Research Article

The Effects of Individual Voice Training on Pre-service Turkish Language Teachers' Speaking Performance[*]

B. Ümit Bozkurt[1]
*Abant İzzet
Baysal University*

Ali Erim[2]
*Abant İzzet
Baysal University*

Pınar Çelik-Demiray[3]
*Abant İzzet
Baysal University*

Abstract

This research investigates the effect of individual voice training on pre-service Turkish language teachers' speaking skills. The main claim in this research is that teachers' most significant teaching instrument is their voice and it needs to be trained. The research was based on the convergent parallel mixed method. The quantitative part was carried out according to the changing criterion model, which is a single subject design. In the qualitative part, the data were obtained from semi-structured interviews conducted before and after the intervention phase and the diaries kept throughout the process. Three pre-service Turkish language teachers, voluntarily participated in the study. First, the baseline level of the participants was determined, then the intervention phase was implemented accordingly (a five-week individual voice training). Each participant received one-hour individual voice training weekly, and three case evaluation sessions were conducted at intervals after each training session. At the end of five weeks, more than 90% improvement was recorded in all participants. Data analysis also revealed that their perceptions of self-efficacy increased and anxiety levels decreased in terms of public speaking. Finally, it is suggested that voice training need to be integrated into Turkish language teacher education program.

Keywords

Voice training • Phonological skills • Speaking • Pre-service Turkish language teachers • Teacher education

[1] **Correspondence to:** B. Ümit Bozkurt (PhD), Department of Turkish Language Education, Abant Izzet Baysal University, Bolu Turkey. Email: umitbozkurt@gmail.com

[2] Department of Music Education, Abant Izzet Baysal University, Bolu, Turkey. Email: erimalier@yahoo.com

[3] Department of Music Education, Abant Izzet Baysal University, Bolu, Turkey. Email: pinarcelik88@hotmail.com

Natural language speakers use spoken language, which is the primary language system, for various purposes. As defined by Jacobson (1960, pp. 354–358), language has referential, emotive, conative, poetic, or metalingual functions. These functions can prove to be effective or ineffective depending on the use of speaking skills. In this regard, the discourse features which distinguish it from written language make spoken language inevitable for daily language and work life. Speaking is a skill in both first and second language and, as Bygate (2003, p. 7) states, it is the perfect tool for social solidarity, social status, and professional progress.

The speaking process is the product of a mechanism related to linguistic and communicative competence and its different dimensions can be analyzed individually. Considering its physiological (organization of language in the brain and the use of speaking organs), linguistic (phonology, syntax, semantics, and pragmatics), and cognitive aspects (conceptualization, organize, idea production, understanding, and more), every component of speaking skill is a field of scientific inquiry on its own. Levelt (1993, p. 1) argues that a complex cognitive skill such as speaking should be analyzed by breaking it into its components. Therefore, in many research studies, it is not possible to investigate all aspects of speaking at the same time. This study aims to investigate the phonological component of the speaking skill.

Phonological operations require sub-operations, such as accurate use of respiration, correct pronunciation of phonemes, and use of prosody. Although each native speaker undergoes an acquisition process related to articulation and use of phonemes, effective and accurate speaking is not a skill that can develop and improve by itself. Effective and accurate use of voice requires a learning process and repetition. Anderson (1977, p. vi) explains this as follows: Effective use of voice is a skill that can be developed with awareness; it could be improved through observation, study, and most importantly by practice. Voice training will equip users with this awareness.

In some professions, the use of voice is more than a basic requirement of daily life. Since it influences cohesion and coherence, and creates the word's rhetorical power, it is a powerful tool for professional voice users (teachers, politicians, lawyers, and call-center employees, etc.). As professional voice users, teachers have to speak for long periods of time in front of communities and stand out as role models. They also need to preserve their voice health through the economical use of breath and voice exercises. Teachers are at the center of research on voice health. Therefore, equipping teachers with voice training will result in a noticeable difference in the exercise of their profession.

The contents of basic voice training include posture, breathing, phonation, resonance, articulation, intonation, and stress exercises. Speech speed, fluency, and voice quality are also targeted in this training (Ege, 2006; Gürhan, 2013; Özçimen, 2008; Selen, 1976). Posture training is aimed at ensuring that the body is in a balanced position and straight line

with a correct posture. One of the important conditions of effective respiration and speaking correctly is a correct posture (Özçimen, 2008, p. 157). Respiratory training involves diaphragmatic breathing technique. Through exercises specific to respiratory training, it is possible to restrain respiration in line with the sentence uttered and to inhale when uttering the second phrase having uttered the first one with an exhale. Such a training is the first step towards speech training (Selen, 1976, p. 97). The voice source for speaking is produced as the air in the lungs passes through the vocal cords in the larynx. This is called phonation (Ege, 2006, p. 6). Phonation is very important particularly because it takes place in the phase of correctly producing the voice. Use of the larynx, where vocal cords are placed, and the vocal folds with natural movements, without any contraction, during the production of voice is one of the important behaviors that is desired to be achieved through voice training exercises (Gürhan, 2013, p. 11). By means of the resonance exercises, on the other hand, the objective is to achieve growth of voice, produced by the vocal folds, echoing along the vocal tract and gain richness of resonance (Gürhan, 2013, pp. 12–13). As the voice passes through the mouth and nasal cavity, by means of the organs called articulators, such as the tongue, lips, teeth, and palate, various sounds of a language are produced. This process, that is shaping the articulators in different ways to produce the sounds in a language, is called articulation. There is a different articulation form and position for every sound in a language (Ege, 2006, p. 6). In order for the articulation to be clean and proper, the lips, the tongue and the mouth could be moved easily. With the aid of articulation, even a sound in the worst conditions can gain clarity. Finally, the functions of distinctive features of prosodic items are emphasized in the exercises of intonation, melody, and stress, which are the elements of the prosody of Turkish

Given that a teacher's fundamental instrument is their voice, basic voice training could be integrated into teacher education programs. However, teacher education programs in Turkey do not have such a training module. Studies on pre-service teachers reveal that most of them are not willing to do speaking-related activities, have problems in the use of voice, stress, articulation, and fluency, and the negative factors that influence their speech the most are anxiety and a negative perception of self-efficacy (Akkaya, 2012; Arslan, 2012, Başaran & Erdem, 2009; Oguz, 2009, 2015). It has been highlighted that there is a relationship between pre-service teachers' communication skills and self-efficacy and anxiety. In this regard, Temiz's study (2013) is noteworthy. This study showed that pre-service Turkish language teachers are more inclined to have speaking anxiety than pre-service music teachers. However, first language teachers are expected to have less speaking anxiety.

