



DOI: 10.2478/linpo-2020-0005

Speech shadowing as a teaching technique in the CFL classroom

Ewa Zajdler

Jagiellonian University
ewa.zajdler@uj.edu.pl

Abstract: Ewa Zajdler, *Speech shadowing as a teaching technique in the CFL classroom*. The Poznań Society for the Advancement of Arts and Sciences, PL ISSN 0079-4740, pp. 77-88

The aim of this paper is to present speech shadowing (the listener's repetition of a word, phrase or sentence immediately after hearing it) as an effective teaching technique. Shadowing has been practiced in English classes in Japan for decades and many studies have confirmed its effectiveness for improving learners' listening comprehension and pronunciation skills. Even though some studies have already indicated that this technique is successfully used in teaching Chinese as a Foreign Language (CFL) (Zajdler & Chu 2019), its potential has not been widely utilized in the Chinese classroom in Poland. Thus, the present paper will first discuss the auditory and cognitive underpinnings of shadowing, then a classification of the types of shadowing will be proposed. Finally, practical aspects of shadowing as an effective in-class CFL teaching technique will be presented.

Keywords: Chinese language learning, Chinese language teaching, CFL, speech shadowing technique

1. Listening to speech signal

1.1. The sense of hearing and listening

The sense of hearing is not the same as speech signal decoding or listening. Listening is more than just the perception of air vibration as it is a neurological process of receiving sound stimuli and decoding them into meaningful signals. Gronbeck et al. (1990: 20) underlined the importance of listening as a skill in the native language (L1) in the following manner:

Listening is an activity that we all too often take for granted. After all, we have been listening to others since birth – with this amount of practice, why should we bother to study it in a serious manner? Since listening takes up much of our daily life – estimates run as high as 45 percent of our communication time spent in attending to what others say – we would be proficient at it by now. While that might make sense, your experience with your own listening

behaviour, and with that of others, strongly suggests that excessive practice does not always result in proficiency.

Furthermore, Gronbeck et al. (1990: 20) argues that there is no spoken language development without auditory training, as “[l]istening is central to the process of presenting ideas orally”.

Furthermore, Gronbeck et al. (1990), following Goss (1982b: 24), takes an information processing approach to listening. “There are three stages to the model:

1. Signal processing – translating the message to the listener. This stage becomes problematic only if the speech is unclear or poorly spoken, or the language being used is unfamiliar to listeners.

2. Literal processing – taking the words in the message at face value in assessing their probable meaning. It is the first stage of meaning assessment, and it focuses on the denotative meaning of the words used.

3. Reflective processing – listening to evaluate. It goes beyond the literal stage to determine what else may be contained in the message (for instance, interferences, motives and speaker credibility)”.

Since, as proposed above, listening is a complex skill of comprehending the information being conveyed in the speech signal, proficiency and effectiveness in listening is vital. The skill becomes even more important in the foreign language classroom. Listening as an act constitutes the initial skill in any foreign language learning when a linear-coaxial model of introducing language is considered (for details see Zajdler 2010a; Pfeiffer 2001). The role of the listening skill becomes absolutely vital during learning Chinese in the Polish classroom not only because Chinese, unlike Polish, is a tonal language but also because the distribution of linguistic information conveyed across the whole spectrum of frequencies in speech is significantly different in Polish and in Chinese.

1.2. Hearing span and auditory skill in Polish and Chinese

As described by Ladefoged & Maddieson (1996), there is a universal cut-off value of frequency at 1 kHz which splits the speech sounds of all languages into low and high frequencies. Generally, about 50% of energy is accumulated in the low frequency spectrum (100-350 Hz) realised mostly in vowels and nasal sounds (Hojan & Skrodzka 2005). Though fricatives (especially sibilant fricatives) in acoustic terms reveal intensity as well, the frequency of the lower cut-off point places sibilants in the higher spectrum.

