims of the Research and Experimental Design

The purpose of the study was to explore the effectiveness of online resources on the development of learner autonomy, and to determine whether heightened autonomy results in greater pronunciation gains, as well as to compare it with the effects of traditional instruction when it comes to individual students. What is more, the study sets out to determine whether the gains in the two areas are maintained over time with respect to individual learners.

The study reported here was *quasi-experimental* in character, as the participants took part in it within two intact classes. The study was concerned with the final *-ed* sound of the simple

past tense of regular English verbs by members of two experimental groups, who received either innovative (i.e., based on independent use of online resources and without constant supervision of the teacher) or traditional (i.e., based on coursebook materials and with constant supervision of the teacher) instruction. In addition, the two groups were called Experimental Group 1 (ExG1) and Experimental Group 2 (ExG2). Apart from this, a control group (CtrlG) was included in the design of the study, but this group received no instruction.

The study was conducted according to *the pretest-posttest design*. The pretest and the pre-pronunciation autonomy questionnaire were administered one week before the experiment; the immediate posttest and the immediate post-pronunciation autonomy questionnaire, as well as the delayed posttest and the delayed post-pronunciation autonomy questionnaire were given one and four weeks after the experiment respectively in order to provide the present author with information as to the short- and long-term effects of the two kinds of treatment. Moreover, one week before the experiment the participants were asked to complete a background questionnaire, and after the treatment the experimental subjects were requested to fill out an evaluation sheet. It should also be noted that careful attention was given not to teach the items that were covered during the treatment sessions between the immediate posttests and the delayed posttests, which could have distorted the findings.

In addition, the decision to focus in the course of the present study on the final *-ed* ending was motivated by the fact that the participants of the research project hardly ever pronounced the sound in question correctly despite its frequent occurrence, for example, in various activities and materials utilized during English lessons. What is more, the decision to focus on pronunciation was inspired by the present author's experience as a language teacher and formal as well as informal conversations with other language teachers attending various language conferences or meetings at schools, who often claimed that pronunciation is very rarely taught because of lack of time, insufficient supply of pronunciation materials or even teachers' lack of confidence in their own pronunciation.

### **Participants**

The subjects of the study were 45 grade three Polish senior high school students. They were members of two separate intact classes. One of the classes was randomly divided into two experimental groups consisting of 15 (ExG1) and 16 (ExG2) students. The control group included 14 learners. It has to be noted that the curricular policy of the school provided the experimental subjects with three 45-minute lessons per week and the learners in the control

group had two 45-minute classes a week. The background questionnaire revealed that on average, the students in ExG1 and ExG2 had been learning English for 7.33 and 8.06 years, respectively, while the subjects in CtrlG for 7.21 years. The participants were quite uniform when it comes to such factors as extracurricular instruction, out-of-school exposure and the reasons for which they were learning English. The vast majority of them had no English instruction outside of school; only 3 (20%) subjects in ExG1 and 3 (18.75%) learners in ExG2 admitted to attending some additional tutorials either at the time of or before the experiment. This fact was welcomed by the present author as this meant that the likelihood of out-of-class exposure unduly affecting the results of the study was minimal. When it comes to instruction in English pronunciation that the participants had received in junior high school, 4 (26.66%) subjects in ExG1, 11 (68.75%) students in ExG2 and 8 (57.14%) control learners claimed that it mainly took the form of repeating English words or phrases after the teacher or recordings. Judging by the grades the learners had been awarded at the end of the second grade, the two classes were comparable in terms of proficiency, as indicated by the fact that the grade point averages amounted to 2.40 on a 1-6 scale (1 – lowest, 6 – highest) in ExG1, 2.50 in ExG2 and 2.36 in CtrlG.

### **Instructional Treatment**

At the start of the experiment, the students in both experimental groups were informed that the next four lessons would be devoted to the pronunciation practice of the final *-ed* sound of the simple past tense of regular English verbs. Each pronunciation session lasted approximately 25 minutes and the remainder of each lesson was devoted to working with regular classroom materials. As for the control students, they continued to cover successive units in their coursebook and no attempt was made to teach the item in question.

The instructional difference between the experimental groups was that the subjects in ExG1 gained access to the Internet and exercised more freedom in learning English pronunciation and they were encouraged to try to “take control of their own learning” (Holec, 1981). In order to promote learner autonomy, the students could, for example, choose from a variety of online activities, repeat pronunciation exercises as many times as necessary, take notes in their notebooks or decide how much time to devote to practice the *-ed* sound. In addition, the subjects kept learners’ logs in which, after each lesson, they were requested to write about their pronunciation learning. Also, they tried to evaluate and reflect on their own learning there. Conversely, the treatment employed in ExG2 obliged the learners to do

exactly what the researchers had planned and demanded from them. Additionally, they had to follow the teacher's instructions and assessment.

During the lessons, the students were provided with the opportunity to watch short movie clips which explained how to pronounce the final *-ed* sound of the of the target structure (e.g., [http://www.youtube.com/user/evaeaston#p/c/13/\\_M7xIwAqy9I](http://www.youtube.com/user/evaeaston#p/c/13/_M7xIwAqy9I), [http://www.youtube.com/user/evaeaston#p/c/15/\\_rL2hsOsW28](http://www.youtube.com/user/evaeaston#p/c/15/_rL2hsOsW28)) and take notes in their notebooks. In addition, the learners were asked to read, listen to or watch online stories seeded with words containing the sound in question (e.g., <http://evaeaston.com/t-d-ld-pr-lincoln1.html>, <http://evaeaston.com/t-d-ld-pr-fox.html> or <http://www.youtube.com/user/evaeaston#p/c/9/NegoD3bkZ-Q>) and repeat the words. The subjects were also provided with the opportunity to record their own pronunciation of the sound in question and compare it to the model. Moreover, the students were requested to do online activities most of which contained embedded audio files (e.g., <http://www.elearnenglishlanguage.com/esl/grammar/simplepast-pronunciation.html>) and perform online pronunciation quizzes with or without sound ([http://eolf.univ-comte.fr/uploads/ressources/pronunciation/01\\_-ed\\_endings/01\\_ed.htm](http://eolf.univ-comte.fr/uploads/ressources/pronunciation/01_-ed_endings/01_ed.htm) or <http://www.english-zone.com/convo/pron-ed1.html>). The activities presented on the web pages varied and included such exercises as: clicking on the word and listening to the pronunciation of the *-ed* sound, listening and matching, transcription, listening to sentences with words containing the sound under study and choosing the correct pronunciation of the sound, etc. The aim of these activities was to further practice the pronunciation of the *-ed* ending as well as the resources allowing the students to check their own pronunciation of the sound. It has to be noted that some of the activities provided the learners with immediate feedback based on which the subjects had to independently decide whether or not the activity was performed correctly. However, the feedback was in most cases limited to showing the students the correct answers only without explicit information on how to pronounce sounds.

