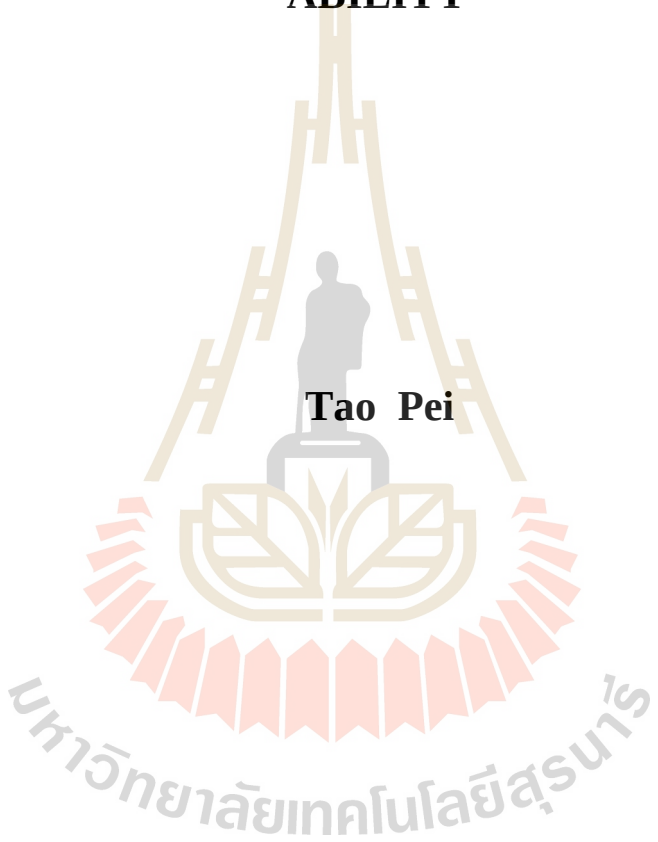
THE EFFECTS OF WEB-BASED METACOGNITIVE LISTENING PRACTICE ON CHINESE UNIVERSITY EFL LEARNERS' LISTENING COMPREHENSION ABILITY

Tao Pei



A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy in English Language Studies

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ผลการฝึกทักษะการฟังตามแบบกลวิธีอภิปัญญาด้วยการเรียนผ่านเว็บ ที่มีต่อความสามารถในการฟังเพื่อความเข้าใจของนักศึกษาจีน ที่เรียนภาษาอังกฤษในฐานะภาษาต่างประเทศ

นายเถ้า เพย์

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาศิลปศาสตรดุษฎีบัณฑิต
สาขาวิชาภาษาอังกฤษศึกษา
มหาวิทยาลัยเทคโนโลยีสุรนารี
ปีการศึกษา 2562

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Suranaree University of Technology has approved this thesis submitted in partial fulfillment of the requirements for the Degree of Doctor of Philosophy.

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เถ้า เพย์ : ผลการฝึกทักษะการฟังตามแบบกลวิธีอภิปัญญาด้วยการเรียนผ่านเว็บที่มีต่อความสามารถในการฟังเพื่อความเข้าใจของนักศึกษาจีนที่เรียนภาษาอังกฤษในฐานะภาษาต่างประเทศ (THE EFFECTS OF WEB-BASED METACOGNITIVE LISTENING PRACTICE ON CHINESE UNIVERSITY EFL LEARNERS' LISTENING COMPREHENSION ABILITY) อาจารย์ที่ปรึกษา : อาจารย์ ดร.จิตพนัส สุวรรณเทพ, 342 หน้า

