

Improving Speaking Fluency Through 4/3/2 Technique and Self-Assessment

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Abstract

This quasi-experimental research aimed to examine if and to what extent the adaptation of the 4/3/2 technique and self-assessment contributes to the improvement of students' speaking fluency. 24 ninth graders ranging from 11 to 13 years old were separated randomly into control and experimental groups, each having 12 participants. The data were obtained by means of two tests (pre and post) and examined using a speaking fluency rubric. The calculation of rubric variables was done using the software Praat and Jwatcher and analyzed using the SPSS. After the implementation of the two techniques, fluency increased in both groups. However, the experimental group showed a significant difference compared to the control group. The use of the 4/3/2 evidenced the importance of planning, practicing, and repeating; and the self-assessment revealed the importance of feedback. Both techniques indicated to students that they could be autonomous in their learning, and they can search for different ways to reach their goals, making them the primary agent of their learning. The implications for teaching/learning and the limitations found during the study are discussed. Some recommendations for future research are presented. This research is addressed to EFL teachers who want to help students improve their spoken fluency.

Keywords: 4/3/2 technique; fluency; self-assessment; speaking; action research; Ecuador

Improving spoken fluency is considered one of the most challenging steps for students (Santos & Barcelos, 2018) because learning this skill involves cognitive and external factors such as emotions, motivation, and methodologies used by the teacher (Brown, 2015; Mota et al., 2014). A

qualitative study conducted by Santos et al. (2020) found that learners from the Los Ríos province present some negative emotions that might hinder their class participation, such as fear, lack of confidence, or shyness; consequently, they are not able to practice their oral skills. Other aspects that affect Ecuadorian learners to improve their fluency are the lack of opportunities to use the language outside the classroom, the lack of vocabulary, and how English is taught (Haboud, 2009). Briones and Ramírez (2011) pointed out that the classes are still substantially teacher-centered, and some teachers only consider the students with high levels resulting in no development of the language competence by the lower-level students.

Observations made for this study at a private school in Los Ríos Province, Ecuador, report low speaking performance in ninth graders when they tried to express themselves using English. This school offers eight hours of English per week and two different subjects in English such as science and social studies. Being in touch with English every day was not sufficient to make students develop their speaking skills. They were not capable of speaking fluently on topics they had already learned. They repeated many times the same information and constantly made long and silent pauses. Researchers (Asri & Muhtar, 2013; Moheidat & Baniabdelrahman, 2011; Molina & Briesmaster, 2017) have shown two useful techniques that might improve students' speaking fluency. The first one is called 4/3/2, repeating the same speech three different times in different durations. It is expected that they start their spoken practice within four minutes and the third practice lasts two minutes. The second technique that will be tested in this study is self-assessment. This includes students not only assessing their work but also reflecting on their learning.

Therefore, the present-day study aimed to verify if and to what extent the adaptation of the speaking technique 4/3/2 and self-assessment contribute to the improvement of ninth-grade students speaking fluency. Thus, this quasi-experimental study addressed the following research questions: 1) To what extent the 4/3/2 technique and self-assessment will improve speaking fluency?

Literature Review

Speaking

The definition of speaking is hard to find because many scholars define it differently (Howarth, 2001; Luoma, 2004). Howarth (2001) defined speaking as an exchange of utterances among people, which involves an authentic communication of ideas, information, or feelings. So speaking is considered cooperation between two or more individuals in shared time. Luoma (2004) described speaking as producing, receiving, and exchanging information. Additionally, she said that this skill is spontaneous and predictable since the meaning depends on the context, participants, and purpose. For that reason, developing this skill can be difficult for students. Organizing what to say is not an easy task (Sánchez, 2019), resulting in pressure on the students, which may increase their anxiety to speak (Akkakoson, 2016). What is similar in all these definitions is the importance of this skill to language learners because students evaluate their success on how they improved their speaking (Juhana, 2012).