Chinese locates its significant frequencies in a rather low spectrum while numerous consonant clusters in Polish place it in the relatively high frequency span. When low frequencies are cut off in high pass filtering at, respectively, 350 Hz or 500 Hz, there is only a slight decline in speech intelligibility (2-5%) in Polish. Assessed through speech signal filtration, the Polish language reveals the satisfactory value of intelligibility at 85% above 1 kHz, and 90% below 4 kHz frequency (Hojan & Skrodzka 2005: 104-105; [1]).

In contrast, the lexical tone in Chinese, which is responsible for information encoding and which is always associated with vowels (or glides), is physically manifested in the F0 contour. A pitch of F0 contour is located mostly below 300 Hz (Zajdler & Stal 2016). Low frequencies (cut-off at 650 Hz or even 500 Hz) are assessed much more positively for speech intelligibility than high-pass filtering. Low-pass filtering of Chinese speech signal under 1000 Hz preserves almost the whole linguistic information (Zajdler & Stal 2016; Guo Jyun-Hong et al. 2010).

Given the critical differences described above, Polish students learning Chinese face a difficult task as they have to attend to those L2 speech frequencies which do not carry the most relevant linguistic information in their L1. In this context, exposure to foreign sounds and listening training, which employs speech signal frequencies surpassing the L1 range, necessitates the development and the use of specific monitoring strategies. They are needed to work out a new manner of attentive listening to the new sounds which convey the relevant linguistic information. Also, as argued above, the development of such strategies, and the listening skill in L2 in general, should lead to more successful L2 oral production. It is argued in the present paper that shadowing is an effective teaching technique which facilitates such development. As presented in Figure 1, shadowing follows a number of stages starting from the perception of new sounds and aiming at obtaining new language auditory and articulatory skills, i.e.:

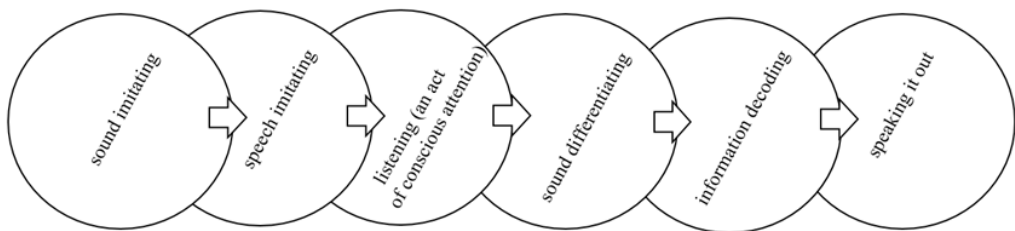


Figure 1. A schematic illustration of stages of skill development resulting from shadowing

Therefore, shadowing links directly attentive listening with oral production, thereby mimicking the developmental path from listening to speaking.

2. Speech shadowing

2.1. Speech shadowing – imitation or repetition?

Speech shadowing, in simplest terms, is the listener's repetition of a word, phrase or sentence immediately after hearing it (Lambert 1994; Green et al. 1994). Basically, when shadowing, the listener hears everything twice, first as an audio stimulus which they have to repeat, then during self-monitoring in production. Shadowing is used in audiology to assess hearing with understanding. Originally, it was used in experimental psychology to

analyse speech processing, starting in the 1950s with selective attention (Cherry 1953). For decades speech shadowing has been researched and applied in teaching English as a foreign language (EFL) mostly in Japan. It has drawn more attention of teachers of English and researchers there after Tamai's publication in 1992, which initiated numerous experiments and a debate on the teaching methods and the benefits of the technique (Hamada 2016a: 1-2; see Tamai, Mochizuki, Hamada and others). Presently, the use of shadowing is not limited to Japan. Commander and de Guerrero (2013; 2016) encouraged Spanish learners of English to use shadow-reading. The benefits of shadowing techniques have also been identified in experiments conducted in the teaching of English to Algerian speakers (Manseur 2015) and to the Filipino, Indonesian and South-American students in Indonesia (Hamzar 2014; Ginting 2018).