ในการศึกษานี้ได้มีการคัดเลือกผู้เรียนที่เรียนภาษาอังกฤษในฐานะภาษาต่างประเทศในระดับกลางถึงพื้นฐานจากมหาวิทยาลัยแห่งหนึ่ง จำนวน 132 คน โดยจำแนกเป็น 3 กลุ่ม คือ กลุ่มการฟังเชิงกลวิธีอภิปัญญา (MG) กลุ่มการฟังจากระดับล่างขึ้นระดับบน (BG) และกลุ่มการฟังแบบดั้งเดิม (TG) ในระยะเวลา 12 อาทิตย์ กลุ่มการฟังเชิงกลวิธีอภิปัญญา (MG) ทำแบบฝึกหัดเชิงกลวิธีอภิปัญญา (Vandergrift, 2004 ; 2007) และบูรณาการกับการฟังจากระดับล่างขึ้นระดับบนด้วยการฟังผ่านเว็บ และกลุ่มการฟังแบบดั้งเดิม (TG) ฝึกการฟังเพื่อความเข้าใจจากการฟังแบบดั้งเดิมผ่านเว็บ การศึกษานี้ใช้การออกแบบวิจัยแบบผสมผสานและรวบรวมข้อมูลจากหลายแหล่งเพื่อยืนยันผลลัพท์ของการวิเคราะห์ในสามแง่มุม การศึกษานี้ใช้แบบทดสอบ TOEFL และ TEM-4 เพื่อวัดความสามารถในการฟังเพื่อความเข้าใจของผู้เรียน และใช้แบบสอบถาม MALQ (ซึ่งเป็นแบบสอบถามการรับรู้ความสามารถตนเอง UEQ) เพื่อตรวจสอบการพัฒนาของการรับรู้เชิงอภิปัญญา การรับรู้ความสามารถของตนเองในการฟัง เช่นเดียวกับทัศนคติของผู้เรียนเกี่ยวกับเว็บไซต์การฟังตามแบบกลวิธีอภิปัญญา ในขณะเดียวกัน การสัมภาษณ์หลังการฝึกและบันทึกสะท้อนการเรียนรู้ได้ถูกนำมาใช้เพื่อสนับสนุนผลการทดลองดังกล่าว

การศึกษาเผยให้เห็นถึงผลการวิจัยดังต่อไปนี้

1. แบบฝึกหัดการฟังตามแบบกลวิธีอภิปัญญาด้วยการเรียนผ่านเว็บ แสดงถึงผลการเรียนรู้ด้านความสามารถในการฟังเพื่อความเข้าใจสูงกว่าการเรียนรู้การฟังจากระดับล่างขึ้นระดับบน และการเรียนรู้การฟังแบบดั้งเดิมด้วยการเรียนผ่านเว็บ
2. แบบฝึกหัดการฟังตามแบบกลวิธีอภิปัญญาด้วยการเรียนผ่านเวบ แสดงถึงผลการพัฒนาการรับรู้เชิงอภิปัญญา (ยกตัวอย่างเช่น การวางแผนและการประเมิน และการแก้ปัญหา) โดยเฉพาะอย่างยิ่งสำหรับกลุ่มผู้เรียนที่มีทักษะในการฟังน้อย สูงกว่าการเรียนรู้การฟังจากระดับล่างขึ้นระดับบน และการเรียนรู้การฟังแบบดั้งเดิมด้วยการเรียนผ่านเว็บ

3. แบบฝึกหัดการฟังตามแบบกลวิธีอภิปัญญาด้วยการเรียนผ่านเว็บ แสดงถึงผลที่สูงกว่าในการรับรู้ความสามารถของตนเอง มากกว่ากลุ่มการเรียนรู้การฟังจากระดับล่างขึ้นระดับบนและการเรียนรู้การฟังแบบดั้งเดิมด้วยการเรียนผ่านเว็บ
4. ผู้เรียนแสดงถึงประสบการณ์ที่ดีในกลุ่มการฟังเชิงกลวิธีอภิปัญญาผ่านเว็บ

