

## <Note> Shadowing in the Classroom : An Overview of Theory and Practice

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**Note**

## Shadowing in the Classroom: An Overview of Theory and Practice

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### **Abstract**

This paper provides an overview of the theoretical background of shadowing and the practical considerations involved in implementing a shadowing program in a classroom context. Shadowing is presented as a task that can be adapted to suit different teaching contexts as a way of addressing inadequate L2 bottom-up processing skills which inhibit listening comprehension. This paper is relevant to instructors who are interested in developing learners' listening comprehension skills and learners' sensitivity to prosody and phonological perception through an integrated course of classroom shadowing tasks.

### **What Is the Definition of 'Shadowing'?**

Shadowing has been defined by Lambert (1988) as a 'paced, auditory tracking task which involves the immediate vocalization of auditorily presented stimuli, in other words, repeating word-for-word, and in the same language, a message' (377). Lambert's definition related to shadowing as a training technique for novice interpreters who needed to practice listening and speaking simultaneously in their L1 before attempting the more complex and cognitively demanding skill of code-switching during simultaneous interpretation. Lambert's definition of shadowing was later reconceptualized for language learners by Tamai (1997) as 'an active and highly cognitive activity in which learners track speech they hear and vocalize it as clearly as possible while simultaneously listening' (cited by Hamada, 2014: 3), and

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it is this definition which has subsequently become widely accepted in EFL literature (Hamada, 2011, 2014, 2015a; Kadota, 2007; Saito, Nagasawa and Ishikawa, 2011; Sumiyoshi and Svetanant, 2017). Tamai's (1997) definition clarifies the key difference between shadowing carried out by language learners in their L2 and shadowing as a technique for novice interpreters carried out in their L1. According to Tamai (1997), language learners shadow by trying to accurately reproduce the sounds they hear without delay while listening attentively to incoming information. For language learners, shadowing is a cognitively demanding act (Hamada, 2011) which fully engages the language centers of the brain (Kadota 2007, cited in Hamada 2011). It is demanding because learners' (especially low proficiency learners') level of phoneme perception in an L2 lacks development, and they must therefore make full use of available cognitive resources to recognize incoming sound (Hamada, 2016). Shadowing is also a learned skill – whilst we usually wait for a pause in conversation before we speak, in shadowing, we must learn to listen and speak simultaneously (Lambert, 1992), and this further taxes learners' cognitive resources. For novice interpreters, however, shadowing is a simple training technique which is far less cognitively challenging because their level of L1 phoneme perception is already fully developed and automatized (Hamada, 2016).

### **What Are the Mental Processes Involved in Shadowing?**

Tamai's (1997) definition stresses that shadowing is a cognitively challenging activity. Even so, research has shown that shadowing is not a form of deeper processing that prompts increased comprehension or recall. In fact, participants have been found to consistently score lower on comprehension tests when they shadow compared to when they apparently passively listen (Gerver, 1974 cited in Lambert, 1988). The reason appears to be that vocalizing material while simultaneously attending to the incoming sound actually carries a far greater cognitive load than the act of listening by itself, and this extra load interferes with the ability to attend to and process meaning, which frustrates comprehension (Lambert, 1988).

Citing Kadota (2007), Muraoka (2017) and Saito et al. (2011) clarify why comprehension can be frustrated when shadowing. They explain that there are two stages of understanding – perception and comprehension. First, sound is perceived and transformed into phonetic representations for further processing. Then comprehension is achieved through five different kinds of online processing: lexical, syntactic, semantic, contextual, and schematic (Saito et al. 2011, citing Kadota, 2007). Lexical processing is auditory and involves identifying a word from its sound. Syntactic processing is comprehension derived from the order of words in a

sentence. Semantic processing involves the recognition of a sentence which is grammatically correct. Contextual processing depends on the context in which the words were uttered. And schematic processing depends on the use of extraneous and background knowledge to achieve comprehension (Kadota, 2007 cited by Saito et al., 2011). Because shadowing is only the immediate, verbatim repetition of incoming sound, understanding tends to be confined to the initial perception stage without moving onto the second stage of comprehension.

Shadowing can therefore be understood as a focused, online learning task where learners become increasingly sensitized to the phonological representation of words (Shiki, Mori, Kadota, and Yoshida, 2010). As a form of verbal rehearsal of incoming sound, shadowing helps learners to automatize the perception and transformation of sound into phonetic and phonological representations (Muraoka, 2017). By doing shadowing tasks, learners can therefore increase the number of phonetic representations in their mental lexicon (Muraoka, 2017). Repeated practice of sound identification and verbal rehearsal leads to automatized phonological coding (Hamada, 2011) which improves learners' skill to perceive sound in the first stage of understanding.