The answer to the question whether shadowing is closer to simple sound imitation or to meaningful repetition is not straightforward. The less developed the student's phoneme perception skills are, the closer their shadowing is to simple sound imitation. With increasing proficiency in the mechanisms of immediate speech processing, shadowing becomes meaningful imitation and then leads to the internalization of second language (L2) structures. Students' attention in shadowing focuses on catching the sounds prior to meanings. Thus, the primary role of shadowing is to improve learners' phoneme perception skills, which at the low-proficiency levels means using the bottom-up processes (phoneme perception) more than the top-down processes, exercised later, which aim at catching the meaning rather than the phonemes. Therefore, through the repetitive practice of in-class shadowing applied in diverse ways, learners become better at catching the sounds that enable them to grasp the meaning (Hamada 2016b). The dividing line between imitation and repetition is unclear, since it is the information decoding process (overlapping with sound differentiation) that is responsible for meaningful and productive shadowing. The more distance there is between sound perception and information decoding, the more imitative the speech sound production is during shadowing.

Speech shadowing is a technique in language teaching which can be applied at different language levels and adjusted according to the aims set for the particular skill training. On the one hand, it is aimed at low-proficiency learners to help them activate the perception and imitation of unfamiliar speech sounds, followed by the processing, and – ultimately – production of simple information. On the other hand, advanced learners, who have an already satisfactory verbal material at their command, can focus on intonation and expressiveness during shadowing. For advanced users of a foreign language the technique provides a perfect exercise in order to increase the speed of pronunciation and information processing, and, if applied in a bilingual input–output exercise, to reinforce their translation skills (Hamada 2016b; Sumiyoshi & Svetanant 2017; Wang 2017).

2.2. Classification

There is no single, all-embracing classification of the whole variety of the types of shadowing. Hamada (2012: 4) discusses various authors reporting different uses of shadowing: "A variety of shadowing usages have been reported in language teaching contexts.

For example, Murphey (2001), Kadota and Tamai (2005), and Takizawa (2002) describe the varieties in ESL/EFL teaching contexts [...]. Kurata (2007) shows how she used shadowing techniques in JFL contexts.” Below I adapted and simplified Murphey’s (1995: 42-62) classification of shadowing by specifically focusing on three criteria – the time between input and output, the contents of the stimulus material and the ways to deal with it.

Input – Output delay

- Close (or immediate) shadowing
- Delayed shadowing
- Phrase shadowing
- Parallel reading (shadow reading)
- Speed reading

Contents

- Reading shadowing (a partner shadowing)
- Conversational shadowing (silent or aloud)
- Lecture shadowing (silent)

Types of conversational shadowing

- Complete shadowing (of a word, phrase or sentence)
- Selective shadowing (key words or key phrases)
- Interactive shadowing

Close (or immediate / phonemic) shadowing happens without deeper processing when the delay between hearing a speech stimulus and repeating it is reduced to 250 ms or less, so, in fact, simultaneously. Close shadowing is immediate speech processing and pronouncing it nearly at the same time before it is fully delivered, thus not completely processed in advance of production. Although delayed (or distant) shadowing is only slightly late (on average over 500 ms), both are regarded as on-line syntactically and semantically analysed (Marslen-Wilson 1985, Hamada 2016a). Phrase shadowing (or slash shadowing) means repeating the information phrase by phrase / sentence by sentence, while providing the time for the recognition of words and, possibly, for grammatical analysis, with the assumption that the stimulus signal is delivered, then processed and spoken out. Parallel reading (also known as shadow reading or synchronized reading) is an activity of reading a transcript aloud along with listening. It aims at fostering the students’ reading comprehension and retention of L2 texts, thereby increasing the reading rate and fluency. However, an already obtained advanced level of writing is an essential condition for another modified shadowing technique, i.e. speed reading which ignores the degree of understanding and strongly emphasises reading aloud and quick reading, in fact – vocalizing the script which becomes an audio stimuli to the performer him/herself (Hamada 2012; 2014; Commander & de Guerrero 2016; Shiota 2012).

