



From Reading Aloud to Peer Interaction: The Effect of Oral Reading on EFL Proficiency

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The present study considered the effects of oral reading on the English proficiency of EFL learners in the context of restricted real-life oral English communication. This case study was conducted in a university in Pyongyang, DPR of Korea. Over six months, EFL students were encouraged to read aloud task-related English materials before peer interactions and other speaking activities in the classroom. Audio materials were recommended as a model of correct and natural reading for oral reading practice. Sufficient oral reading practice proved to have prepared the learners to use the language easily and naturally in their follow-up peer interactions. Out of the classroom, daily oral reading practice was promoted, which provided learners with frequent oral exposure to a range of English texts. The participants appeared to be highly motivated and showed swift progress in oral performance. The findings imply that oral reading serves as an essential scaffold for peer interactions, increasing EFL learners' accuracy and fluency and boosting confidence in oral production.

Keywords: oral reading, peer interaction, fluency, accuracy, confidence

Introduction

Currently Korean EFL learners in the DPR of Korea have few chances to meet native speakers of English, although once they graduate they are likely to use English as a lingua franca with other non-native speakers for such purposes as business, tourism, and sports exchanges. Because of this lack of authentic practice, they often find it hard to speak fluently even when they have a wide vocabulary and almost all the essentials of English grammar. Furthermore, differences between Korean and English prosodic features (i.e., stress, intonation, and timing), pose a big challenge to them with English listening, reading aloud, and speaking. For example, word stress presents a big challenge to Korean speakers whose mother tongue has a different system in which most syllables are evenly stressed or timed. Given the that English is a stress-timed language, students' speech can sound unintelligible in English as a result of first language (L1) transfer.

This paper considers the role of well-controlled oral reading practice in obtaining fluency in peer interaction. The oral reading practice has two goals: firstly, accommodating learners to English prosody and secondly developing automaticity in the use of English. Automaticity encourages language fluency and can be achieved by using English as frequently as possible. The oral reading practice is conducted in three stages with multiple approaches from fully-controlled to semi-controlled to free practice.

The research questions we aimed to answer in the study are:

- 1) How could oral reading lead to confidence and language ability during peer interaction?
- 2) Do students who have practiced reading aloud show gains in the three areas of fluency, accuracy, and confidence?

Literature Review

The tradition of qualitative research in applied linguistics is well established. As explained by Groom and Littlemore (2011), it “tends to answer questions about *how* and *why* rather than *what*” (p. 61), and it is also said to “provide rich and varied data that show new or interesting light on the phenomenon under investigation” (p. 61).

Beliefs about how a second language (L2) is acquired have moved through many phases over the decades and for each phase language teachers have responded by trying out new ways of teaching. Loewen (2015) refers to traditional views, saying that “the goal of L2 instruction ...[meant] ... the acquisition of linguistic knowledge” which contrast with current views of “many L2 researchers, teachers and learners ... that the ability to use the L2 to communicate with other speakers of the language is just as important” (p. 18). For learners in countries where English is not the main language, the “other speakers” referred to by Loewen include people who are, like the learners, using it as a common language with non-native speakers. As Lam (2012) points out in the introduction to her Hong Kong based study, “developing learners’ oral skills is particularly daunting to English as a foreign language (EFL) teachers in Asia, where English does not have immediate social and communicative functions within the community where it is learned and speaking is often neglected in EFL classrooms” (p. 127).

From time to time a new way of teaching may include something traditional, as could be said of some forms of scaffolding. The term ‘scaffolding’ in language classrooms started as a metaphor but is now so commonly used that its metaphorical origin is often forgotten. However, picturing an actual scaffold is a good reminder of the word’s meaning, namely as a support which will be removed once the building (learning) is established. Liu and Berger (2015) point out that “scaffolding may be realised through repetition, recasting and/or discussion of a particular point or linguistic structure” (p. 269).