These indicators support the finding that voice training could be considered as a solution to language teachers' speaking problems. It is reported that skills-related problems negatively influence self-efficacy perceptions. Bandura (1994) also asserts that self-efficacy perception is fed from four resources: performance

accomplishments, vicarious experience, social persuasion, emotional states, and performance accomplishments are the most significant among these. These highlight the need for learning environments which lead pre-service teachers to have verbal-skills-related experiences and see model behaviors. This study predicts that this need can be met through voice training.

There are some studies on voice training in various professions and student groups. The majority of these focus on voice health and voice preservation programs as similar problems are experienced on this topic in various countries. These studies report that the occupation which uses voice most intensively is teaching, and teachers have more voice disorders than other professionals. Voice disorders can be regarded as one of the basic professional dangers and voice-related symptoms (hoarseness, voice loss, and loss of voice color) affect teaching quality and learning experiences to a great extent. Additionally, the common result of these studies is that teachers' voice problems mostly stem from the lack of voice training and preservation (Alves, Robazzi, Marziale, Felippe, & Romano, 2009; Bele, 2008; Chen, Chiang, Chung, Hsiao, & Hsiao, 2010; Costa, Prada, Roberts, & Cohen, 2012; Houtte, Claeys, Wuyts, & Lierde, 2010; Mattiske, Oates, & Greenwood, 1998; Roy et al., 2001). In terms of Turkey, Agduk (2004) and Sazak (2007) documented that teachers are not trained on how to use and preserve their voice.

The literature is unequivocal on the application of voice training and preservation programs in order to prevent intense voice use from damaging professionals' voices and it is suggested that this training should begin as early as pre-service teacher education. Experimental studies on teachers' voice disorders, voice preservation programs, and voice quality indicate that voice training could benefit voice quality (Bovo, Galceran, Petruccelli, & Hatzopoulos, 2007; Chan, 1994; Duffy, & Hazlett, 2004; Ilomäki, Laukkanen, Leppänen, & Vilkman, 2008; Pasa, Oates, & Dacakis, 2007; Timmermans, De Bodt, Wuyts, & Van de Heyning, 2005).

There is also research on the effects of voice training on speech voice (Aycan, 2012; Bele, Laukkanen, & Sipil, 2010; Gürhan, 2013; Stemple, Lee, D'Amico, & Pickup, 1994; Timmermans et al., 2011; Timmermans, Coveliers, Wuyts, & Van Looy, 2012). These studies include voice training programs, posture, breathing, phonation, resonance, and articulation exercises, as well as voice hygiene and preservation. In a study on whether voice training is effective in reducing stress problems in Turkish speech, Aycan (2012) recorded a significant increase in voice duration, intensity, and magnitude with no significant increase in pitch values. Bele, Laukkanen, and Sipil (2010) investigated the effect of a three-week voice-training program on journalism students' voice and found that the training yielded a noticeable success rate. In a study on solving six politicians' voice problems and the development of speaking

skills through one-hour voice training over eight weeks, Gürhan (2013) found that voice training has a positive effect on politicians' speaking skills. Stemple et al. (1994) worked with 35 adult women in order to improve voice production and at the end of a four-week training period recorded significant changes in voice volume, fluency, maximum speaking time, and frequency ranges. Timmermans et al. (2011) and Timmermans et al. (2012) added a 30-minute individual counseling session to their six-hour voice training for pre-service teachers and carried out two studies. They recorded a significant difference in some parameters, especially in women and observed that the individual counseling session resulted in a small difference. On the basis of this, they argue that voice training is effective and should be provided at the beginning of pre-service teacher education.

The above studies point out that voice training has a direct influence over voice health, speaking skills, and teacher self-efficacy. Therefore, having this professional training is highly important for a teacher and also for staying healthy. This highlights the quality of the training that language teachers receive. There is a dearth of research on the use of individual voice training for in-service and pre-service language teachers for improving effective speaking skills. In order to fill this gap, this study aims to investigate the effect of individual voice training on pre-service Turkish language teachers' speaking skills. It has been argued that this potential skill could turn into a powerful instrument within a short period.

Material and Methods

Design

The research was based on the convergent parallel mixed method design. ln this approach a researcher collects both quantitative and qualitative data, analyzes them separately and then compares the results, to see if the findings confirm or disconfirm each other (Cresswell, 2014, p. 219). In line with this approach, quantitative data were obtained from the measurements gathered through behavioral observation forms administered three times a week during the five-week voice training in the study. Qualitative data, on the other hand, were obtained through interviews with participants at the beginning and end of the training period, as well as the diaries the participants kept throughout the training. Then, the data analyzed separately were compared. In this framework, quantitative part was carried out according to single-subject research design. Single-subject designs, or single-case designs, investigate cause-effect relationships based on one or a few participants' data (Gravetter & Forzano, 2012, p. 396). Therefore, this design is selected on the basis of participant number and the cause-effect relationship between the dependent and independent variable is examined individually, without making a comparison between the participants. In brief,

These single-case designs are very useful for evaluating experimental control in studies that (a) include one or few participants; (b) require ongoing, repeated, and quantitative measures of individual students' progress across time; and (c) apply interventions that seek to improve students' performance of socially valid, directly observable, and measurable target behaviors (McDougall, Hawkins, Brady, & Jenkins., 2006, p. 2).

This study, which aims to improve pre-service language teachers' speaking skills via voice training, is based on a single subject *changing criterion design*. The changing criterion design aims to show the gradual effect of a series of applications on a behavior and is used when an already acquired behavior is targeted. In this respect, it is different from ABAB design and multiple baseline designs. In this model, it is not necessary to withdraw the training to determine the effect of the independent variable. Another important quality that distinguishes the changing criterion design from others is that the aim is to perform behavior change in a gradual manner (Tekin-Iftar, 2012, p. 255).

The changing criterion design comprises a series of stages whereby each target behavior level is determined by a specific criterion. The changing criterion design changes from one stage to another (Gravetter & Forzano, 2012, p. 422). There are two main stages in this model: the baseline level and the intervention phase. In order to reach the objective, the intervention phase is divided into sub-stages and there is a criterion for each sub-stage (Kratochwill, 1978, pp. 66–67; Tekin-Iftar, 2012, p. 255). In this process, behaviors are continually observed and recorded (Gravetter & Forzano, 2012, p. 422).