An early work of Murphey (1995) introduces some observations, analyses and conclusions on shadowing in teaching English as a foreign language and the diversity of shadowing types. Reading shadowing is, as pair-work, an in-class activity where one student reads and their speech becomes an input for a partner shadowing it. Conversational shadowing as out-of-class communication, silent or aloud (to any degree), provides

an interlocutor with a feedback on speech perception and comprehension. Practiced in a class, it turns into a natural conversation when drawing on the experience of selective shadowing, or it can even become interactive shadowing. No less important than presented above is a technique aimed at advanced users of a foreign language. Murphey discusses lecture shadowing, done silently to oneself, sometimes with lips moving only. “Shadowing seems to block some of the potential disruptions of listening comprehension [...] as it focuses more attention on the auditory message outside” (Murphey 1995: 44). When talking about encouraging students to practice silent shadowing he stated that his intention was to “turn their brain on” (Murphey 1995: 44). Any substance of the verbal material can be shadowed completely or selectively, adjusting the sub-technique to the learner’s needs, their potential and the current language level. Complete shadowing of a word, a phrase or a sentence, as it is heard, can also be considered as being phonemic when the time pressure eliminates information chunking (Hamada 2016a). Selective shadowing aims at picking up key words out of a phrase, or key phrases out of a sentence, from an audio recording or an interlocutor’s input. This way it affects positively conversational shadowing. Furthermore, interactive shadowing includes selective shadowing and a creative approach of the listener (including questions and comments to the input material) in order to comprehend speech which, along with following reactions, turns into a natural conversation (Murphey 1995; 2001).

3. Speech shadowing techniques in use

3.1. Pre-shadowing and post-shadowing

Hamada (2014) presents findings consistently indicating that shadowing is an effective technique for improving listening skills. The mechanism of shadowing is analysed from the cognitive point of view in empirical psychology, psycholinguistics and neurolinguistics. As a pedagogical procedure, shadowing is viewed as an in-class (or after-class, self-study) activity carried out in various ways with diverse materials and objectives (aimed at listening comprehension, pronunciation, intonation, translation, etc.). This highly cognitive activity “is considered to be more effective in combination with other activities, such as reading comprehension and vocabulary learning” (Hamada 2014: 4).

Hamada discussed bottom-up and top-down processing through pre-shadowing (shadowing prior to the textbook unit study) and post-shadowing (shadowing after the unit study) (2014: 4-7).

Step	Pre-shadowing group	Both groups	Post-shadowing group
1.		Listen to the passage	
2.	Shadowing practice		(Skip)
3.		Vocabulary activities	
4.		Comprehension of the passage	
5.	(Skip)		Shadowing practice

Figure 2. Pre-shadowing and post-shadowing in-class procedures

He reported on an experiment carried out with two groups of Japanese university freshmen being taught 8 lessons from the same textbook. The difference in the in-class activities for the two groups resided in the moment the new vocabulary was introduced and then individually practiced within a given time limit. For the pre-shadowing group, the vocabulary was introduced and practiced after the shadowing practice, whereas for the post-shadowing group this was done before the shadowing practice. The two groups' scores on the pre-test and post-test assessing listening comprehension skills were analysed. Hamada (2014: 7) found that:

[t]he mean score of the pre-shadowing group increased by 0.53, while that of the post-shadowing group increased by 0.84. [...] These results suggest that the post-shadowing group, for which the effect size was medium, improved their listening comprehension skills after a limited, one month period of shadowing practice. [...] The post-shadowing group alone improved their listening comprehension skills with statistically significant differences.