How might this idea of repetition be balanced in a language class with the more recent idea of students talking with other students (i.e., peer interaction)? In their examination of peer interaction in language classes, Philp, Adams, and Iwashita (2014) highlight a number of purposes and methods for encouraging student-student talk, one purpose being its affective value. If students are to use their new language confidently in the future in authentic out-of-class contexts, teachers can provide classroom tasks that build up this confidence.

The history of oral reading is described by Rasinski (2006), who points out that previous studies have been limited to reading fluency in ESL contexts. Devaney’s (2012) case study of High School ESL learners includes the recommendation that “studies about oral reading fluency in EFL (English as a Foreign Language) and other languages may be used to add to the depth of the research” (pp. 5-6).

Research into classroom communication is being carried out in various parts of the world. Farrell’s (2004) edited investigation of Asian classrooms suggests ways in which research-based studies can help us understand the dynamics of classroom communication. In his book, researchers from different countries look for answers to questions such as what patterns emerge in group work (from Japan), how teachers can make classroom communication more effective (from Thailand), and the broad question of why we should reflect on classroom communication (from Hong Kong). Groom and Littlemore (2011) mention a number of ways of collecting qualitative data: through interviews, introspection (including think-aloud and diary studies), case studies, and non-participant observation. They then offer advice on analysing the data collected, including conversational analysis.

Method

The purpose of this present study is to see how the activity of reading aloud can combine with a focus on the function or meaning of the words through a range of activities which encourage meaningful communication between students.

At the same time as choral reading was continuing in class, samples of peer interaction were collected over a period of six months to see how students' language developed, and this was done in relation to the amount and quality of their language use. Specifically, we counted:

1. the number of exchanges over a 45-minute period when students were set tasks to complete in pairs and groups.
2. the range of language functions used.

In addition, 57 students were interviewed for their impressions of how their speaking was improving in terms of their willingness to communicate.

As Lam (2012) points out in the introduction to her Hong Kong based study, "developing learners' oral skill is particularly daunting to English as a foreign language (EFL) teachers in Asia, where English does not have immediate social and communicative functions within the community where it is learned and speaking is often neglected in EFL classrooms" (p. 127).

Participants

Participants of this study included two classes of tertiary-level students of social science. They were all non-English majors. They had already studied for more than 5 years. Aged 17 to 20, half of them were males, the other half females. It was found through interviews that oral reading had not been a regular practice for them, though they had to do it frequently in middle school. Most of them thought that reading aloud is a typical activity of English beginners to practice English pronunciation and intonation.

Materials

It is important to choose the appropriate materials for speaking-oriented oral reading practice. It was suggested that the materials in a given speaking task should be consistent with the learners' level of English proficiency.

Simplified materials

Simplified materials, or graded readers such as Penguin readers, have proved to be useful for EFL learners, who have limited exposure to real oral communication. These types of materials provide them with a good understanding of how to express a complicated idea or feeling by dint of easy words and expressions. Although our Korean EFL learners have sufficient amounts of vocabulary and grammar to read and comprehend any English book, they usually find it difficult to express a simple thought or feeling using high-frequency words readily and efficiently. Regular spoken communication with English natives could be a solution to the problem, but this is unrealistic. In our EFL environment, it can be substituted by simplified materials retold by native writers.

Other resources

Occasionally texts, dialogues, and monologues from course books were also used for oral reading practice as long as they matched the assigned speaking tasks and didn't go far beyond the participants'

level of English. The main purpose of using them was to borrow ideas, words, and structures from the texts to complete a certain speaking task.

The study revealed that materials difficult for EFL learners to read and understand may not be suitable for speaking-oriented oral reading practice, for the learners are distracted by lots of unfamiliar words and structures in reading.

Procedure

The research began with the survey of the participants' attitudes toward and habits of EFL oral reading through questionnaires and interviews. The results of the questionnaires and interviews were analyzed to find out whether there is an inter-relationship between the habit or amount of oral reading in and outside the EFL classroom and the learner's proficiency, particularly in terms of speaking fluency.