Speaking is labeled a challenging skill to assess because people may focus on multiple factors and characteristics (Fulcher, 2003), such as fluency; for that reason, some researchers considered it less tangible to evaluate (Isaacs, 2016). Teachers face problems when assessing their students' speaking due to the forms it may have a) monolog, b) paired conversation, c) group discussion (Fan & Yan, 2020), and the different conditions it presents: it may be planned or spontaneous (Carter & McCarthy, 2015). Then, a diversity of assessment strategies has been adopted by

teachers, such as oral portfolios (Cronenberg, 2020), speaking scales and scoring (Hughes, 2011), and technological tools (Sánchez, 2019) to help them in this process.

In order to reduce the before mentioned problems, it is advisable to choose measurement tools such as rubrics which may make the scores more reliable (Bachman & Palmer, 1989). This present-day study adopted a rubric to create reliability to assess students' fluency at the beginning and the end of the research.

Fluency

The term fluency is connected to communication. Lennon (2000) defined fluency as "the rapid, smooth, accurate, lucid, and efficient translation of thought or communicative intention into language (p. 26)". So, fluency does not entail only speed but also social interaction. Fillmore (1979) postulated that fluency might be characterized by four different dimensions: a) talk with not many pauses in a specific range of time; b) talk with cohesion and coherence; c) adapt the speech to different contexts, and d) be creative in the language and create diverse situations.

Students misunderstand the concept of fluency because they think it is the ability to speak fast, so when they learn a language and speak rapidly, they think they are fluent in that language (Browne & Fulcher, 2017). Indeed, fluency is associated with speed, but not only this aspect needs to be considered. It is also related to rate; hesitations; repetitions; and corrections.

Research on second language fluency has been growing lately (Ginther et al., 2010; Lennon, 2000; Luoma, 2004); consequently, techniques to measure students' oral fluency have also appeared and developed. The most common aspects of speaking fluency measured by the studies are: First, rate, the number of syllables spoken by a minute. The bigger the number of syllables, the higher the fluency (Ginther et al., 2010). Second, hesitation, relates to the number of pauses done in a determined time (Riggenbach, 1991). These pauses may be due to a lack of vocabulary, time to reformulate the sentence, or just distraction (Park, 2016). There are two types of pauses: silent pauses (Riggenbach, 1991), pauses with no articulations (Park, 2016), which their length can categorize: a) micro pause – 0.2 second of silence, b) hesitation – 0.3 to 0.4 second of silence and c) unfilled pause – 0.5 second or greater of silence (Riggenbach, 1991) and filled pause, pauses with articulations such as 'Uhm,' 'er,' and 'mm. Third, repair, repetition of the same speech to make corrections because the speaker said something that is judged inappropriate, wrong, or irrelevant (Schegloff, 2007).

4/3/2 Technique

The 4/3/2 technique, or timed monologue, was created by Maurice (1983) to help students improve their speaking fluency and it has still been used by many authors (Sánchez, 2019; Yang, 2014) given its improvements in student learning. This technique invites students to give the same talk three different times; each time, the length of time (first 4 minutes, second, 3 minutes third 2 minutes) decreases to make students accelerate the way they speak, in other words, students repeat the same speech three different times with different durations. Boers (2014) demonstrated that when students have to use the same speech repeatedly, the function embeds these statements in their memory and makes them easily recoverable for future use. For this reason, Nation (1989) and Yang (2014) concluded that this technique is ideal for improving students' fluency because as Jin (2006) and Thai and Boers (2016) stated that an excellent way to increase verbal fluency is to use the same language many times.

Molina and Briesmaster (2017) applied this technique for 10 weeks with Chilean students and their results indicated that after implementing the 3/2/1 technique the students had a small improvement in their fluency in terms of words per minute (WPM) and pauses made. Yufriзал (2018) shared the same positive results, he found out that 4/3/2 helped 20 Indonesian students improve speaking accuracy and fluency during three speaking turns. However, Asri and Muhtar (2013) found out that their students had no significant improvement in their fluency because they were bored of repeating the same speech many times. In light of this finding, working only with this technique might be boring for the participants. So, we opted to use the self-assessment to complement the 4/3/2 in order to achieve significant results because we believe that when students visualize their mistakes and reflect on them, they became aware of their learning process

Many authors have worked with this technique to improve students' fluency in different settings (Asri & Muhtar, 2013; Boers, 2014; Yang, 2014). However, most of these studies focused on the university context, and few of them were in the school context. For example, in Ecuador, one study was conducted with teenagers and adults from a private language school in Guayaquil (Sánchez, 2019). Because of the lack of studies at the school level, this research tries to field this gap.