The experiment revealed a priming effect (an influence on a response regarding the skills in question) for the students in the post-shadowing group. It turned out that the vocabulary and the target content they learned, next enhanced (primed) the content they shadowed, resulting in students' improvement in listening comprehension. The observed effect might have stemmed from the interplay of bottom-up and top-down processing in the following manner. Once the students became familiar with the target content, they not only undertake bottom-up processing of identifying the incoming phonological information, but they can also apply top-down processing by re-activating the familiarised lesson content, which enables them to predict which word may come next. This suggests that bottom-up and top-down processes might overlap in shadowing resulting in a stronger effect. Moreover, by enhancing mutual interdependence of the words' phonology and their meaning, shadowing leads to effective internalization of the practiced phrases.

3.2. Shadowing techniques in Chinese language classes

Many years of shadowing use during teaching EFL in Japan and numerous Japanese studies testing shadowing have shown that it is an effective technique for improving listening skills, especially at lower proficiency levels. Therefore, it seems justified to

expect that shadowing might be an effective technique in Chinese language classes. It must be underlined here that, during Chinese instruction, adult non-tonal L1 users experience significant difficulties when they are trying to grasp speech sounds in tonal syllable segments as meaningful units. In this context shadowing seems to be a very helpful technique. During combining words to phrases and phrases to sentences when shadowing, students' sound differentiation skills are being practiced and the students learn not only to recognize tonal phonemes in Chinese as distinctive features in common word-homophones but they also learn to identify the correlated linguistic cues as regularities in the inflexible syntactic word order in Chinese. Thus, apart from the mechanism of sound to meaning decoding, one discovers syntactic categories in an utterance, thereby benefiting behaviourally and cognitively from the shadowing technique.

The initial stage of language learning always starts with phoneme identification (bottom-up processing), but becomes top-down when it is supported by some understanding of phonetics (both auditory and articulatory rules) and self-monitoring which enhances auditory attention. Auditory and articulatory abilities fall into basic language skills and condition spoken communication. For non-tonal L1 users who learn Chinese the shadowing technique becomes a key to grasp the acoustic features of the speech signal in practice, i.e. sound perception, identification and differentiation of tonal phonemes, which is difficult but crucial at the A1-A2 language level (Zajdler 2010b; 2012). Shadowing initially exercises attentive listening and sound discrimination prior to speech imitation, but then it encourages meaningful repetition and production.

Speech sound discrimination and articulation seem to be a starting point for listening comprehension and speech production. Practical exercises which raise the student's phonological awareness are a must for effective learning and processing Chinese as a tonal foreign language. It is crucial for students to be able to recognise syllable structures, distinctive features of consonants and tone pitch, contours and timing (Zajdler 2010b; 2015).

As far as teaching Chinese to Polish learners is concerned, the use of shadowing in the language classroom in Poland is still limited but the awareness of its effectiveness is growing. The speech shadowing technique is in use in the Chinese language classroom at the Jagiellonian University in Krakow for Sinology students. The audio stimulation approach is applied to freshmen during the first year of Chinese language instruction for approximately one-fourth of instruction time. Students are provided with introductory descriptive phonetics as well as a structural grammar course to whose content, if needed, the teacher refers when students ask for additional tips in sound differentiation or information decoding. Audio recordings, the learners' own voice or voices in their choir repeating after the original input are all regarded as sources of speech sound stimuli. At home, during self-study sessions, the students are expected to familiarize themselves with the new vocabulary of the unit from a regular textbook with respect to their pronunciation and the meaning of the words. This way, post-shadowing is applied in the classroom, with a strong focus on loud and maximally precise pronunciation.

During the first semester of the in-class practice, shadowing is more focused on sound and speech imitation, gradually enhancing sound discrimination and sound identification in order to distinguish short units of information, i.e. words, phrases and short sentences.