The questionnaire consisted of 25 closed questions. The results of the survey showed that all of them regard oral reading as an essential part of practice for acquiring basic articulation skills. It appeared that the students whose English speaking is comparatively fluent are normally more engaged in reading English materials aloud than those who are less fluent. The average time the former spent on oral reading was much longer than that of the latter, who preferred silent reading.

According to the interviews with some EFL teachers, it was also known that, in the past, most of them would assign their students oral reading tasks mainly for the purpose of memorizing language features of a text, rarely presenting feedback on students' phonological accuracy.

The survey also showed not many of them thought about oral reading from the perspective of improving the fluency of speaking. However, it was unanimously agreed that they need to use English as often as possible to achieve high language proficiency. The analysis revealed that 8 students (17%) were practicing oral reading on a regular basis for about 20 minutes a day, 33 (70.2%) sometimes for about 10 minutes, and the rest 6 (12.8%) rarely and for less than 5 minutes. In classroom observations, it was found that oral reading had not been a regular performance in normal EFL classes. To be more specific, oral reading practice was not incorporated into peer interactions and other speaking practices.

It is generally accepted that EFL learners need sustained input of language and language skills in order to increase and maintain the proficiency of English. The input may vary depending on their mode, whether it be visual, audio, or oral. The type of input for a speech act should be oral, and the channel of oral input is tridimensional, using the eyes, ears, and mouth.

The principle underlying the current study is that in a non-English speaking environment, frequent reading-aloud practice is a unique way of obtaining oral inputs, for this will train all necessary muscles of organs of speech to produce English sounds readily and naturally, building up confidence about English speaking.

In the study, oral reading practice comprised three stages: fully-controlled, semi-controlled, and free practice.

Fully-controlled practice of oral reading

The fully-controlled oral reading practice aimed at building the learners' phonological awareness and phonics, and thus, building a firm base for the accurate production of the phonological features, especially the prosodic features of English (e.g., word stress, intonation, and sound changes in connected speech). The practice also comprised spoken English grammar (e.g., ellipsis, two-step questions) such as lexical phrases (e.g., *back in sec. see you later*) and adjacency pairs (*D'you fancy a coffee?! Yes, please* or *No, thank you*), and conversational strategies (Harmer, 2015, p. 384-385).

The teacher was a model reader. In case audio files were available, it was preferable to use them as a model. At this stage, students were required to underline problematic phonemes or key words (content words) and structures so that their oral reading could be focus-based. The participants were also instructed to take notice that the key words and structures were to be used in a follow-up peer interaction at the

semi-controlled stage. Below is a sample audio transcript for this stage:

After July came the cold winds and the grey skies of August. My family had all their usual illnesses. My mother and I had bad colds. My brother Leslie had a problem with his ears. My sister Margo's spots were worse than ever. Only my oldest brother, Larry, was healthy, but he found the rest of us very difficult to live with. ...

'You are,' Larry said. 'We need sunshine... a country where we can grow.'

'Yes dear, that's good idea,' Mother answered, not really listening.

'George says Corfu's wonderful. Why don't we go there?'

'If you like, dear.' It was important to keep Larry happy.

(An extract from Gerald Durrell's '*My family and other animals*' retold by Jocelyn Potter and Andy Hopkins. Level 3, Penguin readers, 2008)

The practice mainly included (1) the practice of lengthening long vowels (e.g., caught, seat) or diphthongs (e.g., coat, make), (2) the practice of word stress and sound changes in connected speech, (3) the practice of reading aloud with common expressions, and (4) the practice of using spoken language features (e.g., you know, I mean) while reading aloud.

One of the effective ways of controlling oral reading is through paired or assisted reading. In paired or assisted reading, students take turns reading a portion of text aloud to each other and give each other feedback (see Rasinski, Blachowicz, & Lems, 2006, p. 31)

In fully-controlled reading, the participants are supposed to meet the criteria, indicators of fluency; that is, the oral reading has to be accurate, reasonably fast, and it has to be done with expression.