Participants

The participants were determined in face-to-face interviews with pre-service teachers who viewed themselves to be inadequate in terms of speaking skills. The participants, who were sophomore Turkish language education students, reported that they did not receive any prior training in voice or speaking skills, were anxious when talking in front of a crowd, had breath control problems, spoke faster or slower than necessary, could not use prosodic cues adequately and therefore felt inadequate in terms of speaking. From the pre-interviews three female participants around the age of 20 were selected randomly from the 25 volunteers. Since all the voluntary participants were female, no choice was made about gender. The heavy work schedule of the trainer, the individual courses with each participant, and the requirement to obtain consistent data for five weeks limited the number of possible participants. Finally, in interviews with participants, their health status was taken into consideration and care was taken to ensure that the participants had no physical impediments.

In order to ensure confidentiality of the participants, pseudonyms were used instead of real names.

Procedures and measurements related to the quantitative data

The study lasted five weeks and each participant received an hour of individual training weekly. During the process, both measurement and training sessions were recorded. Throughout this process, which comprised the baseline level and intervention phase, the following were carried out:

• Specifying a behavior that is already attained and could be incrementally improved or reduced (speaking skills à phonological skills)

• Determining the contents of a five-week voice training program (see Appendix 1)

• Obtaining consistent data on the baseline level related to the specified behavior. At this stage, the participants were asked to read a selected speaking text *(Atatürk's The Decennial Speech)*. During the speaking, the behavior observation form developed by Gürhan (2013) was used to determine the baseline levels.

The sub-behaviors targeted were as follows:

(i) Breathing timely and accurately, (ii) maintaining breath control, (iii) increasing voice in the right resonance regions, (iv) maintaining articulation in speech, (v) using the vocals accurately, (vi) initiation to speak (by taking right breath), (vii) making speech more effective through stress and intonation, (viii) having a good posture during speech, (ix) pursuing speech naturally and actively (non-monotonously), (x) keeping the speech speed within normal boundaries.

The participants' speech behaviors were rated on a five-point grading scale (see Appendix 2) and the numbers of week and measurement were specified.

In order to determine the stability of the collected data, the same operation was applied twice and the average of these three measurements was taken as the sub-criterion.

Based on the criterion of the first sub-stage (30%), the criteria for other sub-stages were determined. The sub-criteria for the intervention phase were determined as follows:

30% of the participant's behavior in the first sub-stage

50% in the second sub-stage

60% in the third sub-stage

70% in the fourth sub-stage

over 89% performance in the fifth sub-stage

The developmental rates that can be seen in the process have been determined considering the performance shown in the first phase. Then, at the end of each stage, it was checked whether the criteria determined for the next stages were still valid.

- Three sessions were carried out in order to obtain consistent data on the sub-criteria for each intervention phase. The following texts were used in these sessions: *Socrates' Defense, Brutus' Defense, Ways of Success in Life*.

- When the sub-criterion for each sub-stage was met, the following stage started.

- The main criterion was met in the fifth sub-stage and the study ended.

- In order to ensure reliability, 30% of the participants' text reading recordings were rated by another expert. The following formula was used in calculating reliability: *Reliability = number of agreement / agreement + number of disagreements* (Trochim, Donnelly, & Arora, 2015, p. 121). The reliability coefficient was found to be .88.

Collection and analysis of qualitative data

Interview and diary entries were used as qualitative data collection instruments. The participants wrote three diary entries, which were at the beginning, middle, and end of the training. In addition, through face-to-face semi structured interviews carried out before and after the training, qualitative data were obtained on the effectiveness of training on participants' speaking skills.

Semi-structured questions were created to monitor the reflection of the change took place in the participants in the quantitative data collection process. In this framework, the source of participants' motivation to be involved in the study, how they describe themselves in terms of speaking skills, what their expectations from this study are, and the changes they experienced in the process were in focus. Lastly, they were also asked how they would reflect this work in the future. The questions were formed by the agreement of all three researchers (Appendix C).

Qualitative data was analyzed thematically. At this stage, the data were organized, ideas and concepts were found and the themes were determined. Finally, possible explanations of the data were built (O'Connor, & Gibson, 2003). Investigator triangulation and method triangulation were used in the study for reliability and validity (Denzin, 1989, as cited in Speziale, Streubert, & Carpenter, 2011, p. 350). In the study, more than one researcher participated in the collection, analysis and interpretation of data and various data collection methods (observations, interviews and diaries) were employed. Sample analysis data can be seen in the appendix. (Appendix D)

Findings

In this section, findings are presented separately for each participant. First, quantitative data obtained through observational forms related to the participant and then qualitative data obtained through diaries and interviews will be presented respectively.

Findings related to Ayla's process

Consistent data obtained at the baseline level and every phase of the five-week intervention are demonstrated in graphics specific to single-subject design studies. Ayla's performance at the baseline level and the intervention phase is shown in Figure 1:
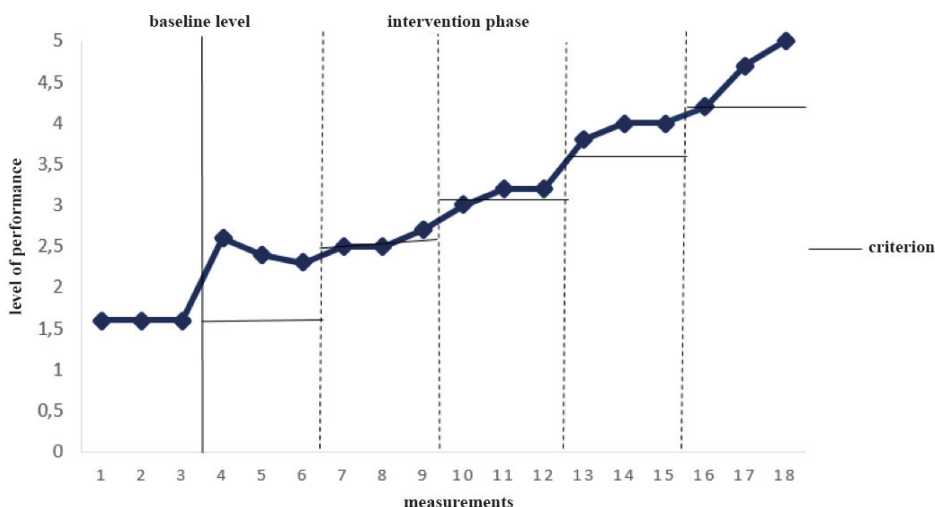

Figure 1. Ayla's performance at the baseline level and intervention phase.