การศึกษานี้สรุปด้วยบทบาทสำคัญของเว็บไซต์การฟังเชิงกลวิธีอภิปัญญาในการพัฒนาความสามารถในการฟังเพื่อความเข้าใจ การรับรู้เชิงอภิปัญญา การรับรู้ความสามารถของตนเอง ทั้งนี้การศึกานี้ยังแสดงถึงผลทางทฤษฎีและการสอนสำหรับนักวิจัยด้านการเรียนรู้ด้านการฟังและผู้สอนเพื่อศึกษาเพิ่มเติมเกี่ยวกับการใช้กลวิธีอภิปัญญาในสภาพแวดล้อมบนเว็บไซต์

สาขาวิชาภาษาต่างประเทศ ลายมือชื่อนักศึกษา_____

ปีการศึกษา 2562 ลายมือชื่ออาจารย์ที่ปรึกษา_____

TAO PEI : THE EFFECTS OF WEB-BASED METACOGNITIVE LISTENING PRACTICE ON CHINESE UNIVERSITY EFL LEARNERS' LISTENING COMPREHENSION ABILITY. THESIS ADVISOR : JITPANAT SUWANTHEP, Ph.D., 342 PP.

CALL/ LISTENING COMPREHENSION ABILITY/ METACOGNITION/ SELF-EFFICACY/ WEB-BASED LEARNING

Recent decades witnessed the growth of research in L2 listening instruction based on a metacognitive approach (Goh, 2008). The present study combined the metacognitive approach with CALL (Computer-assisted Language Learning) by investigating the effects of web-based metacognitive listening practice on listening comprehension, metacognition awareness, and self-efficacy with Chinese university EFL listeners. The study recruited 132 Chinese low proficiency EFL learners in three groups: the metacognitive listening group (MG), the bottom-up listening group (BG), and the traditional listening group (TG). For 12 weeks, the MG did the web-based metacognitive listening practice, which was built on the metacognitive listening cycle (Vandergrift, 2004; 2007) and integrated with bottom-up listening tasks. The BG undertook the web-based bottom-up listening practice and the TG the web-based traditional listening comprehension practice. With a mixed-method design, this study collected multi-source data for triangulating results. The study used TOEFL and TEM-4 tests to measure learners' listening comprehension ability and questionnaires (MALQ, self-efficacy questionnaires, UEQ) to detect the development of metacognitive awareness, listening self-efficacy, as well as learners' perceptions of the metacognitive listening website. Meanwhile, the post-interviews and reflective journals were

employed to enrich these results. The study unveiled the following findings:

1. The web-based metacognitive listening practice gained the advantage over the web-based bottom-up and traditional listening practice in improving listening comprehension ability.

2. The web-based metacognitive listening practice gained the advantage over the web-based bottom-up and traditional listening practice in developing some factors of metacognitive awareness (i.e., planning-evaluation and problems-solving), especially with the less-skilled listeners.

3. The web-based metacognitive listening practice gained the advantage over the web-based bottom-up and traditional listening practice in developing the listening self-efficacy.

4. Learners showed good experiences in web-based metacognitive listening practice.

This study concluded with the crucial role of the metacognitive listening website in developing listening comprehension ability, metacognitive awareness, and self-efficacy. Also, it provided theoretical and pedagogical implications for language listening researchers and practitioners to further explore the metacognitive listening intervention in a web-based environment.

School of Foreign Languages Student's Signature_____

Academic Year 2019 Advisor's Signature_____

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Firstly, I owe the deepest gratitude to my great mentor, Dr. Jitpanat Suwanthep. Your consistent scaffolding and suggestions made this learning journey exciting and impressive. Your witty and keen observations always broadened my views during the research process. I am pleased and proud ever to be your advisee.

I would also prefer to give gratitude to my committee members, Assistant Prof. Nawamin Prachanant, Assistant Prof. Issra Pramoolsook, Dr. Acharawan Buripakdi, and Dr. Jeannie Butsakorn for sitting on my thesis proposal and defense committee. Your insightful suggestions and constructive comments made my thesis defense a pleasant moment and resulted in a significant improvement of this thesis.