Semi-controlled practice

The semi-controlled practice focused more on meaning and communication. In this study, semi-controlled practice was conducted in a way that the learners carried out various follow-up speaking tasks based on the oral reading. It means that every oral reading activity was followed by various kinds of speaking practice, including peer interaction. Typical follow-up speaking practice included immediate oral reproduction of what the participants had read aloud (repeated three times), peer interactions, and role-plays. An example is as follows:

Using a story. The students were assigned to read a certain extract from a story aloud multiple times. Then they were required to work with partners reproducing the story using key words and structures that they had practiced during the fully-controlled oral reading. Every student was required to repeat the story three times, changing partners each time. By the third time, their speaking became more fluent.

Here is a sample of a participant's oral reproduction:

It was time after July. And there were the cold winds. The sky of August was grey. All his family had all illness. His mother and he had bad cold. His brother (*I don't remember*) had a problem with ears. And his sister Mar (*I don't remember clearly*) had spots and it was worse. Only his oldest brother Larry was healthy. ...

After the pair work, they were asked to role play the story. For the role play in this example, the participants were divided into groups of three. For this group work, one was a narrator, the other two played the characters from the extract: mother and Larry. Below is an extract from the story followed by an example of a role play enacted by the students.

(An extract)

After July came the cold winds and the grey skies of August. My family had all their usual illnesses. My mother and I had bad colds. My brother Leslie had a problem with his ears. My sister Margo's spots were worse than ever. Only my oldest brother, Larry, was healthy, but he found the rest of us very difficult to live with.

'Why do we stay in England in this weather?' he asked Mother. 'They're ill and you're looking older every day.'

'I'm not,' Mother replied. She was reading at the time.

'You are,' Larry said. 'We need sunshine... a country where we can grow.'

'Yes dear, that's good idea,' Mother answered, not really listening.

'George says Corfu's wonderful. Why don't we go there?'

'If you like, dear.' It was important to keep Larry happy.

'When?' asked Larry with surprise.

Mother realized her mistake and put down her book. 'Perhaps you can go first and look at the place.' She said cleverly. 'If it's nice, we can all follow.'

Larry looked at her. 'You said that last time. I waited in Spain for two months and you didn't come. No – if we're going to Greece, let's go together.'

'But I've only just bought this house!' Mother answered.

'Sell it again then!'

'That's stupid, dear,' said Mother. 'I can't do that.'

So we sold the house and ran from the English summer.

We travelled by train with our clothes and our most important belongings: Mother's cook books, Leslies' guns, something for Margo's spots, Larry's books, my favorite insects and Roger, my dog.

(261 words)

(Extracted from Gerald Durrell's *'My family and other animals'*, retold by Jocelyn Potter and Andy Hopkins. Level 3, Penguin readers, 2008)

(An example of students' role play)

S1: Here is a story of one family. There are 5 people in the family: 4 children and their mother. It is autumn and getting cold. Some of the family members are not fine, mother and one child have got a bad cold, another brother has a ear problem, the sister has a skin problem. Only one child, the oldest, is healthy. Mother and the oldest brother are discussing about moving their place.

S2: Mother, why are we in England in this weather? Brothers and sister are ill and you are looking older day by day.'

S3: I'm not.

S2: Yes, you are, mum. We need sunshine. Let's move to a country where we can grow.'

S3: That's a good idea

S2: Why don't we go to Corfu? It's wonderful.

Using a list of questions as a prompt for peer interaction. Peer interaction was the main follow-up activity for oral reading in this study. Two learners, who were well aware of the contents and language features of the material they had read aloud, would interact with each other in a Q&A (question and answer) session which was followed by a feedback session.