Ayla could perform 30% of the objectives at the baseline level. For this reason, the sub-criterion for the first phase was determined to be 30%. Following the first training (at the end of the first sub-stage) the participant was unexpectedly able to perform 50% of the behaviors and outperformed the criterion. However, the sub-criterion for this phase was not altered in order to observe the participant's consistency and the criterion for the second phase was kept as 50%. As expected, the participant consistently met the 50% criterion at this phase. The criteria, which were 60% for the third week and 70% for the fourth week, were also satisfied. The final criterion for Ayla was to perform over 80% in the fifth week. As can be seen in the Figure, in the fifth phase the level of accomplishment of the target behaviors was 80% in the first measurement, 90% in the second measurement and 98% in the third measurement.

It was found that Ayla reached 97% of the objectives of *timely and accurate breathing,* 90% of *resonance, articulation, accurate use of the vocals, initiation to*

speak and *speech speed*. In the *stress and intonation, posture and performing natural, comfortable and non-monotonous speech* behaviors, 85% of the objectives were met.

The findings reveal that Ayla was able to perform the target behaviors incrementally over the process. By continuing the exercises, this performance can be sustained in the long term.

When Ayla's diaries and interview records were analyzed, a development process was encountered parallel to the quantitative findings. The theme that stands out about Ayla is "diaphragm breathing" and for her this training can be defined as a process from easy to difficult:

> I noticed that some words were very difficult to pronounce for me. (...) We started with breathing exercises. But it was harder than I expected. (...) At the end of the training, we did a text reading study for measurement. And the only thing I pay attention is diaphragm breathing and that my mouth be open. In this way, everything was easier and less exciting. (29.04.2016)

Ayla feels more secure and makes fewer mistakes as long as she breathes correctly during lessons and measurements. She noticed that she minimized phonetics related problems in the middle of the process and easily pronounced even a text she encountered for the first time. In the last lesson, correct breathing became spontaneous for her, being no more performed forcibly and constrainedly. She thought she eventually received the reward she deserved for her efforts:

> While I was reading, I always focused on the diaphragmatic breath. When I did so, I felt safe; I felt that my mistake rate would be very low, and indeed it was. (...) In a short period of time, these studies have taken me forward. I realized that the problems I experienced in word pronunciation were minimized, and I read comfortably and smoothly a text that I have read for the first time, as if I had read it beforehand. (15.05.2016)

> Now, diaphragm breathing is not something I do constrainedly, rather it comes out naturally and spontaneously. (...) The words came out of my mouth such smoothly and deeply that I thought I got the reward for our work. (03.06.2016)

At the interview that was held at the end of the process, Ayla stated through an example that she felt more effective, spoke in a more relaxed manner, pronounced some words more easily and felt more self-efficacious:

> On the final week of the training, there was a program and suddenly I had to be the presenter instead of the real presenter. It was a 30-page presentation. There were a lot of foreign words. However, I made use of the voice training that evening. How? First I did some breathing exercises; I managed my anxiety and then focused on diaphragm breath. My mouth was always open in the microphone and I completed the presentation with the help of breath control. Therefore, I view myself as more satisfactory than before, but it is only a five-week progress.

Findings related to Bahar's process

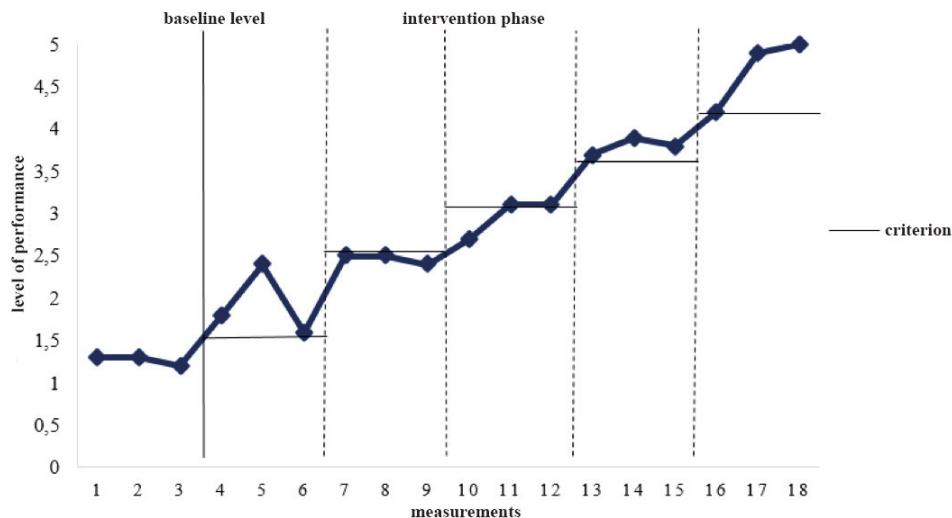Bahar's performance at the baseline level and the intervention phase can be seen in Figure 2:

Figure 2. Bahar's performance in the baseline level and intervention phase.

Bahar could perform 25% of the target behaviors at the baseline level. For this reason, the 30% sub-criterion was determined for the first sub-stage. The participant could perform 36%, 48% and 32% of the target behaviors respectively in the measurements following the first week. The criterion for the second sub-stage was 50% and this was achieved. Bahar could not meet the sub-criterion in the first measurement and consistent data were obtained in the following two measurements (60%). In the fourth and fifth sub-stages, the objectives of 70% and 80% were met. In the final measurement, the participant could perform 97% of the target behaviors.

At the end of the process, Bahar could achieve 96% of the *timely and accurate breathing* behavior, 90% of the *resonance, articulation, accurate use of the vocals, initiation to speak* and *speech speed* behaviors and 85% of the behavior of *pursuing the speech naturally and non-monotonously*.

The findings reveal that Bahar could develop the objectives incrementally during the process.

When Bahar's diaries and interview records were analyzed, it became clear that the themes standing out were "awareness about voice" and "being able to use sounds freely".

Bahar had more difficulty than she expected in the initial lessons. She also felt the tiredness of her voice:

I felt strongly that I was having difficulty and making mistakes while making the sounds. (...) I thought I would use use my voice freely at the end of the lesson; at least my voice would be tuned up; yet, on the contrary, my voice and my throat were tired and there was a slight pain. This pain passed in a short time. (01.05.2016)

Bahar speaks of the awareness she developed on voice in this process, as well as being able to breathe correctly and using her voice comfortably:

I certainly developed great awareness on voice. (...) Now, I can now make a sound more freely and my voice does not tremble when making high-pitched or low-pitched sounds. (…) I feel that my voice is now tuned up. I use my diaphragm when I breathe, and I do not do it intentionally or consciously, so I guess this is really settled. (17.05.2016)

When the lessons are over, in her diary, she emphasized making the sounds correctly and comfortably and how her posture straightened up.