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Finally, I would like to use the thesis to commemorate Prof. Dr. Vandergrift, who, with his talented insights and efforts, influenced the language listening field in the last decades and, on whose contribution, my work could be established.

Tao Pei

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LIST OF ABBREVIATIONS

ALCPT	American Language Course Placement Test
ANCOVA	Analysis of Covariance
ANT	Audio News Trainer
CA	Comprehension Approach
CALL	Computer-assisted Language Learning
CALLA	Cognitive Academic Language Learning Approach
CERN	The European Organization for Nuclear Research
CET-4	College English Test-Band 4
CET-6	College English Test-Band 6
CLT	Communicative Language Teaching
CMS	Content Management System
EFL	English as a Foreign Language
ESL	English as a Second Language
EQ	Ergonomic Quality
FSL	French as Second Language
HQ	Hedonic Quality
HSG	High Scaffolding Group
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol

LIST OF ABBREVIATIONS (Continued)

IELTS	International English Language Testing System
L1	First Language
L2	Second Language
LSG	Low Scaffolding Group
MALQ	Metacognitive Awareness Listening Questionnaire
MSTI	Metacognitive Strategy Training Instruction
NCETC	National College English Testing Committee
NEEA	National Education Examination Authority
PDA	Personal Digital Assistants
RSPS	The Reader Self-Perception Scale
SDG	Self-dictation-generation
SPSS	Statistical Package for the Social Sciences
TEM-4	Test for English Majors Band-4
TOEFL	Test of English as a Foreign Language
TOEFL IBT	Test of English as a Foreign Language Internet-Based Test
UI	User Interface
USQ	User Experience Questionnaire
UX	User Experience

CHAPTER 1

INTRODUCTION

This chapter started with an illustration of the research background concerning the importance of language listening and development of L2 listening instruction and research. Then it provided a detailed elaboration of the problems of current L2 listening instruction in both the general and specific contexts and limitations of current L2 listening research, followed by a description of the rationale of the study. Next, the research questions were exhibited. Finally, it provided an operational definition of critical terms in the study.

1.1 Background of the research

Why language listening skills are essential seems an odd question, since it is evident that people need listening competence to sustain communication. Listening accounts for 50% communication time, speaking 25-30%, reading 11-16%, and writing about 9% (Gilman & Moody, 1984). A report by the Learning Assistance Center of City College of San Francisco in 2005 (Piamsai, 2014) showed that students spent around 20 per cent of hours in school just listening, and this rate could ascend to 50% by involving television watching and communications in which listening is a primary medium. That is not only the case in schools but in the workplace. Krizan, Logan, and Merrier (2007) indicated that workers spent 75% time on communication each working day and half of the time was on listening, and employers rated listening as one of the top five

working skills for employees since “good listening skills could improve productivity and increase both employee and client satisfaction” (p. 401). Besides, listening comprehension was closely related to the whole language achievements (Feyten, 1991), and the improvement in listening comprehension could help adults or teenagers relieve pressure and anxiety in early oral communication, resulting in the development of other skills and a sense of success (Vandergrift, 1999). However, even if listening appears effortless to L1 speakers, it is a complex and multi-faceted ability (Cutler, 2012) and recognized by language learners as the most challenging skill to develop (Graham, 2003; Hasan, 2000; Kim, 2002; Vandergrift, 2007). Meanwhile, language listening remains the least researched among four traditional language skills (Flowerdew & Miller, 2005; Vandergrift, 2007; Field, 2008a; Lynch, 2011; Chou, 2017). For instance, after an examination of nine volumes of *the Journal of English for Academic Purposes*, Lynch (2011) reported the extreme lack of papers on one-way academic listening and only nine articles tackled the issues of listening and listening/speaking (dialogue). Among the nine articles, only one examined one-way listening comprehension. He further stated that the low profile of listening research reveals the extensive negligence of listening in the academic field. Part of the reasons for this negligence was the “inaccessibility of listening and the variety of influences on the success or failure to understand spoken language” (Lynch, 2011, p. 80).