When it comes to ExG2, the first lesson commenced with the teacher's presentation of the pronunciation of the final *-ed* sound with relevant examples. The remaining part of this class was devoted to doing exercises during which the learners listened to the teacher and repeated the words containing the final *-ed* sound. During the second lesson, the students were presented with a table containing new regular verbs in the simple past tense and were



asked to listen to the teacher and repeat the words. Next, the teacher instructed the students to fill in a chart by placing the verbs in the correct columns according to how they were pronounced. The activity was checked by the teacher who asked at random several students to read the answers. As for the third lesson, it began with a short revision of the material covered in the previous session and then the learners read a short dialog. As always, the teacher was responsible for making sure that the task was completed correctly. When it comes to the last lesson, the students listened to a number of the regular simple past verbs and sorted them into the correct columns according to the final *-ed* ending. Next, the students were requested to complete a set of sentences with the simple past of several regular verbs and indicate the correct pronunciation of *-ed* in the brackets. As in the case of the previous lessons the activities were checked by the teacher who always asked at random several students to read the answers.

### **Instruments and Procedures of Data Collection and Analysis**

The testing instruments which provided the data to be analyzed were identical in all groups. The perception test consisted of two tasks. In the first task, the students were asked to listen to 15 regular verbs in the past simple tense and mark the phonetic symbols representing the sound of the *-ed* ending. As for the words, five of them contained the *-ed* sound pronounced as /t/, another five the *-ed* sound pronounced as /d/, and five the *-ed* sound pronounced as /ɪd/. When it comes to the second task, it required the learners to listen to a short text containing 15 verbs in the past simple tense. As was the case with the first task, the same number of words contained the *-ed* sound pronounced as /t/, /d/ and /ɪd/ and the students were asked to mark the phonetic symbols representing the sound in question. It has to be noted that the tasks were previously recorded by the teacher and the words in the first task were read at random.

The production test consisted of three tasks. In the first task, the subjects were requested to read 15 regular verbs in the past simple tense and in the second one the students were to read a short text which also included 15 such verbs. It should be noted that in each task the same number of words contained the *-ed* sound pronounced as /t/, /d/ and /ɪd/. As for the third task, the students were asked to tell a short story beginning with the following words: *Yesterday morning John ...* . In order to perform the activity the learners were presented with six pictures and six phrases each of which contained a regular verb in the present simple tense. All in all, the students were supposed to produce three words containing the -



*ed* sound pronounced as /t/, three of the *-ed* sound pronounced as /d/ and the other three of the *-ed* sound pronounced as /ɪd/.

When it comes to the scoring criteria, the perception test contained a total of 30 items, each of which could be accorded 1 point, which means that the maximum score was 30 points. As for the production test, it was possible to score a total of 39 points for it (i.e., one point for each correct answer). It should be noted that each time the students were tested on the production test they were provided with the opportunity to read the test in order to rehearse before recording (Celce-Murcia, Brinton & Goodwin, 2004).

In order to make sure that the production tests were scored consistently, randomly chosen samples of the data originating from the tests were assessed by the present author and a highly qualified English teacher. The results were then compared to those obtained previously with the purpose of determining interrater reliabilities which proved to be quite large in all cases since the lowest value of the Pearson Correlation Coefficient amounted to 0.665 and the average equaled 0.712. In addition, samples of randomly-selected data derived from the tests were reanalyzed so as to control for consistent scoring of the production test over time. The intrarater reliabilities computed in this manner were high since the lowest value of the Pearson Correlation Coefficient equaled 0.925 (the average amounted to 0.934).

As for the pronunciation autonomy questionnaire (PAQ), it was created by focusing on the aspects mentioned in the questionnaire developed by Czura (2010). Its aim was to measure the subjects' autonomy related to studying English pronunciation. The questionnaire was designed in the form of a 5-point Likert-scale and contained 28 statements. Moreover, PAQ consisted of seven areas which included: (1) the ability to select and implement relevant resources, (2) collaboration with other students, (3) the ability to establish learning aims and objectives, (4) engagement in outside classroom learning, (5) the ability to evaluate own pronunciation, (6) the capability to implement appropriate pronunciation strategies and (7) the role of the teacher and the role of the learner in pronunciation instruction and learning. The reliability estimate for the questionnaire was established on the basis of the results obtained before, immediately after the study and after four weeks by means of Cronbach alpha and the values obtained were each time high ( $\alpha = .79$ ,  $\alpha = .81$ ,  $\alpha = .78$ , respectively).

In addition, the results of PAQ as well as the perception and the production tests were subjected to quantitative analysis which involved computing the mean score, the ranges and the standard deviation.

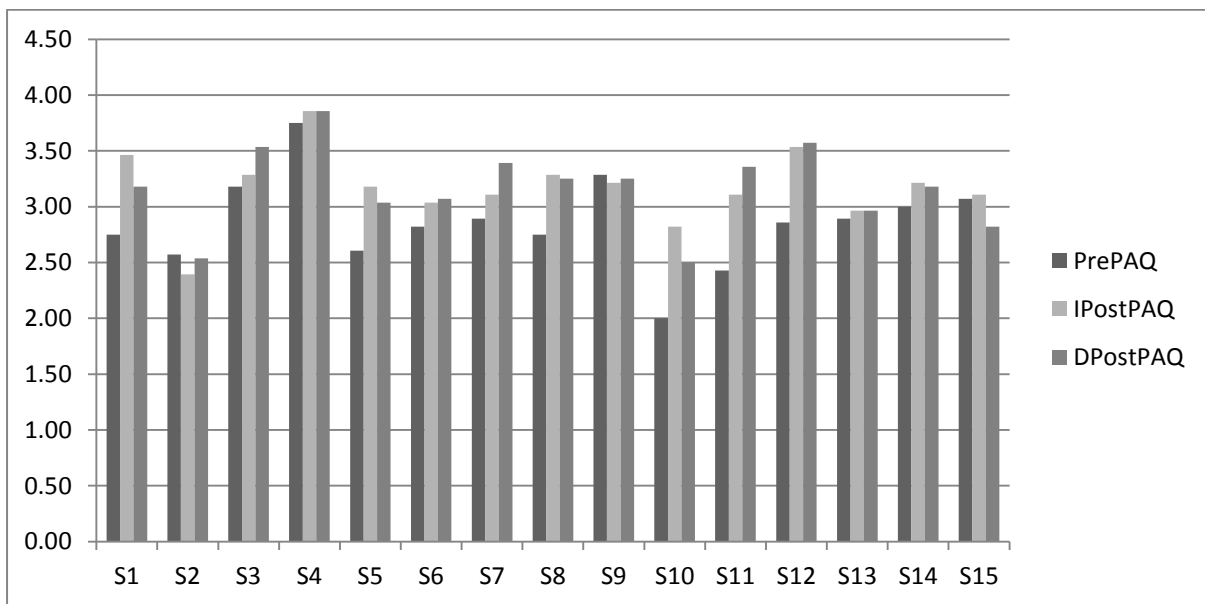
## Results and Discussion

### The Development of Learner Autonomy

The following abbreviations will be used so as to indicate the administration of PAQ before the treatment (PrePAQ), immediately after it (IPostPAQ), and after four weeks (DPostPAQ).