In fact, the successful automatization of phonological coding is one of the three principal purposes of shadowing, along with the rehearsal of coded phonology in an efficient and effective manner, and the enhancement of the capacity of short-term memory to hold phonemic input (Hamada, 2011 citing Kadota, 2007). The three purposes are interconnected because the automatization of phonological coding ensures that a greater amount of auditory input can be processed more quickly, and repeated shadowing practice enhances the capacity of the short-term memory. The act of shadowing thus utilizes the psychological mechanisms highlighted by Schmidt (1992) that underlie second language acquisition and fluency development. Citing Schiffrin and Schneider (1977), Schmidt (1992) explains that the automatization of processing depends on 'repeated exposure and rehearsal' which he refers to as 'association learning' (361). Repeated instances of association learning strengthen the connections between nodes in the memory until automatization finally occurs. Shadowing is a form of association learning which automatizes the recognition and recall of phonetic representations of words in the mental lexicon.

### **Skill Deficiencies in Bottom-up and Top-down Processing**

In bottom-up processing the listener decodes the stream of sounds into 'meaningful units' (Vandergrift, 2011: 456) beginning with a basic unit of speech such as a sound which forms a phoneme, a morpheme and then a word (Sumiyoshi, 2019). Meaning is gradually built up from the phoneme-level, with successively

larger units of meaning being combined to discourse-level (Vandergrift, 2011). Top-down processing, on the other hand, begins from the context (Sumiyoshi, 2019) and contextual and prior knowledge are applied to input to create a ‘conceptual framework’ that can be used for interpretation (Vandergrift, 2011: 456). Bottom-up processing and top-down processing are not mutually exclusive however, and are in fact typically used in parallel by listeners as they apply their contextual knowledge, prior knowledge and linguistic knowledge (including that gained from phonological coding) to achieve comprehension (Vandergrift, 2011 citing Hulstijn, 2003). This processing takes place in just a few seconds as the words are held in the phonological loop of the working memory (Rost, 2013 citing Baddeley and Larsen, 2007). Although words are initially accessed by clues such as their beginning sound or lexical stress, they are ultimately recognized through the interaction of phonological perception and the inferred likelihood of utterance given the particular context (Rost, 2013). This interaction between phonological perception and the inferred likelihood of utterance seems to rest on a specific recognition point. Taft and Hambly (1986) found that bottom-up processing applied to phonemes prior to the recognition point provides access to the word within the mental lexicon, and that top-down processing applied to other information about the word (after the recognition point) is used to test whether the correct word has been accessed. Bottom-up and top-down processing are not always deployed in a harmonious combination, however, and the extent to which a learner has to rely on more or less heavily on one or the other depends on a variety of factors, including learners’ proficiency level, the context, and the purpose of the listening act (Vandergrift, 2011).

Of course, not all words need to be recognized and understood in L1 or L2 listening, and prior to the increased use of authentic materials for listening tasks in the classroom, what researchers had originally assumed was a bottom-up dependency of learners may actually have been a result of misapplied instructional methodology which emphasized full recognition at word-level (Field, 2004). In fact, SLA research reveals that learners tend to over-rely on top-down listening skills as compensation for inadequate bottom-up processing (Field, 2004; Hamada, 2019, citing Rost, 2011) which in turn constrains comprehension (Vandergrift, 2011). Field (2004) notes how research by Tsui and Fullilove (1988) on 20,000 examinees in Hong Kong revealed that listening questions that were not supported schematically were answered poorly, and that low-proficiency learners with poor bottom-up listening skills had over-relied on top-down processing (Hamada, 2019, citing Rost, 2011). Without tackling this over-reliance on top-down listening skills, problems with phoneme perception are likely to continue to inhibit comprehension (Hamada, 2015a).