Self-Assessment

Self-assessment has gained much attention in the current language teaching context because it accentuates the independence and autonomy of the student during the learning practice (Moheidat & Baniabdelrahman, 2011; O'Malley & Valdez, 1996). This technique is the process that allows students to self-reflect on their learning. It does not mean that students give themselves grades (Moheidat and Baniabdelrahman, 2011), but make them reflect upon their performance, ability, or progress. This practice presents some beneficial features for the learners: It encourages responsibility (O'Malley & Valdez, 1996), engages learners in the learning (Paris & Ayres, 1994), and makes students aware of the learning process (Butler & Lee, 2010), so, consequently, it makes students feel more comfortable and confident to speak (Léger, 2009).

However, Bachman and Palmer (1989) have suggested that students tend to state what they cannot do or what is complex to do rather than what they can do most of the time. According to Nunan (1992), it is necessary to make the self-assessment process a habit in the class to avoid this situation. Also, Ross (2006) said that working with rubrics helps to deal with bias because these tools elucidate the targets for their work Phan and Phuong (2017) confirmed this hypothesis when they applied rubrics to their students to assess their speaking fluency. Ross (2006) and Phan and Phuong (2017) realized that the participants became more conscious about speaking in class and improved their oral fluency.

Methodology

Design

This study used a quasi-experimental pre-post design with one experimental group and one control group. According to Stratton (2019) pre-test and post-test design is “a form of quasi-experimental research that allows for uncomplicated assessment of an intervention applied to a group of study participants (p.574)”. The experiment was carried out during the summer 2020 semester over a period of five weeks with three weekly sessions. Due to the covid-19 situation, the classes were conducted on the Zoom platform.

Participants

This study was undertaken in a private school in Los Ríos Province, Ecuador where the author works. So, 24 ninth graders whose ages ranged between 11 and 13 were selected through convenience sampling. These students were separated randomly into a control group, 12 participants, and an experimental group, 12 participants. Among the participants in the experimental group, 66.7% were female, and 33.3% were male. In the control group, 50% were female, and 50% were male. All the participants did the Cambridge exam at the beginning of the year, pursuing the A2 level of English according to the Common European Framework of Reference for Languages (CEFR).

Description of the Intervention

The implementation of the 4/3/2 technique and self-assessment in this study lasted approximately five weeks; the classes were taught by the same instructor in both groups. However, only in the experimental group, students used the two techniques. First, the teacher scaffolded students with all the necessary information to write a movie review; each class approached a different goal of research. Next, the vocabulary was introduced through games (hangman, hot potato, Pictionary) and role-plays. Then the verb tenses were explained through real contexts to make sure students understood their uses. Finally, the genre movie review was presented through videos and later compared with other genres to check if students know its specific characteristics. After each activity, feedback was provided by the teacher to each student to show them their breakthroughs in learning.

The experimental group used the 4/3/2 in each class. First, they talked about a specific topic of the class for four minutes, second for three minutes, and finally for two minutes. At the end of the class, they performed a self-assessment. Each student received a rubric to make the self-assessment. When they finished filling out the rubric, they exposed their conclusions to all the students and in the end, they had to say what they could do to improve their learning. As this was the first-time students worked with rubrics and performed the self-assessment, the teacher trained students on how to do both processes: working with rubrics and self-assessment. Finally, the teacher provided feedback about the students' self-assessment. The author followed the same steps as the learning intervention of the experimental group, except for the use of the 4/3/2 technique and self-assessment. Table 1 portrays the schedule of the intervention.