I make sounds more comfortably, accurately and clearly. I realize my posture has improved. I notice and correct it when my posture is poor. (07.06.2017)

At the last interview, Bahar's views focused on phonological skills:

I had problems in stress and intonation. I think there is progress in this area.

Additionally, Bahar mentioned that her self-efficacy perception was positively influenced as long as she used what she learned:

If I use the exercises before making a speech, I know the result will be better. At least I guess it will be like this. If I perform breathing exercises, and practice some techniques, my breath quality will automatically increase. In this respect, I see the training as an opportunity; an opportunity if used, will change the obtained result. This comforts me psychologically and helps me feel efficient.

Bahar recounts a situation related to anxiety level through an anecdote:

I had an important presentation I was preparing for from the start of the term. I thought 'Everything will be all right if I am not nervous.' I mean, I thought I was going to be nervous. I did breath-balancing exercises and started the presentation. At the start of the presentation, I mean at the stage where I introduced what I was going to do, I was a little nervous. When I started the presentation, everything was fine and I was not anxious. The presentation lasted 35 minutes and it was the longest presentation I ever made. In brief, I had almost no anxiety. After the presentation, I thought this success was thanks to the training I received. This effect was the most noticeable effect I observed during the training.

Findings related to Ceren's process

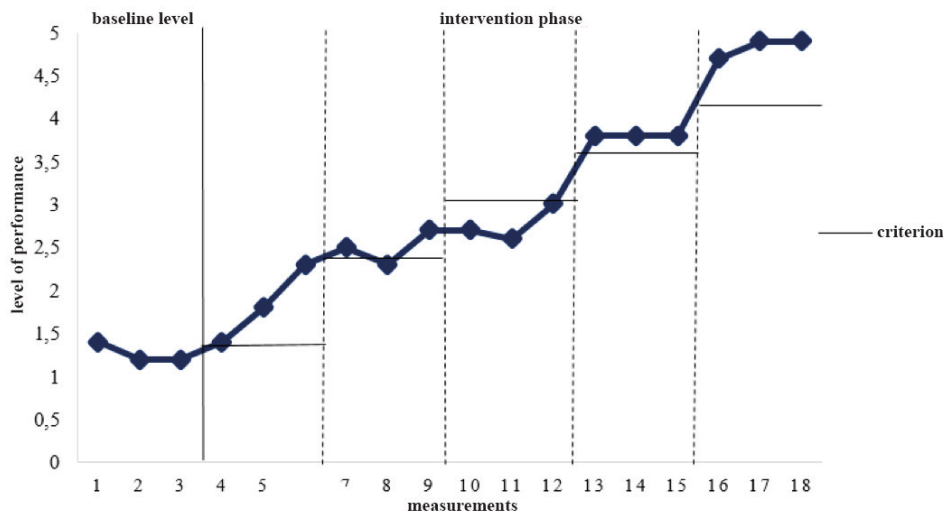Ceren's performance at the baseline level and the intervention phase is shown in Figure 3.

Figure 3. Ceren's performance at the baseline level and intervention phase.

Like Bahar, Ceren could perform 25% of the target behaviors. For this reason, the criterion for the first sub-stage was set as 30%. Following the training in the first stage, Ceren met 30% of the targets in the first measurement and 36% and 46% of the targets in the second and third measurements and approached the second sub-criterion. At the second sub-stage, the 50% criterion was performed. Ceren could not achieve the 60% criterion immediately and achieved it in the third measurement. The participant, who performed above the 70% sub-criterion in the fourth sub-stage, achieved nearly 100% performance after the 76% performance in the second measurement.

Ceren reached 98% of the target behaviors of *resonance, articulation, accurate use of the vocals, initiation to speak* and *the right posture.* Her rate of performing *stress-intonation and speech rate* behaviors was 90% and the rate of *pursuing the speech naturally, comfortably and non-monotonously* was 80%.

Like the other participants, Ceren improved the target behaviors incrementally. Ceren, who had a lower performance than the others in terms of achieving target behaviors in the baseline and the first intervention phase, reached the highest performance level at the end of the training.

In Ceren's reflections, the themes of "feeling oneself safe" and "relaxing" stand out. Ceren feels herself incompetent at the beginning of the process. Moreover, she mentions her concerns about speaking in front of a group.

I do not see myself good enough about addressing an audience. I have shortness of breath when I read some texts. In this process, I expect to be able to control myself and my breath better. (...) I hope that some of my worries and fears will be reduced to a minimum with this training. (28.04.2016)

As the lessons progress, she notices the development she made and the techniques she found challenging:

At the end of each lesson and during the measurements performed every week, I feel that I can read and speak more easily. (...) In some techniques, (speaking with an open soft palate) I have a hard time. But, I know that this is caused by not practising daily. (18.05.2016)

At the end of the process, she stated that the techniques she learned relieve her and give her confidence.

At the end of the lesson, what I observed in myself was that I could speak fluently, in a more relaxed, and accentuated manner. (...) I felt I could apply the techniques I learned to my daily life and measurements very comfortably. (...) In some of my expressions, I started out more confidently and relying on these techniques. (...) The breathing exercises in particular made it possible to speak/read a sentence from the beginning to the end on a single breath. This, of course, gave me more confidence. (...) The moment I have difficulty, I remember the techniques I learned and I feel relieved. (02.06.2016)

Ceren expressed the change in her speaking skills as follows:

The training definitely improved my speaking skills. First of all, I realized that it had an impact on my stress and intonation. I started to talk in a more emotive manner. Learning to use the diaphragm breath was also very useful; I now see the diaphragm as an aid.

Ceren mentioned that her anxiety almost disappeared.

Before the training, I was very anxious in some talks and presentations. I felt my breathing was insufficient. This training helped me overcome such anxieties. I had to make a presentation after the training and I saw that my anxiety almost disappeared in this presentation. I felt that I could express myself more easily. The vibrations in my voice and the stress in my body had almost disappeared. This is the most positive part of the training. I could overcome my concerns.

According to the quantitative findings, at the end of the voice training, the participants started to exhibit the targeted behaviors within a short period. This implies that as long as there are no physical and psychological barriers, voice can be transformed into a functional instrument. Qualitative findings, on the other hand, can be summarized under three headings:

All of the participants stated that the training influenced their speaking skills positively. They stated that they reduced their pronunciation problems to the minimum, that now the diaphragmatic breathing takes place naturally and spontaneously, that they made progress in intonation and stress, and that they started to speak more comfortably and fluently.