While bottom-up processing is evident then, the second semester allows the students to switch to more complex phrases and sentences to practice information decoding and pronunciation with understanding. When complete conversational phrases are used during shadowing at relatively low-proficiency levels, both bottom-up and top-down processing take place but to different degrees, depending on the difficulty of the verbal material in comparison with the already acquired components.

The cognitive process of assigning meaning to the sound structures results in the production of information chunked into phrases in accordance with the Chinese syntactic word order. Listening to individuals, observing them and their verbal performance, a teacher can interfere when support is needed. The internalization of the phrases recognised in complex utterances seems to be the additional benefit of shadowing, apart from the development of attentive listening or improvement of listening comprehension and pronunciation skills, as confirmed in the in-class regular assessment. As reported by Zajdler and Chu (2019), the use of shadowing in line with the above-mentioned procedures results in the mastery of tone production by Polish students of Chinese, as evidenced by Chinese native speakers' perceptual evaluations.

Undoubtedly, shadowing techniques cannot replace other methods in adult foreign language teaching. Auditory training should be a part of the eclectic approach, along with all other tools promoting cognitive learning. It needs to be stressed that shadowing is demanding to the instructors as well. They need to be familiar with Chinese phonetics, they need to know how to adjust sound stimuli and exercises to targets and to be able to diagnose individuals in each of the learning stages. As far as the learners are concerned, shadowing requires not only their engagement and effort in sound processing and production, but also their attention in the classroom and pre-class preparation at home. Thus, being a rather intensive type of training, it may not be equally suitable for all groups of learners.

Shadowing as a technique in auditory training can be modified for the in-class practice depending on the curriculum, the aims of the course, the learners' proficiency levels, etc. It is important to identify partial aims for a given stage of learning and to keep in mind that the technique is an output-promoting stimulation. Then, a well-designed in-class procedure will meet the needs of a particular group of students. Moreover, shadowing of complete conversational phrases can be helpful to the teacher as an indicator of comprehension levels among students, where speech production in shadowing is expected to constitute an added value ("i+1") to the current language level (Li 2013; see also Krashen 1985). However, it is important to remember that the "i+1" level of difficulty in shadowing tasks should be maintained, otherwise, due to the large cognitive distance between sound perception and information decoding, shadowing will become a cognitive burden rather than output-promoting stimulation.

As far as teacher tips during in-class practice are concerned, they have diverse functions. They draw the learner's attention to acoustic features, support individual work on articulation skills, or help one focus on the ways of approaching verbal material and of monitoring one's own top-down processing. A close observation of the students' output is crucial as it reveals their speech sound perception and processing difficulties.

More importantly, shadowing in the Chinese language classroom constitutes a method of departing from introducing Chinese tones as an added value to the syllables in Chinese, or pronouncing the syllables with intonation (as was traditionally done in CFL teaching). Simultaneously, shadowing promotes differentiation and identification of tonal phonemes. Furthermore, shadowing a spoken chunk a number of times becomes a drill, which, conducted chorally and individually, becomes a way to overcome a mental block typically stopping students from listening to their own voices. Thereby, shadowing contributes to the developments of the students' own speech production.

Conclusions

The present paper presented shadowing as an effective technique which can be successfully utilized during foreign language learning. This technique seems to be most relevant for teaching Chinese to learners whose L1 is a non-tonal language, such as Polish. As discussed above, Polish and Chinese differ in the distribution of the most relevant linguistic information across the spectrum of speech frequencies. Therefore, shadowing can be very helpful in raising the learners' phonological awareness and may increase their attentive listening span to help them hone not only their listening skills in Chinese but also, in consequence, their production of Chinese sounds and structures. The paper discussed various types of shadowing, it presented the auditory and cognitive underpinnings of shadowing and offered practical advice on how shadowing can be used in the classroom. Thereby the paper aimed at encouraging a wider use of this technique during teaching Chinese as a foreign language.

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