Table 1. Intervention Schedule

Day	Group	
	Experimental	Control
1	Pretest	Pretest
2	Working with rubrics	Vocabulary
3	Explanation of the 4/3/2 and self-assessment	Vocabulary
4	Vocabulary/Practice 4/3/2 and self-assessment	Vocabulary
5	Vocabulary/Practice 4/3/2 and self-assessment	Grammar
6	Grammar/Practice 4/3/2 and self-assessment	Grammar
7	Grammar/Practice 4/3/2 and self-assessment	Grammar
8	Grammar/Practice 4/3/2 and self-assessment	Grammar
9	Movie Review/Practice 4/3/2 and self-assessment	Movie Review
10	Movie Review/Practice 4/3/2 and self-assessment	Movie Review
11	Movie Review/Practice 4/3/2 and self-assessment	Movie Review
12	Writing/Practice 4/3/2 and self-assessment	Writing
13	Writing/Practice 4/3/2 and self-assessment	Writing/
14	Writing/Practice 4/3/2 and self-assessment	Writing
15	Post Test	Post Test

Assessments and Measures

In this study, the independent variables were the self-assessment of students' recorded videos as well as the 4/3/2 technique, and the dependent variable was students' speaking fluency.

Pre and post-test. The two groups, experimental and control, recorded two videos that were used as a speaking test. The first video, the pretest (P1), was developed by the students before the implementation. Each student had five minutes to record a one-minute video about a movie review of their interest during class time. On the other hand, the last video, post-test (P2), was recorded at the end of the implementation. To obtain comparable speech samples from the participants and check their progress over the implementation, the same speaking task was used in the two tests (P1 and P2), in other words, the post-test video followed the same instructions/patterns as the pretest video. The speaking test was developed by the authors, and it was sent to two Brazilian English Language Ph.D. students to ensure credibility. Later, it was piloted on two learners.

The researcher used a rubric (Appendix 1), based on the studies of Bosker et al. (2013) and Sánchez (2019), to calculate the students speaking fluency improvement in the pre and post-test video. This rubric focused on three aspects of speaking fluency: rate, hesitations (breakdown), and repair. Table 2 shows an explanation of the elements of the rubric.

Table 2. Rubric Elements.

Aspect	No.	Acoustic measures	Calculation
Speed fluency	1	Mean length of syllables (MLS)	Log (spoken time / number of syllables)
Breakdown fluency	2	Number of silent pauses (NSP)	Number of silent pauses / spoken time
	2	Number of filled pauses (NFP)	Number of filled pauses / spoken time
Repair fluency	3	Number of repetitions (NR)	Number of repetitions / spoken time
	4	Number of corrections (NC)	Number of corrections / spoken time

Each aspect of the Basker et al. (2003)'s rubric is worth three points, totalizing a maximum of 12 points: a) rate; b) hesitations; c) repetitions; and d) corrections. The researcher assigned a grade from one to three, in each element of the rubric, according to each student's performance in the pre and posttest. For example, if the students made many corrections (four or more), they earned one point, if they made some corrections (from two or three), they earned two points, and, finally, if they made a few corrections (one or less), they earned three points. The final score was a sum of all four parts.

Ethical Considerations

This research followed the procedures of ethical considerations (Kaewkungwal & Adams, 2019). First, the researcher asked permission to work with the students in the school where the study took place. The permission was granted by the Director of the school. Later, the authors invited the whole ninth-graders class to participate in this study. The author explained the research's objective to the participants and got consent and authorization from the parents. The authors made sure to have only voluntary participation and protect the privacy and anonymity of the research participants. There were 35 students enrolled in the class, but some of them did not wish to participate and some parents did not allow their kids to participate. As the implementation was done during the afternoon, it was possible to have only voluntary participants. Finally, it was explained that the data collected will be used as a future study and will be published.