For peer interaction, the teacher asked students to make a list of questions after they were finished reading aloud. The students then walked around the classroom exchanging the lists and had a Q&A session. Having done one session, they were supposed to repeat it with two other peers, as exemplified below:

S1: What did you read?

S2: It's the story about a boy. I think it's a boy. His name is Larry.

S1: When did the story happen?

S2: It happened after July, in August.

S1: How big is his family?

S2: His family has 5 people, mother, two brothers, one sister and the writer/speaker.

S1: ...

In peer interactions, learners were also encouraged to focus on using appropriate conversational strategies such as turn-taking, giving reactions, etc.

Free practice

The aim of the free oral reading activity was to help EFL learners build up a habit of performing oral reading on a normal basis so as to achieve automaticity in speaking. To this end, free oral reading was promoted out of class as well as in class. It was done through a mixture of homework and class speaking activities. The learners were assigned homework of reading aloud self-selected materials related to the topic of the next class. While doing their oral reading, they were supposed to prepare a questionnaire or a list of questions on the materials they read. Back in the classroom, they exchanged their questionnaires or the lists of questions that they had prepared at home.

Using modern technology: cell phones. In our study, the teacher encouraged the participants to use cell phones to record their own or peer's performance of oral reading. Using cell phones appeared to be effective for self/peer assessment and self/peer correction. The cell phones were also used to record the teacher's model reading.

The participants were also advised to use this technology to monitor their progress after school and at home performing oral reading. This appeared to motivate the participants in a great way as well.

Multiple approaches. Various approaches were applied in the study:

- Repeating while listening to a recording: This was done in the way that the learner wore an earphone, played a recording, and spoke out after the recording which she/he had already got familiar with through previous oral reading practice. It was found challenging for the learners, but proved to be effective in improving fluency and articulation and in boosting confidence. In this case, video materials were preferable, for the learner can see the mouth movement of a speaker in person.
- Role playing: As noted above, learners can recast the materials they have read aloud in a role play. In this study, the learners were well-motivated to prepare and stage a role play after having sufficient oral reading practice. Filming their performance with a cell phone and showing it to another class motivated the learners further.
- Making a speech or a presentation based on the materials they read aloud: Another way of practicing came from presentations. In the study, we assigned the learners to prepare one-minute presentations and deliver them at the beginning of every class. Here, timing their presentation was essential from the perspective of giving chances to more students and posing more challenges to presenters.
- Interviewing: Based on the oral readings, learners prepared a list of questions about what they had read and exchanged the lists with each other. Then they started interviewing the list submitters. In the course of this kind of Q&A session, they also developed conversation strategies to make peer interaction worthwhile.

Results

The study revealed that there were apparent gains in three areas—fluency, accuracy, and confidence—suggesting a close interrelationship between reading aloud and fluent speaking.

For the purpose of the analysis, the participants were classified into four groups according to their levels of English proficiency: group A of high level, group B of moderate level, group C of low level, and group D with the lowest level proficiency. During the six months, formative assessments were carried out every month to evaluate the progress with the fluency and accuracy of the participants. The overall results revealed the effect of oral reading on EFL learners’ speaking and their performance in peer interaction.

Figure 1 below displays a snapshot of each group’s average gain in fluency in after-oral-reading speaking as compared with after-silent-reading only. The gains in fluency were estimated by the number of words per minute (wpm) in speaking both after oral reading practice and silent reading. As shown in the figure, the gains in fluency from oral reading practice were much more significant than from silent reading practice.