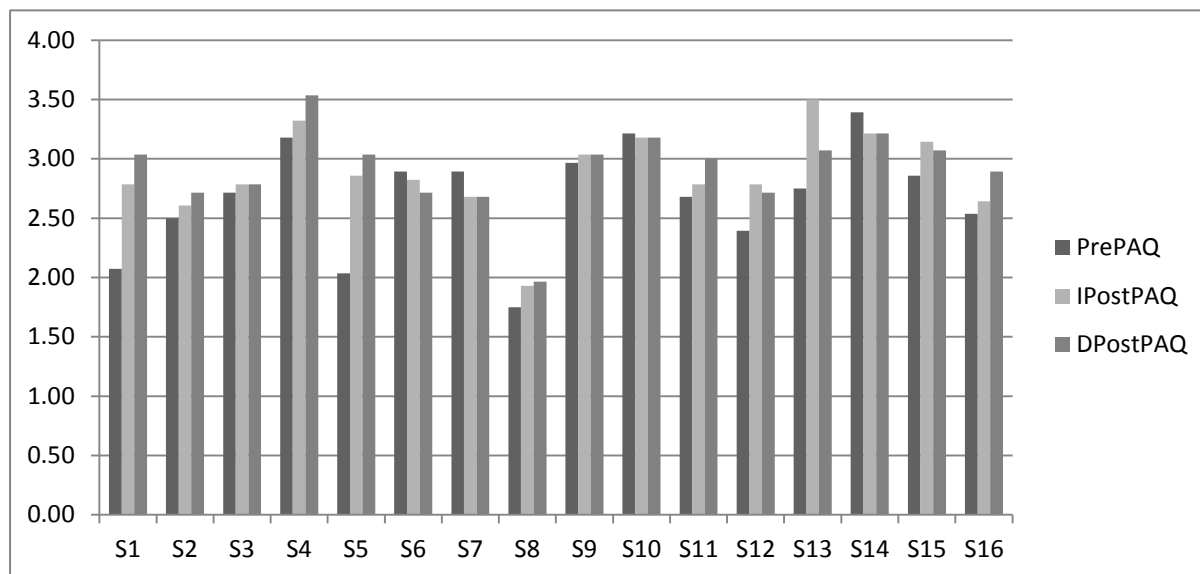
### Results of the responses to Likert-scale items of PAQ for individual students

Figure 1 below diagrammatically shows the mean for each of the 15 experimental subjects in ExG1 for PAQ before and after the intervention. Almost all of the learners (13 or 86.7%) in this group declared more autonomous behaviors immediately after the treatment with the exception of two students (i.e., S2 and S9) whose declared autonomy dropped by 3.6% and 1.6%, respectively. At the same time, there were several subjects whose levels of autonomy increased by 10% or more from PrePAQ to IPostPAQ (e.g., S1, S5 and S8). Moreover, six (40%) students (i.e., S1, S5, S8, S10, S14 and S15) showed less autonomy on DPostPAQ when compared with IPostPAQ, although the largest loss amounted only to 0.32 or 6.4% and was observed for S10. This finding might be partly explained by the fact that these students also happened to be enjoying the lessons and the way they were allowed to work, and when the innovative instruction was over, their interest in learning English pronunciation simply evaporated. What is more, in the case of seven (46.7%) subjects, the declared autonomy levels increased from IPostPAQ to DPostPAQ (i.e., S2, S3, S6, S7, S9, S11 and S12) and the largest gain was observed for S7 (0.28 or 5.6%). It has to be added that the declared autonomy levels on the two postquestionnaires did not change in the event of S4 and S13. Finally, twelve (80%) learners in ExG1 increased in autonomy from PrePAQ to DPostPAQ and the most visible gain was observed in the case of S11 (18.6%), S12 (14.2%), S7, S8 and S10 (each 10%). In contrast, three (20%) of students declared less autonomy on DPostPAQ when compared with PrePAQ and the most noticeable decrease was observed in S15 (0.25 or 5%). These findings can be explained in terms of slow, albeit gradual, development of the subjects' autonomy over time and indicate that the intervention appeared to have been beneficial for at least several learners whose initial level of autonomy was low (e.g., S5, S10 and S11).



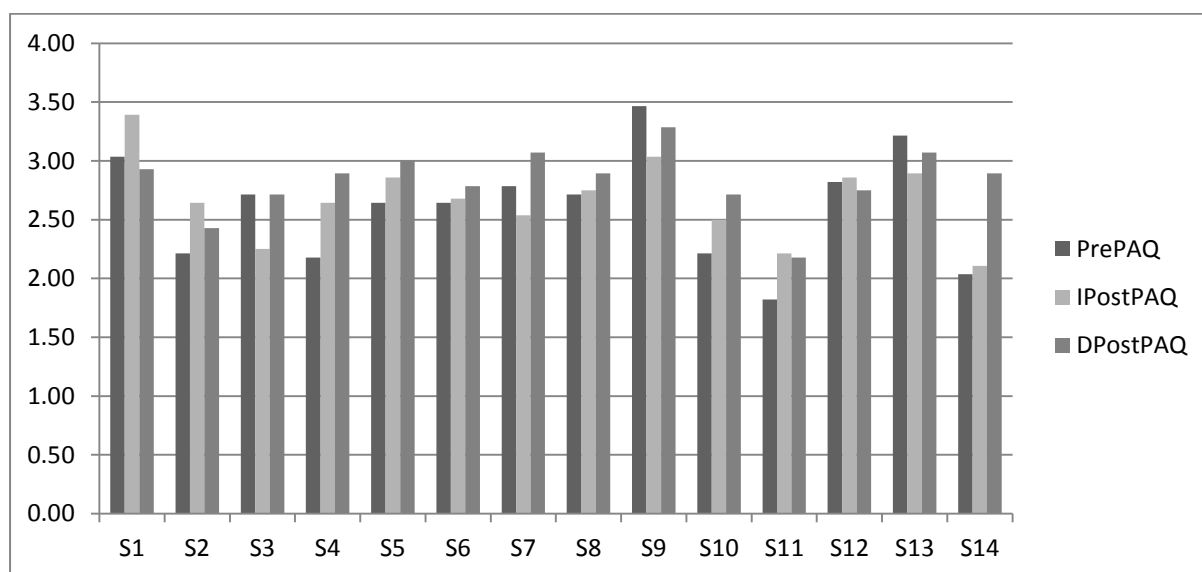
**Figure 1. The means for individual learners in ExG1 on PAQ**

The means for the subjects in ExG2 on PAQ are presented in Figure 2. Twelve or 75% of students in this group exhibited more autonomy from PrePAQ to IPostPAQ and the increase of 10% or more was observed in the case of S1, S5 and S13. In addition to this, a decrease in declared levels of autonomy on IPostPAQ was found in four learners, although it was minute with the exception of S7 and S14 (4.2% and 3.5%, respectively). Moreover, seven (43.75%) students showed more autonomous behaviors on DPostPAQ in comparison with IPostPAQ (e.g., S1, S2, S4, S5 and S16) and the most visible change was observed in S1 and S16 (both 5%). What is more, there was no difference from IPostPAQ to DPostPAQ in the case of five students (i.e., S3, S7, S9, S10 and S14). These findings could be interpreted as indicating that most of the students who declared more autonomy on both postquestionnaires also happened to be working quite hard during the classes, with the exception of a few students who always lagged behind and did not actively participate in the lessons. When it comes to the PrePAQ–DPostPAQ difference, twelve (75%) students in this group manifested more autonomy and only in the case of two students (i.e., S1 and S5) was the difference larger than 10% (i.e., 19.4% and 20%, respectively). The rest of the subjects in ExG2 (three or 18.75%) displayed less autonomy on DPostPAQ in comparison with PrePAQ (i.e., S6, S7 and S14), with the largest drop observed for student 7 (4.2%).