Participants stated that there were changes in their self-efficacy perceptions and anxiety levels. They said they then felt more competent, that the techniques they learned instilled confidence in them and relieved them, thus reduced their anxiety.

Finally, they referred to their role in the adequacy and permanence of this training. They reported that a five-week training was not enough, that the techniques they learned would be permanent as long as they are used, and that they needed to constantly improve themselves in this respect.

Conclusions and Discussion

The studies on the effects of voice training on speech voice (Aycan, 2012; Bele et al., 2010; Gürhan, 2013; Stemple et al., 1994; Timmermans et al., 2011; Timmermans et al., 2012) reported that voice training was beneficial for professional voice users. It is difficult to compare the results of these studies which differ in terms of training duration, participant numbers, and different measurement tools (such as perceptual tests used in otorhinolaryngology clinics, PRAAT software, speech observation form, etc.). Nevertheless, these research can be considered with the main lines with regards to the effects of voice training on speech voice.

Stemple et al. (1994) worked with 35 adult women in order to improve voice production. At the study, subjects in the experimental group (n = 12), the control group (n = 12) and a placebo group (n = 11) ranged in age from 21 to 26 years (mean 23.8 years). The control subjects and those in the placebo exercise program demonstrated no change in pre- and post-test measures. At the end of a four-week training period recorded significant changes in phonation volume, flow rate, maximum phonation time, and frequency range for the experimental group.

Bele et al. (2010) investigated the effect of a three-week vocal exercise program on journalism students' speaking voice and found that the training yielded a noticeable success rate. At this study, the participation of broadcast journalism students (n = 9) in a 10-lesson voice training course using the Kuukka exercises brought about statistically significant results in few acoustic variables.

In the study of Timmermans et al. (2011), 65 pre-service teachers participated in the six-hour audio training carried out as a group. At the study, trained subjects (n = 35) were able to expand their voice range and to alter their vocal behavior. Additionally they clearly explained what is good for the voice and what is not good for the voice, how the voice should be used, and which techniques needed to be used. Timmermans et al. (2012) added a 30-minute individual counseling session to their six-hour voice training for pre-service teachers (n = 81). This study's results are quite similar to the previous study: Trained subjects (n = 51) were able to expand their voice range and to alter vocal behavior. The individual counseling session resulted in a small difference.

Aycan (2012) investigated the effect of voice training on the correction of accent defects and found that voice training positively contributes to the correct use of breathing in pre-service Turkish language teachers (n = 29). In this study, the seven

words were focused (vazifen, Türk, istiklâlini, muhafaza, müdafaa, mevcudiyetinin and istikbalinin) and with the help of the data obtained from the PRAAT vocal analyze program the accent defects have been evaluated. At the end of the process they showed difference in performing accentuation (i.e. amplitude, duration and intensity) correctly.

In a study on solving six politicians' voice problems and the development of speaking skills through one-hour voice training over eight weeks, Gürhan (2013) found that voice training has a positive effect on politicians' speaking skills. The study concluded that breathing, posture, stress and intonation, resonance and articulation exercises each has an effect on the speech skill of the politicians. These studies show that voice training significantly improved the quality of voice, awareness of voice and phonological skills.

The present study yielded results parallel with the abovementioned research. The results show that individual voice training, which includes the components of breathing, posture, resonance, articulation, stress, and intonation, could improve voice, the phonological skills, and awareness of voice. Additionally qualitative data have shown that the training positively influenced pre-service Turkish language teachers' self-efficacy perceptions and helped reduce speaking anxiety.

In conclusion, it could be argued that integrating voice training into teacher education programs could fill a very important gap. In a future study, we aim at increasing the participant number in order to understand whether group voice training is effective.

References

Agduk, A. (2004). *Öğretmenlerin ses kullanım alışkanlıkları ile ses hijyeni ve ses hastalıkları hakkında bilgi düzeylerinin incelenmesi* [Investigation of teachers' voice usage habits and level of knowledge about voice hygiene and voice disorders] (Master's thesis, Anadolu University, Eskişehir, Turkey). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/

Akkaya, A. (2012). Öğretmen adaylarının konuşma sorunlarına ilişkin görüşleri [The opinions of teacher candidates about speech problems]. *Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 9*(20), 405–420.

Alves, L. A., Robazzi, M. L. C. C., Marziale, M. H. P., Felippe, A. C. N., & Romano, C. C. (2009). Health disorders and teachers' voices: A workers' health ıssue. *Rev Latino-am Enfermagem, 17*(4), 566–572.

Anderson, V. A. (1977). *Training the speaking voice*. London: Oxford University Press.

Arslan, A. (2012). Üniversite öğrencilerinin topluluk karşısında konuşma ile ilgili çeşitli görüşleri [University students' opinions about public speaking]. *Turkish Studies, 7*(3), 221–223.

Aycan, K. (2012). *Ses eğitimi yöntemlerinin Türkçe konuşma eğitimindeki vurgu kusurlarının düzeltilmesine etkisi* [The effects of vocal tranining methods on improvement of accent defects in speech education] (Doctoral dissertation, Gazi University. Ankara, Turkey). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/giris.jsp

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (pp. 71–81). New York, NY: Academic Press.

Başaran, M., & Erdem, İ. (2009). Öğretmen adaylarının güzel konuşma becerisi ile ilgili görüşleri üzerine bir araştırma [A research about views of teacher candidates on rhetorical speaking skill]. *Kastamonu Eğitim Dergisi, 17*(3), 743–754.

Bele, I., Laukkanen, A. M., & Sipil, L. (2010). Effects of a three-week vocal exercise program using the Finnish kuukka exercises on the speaking voice of Norwegian broadcast journalism students. *Logopedics Phoniatrics Vocology, 35*, 150–165.

Bele, V. I. (2008). The teacher's voice: Vocal training in teacher education. *Scandinavian Journal of Educational Research, 52*(1), 41–57.

Bovo, R., Galceran, M., Petruccelli, J., & Hatzopoulos, S. (2007). Vocal problems among teachers: Evaluation of a preventive voice program. *Journal of Voice, 12*, 705–722.

Bygte, M. (2003). *Speaking* (10th ed.). Oxford: Oxford University Press.

Chan, R. W. K. (1994). Does the voice improve with vocal hygiene education? A study of some instrumental voice measures in a group of kindergarten teachers. *Journal of Voice, 8*, 279–291.

Chen, S. H., Chiang, S. C., Chung, Y. M., Hsiao, L. C., & Hsiao, T. Y. (2010). Risk and effects of voice problems for teachers. *Journal of Voice, 24*(2), 183–192.