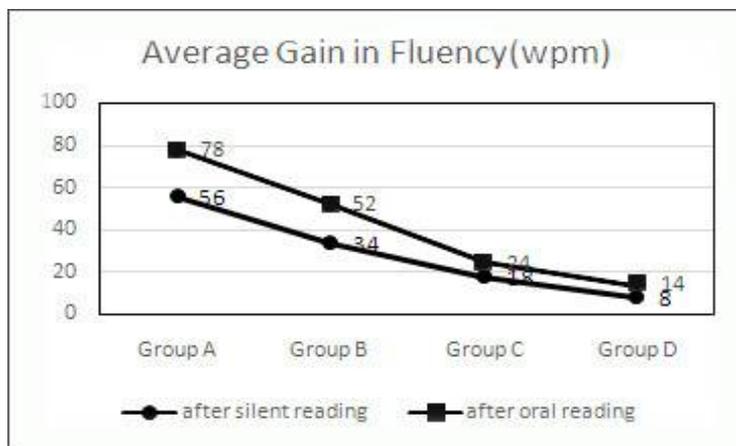


Figure 1. Average gain in fluency in after-oral-reading speaking.

Figure 2 displays a snapshot of each group’s gain in accuracy in after-oral-reading speaking as compared with after-silent-reading speaking. The gains in accuracy were measured by the percentage of occurrence of phonological mistakes and unintelligible use of words and structures while speaking. Accordingly, a low percentage indicates a high level of accuracy, and vice versa. As shown in the figure, the gains in accuracy from oral reading practice appeared to be more significant than from silent reading practice.

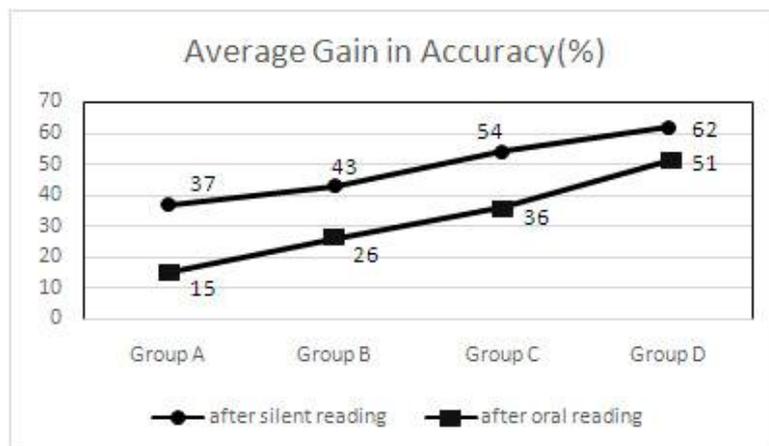


Figure 2. Average gain in accuracy in after-oral-reading speaking.

One of interesting facts observed in the study is that the learners with high English levels revealed less fluency gains than those of moderate level at a certain point of progress. This indicates achievement of fluency has its limit for some reason. When the fluency rate in speaking becomes stable, the accuracy rate tends to still be rising.

The gains in confidence were evaluated by the individual participants' engagement and behavior during peer interactions in the classroom. Confidence or motivation analysis was carried out by means of class observation, interviews, and questionnaires. In classes, we observed that the learners volunteered more often than before and that they were speaking louder and more articulately in peer interactions. In interviews and questionnaires, all respondents agreed that oral reading practice motivated and assisted them in peer interactions.

It was also found in interviews that there were extra gains from daily-based oral reading practice. Most of the participants of the study appreciated the influence of oral reading practice on the improvement of their English reading and comprehension abilities, such as decoding strategies. Through everyday oral reading practice, sight vocabulary turned into active vocabulary as well.

Conclusion

The overall results of our study demonstrate that reading aloud practice is an effective scaffold for EFL learners in peer interaction, and that if it is performed on a regular basis, it will produce an effect of speaking regularly. The gains are summarized as follows:

Firstly, learners got more motivated and confident from the immediate use of oral input from reading aloud. This led to their active involvement in peer interactions. Their increased confidence can be attributable to their increased fluency and accuracy.

Secondly, the more learners read aloud, the more fluent their speaking got. Oral repetition ensures automaticity of language use in speaking. Furthermore, frequent encountering with sight vocabulary enlarges a range of active vocabulary, leading to more fluent speaking. Seemingly and interestingly, if the increased rate in fluency attained a certain high level, it came to be stable or increased more slowly at some point of time and learners became more concerned about accuracy.