On the other hand, “the image of L2 listening instruction is changing” (Vandergrift, 2004, p. 3). Although listening as a skill taught on its right can be traced back to one of the first listening courses by Abbs, Cook and Underwood (1968), the emergence of Communicative Language Teaching (CLT) in the late 1970s assigned a critical place to listening in language instruction (Goh, 2008). Since then, international English tests

have involved the listening comprehension. Moreover, listening comprehension exercises with its ease and reliability for language practitioners have been viewed as "the most appropriate form for the listening class to take" (Field, 2008b). Although CLT is foregrounding "the need to teach listening for effective oral communication" (Goh, 2008, p. 189), listening activities have become comprehension tests with an excessive focus on the product of listening (Goh, 2008). In response to the product-oriented listening underpinned in traditional language teaching, researchers (Mendelsohn & Rubin, 1995; Vandergrift, 1999, 2003, 2004; Field, 2008b) acknowledged that L2 listening is a skill requiring learners to actively engage in the interpretation process actively and listening instruction should shift from focusing on listening product to listening process.

Accordingly, past decades have witnessed a remarkable growth in L2 listening strategy research, based on the view that "listeners actively process language input" (Rubin, 1994, p. 211). Some studies (O'Malley & Chamot, 1990; Vandergrift, 1997, 2003) indicated that skilled L2 listeners are more active in the listening process and employed more metacognitive strategies than their less-skilled peers. These findings caused a practical necessity to train an L2 learner into an expert listener who could actively utilize their metacognition and regulate his listening process to attain a better listening comprehension. Considering the necessity, Vandergrift (2004, 2007) proposed a metacognitive cycle or Vandergrift's cycle (See Appendix 1) for L2 listening instruction which could guide L2 learners through a concatenation of metacognitive processes of listening and make them self-regulated listeners. This metacognitive cycle offered an option for language researchers and practitioners to conduct metacognitive listening instruction for L2 learners. This cycle represented not just an explicit

instruction of listening strategies but a more implicit way of instruction that allows learners to experience metacognitive processes of listening in a regular basis and during the processes, employ a repertoire of strategies and develop their metacognitive awareness, forming the processing habits similar to those an expert listener (Field, 2008b; Vandergrift & Tafaghodtari, 2010). Many of the subsequent studies (e.g., Bozorgian, 2014; Cross, 2011; Mareschal, 2007; Vandergrift & Tafaghodtari, 2010; Wang, 2016) confirmed the positive effects of the metacognitive cycle on L2 listening comprehension ability and metacognitive awareness, especially for less-skilled L2 listeners. Thus far, most studies (e.g., Bozorgain, 2014; Cross, 2011; Vandergrift & Tafaghodtari, 2010; Wang, 2016) underpinned by this cycle focused on the metacognitive instruction inside the classroom. On the other hand, recent decades have witnessed an increasing exploration of instructional designs of L2 listening by using the "functionality (e.g., use of captions)" and "interactivity (e.g., learners' control over help options)" (Vandergrift & Cross, 2017, p. 7) in the multimedia environment. However, there is a lack of attempts to utilize the information technology, especially the websites, to realize learners' metacognitive listening outside the classroom.

1.2 Statement of the problems

1.2.1 Problems of L2 listening instruction in general contexts

There exists a gap between the interests of second language researchers and language practitioners (Berne, 1998). Although making an active and self-regulated expert listener is what current L2 listening researchers (e.g., Cross, 2014; Vandergrift & Tafaghodtari, 2010) care about, listening teaching techniques employed in the 1960s (e.g., answering comprehension questions) could still find their places in classrooms

and coursebooks 20 years later (Brown, 1987). The traditional “Comprehension Approach” (CA) which emphasizes correct responses to listening questions, still prevails in listening instruction (Field, 1998, 2008b).