**Figure 2. The means for individual learners in ExG2 on PAQ**

As regards the control group, ten (71.4%) students exhibited more autonomy on IPostPAQ with the exception of four students (i.e., S3, S7, S9 and S13) whose declared autonomy dropped by 9.2%, 5%, 8.4% and 6.4%, respectively (see Figure 3). It has to be noted that no one in this group demonstrated autonomy greater than 10% or more on IPostPAQ when compared with PrePAQ. When it comes to the IPostPAQ-DPostPAQ difference, ten (71.4%) control subjects manifested more autonomous behaviors on DPostPAQ, however the most visible gain was observed only in the case of S3 (9.2%), S7 (10.6%) and S14 (15.6%). What is more, the largest loss in displayed autonomy on DPostPAQ was observed in S1 and equaled 0.46 (9.2%). It should also be pointed out that nine (64.3%) controls increased in autonomy from PrePAQ to DPostPAQ and the largest gain was observed in the case of S14 (17%), S4 (14.2%) and S10 (10%). On the other hand, four (28.6%) controls manifested less autonomy on DPostPAQ when compared with PrePAQ, although the loss was rather small. Such findings should not be surprising in view of the fact that these learners were taught in a traditional manner and were not encouraged to work on their own.



**Figure 3. The means for individual control learners on PAQ**

	Range	Standard deviation
<b>ExG1 (N = 15)</b>		
<b>PrePAQ</b>	1.75	1.75
<b>IPostPAQ</b>	0.33	1.47
<b>DPostPQA</b>	0.37	1.36
<b>ExG2 (N = 16)</b>		
<b>PrePAQ</b>	0.45	1.64
<b>IPostPAQ</b>	0.36	1.57
<b>DPostPQA</b>	0.34	1.58
<b>CtrlG (N = 14)</b>		
<b>PrePAQ</b>	0.47	1.64
<b>IPostPAQ</b>	0.34	1.28
<b>DPostPQA</b>	0.28	1.11

**Table 1. Ranges and standard deviations for ExG1**

A closer investigation of Figures 1, 2 and 3 shows that there were five (33.3%) students in ExG1, 7 (43.75%) students in ExG2 and six (42.86%) control ones who displayed a steady growth in autonomy from PrePAQ to DPostPAQ. Moreover, twelve (80%) subjects in ExG1, six (37.5%) learners in ExG2 and two (14.3%) control students demonstrated a higher level of autonomy than 3.0 immediately after the experiment was over and in the case of eleven (73.3%) students in ExG1, nine (60%) subjects in ExG2 and four (28.6%) control ones the 3-point-average threshold was attained in the long run. These findings could be taken as

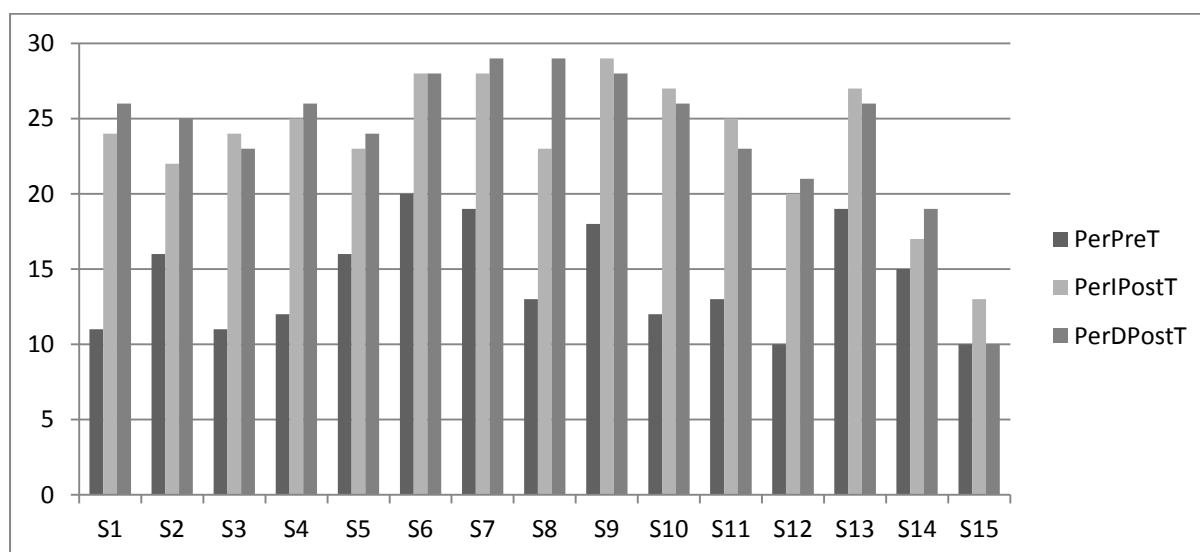
evidence that the pedagogic intervention in the form of the application of online resources had a more pronounced effect for individual students in ExG1, despite the fact that more subjects in ExG2 and CtrlG showed a steady growth in autonomy from the first to the last administration of PAQ. In addition, the gap between the best and the worst subjects narrowed as evidenced by the decrease in the value of the range in all groups (see Table 1). What is even more encouraging, the most noticeable decrease in the value of the range from PrePAQ to DPostPAQ can only be observed in ExG1 which equaled 1.38. A similar trend was obtained for the standard deviation, which dropped systematically from one administration of PAQ to another in this group. This shows that the innovative treatment proved to be effective not only for the group as a whole, but, in fact, it did eliminate individual variation at least when the two experimental groups are compared.

### **Pronunciation Gains**

Throughout the discussion the following abbreviations will be used so as to indicate the perception test: PerPreT for the pretest, PerIPostT for the immediate posttest and PerDPostT for the delayed posttest. As for the production test: ProPreT for the pretest, ProIPostT for the immediate posttest and ProDPostT for the delayed posttest.

### **Individual subject's performance on the perception test.**

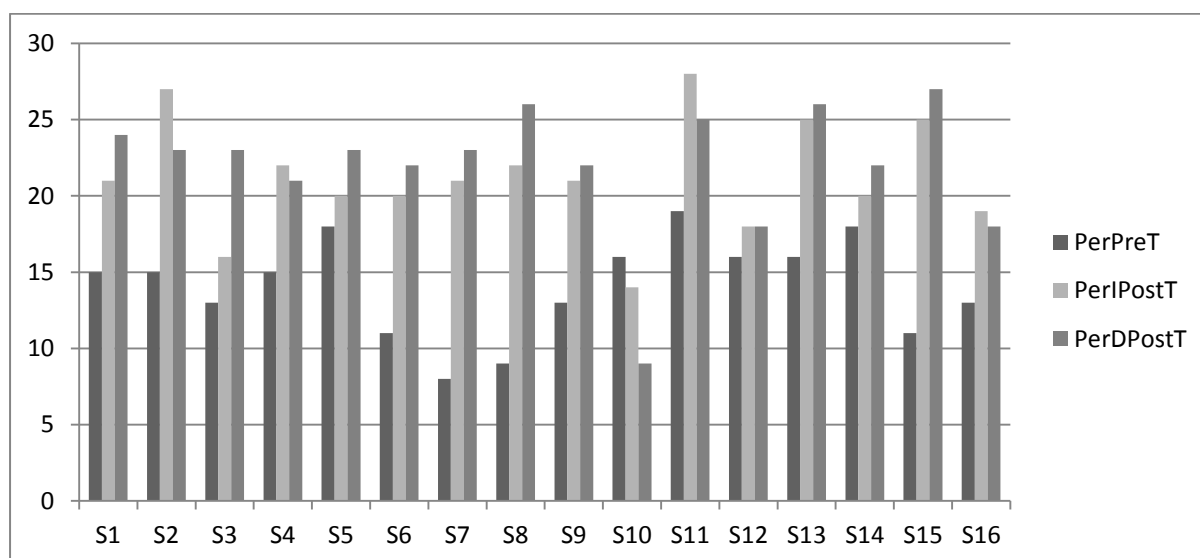
As illustrated by Figure 4, which diagrammatically presents the mean scores for individual students in ExG1 on each administration of the perception test, all subjects in this group improved from the beginning of the study to the immediate posttest. What is more, there were seven (46.7%) learners who improved by 10 points or more from PerPreT to PerIPostT and as many as nine (60%) who did so from PerPreT to PerDPostT. It should be pointed out that none of the subjects in ExG1 scored below the initial level on PerDPostT. Last but not least, quite a few students (eight or 53.3%) improved on PerDPostT when compared with PerIPostT (e.g. S1, S2, S4, S5, S7 and S14), and, at the same time, they consistently did better on the successive tests. In fact, most of these subjects also happened to score relatively high (at least 15 points) on the first administration of the perception test.