Costa, V., Prada, E., Roberts, A., & Cohen, S. (2012). Voice disorders in primary school teachers. *Journal of Voice, 26*(1), 69–76.

Cresswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods* (4th ed.). Thousand Oaks, CA: Sage Publications.

Duffy O. M., & Hazlett, D. (2004). The impact of preventive voice care programs for training teachers: A longitudinal study. *Journal of Voice, 18*, 63–70.

Ege, P. (2006). Farklı engel gruplarının iletişim özellikleri ve öğretmenlere öneriler [Communication features of different disability groups and suggestions to the teachers]. *Ankara Üniversitesi Eğitim Bilimleri Fakültesi Özel Eğitim Dergisi, 7*(2), 1–13.

Gravetter, F. J., & Forzano, L. B. (2012). *Research methods for the behavioral sciences* (4th ed.). Belmont, CA: Wadsworth.

Gürhan, D. (2013). *Ses eğitimi çalışmalarının politikacıların konuşma becerilerine etkisi* [The effect of voice training on the speaking skills of politicians] (Doctoral dissertation, Gazi University. Ankara, Turkey). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/giris.jsp

Houtte, E. V., Claeys, S., Wuyts, F., & Lierde, K. V. (2010). The impact of voice disorders among teacher: Vocal complaints, treatment-seeking behavior, knowledge of vocal care, and voice-related absenteeism. *Journal of Voice, 25*(5), 570–575.

Ilomäki, I., Laukkanen, A. M., Leppänen, K., & Vilkman, E. (2008). Effects of voice training and voice hygiene education on acoustic and perceptual speech parameters and self-reported vocal well-being in female teachers. *Logopedics Phoniatrics Vocology, 33*(2), 83–92.

Jacobson, R. (1960). Closing statement: Linguistics and poetics. In T. Sebeok (Ed.), *Style in language* (350–377). Cambridge, MA: MIT Press.

Kratochwill, T. R. (1978). Foundations of time-series research. In T. R. Kratochwill (Ed.), S*ingle subject research: Strategies for evaluating change* (pp. 1–100). New York, NY: Academic Press.

Levelt, W. J. M. (1993). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.

Mattiske, J. A., Oates, J. M., & Greenwood, K. M. (1998). Vocal problems among teachers: A review of prevalence, causes, prevention, and treatment. *Journal of Voice, 12*(4), 489–499.

McDougall, D., Hawkins, J., Brady, M., & Jenkins, A. (2006). Recent innovations in the changing criterion design: Implications for research and practice in special education. *The Journal of Special Education*, *40*(1), 2–15.

O'Connor, H., & Gibson, N. (2003). A step-by-step guide to qualitative data analysis. *Pimatisiwin: A Journal of Indigenous and Aboriginal Community Health, 1*(1), 63–90.

Oğuz, A. (2009). Öğretmen adaylarının sözlü ve yazılı anlatım becerilerine ilişkin öz yeterlik algıları [Trainee teachers' self-efficacy perceptions regarding their written and oral expression skills]. *Electronic Journal of Social Sciences, 8*(30), 18–42.

Oğuz, A. (2015). Öğretmen adaylarının sözlü anlatım öz yeterlik inançlarının incelenmesi [Investigation of prospective teachers' self-efficacy beliefs of oral expression]. *Turkish Studies, 10*(7), 765–780.

Özçimen, A. (2008). Etkili – anlaşılır konuşma eğitimi için gerekli temel faktörler [Basic factors required for a clear effective speak training]. *Selçuk Üniversitesi Ahmet Keleşoğlu Eğitim Fakültesi Dergisi, 26*, 155–166.

Pasa, G., Oates, J., & Dacakis, G. (2007). The relative effectiveness of vocal hygiene training and vocal function exercises in preventing voice disorders in primary school teachers. *Logopedics Phoniatrics Vocology, 32*(3), 128–140.

Roy, N., Gray, S. D., Simon, M., Dove, H., Corbin-Lewis, K., & Stemple, J. C. (2001). An evaluation of the effects of two treatment approaches for teachers with voice disorders a prospective randomized clinical trial. *Journal of Speech Language and Hearing Research, 44*, 286–296.

Sazak, N. (2007). İlköğretim okullarında görev yapan öğretmenlerin ses sağlığı ve korunmasına ilişkin görüşleri [Primary school teachers' views on voice health and protection]. *İnönü Üniversitesi Eğitim Fakültesi Dergisi*, *7*(13), 69–86.

Selen, N. (1976). Konuşma eğitimi [Speech training]. *Tiyatro Araştırmaları Dergisi, 7*(7), 97–101.

Speziale, H. S., Streubert, H. J., & Carpenter, D. R. (2011). *Qualitative research in nursing: Advancing the humanistic imperative*. Philadelphia: Lippincott Williams & Wilkins.

Stemple, J. C., Lee, L., D'Amico, B., & Pickup, B. (1994). Efficacy of vocal function exercises as a method of improving voice production. *Journal of Voice, 8*(3), 271–278.

Tekin-Iftar, E. (2012). Değişen ölçütler modeli [Changing criterion design]. In E. Tekin-Iftar (Ed.), *Eğitim ve davranış bilimlerinde tek-denekli araştırmalar* (pp. 255–274). Ankara, Turkey: Türk Psikologlar Derneği.

Temiz, E. (2013). Speech anxiety of music and Turkish language teacher candidates. *Journal of Educational and Instructional Studies in The World, 3*(2), 101–105.

Timmermans, B., Coveliers, Y., Meeus, W., Vandenabeele, F., Van Looy, L., & Wuyts, F. (2011). The effect of a short voice training program in future teachers. *Journal of Voice, 25*(4), 191–198.

Timmermans, B., Coveliers, Y., Wuyts, F. L., & Van Looy, L. (2012). Voice training in teacher education: The effect of adding an individualized microteaching session of 30 minutes to the regular 6-hour voice training program. *Journal of Voice, 26*(5), 669e1–e9.

Timmermans, B., De Bodt, M. S., Wuyts, F. L., & Van de Heyning, P. H. (2005). Analysis and evaluation of a voice-training program in future professional voice users. *Journal of Voice, 19*(2), 202–210.

Trochim, W., Donnelly, J. P., & Arora, K. (2015). *Research methods: The essential knowledge base*. Boston, MA: Cengage.