### **Addressing Bottom-up Processing Skills Deficiency With Shadowing**

The lack of sufficiently developed bottom-up processing skills can lead to listening comprehension problems in a learner's L2. Low proficiency listeners tend to create schema based on the topic of a listening task which guides processing when bottom-up information is lacking (Field, 2004). They then mistakenly match unrecognized and unknown words to similar known words that fit the context (Field, 2004). Underdeveloped phonological perception and unfamiliar prosody in the L2 also cause mishearing (Rost, 2013). And learners face the challenge of segmenting words in unfamiliar patterns of prosody while having to refrain from instinctively applying L1 segmentation to the L2 (Vandergrift, 2011), a point which is particularly salient for Japanese learners. Japanese is a mora-timed language with equally stressed syllables, while English is a stress-timed language where the number of stressed syllables of an utterance correlates with the time taken to say it (Nakayama, 2016; Saito et al. 2011). Because the spoken rhythm of each language is so different, bottom-up processing skills such as word-segmentation are even more challenging for Japanese learners studying English, a point illustrated by the placement of English and Japanese on the language distance scale (how different languages are from each other), where they are actually the furthest apart (Kadota, 2015 cited in Hamada, 2017). Consequently, the development of decoding skills to: become more familiar with the phonetic properties of words; recognize words more rapidly; segment words correctly; and automatize the whole decoding process are of vital importance to improve L2 listening proficiency (Vandergrift, 2011 citing Hulstijn, 2003). Effective decoding skills are also fundamental to increasing the number of recognizable words in learners' mental L2 lexicon (Sumiyoshi, 2019 citing Vandergrift and Baker, 2015). Unless takes are provided to develop decoding skills, low proficiency listeners' L2 bottom-up processing is likely to remain stunted and immature (Hamada, 2017), and the use of top-down processing as an inadequate compensation strategy is likely to continue.

In the early 2000s, there was an apparent lack of SLA research on tasks which could help learners become more familiar with the phonetic properties of words and automatize word recognition (Vandergrift, 2011 citing Hulstijn, 2003). At that time, shadowing was just beginning to gain recognition (Murphey, 2001). Since then, shadowing has come into its own and is now recognized as an effective way to develop bottom-up processing skills because it forces learners to 'synchronize incoming information into the phonetic representation of speech production' and store it in their mental lexicon (Sumiyoshi, 2019: 8). It is an activity which can counteract the traditional lack of learning opportunity in the classroom to internalize phonetic representations of speech (Shiki et al, 2010). It focuses on developing

decoding skills and building phonetic and phonological representations in the mental lexicon, helping to build up essential bottom-up listening skills that can positively impact listening comprehension (Hamada, 2019). This is because understanding proceeds from the first stage of perception (where sound is perceived and transformed into phonetic representations for further processing) to the second stage of comprehension (where five different kinds of online processing take place; Muraoka, 2017 and Saito et al., 2011 citing Kadota, 2007), so enhanced perception in the first stage due to shadowing practice is likely to improve comprehension in the second stage. Certainly, numerous studies in Japan and East Asia attest to the fact that shadowing is a useful technique to improve listening skills (Hamada 2011; Hamada 2012; Hamada, 2016; Hamada, 2019; Nakayama, 2011b; Sumiyoshi, 2019).

### **Shadowing and Latency**

Shadowing was initially developed as a technique to train interpreters in simultaneous interpretation (Lambert, 1988). Citing Norman (1976), Lambert (1988) distinguishes between two kinds of shadowing – phonemic shadowing and phrase shadowing. Phonemic shadowing requires immediate vocalization of each sound as it is heard, while phrase shadowing permits repetition at a longer latency so that the shadower has time to wait for a chunk of information. Only phonemic shadowing qualifies as shadowing according to Tamai's (1997) definition because the sound is repeated without delay. In phonemic shadowing, immediate vocalization was found to improve the accuracy of the reproduction of sounds but to impair recall (Chistovich, Aliakrinskii and Abilian, 1960 cited by Lambert, 1988), making this kind of shadowing the most useful to address deficiencies in bottom-up listening skills. In contrast, phrase shadowing was found to improve recall of material (*ibid.*), meaning that the focus of the task had likely switched from the perception stage of understanding to the comprehension stage. Increased latency may mean that this kind of shadowing is therefore less likely to sensitize learners to the phonological representation of words (Shiki et al, 2010) because attention is given over to comprehension rather than perception, making phrase shadowing the poorer choice to address the deficiency of weak bottom-up listening skills.

### **Forms of Shadowing That Do Not Align With Tamai's (1997) Definition**

Murphey (2001) distinguishes between three kinds of shadowing – complete shadowing, selective shadowing and interactive shadowing. Complete shadowing means that the listener repeats everything the speaker says, while in selective shadowing, the listener chooses phrases that they think are useful to repeat aloud. In