**Figure 4. The mean scores for individual learners in ExG1 on the perception test**

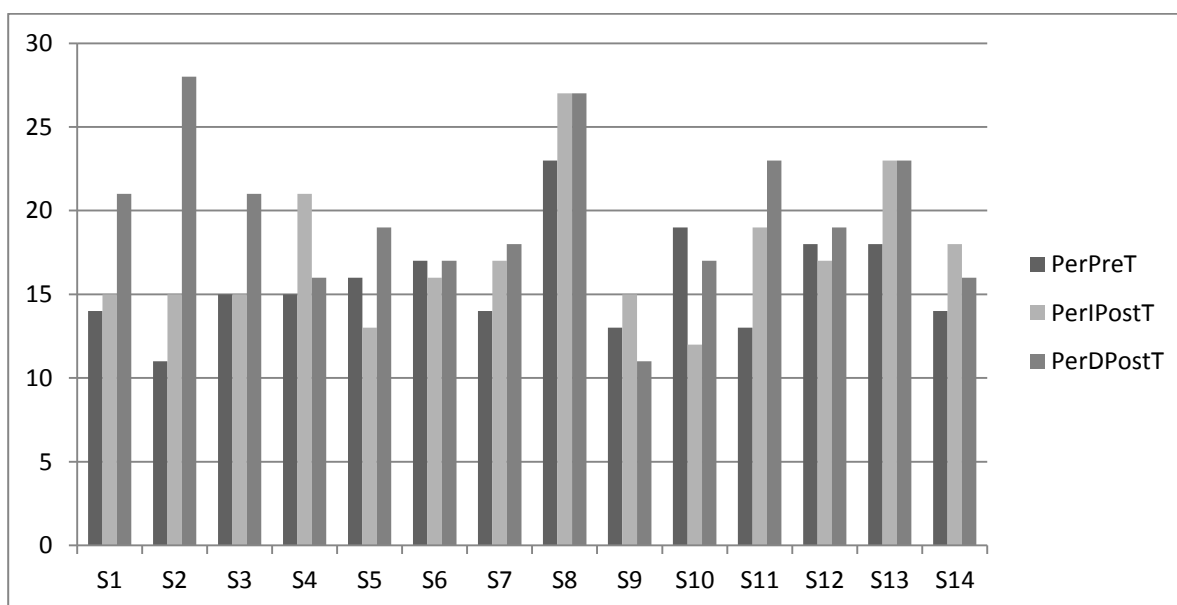
Figure 5 shows the mean scores for individual learners in ExG2 on the successive tests. In this group, almost all of the subjects improved from the pretest to the immediate posttest, with the exception of one learner (S10) whose performance on PerIPostT deteriorated below the initial level. In addition to this, five (31.25%) students (i.e., S2, S7, S8 and S15) did better by 10 points or more on PerIPostT. Moreover, ten (62.5%) subjects improved from PerIPostT to PerDPostT. It has to be noted that six (37.5%) learners in this group scored higher by 10 points or more on PerDPostT in comparison with the pretest and only in the case of S10 did the delayed posttest score fall below the initial level. In fact, he was a rather weak and unmotivated learner who always scored low on the three occasions. When it comes to the students who systematically improved from the first administration of the test to the last, there were ten (62.5%) such learners. It has to be added, however, that the majority of these students also scored 15 points or more on the pretest. Generally speaking, the traditional instruction proved to be no worse than the innovative one when it comes to the perception test, the largest difference being only with the number of students who improved by 10 points or more from PerPreT to PerIPostT and found in ExG1 (the difference of 23%).





**Figure 5. The mean scores for individual learners in ExG2 on the perception test**

As illustrated by Figure 6, which provides a graphical representation of the mean scores for the control learners on the successive perception tests, nine (64.3%) students improved from PerPreT to PerIPostT and in the case of one subject (i.e., S3) no change was observed. It should be added that no one in this group improved by 10 points or more from PerPreT to PerIPostT. Moreover, nine (64.3%) students improved from PerIPostT to PerDPostT, however only two (14.3%) of them (i.e., S2 and S8) did so by 10 points or more. In addition, eleven (78.6%) control subjects scored higher on PerDPostT in comparison with the pretest, one of them (i.e., S6) did not change his performance and in the case of two subjects (i.e., S9 and S10) did the delayed posttest scores fall below the initial levels. It has to be pointed out that only two students (i.e., S2 and S11) improved from PerPreT to PerDPostT by 10 points or more. Finally, only four (28.6%) students (i.e., S1, S2, S7 and S11) consistently did better on all occasions, although in the case of S1 and S2 the gain was quite substantial and amounted to 6 and 17 points, respectively. Unexpected as it might have been in view of the fact that these learners did not receive any treatment as regards to the final *-ed* sound, such a state of affairs might be explained in terms of performance of similar tasks used in testing over and over again and ultimately contributed to the occurrence of a practice effect.