Data Analysis

Pre and Post-test. The researchers used the software Praat 6.1 to calculate the speed and breakdown fluency variables and the software JWatcher 1.0 to calculate the repair fluency variables in the pre-post video from the experimental and control group. Praat is a software used by many researchers to detect syllable nuclei to calculate speech rate (de Jong & Wempe, 2009; Lennon, 1990). JWatcher is software used to quantify behavior (Blumstein & Daniel, 2007). This software helped to create reliability in the results. With the exact number of times each descriptor of the rubric appeared, the final grades were calculated. These results could vary from 0 to 12 points. Finally, for validity purposes, both researchers analyzed the scores of each participant.

Later statistical analysis was performed using SPSS25. Paired t-tests were used to check for significant differences in pre-and post-test scores, and an independent t-test was used to compare the post-test results of the experimental group and control group. The effect size was calculated and reported as Cohen's d.

Results and Discussions

The authors run a paired t-test in the SPSS to compare the pre and posttest of the experimental and control group. Table 3 demonstrates that the experimental group showed a significant difference between pre-implementation (M= 7.83, SD= 1.26) and post-implementation (M= 11.00, SD= 1.12) scores when examining all the sample together; $t(11) = -9.19$ and $p = 0.00$ with a large impact ($d=2.65$). On the other hand, the control group showed a not significant difference between pre-implementation (M= 8.00, SD= 1.34) and post-implementation (M= 8.25, SD= 0.86) scores when examining all the sample together; $t(11) = -0.583$ and $p = 0.571$ with a small impact ($d=0.22$).

Table 3. Paired Sample T-test Results from Experimental Group and Control Group.

Experimental (N=12)						
Test	M	SD	Min	Max	Sig. (P)	Cohen's d
Pre	7.83	1.26	5	9	0.000	2.65
Post	11.00	1.12	9	12		
Control (N=12)						
Pre	8.00	1.34	5	10	0.571	0.22
Post	8.25	0.86	7	10		

Note: N= sample; M= mean; Sd= standard deviation; Sig (P): Significance; Cohen's d = effect size

The results suggest that the experimental group improved their speaking fluency by the end of the classes, which meets the research goal. An independent t-test was also carried out to compare the post-test results from the experimental (M = 11.00, SD = 1.12) and control group (M = 8.25, SD = 0.86). As demonstrated in Table 4, the outcomes show that there was a statistically significant difference because the p-value ($p = 0.000$) is less than 0.05; also, the alpha value is $d = 2.75$, which means that the implementation had a large effect.

Table 4. Experimental and Control Post-test.

Test	Experimental			Control			Significance	
	N=12	M	SD	N=12	M	SD	Sig. (P)	Cohen's d
Pre- Post		11.00	1.12		8.25	0.86	0.000	2.75

Note: N= sample M= mean Sd= standard deviation Sig (P): Significance Cohen's d = effect size

These results proved that both groups improved their speaking fluency, but the experimental group students had a substantial improvement compared to the control group. This was caused by the use of the two techniques. This study demonstrated that A2 level students could improve their speaking fluency through repetitions and self-assessment. So, 4/3/2 and self-assessment met the expectations demonstrated by other researchers (Boers, 2014; Sánchez, 2019; Yang, 2014).

Sánchez (2019) used the 4/3/2 technique with 20 participants from an English Language school. She obtained the same results. By the end of her implementation, her students improved their speaking fluency. Equally happened with Boers (2014) who worked with 10 adult students. However, the findings in this study go against Asri and Muhtar (2013) results on the use of the 4/3/2. According to these two authors, students did not have significant outcomes because they were bored, as this technique did not allow them to interact with other classmates. Asri and Muhtar (2013) might have had this problem because they worked with just one technique, contrary to this study, which combined the 4/3/2 with the self-assessment. Both techniques complemented each other. The 4/3/2 helped students improve their speaking fluency while the self-assessment helped them to reflect and visualize their improvements in order to do better next time.