Thirdly, there were gains in accuracy. Gains in accuracy were more remarkable with those learners who had a high level of English proficiency. Accuracy was vivid in clear articulation of English sounds, appropriate choice of words, and proper use of structures. These gains would have been possible by using English every day in a real-world English speaking environment; however, our study suggests that consistent oral reading practice with follow-up activities can supplement or replace a real-life speaking environment and still lead to gains in the fluency and accuracy of EFL learners.

There are some limitations of this study. It lacks detailed information about gradual improvement over the period of six months. It failed to base its analysis of gains on individual participants' performance, which may affect the reliability of the data presented. The analysis is also limited to the gains in speaking rather than extended to the whole range of language ability, although it is widely acknowledged that daily oral reading practice influences the language proficiency of EFL learners.

Notwithstanding these limitations, we believe that the findings will contribute, firstly, to a practical understanding of the effectiveness of oral reading in terms of speaking in an Asian EFL context which is characterized by a large linguistic discrepancy between L1 and L2 and an extremely restricted English speaking environment. Most previous studies of oral reading were found to focus on fluency through oral reading practice from L1 contexts. The current study suggested three areas of gains from oral reading practice in a restricted L2 context. The second contribution of the study is that it enriches the resources for scaffolding learners in EFL classrooms and helps EFL learners improve their language learning strategies further.

The results of the study imply that regular oral reading practice has a positive long-term effect on EFL learners' reading comprehension by increasing reading speed and improving decoding strategies.

Considering the fact that fluency, accuracy, and confidence are concepts that run through all language skills, we need further research to investigate the effect of oral reading on the development of other language skills, particularly with listening and reading comprehension in restricted EFL learning contexts.

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References

- Devaney, K. (2012). *A case study of four high school ESL students' oral reading fluency and affect* (Unpublished master's thesis). Minnesota State University, Mankato, MN.
- Farrell, T. S. C. (2004). *Reflecting on classroom communication in Asia*. Singapore: Pearson/Longman.
- Groom, N., & Littlemore, J. (2011). *Doing applied linguistics: A guide for students*. New York, NY: Routledge.
- Harmer, J. (2015). *The practice of English language teaching* (5th ed.). London, UK: Pearson Education.
- Gilbert, J. (2008). *Teaching pronunciation using the prosody pyramid*. Retrieved from http://www.cambridge.org/other_files/downloads/esl/booklets/Gilbert-Teaching-Pronunciation.pdf
- Lam, W. Y. K. (2012). *Promoting strategy teaching as an innovative practice in the Asian EFL oral classroom*. In T. Muller, S. Herber, J. Adamson, & P. Shigeo Brown (eds.), *Innovating EFL teaching in Asia* (pp. 127-134). London, UK: Palgrave Macmillan.
- Liu, J., & Berger, C. M. (2015). *TESOL: A guide*. London, UK: Bloomsbury
- Loewen, S. (2015). *Instructed second language acquisition*. New York, NY: Routledge.
- Philp, J., Adams, R., & Iwashita, N. (2014). *Peer interaction and second language learning*. New York, NY: Routledge.
- Potter, J., & Hopkins, A. (2008). *My family and other animals*. London, UK: Penguin Readers.
- Seibert, L.C. (1927). An experiment in learning French vocabulary. *Journal of Educational Psychology*, 18, 294-309.
- Rasinski, T., C. Blachowicz, & K. Lems (2006). *Fluency instruction: Research-based best practices*. New York, NY: Guilford Press.
- Yoshimura, Y., & MacWhinney, B. (2007). *The effect of oral repetition on L2 speech fluency: An experimental tool and language tutor*. Workshop on Speech and Language Technology in Education, Language Technologies Institute & Department of Psychology, Carnegie Mellon University, Pittsburgh, PA.