**Figure 6. The mean scores for individual learners in CtrlG on the perception test**

	Range	Standard deviation
<b>ExG1 (N = 15)</b>		
<b>PerPreT</b>	10.0	3.48
<b>PerIPostT</b>	16.0	4.37
<b>PerDPostT</b>	19.0	4.86
<b>ExG2 (N = 16)</b>		
<b>PerPreT</b>	11.0	3.20
<b>PerIPostT</b>	14.0	3.73
<b>PerDPostT</b>	18.0	4.29
<b>CtrlG (N = 14)</b>		
<b>PerPreT</b>	12.0	3.26
<b>PerIPostT</b>	15.0	4.72
<b>PerDPostT</b>	17.0	4.82

**Table 2. Means, ranges and standard deviations for ExG1, ExG2 and CtrlG on the perception test**

At the close of this section, a few comments are in order on the learners who displayed a steady growth on successive production tests as well as the subjects with the highest and lowest mean scores. In the former case, there were eight (53.3%) learners in ExG1, ten (62.5%) students in ExG2 and four (28.6%) subjects in CtrlG. In the latter case, the analysis of the data showed that seven (46.7%) students in ExG1 scored 25 points or more on PerIPostT, four (25%) learners in ExG2 and only one student did so in the control group. As

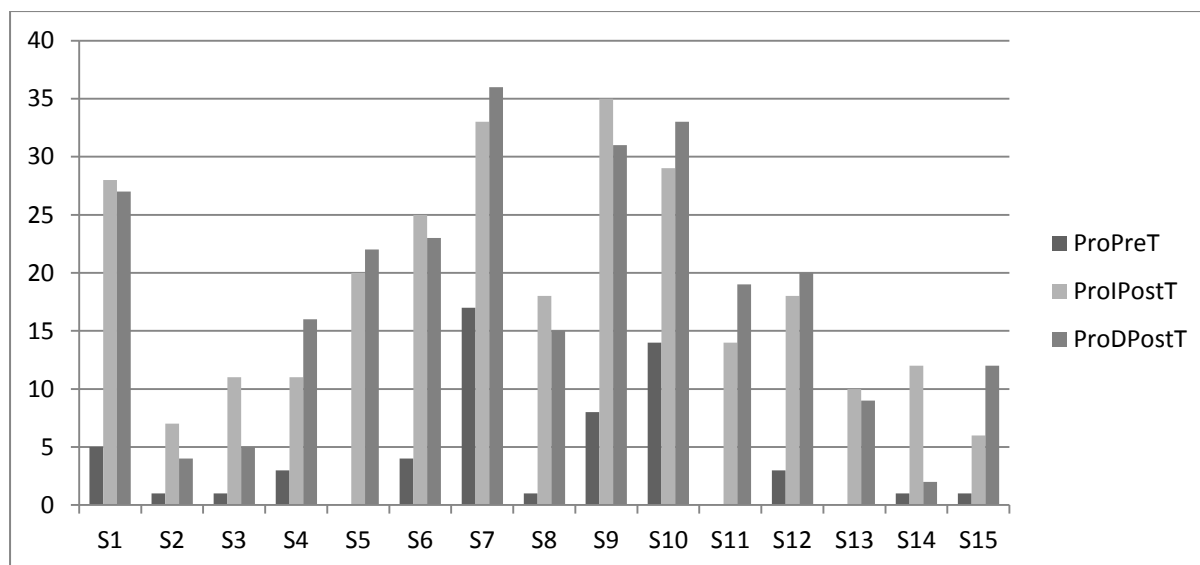
regards PerDPostT, there were nine (60%) subjects in ExG1, four (25%) in ExG2 and two (14.3%) controls. When it comes to students with the lowest mean scores (i.e., 15 points or less), there was one learner in ExG1 (i.e., S15) who scored only 13 points on PerIPostT, one in ExG2 (i.e. S10) and six (42.9%) students in CtrlG. The situation was quite similar on PerDPostT, in view of the fact that these were the same students in both experimental groups, the only exception being that this time there was one such student in the control group (i.e., S9).

The results presented above show that the intervention turned out to be more beneficial for the learners in ExG1, since on each occasion the majority of these subjects performed better than their counterparts. This in turn might indicate that the instruction was particularly beneficial for the weakest students. It has to be noted, however, that traditional instruction was also effective as evidenced by the fact that the majority of the students in ExG2 scored higher than controls. What is particularly interesting, however, is the fact that the innovative instruction turned out to have a more permanent effect on the individual learners in ExG1 since all of them scored higher than before the experiment got under way. This trend was also observed in the number of students in ExG1 with the highest scores on PerIPostT and PerDPostT, which outnumbered these in other groups. On the other hand, the findings have to be viewed with caution, since all participants of the study differed greatly in their overall performance on the perception test. This is evident in the values of the range, which kept increasing from one test to the next, with the largest difference being in ExG1 (9.0) as well as in the growing tendency in the values of the SD. This time, however, the most pronounced PerPreT–PerDPostT difference was observed in the control group which amounted to 1.56. Thus, the changes in the SD indicate that all groups became quite diverse on the three measures (see Table 2).

#### **Individual subject's performance on the production test.**

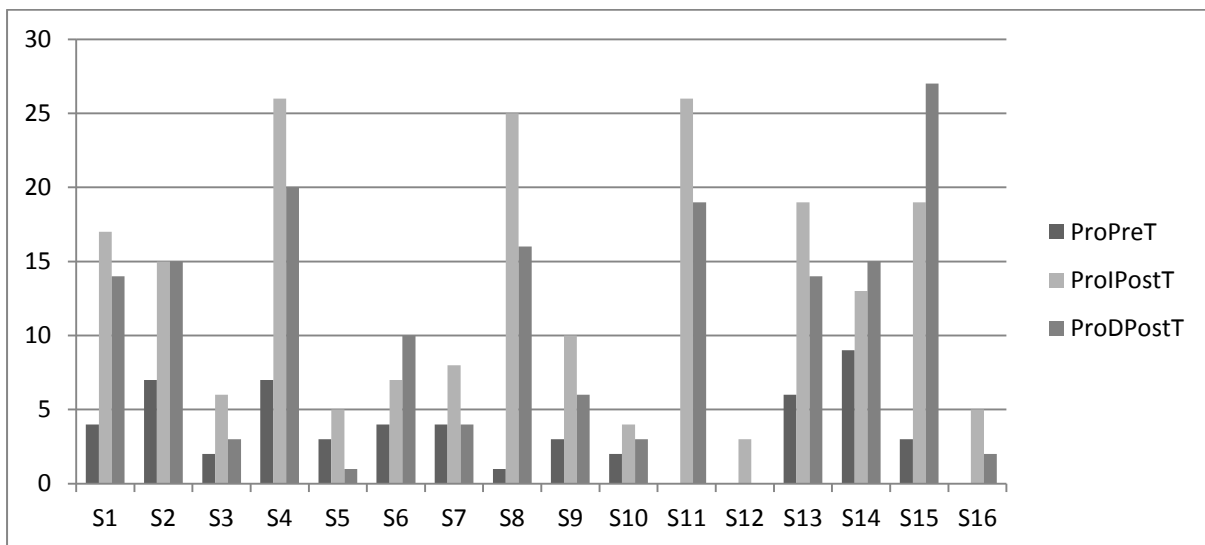
The diagrammatical representation in Figure 7 below shows that all of the learners in ExG1 did better immediately after the treatment. What is more, twelve (80%) students improved by 10 points or more from ProPreT to ProIPostT and eleven (73.3%) did so from ProPreT to ProDPostT. It also has to be added that six (40%) learners performed better on ProDPostT when compared with ProIPostT. In addition, seven (46.7%) experimental subjects systematically improved from one test to another, although the most spectacular gain was observed in S7 and S10. Lastly, no one in this group scored below the initial level on ProDPostT; however there were eight (53.3%) students whose performance deteriorated

from ProDPostT to ProIPostT. On most occasions, however, the scores of these students were only slightly worse. While these results could simply be interpreted as indicating that these students were somewhat more adventurous and eager to study the final -ed sound, an equally plausible explanation could be that the innovative instruction was a decisive factor which enabled some individual students in ExG1 to make a direct leap from inaccurate or erroneous production of the sound in question to correct one on both posttests.