interactive shadowing, the listener adds their own questions and comments to the conversation to make it more communicative. Murphey (2001) describes interactive shadowing between a NS lead speaker and a NNS shadower as the most meaningful and productive form of the three kinds of shadowing and later refers to it as ‘conversational shadowing’ (Murphey, 2001: 151). However, all of these forms of shadowing were performed with latency, and hence none align with Tamai’s (1997) definition. Rather, they seem to be variations of listen-and-repeat, and Murphey’s own definition supports this: ‘Shadowing, at its simplest description is the repetition of an utterance by a listener’ (146). While Murphey’s (2001) research is useful for developing tasks related to building collaborative dialogue, it has less in common with recent research into shadowing, particularly that in East Asia, where most research on L2 shadowing has been published. De Guerrero and Commander (2013) followed Murphey (2001) in researching a shadow-reading task, where one learner read a text and the other listened and repeated the text in three different modes—aloud, in a low voice and silently (subvocally). Selective shadowing of key phrases ensued, and then both learners had to collaborate to reconstruct the text. De Guerrero and Commander (2013) found that reading-shadowing promoted comprehension and linguistic development. However, their focus on comprehension and collaboration is again a different form of shadowing than Tamai’s (1997) version and has a different outcome. It is therefore important to be aware of the significance of the latency effect and the way shadowing is carried out in the classroom, as activities like Murphey’s (2001) and de Guerrero and Commander’s (2013), while valuable, are not likely to target development of learners’ bottom-up processing in the way that other forms of shadowing without latency can.

### **Forms of Shadowing That Align With Tamai’s (1997) Definition**

Muraoka (2017) citing Kadota (2012) distinguishes between bottom-up shadowing and top-down shadowing. In bottom-up shadowing, learners practice shadowing the first time they encounter a target passage, and this form of shadowing is aimed at developing learners’ phonological coding and speech perception skills. In top-down shadowing, vocabulary tasks and structural tasks are used to study the text first, and then shadowing takes place. These two varieties of shadowing have different objectives that teachers should take into account in order to adapt them to their teaching context. In text-presented shadowing (Hamada, 2019 citing Kuramoto et al., 2007), learners shadow using a script of the passage, and this form of shadowing was found to positively impact reading skills. Nakayama (2011a) distinguishes between auditory shadowing where learners processed auditory input, visual shadowing where learners processed visual input alongside auditory input,



and visual-auditory shadowing, which alternated between both visual and auditory shadowing lesson-by-lesson. Pre-test and post-test analysis of learner scores revealed that it was the alternation between visual-auditory shadowing that best facilitated phonological learning through improved retention of the weak forms of function words. These various forms of shadowing (Hamada 2019 citing Kuramoto et al, 2007; Muraoka, 2017 citing Kadota, 2007; and Nakayama, 2011a) required learners to process input almost simultaneously and therefore do align with Tamai's (1997) definition of shadowing as an activity where incoming sound is repeated without delay.

### **Implementing Shadowing in the Classroom: Six Steps**

A full procedure for carrying out shadowing in the classroom with six interlinked steps focussing on learners' phonological development was created by Kadota and Tamai (2004), and it has been widely used in research on the effectiveness of shadowing in the classroom (Hamada, 2011; Hamada, 2012; Saito et al., 2011; Sumiyoshi and Svetanant, 2017; Sumiyoshi, 2019). Their classroom procedure (see table 1 below) incorporates three other kinds of shadowing: mumbling shadowing, prosody shadowing, and content shadowing.

Mumbling shadowing may help to alleviate anxiety about the process of

**Table 1 The six steps of shadowing (Kadota and Tamai, 2004: 62)**

Procedural steps	Focus
1. Listening	Listen to the whole passage without looking at the script and try to understand the gist and the style of the speakers.
2. Mumbling shadowing	Without looking at the script, mumble along to the audio. Focus on the heard sound in general rather than pronunciation.
3. Synchronized reading	Follow the script and shadow the content without delay. Check the meaning as you shadow the content.
4. Prosody shadowing	Focus on the prosodic features of the audio including stress, rhythm, intonation, speed, pauses without looking at the script.
5. Synchronized reading	Focus on difficult points such as pronunciation and meaning until they are completely mastered.
6. Content shadowing	Focus on the heard content as you shadow without referring to the script.

shadowing because it is a simple task that provides a feeling of achievement, and it helps learners to acclimatize to the speed of the recording. Synchronized reading is essentially a form of text-presented shadowing and has been found to enhance reading skills (Kuramoto et al., 2007 cited in Hamada, 2019). Prosody shadowing is

a simple and effective way to integrate the teaching of prosody into a regular lesson, as numerous studies in Japan attest (Kusumoto, 2015; Mori, 2011; Muraoka, 2017; Okada, 2002). Okada (2002) for instance, found that prosody shadowing helped learners to recognize L2 rhythm and intonation, and Mori's (2011) ten week prosody shadowing course followed by a post-test revealed that learners were better able to enhance the phonetic contrast between stressed and unstressed syllables and improve their intonation by lengthening clause-final nouns. A study by Kusumoto (2015) showed that 43% of learners felt their pronunciation had improved through prosody shadowing, and 70% of participants in a study on shadowing training by Muraoka (2017) felt it was useful and that they enjoyed it. Utilizing these different forms of shadowing is recommended, and five shadowing tasks is likely to be sufficient for one lesson because there is a known ceiling effect on performance after four to five shadowings (Shiki et al, 2010).