Acknowledgements

APPENDIX A- Individual Voice Training Program

Week 1

Introduction of the respiratory mechanism and the larynx structure

Respiration types and diaphragm respiration

Posture

Respiration exercises

Resonance work

Information on voice hygiene

Week 2

Respiration exercises

Voice exercises

Articulation exercises

Posture

Week 3

Respiration exercises

Voice exercises and resonance work

Articulation exercises

Stress and intonation work

Posture exercises

Week 4

Respiration exercises

Voice exercises and resonance work

Articulation exercises

Text exercise

Week 5

Respiration exercises

Voice exercises and resonance work

Articulation exercises

Stress and intonation exercises with text

APPENDIX B- Observation Form

Participant:

Date:

Session: Baseline level → ⓪   Intervention level → ① ② ③ ④ ⑤

Number of measurement: → ① ② ③

No	Behaviors to be measured	Performance level of the behavior				
		1 Very weak	2 Weak	3 Medium	4 Good	5 Very good
1	Breathing timely and accurately					
2	Maintaining respiratory control					
3	Increasing voice in the right resonance regions					
4	Maintaining articulation in speech					
5	Using the vocals accurately					
6	Initiation to speak (by taking right breath)					
7	Making the speech more effective through stress and intonation					
8	Having a good posture during the speech					
9	Pursuing speech naturally, comfortably and actively (non-monotonously)					
10	Keeping the speech speed within normal boundaries (125-175 words per minute)					

APPENDIX C- Qualitative Data Protocol

1) Interview framework

Source of motivation: Why did you participate in this study?

Self-definition of speaking skills:

(i) Did you receive speaking/diction/breathing lessons before?

(ii) Do you find yourself a satisfactory speaker?

(iii) Are you anxious when you are speaking? In what situations? How do you feel in such situations?

Expectations: How do you think this training will contribute to your speaking skills? What are your expectations?

Future projections: After this project ends, what should you do in order to integrate what you learnt into your life?

2) Diaries framework

(i) What is my current level?

(ii) What do I expect?

(iii) What did I experience?

(iv) How is it going?

(v) Did it work?

(vi) What changes occurred?

APPENDIX D- An Example Image of the Analysis of Qualitative Data

1. Günlük (29.04.2016)	2. Günlük (15.05.2016)	3. Günlük (03.06.2016)
Bundan önceki hafta hocalarımızın önünde bize verilen metinleri okuduk ve videoya alınmıştık. Okuduğum metin kolay bir metin değildi. Vurgu ve tonlama yaparak okumamız gerekiyordu. Eski birikimlerim ile bunu yapmaya çalıştım. Ayrıca **bazı kelimelerin telaffuzunda çok zorlandığımı fark ettim.** Bu hafta ise Pınar hocamızla ses eğitiminin ilk dersini yaptık. Nefes açma egzersizleri ile başladık. Ama **umduğumdan daha zordu.** Kırk dakikalık dersimizin 20-25 dakikalık bölümünü nefes egzersizleri yani diyafram nefesi için harcadık. Çok terlediğimi ve ciğerlerimin açıldığını hissediyorum. Biraz daha ilerledikçe daha iyi yapmaya başladım. Sonra Pınar hoca piyano başına geçti. Bu tarz bir şey benim ilk deneyimimdi. Yani Pınar hocanın bana söylediği "ma, me, mi, mo" ve "pah, peh, pih, poh" vb. rezonans çalışmalarını yaptık. Heyecanlıydım fakat hocam çabuk kavradığımı ve iyi gittiğimi söyleyerek beni rahatlatıyordu. Bazı egzersizleri ağız içinde, bazılarını gırtlaktan yapıyordum ve daima ağzım sabit bir şekilde açıktı ve yazı, metin okurken en önemlisi konuşurken ağzımı açmadığımı fark ettim. Dersin sonunda ölçüm için metin okuma çalışması yaptık. ==Ve dikkat ettiğim tek şey ağzımın açık olması ve diyafram nefesi.== **Her şey böyle daha kolay ve daha heyecansızdı.**	Bu haftaki dersimizde yine her hafta olduğu gibi ses egzersizleri yani diyafram nefesi ile başladık. Artık daha kolay ve iyi şekilde yapıyordum. Bu çalışmalarımızdan sonra Pınar hoca ile yine piyano başında rezonans çalışmaları yaptık. **Bu rezonans çalışmalarını ben günlük hayatımda da yapmaya başlamıştım.** Çünkü sadece dersle sınırlı kalmak yetmiyordu. ==Sürekli nefesimi, ağzımı açmaya çalıştım.== Bunun katkısını dersimizde gördüm. Daha kontrollü ve tok çıkıyordu ağzımdan sesler. Hocamız bu haftada bizim için tekerlemeler okuttu. İlk okumada biraz zorlansam da birkaç kez hızlı okunduğunda bu zorluk ortadan kalkıyordu. Ve bu tekerlemeleri piyano eşliğinde okuma çalışması yaptık. ==Ve okurken daima diyafram nefesine odaklandım.== **O zaman kendimi güvende ve hata oranımın çok az olacağı hissine kapılıyordum ki öyle de oluyor.** Tabi yine sesler açık, ağzımız açık ve diyafram nefesi unutulmadan yapıldı. **Kısa zamanda bu çalışmalar beni ileriye götürdü. Kelime telaffuzunda yaşadığım sorunları en aza indirdiğimi fark ettim** ve **ilk defa gördüğüm bir metni sanki önceden okumuş edası ile rahat ve düzgün okudum.** Kelimelerin ağzımdan net çıktığını ve ses tonumun toklaştığını yani kalınlaştığını farkettim. Bunları gördükçe diğer haftanın bir an önce gelmesini istiyor ve çalışmalarımızın üstüne biraz daha koymak istiyorum.	Beş haftalık olan çalışmamızın sonuna gelmiş bulunmaktayız. Keyifli, en önemlisi de bize katılan bilgiler ile sonuna geldik. Son çalışmamızı yine yaptık. Nefes açtık, rezonans çalıştık, ifadeli cümleler okuduk. ==**Artık diyafram nefesi zorla yaptığım bir şey**== değil olağan bir şekilde kendiliğinden ortaya çıkıyordu. Son ölçümleri yapmak için yine bir metin okuduk fakat bu metinde beş hafta boyunca öğrendiğimiz her şeyi uygulayacaktım. Metni okurken zorlanmadım. Tam tersine en kolay ve çabuk biten bir ölçümdü. Kelimeler ağzımdan böyle bir kaydı öyle bir tokluk ile çıktı ki çalışmamızın karşılığını aldığımı düşünüyorum. **Elbette yeterli bir zaman değil 5 hafta.** Fakat 5 haftada yol alabiliyorsam uzun bir zaman dilimi neler yapar düşünemiyorum.