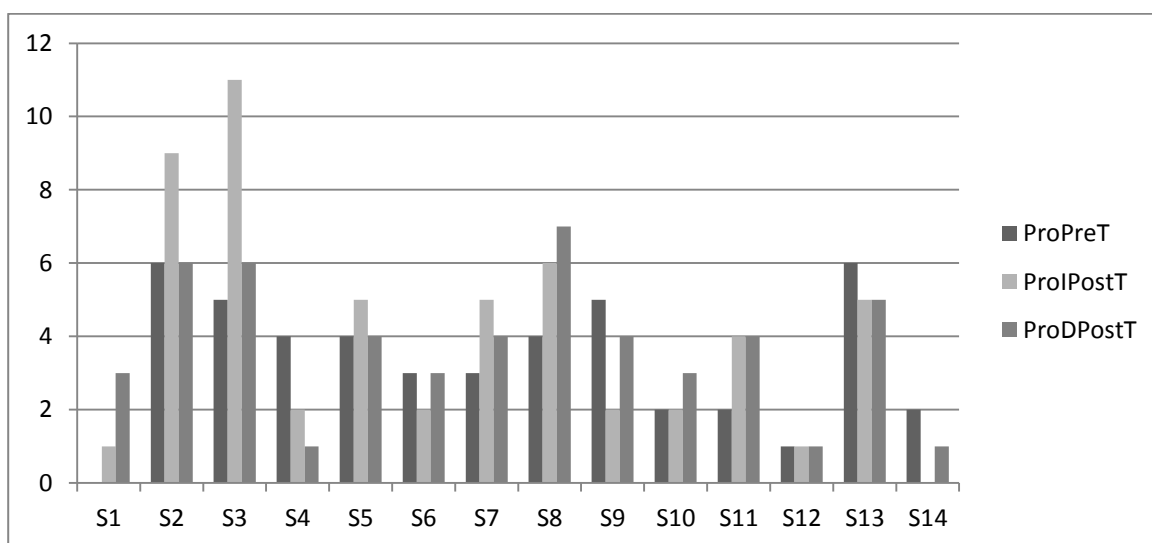
**Figure 7. The mean scores for individual learners in ExG1 on the production test**

The diagrammatical representations of the mean scores for individual students in ExG2 on consecutive tests in Figure 8 indicate there was considerable diversity in the performance of these subjects despite the fact that all the learners improved from ProPreT to ProIPostT and in the case of seven (43.75%) students the gain was greater than 10 points or more. What is more, three (18.75%) students performed better on ProDPostT when compared with ProIPostT, although none of them did so by 10 points or more. Also, thirteen (81.25%) subjects scored higher on ProDPostT in comparison with the pretest, one of them (i.e., S7) did not change and in the case of two learners (i.e., S5 and S12) the delayed posttest scores fell below the initial levels. In addition, there were as many as twelve (75%) who did worse on ProDPostT in comparison with ProIPostT. On a more optimistic note, however, there were six (37.5%) subjects who improved from ProPreT to ProDPostT by at least 10 points. It should also be pointed out that only three learners (i.e., S6, S14 and S15) consistently did better on the successive tests, although the most pronounced gain was only observed in the case of S15.



**Figure 8. The mean scores for individual learners in ExG2 on the production test**

Even a cursory inspection of Figure 9 shows that there were considerable differences among the control subjects on all administrations of the production test. Thus, only half of the subjects improved from ProPreT to ProIPostT, five (35.7%) learners did worse on ProIPostT and in the case of two students (i.e., S10 and S12) the initial score did not alter. In addition, six (42.9%) students improved from ProIPostT to ProDPostT, although their performance was usually minute with the largest amounting only to 2 points and it was more likely to affect the subjects whose initial scores were higher on ProPreT. What is more, two control learners (i.e., S1 and S8) gradually improved from one test to the next. It has also to be noted that no one in this group improved by more than 10 points on any of the tests. This shows very clearly that although traditional instruction was also quite effective when compared with the innovative one, no treatment did not result in any substantial gains among the control students in the production test.



**Figure 9. The mean scores for individual learners in CtrlG on the production test**

	Range	Standard deviation
<b>ExG1 (N = 15)</b>		
<b>ProPreT</b>	17.0	5.22
<b>ProIPostT</b>	29.0	9.50
<b>ProDPostT</b>	34.0	10.67
<b>ExG2 (N = 16)</b>		
<b>ProPreT</b>	9.0	2.71
<b>ProIPostT</b>	23.0	8.17
<b>ProDPostT</b>	27.0	8.07
<b>CtrlG (N = 14)</b>		
<b>ProPreT</b>	6.0	1.82
<b>ProIPostT</b>	11.0	3.17
<b>ProDPostT</b>	6.0	1.90

**Table 3. Means, ranges and standard deviations for ExG1, ExG2 and CtrlG on the production test**

What merits closer consideration are the students who demonstrated improvement in the correct production of the final *-ed* ending from the pretest to the delayed posttest. What does inspire considerable enthusiasm is the fact that there were as many as seven (46.7%) learners in ExG1 and only three (18.75%) such subjects in ExG2 and two (14.3%) students in the control group. In addition, there were five (33.3%) students in ExG1 who scored no

less than 25 points on ProIPostT, three (18.75%) such learners in ExG2 and no one in the control group. What is more, almost the same students in ExG1, with the exception of S6, and only one student in ExG2 (i.e., S15) scored 25 points or more on ProDPostT.

The data listed in numerical form in Table 3 above shows that the range increased from the pretest to the delayed posttest in both experimental groups. In addition, the values of the SD kept increasing from ProPreT to ProDPostT in ExG1 with the difference amounting to 5.45. As for the ProPreT-ProDPostT difference in ExG2, it was also sizable, although remained approximately around the same level on ProIPostT when compared with ProDPostT. This demonstrates that the two experimental groups became quite diverse immediately after the treatment irrespective of the treatment they received. When it comes to the control learners, the range and the SD values were almost identical on the pretest and the delayed posttest, only to shoot up in the immediate posttesting, which can be taken as evidence that the group as a whole became more homogeneous in the longer term.

### **The Impact of the Intervention on the Development of Autonomy and Pronunciation Gains**

Another area that was a particular interest to the researcher was related to the relationship between the development of autonomy and pronunciation gains. Tables 4, 5 and 6 present the results of individual subjects from each group whose autonomy increased more than 60% on each administration of PAQ and those who scored more than 60% on the perception and production tests. As the data included in Table 4 clearly demonstrate, there were four (26.7%) learners (i.e, S1, S6, S7 and S9) in ExG1 whose growth in declared autonomy might have contributed to the mastery of the final *-ed* ending in view of the fact that they happened to score high immediately after the intervention and in the long run on the perception and production test. It should be noted, however, that in the case of S9 the initial level of autonomy was also pretty high (see Figure 1). In addition, as many as six (40%) students (i.e., S3, S4, S5, S11, S12 and S14) in this group scored high on PerIPostT and PerDPostT, with the exception of S14 who did so only on PerDPostT. Finally there was one student (i.e., S15) whose initial level of declared autonomy and the levels obtained immediately after the treatment did not result in greater pronunciation mastery. In fact this student obtained one of the lowest scores on all administrations of the perception and production test (see Figure 4 and Figure 7).