The 4/3/2 is suitable for students of low English level because delivering the same speech three different times makes it easier to memorize and practice the vocabulary (Jin, 2006). Boers (2014) and Nation (1989) might confirm this idea through their discoveries on the efficiency of repetitions to increase faster speech. When the learners delivered the same speech three different times, they were memorizing and practicing the vocabulary (Jin, 2006). Each time they showed progress, which confirmed the findings on the efficiency of repetitions to increase faster speech (Boers, 2014; Nation, 1989; Thai & Boers, 2016). Feeling comfortable and knowing what to say decrease the number of pauses and corrections. Another aspect that helped with the positive results was the emotions. Santos and Barcelos (2018) affirmed that they influence the speaking time in class. So, teachers need to set up a good atmosphere for students and provide good techniques that help them overcome these negative emotions like shyness or fear. Feeling comfortable with what to say, since students repeated the same speech three times, might have made them decrease their fear of making mistakes while speaking, consequently, they became motivated, and it facilitated the improvement of fluency. Brown (2015) said that motivation is one emotional variable that should be considered in class.

On the other hand, self-assessment fostered reflection in the students, enhanced responsibility for their learning, engaged them to continue learning, and helped them feel confident to speak since they saw their small improvements (Léger, 2009; O'Malley & Valdez, 1996; Paris & Ayres, 1994). When students had the opportunity to see their mistakes, they became aware of their learning process. For example, they reflected on their English speaking, and gradually, they changed the aspects they judged they did wrong. During students' first time self-assessing they used to not think critically about their learning. They believed that everything was fine. As was mentioned by Bachman and Palmer (1989), learners tend to overestimate their performance. But after many

practices and with the help of the teacher they were able to do the process correctly searching for improvement.

Giving accurate and reliable self-assessments was not an easy process. Two different steps were considered in order to reach this goal. One was the use of a rubric; without them, students would have focused on different aspects that were not necessary (Ross, 2006). The rubrics played a critical role in helping students focus on what was significant according to the study's goal. Furthermore, they showed the participants the exact learning outcome that has been achieved, therefore the areas of strength and areas in need of improvement (Phan & Phuong, 2017). The second was the proper training; students did the self-assess process many times. Each time the researcher gave them proper feedback. So, in the end, the practice leads learners to the correct way of doing the whole process of self-assessing (Nunan, 1992).

Conclusion

As stated in the literature review, improving speaking fluency is one of the most challenging procedures for a learner because it involves many external factors. Thereby searching for different ways to help students depend on the teacher. This research has demonstrated two useful techniques, 4/3/2, and self-assessment, that teachers can apply together to help students improve their speaking fluency. The pretest and post-test results showed considerable learning improvement outcomes and consequently showed the importance of this study for learners and educators.

This study has some implications for language teaching, the 4/3/2 evidenced the importance of planning, practicing, and repeating; on the other side, the self-assessment revealed the importance of feedback. Both techniques indicated to students that they could be autonomous in their learning, and they can search for different ways to reach their goals as a learner, making them the primary agent of their learning.

Throughout the implementation of the pedagogical innovation, the authors encountered some limitations. The first one was the way the classes were conducted. It was the first-time students worked with the online modality. They might have some results influenced because of the tiredness of being connected all day. In the morning, they had their classes in school, and in the afternoon, the intervention. Secondly, as we worked with two different techniques, we cannot tell which one has helped students improve their speaking fluency. Therefore, it is recommended that future researchers use both techniques separately in order to check and then compare which one suits best. Also, we recommend choosing different English levels to check if they may have the same positive results.

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APPENDIX

Fluency Rubric USED BY THE TEACHER

Descriptors/ Score	1 point	2 points	3 points
Rate	The speaker speaks 40 to 79 words	The speaker speaks 80-119 words	The speaker speaks 120 or more
Hesitations	The speaker has many hesitations (4 or more hesitations)	The speaker has some noticeable hesitations (from 2-3) and short pauses (3 seconds or less)	The speaker has few noticeable hesitations (1 or less) and few short pauses
Repetitions	The speaker makes many repetitions (4 or more)	The speaker makes some repetitions (from 2-3)	The speaker makes a few repetitions (1 or less)
Corrections	The speaker makes many corrections (4 or more)	The speaker makes some corrections (from 2-3)	The speaker makes a few corrections (1 or less)
Total:			

Fluency Level

Poor Fluency Level	1 -4
Medium Fluency Level	5-8
High Fluency Level	9-12