### **Implementing Shadowing in the Classroom: Recommendations**

A basic course of 8 to 10 lessons utilizing the six-step approach within regular lessons is recommended as sufficient to develop listening skills (Hamada, 2017). Instructors should begin by explaining the theoretical background of shadowing to learners, in part to help them understand the objectives (Sumiyoshi, 2019 citing Mochizuki, 2006), but also because students who have a favorable attitude towards shadowing possess greater initial motivation and are more likely to improve (Hamada, 2015). The six steps of shadowing outlined by Kadota and Tamai (2004) are easily adaptable to suit different lessons for different purposes, particularly English lessons at Japanese universities where there are no common guidelines for EFL curricula and where EAP lessons are prevalent (Hamada, 2017). There are certainly many examples of modified versions of the six-step procedure in the literature. Hamada (2012), for instance, adapted the procedure to add a beginning and ending dictation cloze so that learners could feel a sense of accomplishment from an improved performance. Saito et al., (2011) changed the second step of mumbling shadowing to a dictation activity to actualize a top-down shadowing approach, and learners were reportedly positive about the procedure used. Hamada (2014), experimented with bottom-up shadowing versus top-down shadowing. The students belonging to the top-down shadowing group improved the most in pre-post-testing, and Hamada (2014) theorizes that prior activation of schema from studying the passage in conjunction with tasks to ensure comprehension before shadowing can actually help students to focus on phonological information without distraction. On the other hand, Sumiyoshi (2019) citing Kondo (2012) deprived learners of a script during shadowing practice to make the shadowing task closer to the

experience of authentic listening. Teachers can therefore make use of the six-step approach and adapt it to suit their particular context and teaching or research purpose.

### **What Classroom Materials Are Suitable for Shadowing?**

Different teaching materials have been used as shadowing audio including authentic materials such as movies and news (Mochizuki, 2006; Saito et al., 2011; Shiki et al. 2010; Sumiyoshi, 2019), extensive reading books (Nakanishi and Ueda, 2011), audio from textbooks (Hamada, 2011; Suzuki, 2007) and audio from TOEIC textbooks (Hamada, 2012). Although textbooks have been recommended at the  $i-1$  level with at least 95% of the words already known (Kadota 2007, cited in Hamada, 2017), many researchers have used shadowing tasks that were more challenging at  $i$  or  $i+1$  level. Students in any given class have varying levels of proficiency, and teachers may adjust the level of materials to better cater to their students' proficiency needs (Hamada, 2017). Top-down shadowing, which begins with top-down tasks to promote comprehension of challenging materials before learners begin the shadowing task itself, might make it easier to incorporate more difficult materials for shadowing tasks into the lesson. And authentic materials (such as news broadcasts) may engender a stronger focus on sound recognition rather than comprehension due to their level of difficulty (Sumiyoshi, 2019). Nakanishi and Ueda (2011) actually suggest challenging students by moving from the use of easier to more difficult materials during the shadowing course, and that the level of the materials can be adjusted based on ongoing learner-feedback. In a study on the difficulty of materials, Hamada (2012) chose to vary the level of class materials from less to more challenging week by week for an experimental group. The experimental group outperformed the control group (which used consistently easier materials) on comprehension skills-assessment, seemingly because the provision of challenging but attainable tasks provided a better opportunity for learning than tasks that were consistently within learners' capability (Hamada, 2012). By modifying the six-step procedure and adapting shadowing tasks to suit the needs and levels of the learners, there is a degree of flexibility in the range of materials that may be considered for use in a basic shadowing course.

### **Conclusion**

This paper provides a brief overview of the theoretical background of shadowing, and details how shadowing can be effectively utilized in the classroom to develop students' bottom-up processing skills. Learners with poorly developed

bottom-up processing skills tend to over-rely on top-down processing as an inadequate compensation strategy. Incorporating shadowing tasks as a regular part of each lesson can help to redress this imbalance and stimulate learners to use bottom-up and top-down processing more effectively in combination. An essential part of any shadowing program is to first explain the theoretical background of shadowing to learners so that they understand why and how they are going to do it. This paper may be used by teachers as one possible resource to provide students with such an explanation of the theoretical background of shadowing, and to lay out the reasons for the steps that they will take in a shadowing course.

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