	Students														
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15
PrePAQ			✓	✓					✓						✓
IPostPAQ	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓
DPostPQA	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓		✓	
PerPreT															
PerIPostT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
PerDPostT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
ProPreT															
ProIPostT	✓					✓	✓		✓	✓					
ProDPostT	✓					✓	✓		✓	✓					

**Table 4. The relationship between autonomy and pronunciation gains for individual learners in ExG1 on PAQ, the perception and production test**

When it comes to the learners in ExG2, the analysis of the data included in Table 5 revealed that only in the case of two (12.5%) students (i.e., S4 and S15) did the increase in the declared autonomy possibly result in pronunciation gains on PerIPostT and PerDPostT as well as on ProIPostT (S4) and ProDPostT (S15). What is more, three (18.75%) subjects showed more autonomy on both postPAQs that might be ultimately related to the high scores obtained by these students on both postperception tests. Last but not least, one subject in this group (i.e., S10) despite being quite autonomous demonstrated no improvement on PerIPostT and PerDPostT as well as receiving one of the lowest scores on both ProIPostT and ProDPostT (see Figure 5 and Figure 8).

	Students															
	S	S	S	S	S	S	S	S	S	S1	S1	S1	S1	S1	S1	S1
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6
PrePAQ				✓						✓				✓		
IPostPAQ				✓					✓	✓			✓	✓	✓	
DPostPQ A				✓	✓				✓	✓			✓	✓	✓	
PerPreT												✓				
PerIPostT	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
PerDPost T	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓		✓	✓	✓
ProPreT																
ProIPostT				✓				✓				✓				
ProDPosT																✓

**Table 5. The relationship between autonomy and pronunciation gains for individual learners in ExG2 on PAQ, the perception and production test**

The situation looks different in the case of the control subjects, as is evidenced by the data included in Table 6. In the first place, only in the case of four students a more than 60% increase in autonomy was observed, and, what is more, on different administrations of PAQ. Secondly, only a few students scored more than 60% on the perception test and most of them did so in the long run. Finally, no one in this group obtained enough points on the production test to reach the level of more than 60%.

	Students													
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14
PrePAQ	✓								✓					
IPostPAQ	✓								✓					
DPostPQA							✓		✓				✓	
PerPreT								✓						
PerIPostT				✓				✓			✓		✓	
PerDPostT	✓	✓	✓		✓			✓			✓	✓	✓	
ProPreT														
ProIPostT														
ProDPostT														

**Table 6. The relationship between autonomy and pronunciation gains for individual learners in CtrlIG on PAQ, the perception and production test**

As can be seen from the discussion above, the innovative treatment in the form of the application of online resources not only did contribute to larger pronunciation gains but in fact produced more autonomous learners. What is of paramount importance, however, is the fact that the innovative instruction produced a link between autonomy and pronunciation improvement. It could be argued, for example, that such an effect was the direct outcome of the way the students were encouraged to work. It has to be remembered that the learners were provided with the opportunity to independently choose from a variety of activities, they could devote as much time as needed to practice the sound under study and repeat the exercises, or parts of them, as many times as they wanted. At the same time, however, the traditional approach also produced a few autonomous students who also scored high on pronunciation tests, in particular the perception one. This might indicate that it is premature to claim that traditional approaches and techniques to teach English pronunciation are ineffective and perhaps the best remedy for effective pronunciation instruction is a combination of “digital” and “analog” ways of teaching it, since this could allow teachers to develop autonomy among their students, and, at the same time, aid them in mastering English pronunciation.

What is more, teachers should encourage learners to become more autonomous by individualizing their learning. However, it is necessary to realize that if pronunciation sessions and activities are to be planned by the language teacher, they should be arranged in such a way as to create in students a sense of control over their own learning by offering

learners, for example, a set of exercises to choose from. Moreover, students should be provided with the opportunity to self-assess and reflect on their pronunciation progress. In order to accomplish these goals, teachers might ask their students to keep learners' logs in which they would comment on their approach to learning the target language pronunciation, since this experience promotes reflection, improves the quality of foreign language learning and is valued by students themselves (Pawlak, 2008). Last but not least, students should be encouraged to explore the web on their own and seek pronunciation activities, although, depending on the complexity of the structure, teachers might provide students with adequate resources (e.g., links to a variety of web sites to choose from). It has to be noted, however, that there is no guarantee that all students would be equally motivated or willing to take responsibility for their own pronunciation learning. In addition, there is also a danger that some students might actually use the opportunity to study English pronunciation independently of the teacher incorrectly.

### **Conclusions and Implications**

Computers have been present in foreign language education for several decades. Some techniques, such as language drills that underlay first CALL language applications, are still used today on nonprofit EFL/ESL websites in particular. Although such techniques have been questioned and considered ineffective by many researchers and language educators, the advances in computer technology (i.e., overall greater performance, lower costs, broadband access to the Internet etc.), have provided teachers with opportunities to adjust the new technology to constantly changing educational demands.

The results of the study show that the use of online resources had a beneficial effect on the development of learner autonomy and the mastery of the *-ed* sound of the simple past tense of regular English verbs among individual learners. What is more, such benefits are not only visible immediately after the experiment but also in the long run. Such results speak to the efficacy of digital technology, and provide a rationale for its use in the course of promotion of autonomy and pronunciation instruction. It has to be pointed out, however, that traditional instruction was also quite effective, since it produced some autonomous learners and the pronunciation gains were also visible, especially when compared with control students. This could be interpreted as indicating that teachers should use both traditional and innovative ways to facilitate learner autonomy and to teach English pronunciation. What is more, students should be encouraged to practice English pronunciation on their own and have the opportunity to choose from a variety of activities which best suit their needs or devote as

much time as they need to mastering pronunciation features. It needs to be remembered, though, that some students might be simply more predisposed towards learning the target language pronunciation than other learners. Last but not least, there is also a question concerning schools without self-access centers. An alternative solution is to download pronunciation materials and use them in classrooms without computers. A good example of such a web page is English Pronunciation (<http://international.ouc.bc.ca/pronunciation/>) which offers pronunciation workbooks in mp3 audio and the PDF files.

As regards the main strengths of the study, they are related to the fact that it was classroom-based and involved two intact classes performing online and traditional activities as part of their regularly scheduled instruction. Nonetheless, it also suffers from some limitations that should be addressed in future empirical investigations. These are connected with the relatively small number of participants, which reduces the validity of generalizing the findings and the limited duration of the intervention. Yet another problem concerns the completion of the pronunciation tests and PAQ which involved similar activities to be done in a relatively short time separating the three measures. This could have resulted in boredom and increased the likelihood of the occurrence of the practice effect.

It could be argued that further research into the use of online resources in pronunciation instruction is clearly necessary, which might involve the acquisition of other phonological features in a foreign language and include students at different levels of advancement, representing different ages and instructional settings, since all of these factors are likely to influence the outcomes of the instructional techniques and procedures. Even if such studies fail to provide ultimate answers regarding the usefulness of “digital” and “analog” pronunciation teaching, they are likely to provide important insights into how the two approaches can be combined to suit the needs of language students.

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### **Biodata**

Mariusz Kruk, PhD, is from Słupca, Poland. He studied Russian philology (Pedagogical University in Zielona Góra, Poland) and English philology (Adam Mickiewicz University in Kalisz, Poland). He has been working for a number of years as an elementary and senior high school teacher. His main interests include computer-assisted language learning, virtual worlds, learner autonomy and motivation.

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