Language teachers, therefore, take listening instruction as a way of exposing learners to many listening practices and hold that more practice can bring better listening comprehension ability. While under CA, listening teachers made great efforts to support learners during listening, the focus was still on the listening product rather than the process (Field, 1998; Fahim & Fakhri, 2014). Although extensive exposure to listening should bring striking improvement for some learners, weak learners may be “increasingly demoralized by their lack of perceptible progress” (Field, 2008b, p. 29). Besides, language learners, especially in English as Foreign Language (EFL) contexts, are so much worried about the high-stake tests which “tend to adopt the assumptions of the CA as well as its methodology” in test design (Field, 2008b, p. 33). Thus, the form of listening-to-test prevailed in traditional listening instruction, and “much of what occurs in listening classes could more accurately be termed ‘testing’ rather than teaching” (Siegel, 2015, p. 40). The emphasis on language tests also impacts L2 teachers’ attitudes toward listening. For example, Graham and Santos (2015) conducted a large-scale investigation into L2 teachers’ attitudes towards listening instruction in England. Via a set of data collection tools such as questionnaires, observations, and interviews, the results pinpointed that teachers focused little on how to listen and developing listening strategies. Moreover, listening was less taught than tested, and “efforts to improve listening were concentrated on ways of ensuring correct answers and preparing for assessments and examinations” (p. 95).

Meanwhile, some studies (e.g., Graham & Santos, 2015; Mendelsohn, 1998)

have revealed that listening textbooks still focus little on the listening process. For instance, examining a body of English as Second Language (ESL) listening textbooks, Mendelsohn (1998) concluded that these textbooks were quite traditional in approach, content, and organization despite some "state of the art concepts" stated in the introduction to these books and learners were not taught how to listen to the texts of different types but just exposed to them. Few activities in textbooks could "develop metacognitive knowledge through raising…[learners'] consciousness of listening process" (Vandergrift, 2003a, p. 426). Graham and Santos (2015) detected similar findings through the analysis of ELT teachers' books. They indicated that few notes in these books provided "suggestions that might potentially foster learners' development and/or employment of metacognitive knowledge" (p. 120).

Also, listening comprehension is a very complicated process (Lynch, 2009). Given the complexity, some researchers (Chang & Read, 2006; Vandergrift & Tafaghodtari, 2010; Martínez-Flor & Usó-Juan, 2006) argued that listening is a difficult skill, even most difficult for learners to develop among the four skills. This complexity could be partly demonstrated by top-down and bottom-up processing that happens transiently in a listener's brain. The transient nature of listening comprehension requires enough processing speed and poses a greater challenge to language learners than reading comprehension. Other challenges that language learners faced during listening are the inability to identify lexical meanings, retaining information in memory, and decoding the intended meanings (Goh, 2000) because of the factors such as listeners' temporary distraction, novel expressions, rate of speech, accent, unfamiliar content and cultural references (Lynch, 2011). The process is also affected by many cognitive, affective and contextual factors (Vandergrift & Goh, 2012). Some researchers also

indicated that due to cultural differences, listeners might find it challenging to make accurate inferences during listening (Cohen, 2008; Taguchi, 2008). Therefore, Norris, Davis, and Timpe-Laughlin (2017) stated that "developing listening skills… requires more than merely language knowledge and aural processing abilities… [but] must also attend to other types of input involved in comprehension and to strategies for managing the listening activity in context" (p. 79). Given the problems in L2 listening instruction lacking due attention to the listening process and the challenges of L2 listening faced by L2 learners, further investigation of teaching how to listen is merited.

1.2.2 Problems of L2 instruction in Chinese university context

The present study was conducted at Tongling University (TLU), located in Tongling city in the central part of China. Tongling University was ranked as the Number 569 in 2017, such a rank indicating it was a so-called second-tier university or ordinary university (Zhao, Cai, & Dang, 2017). The present study selects the Foreign Department of Tongling University as a research setting. This department offers two four-year programs: English literature and Business English, the students in both programs are called English majors. For the first two years, the courses selected for both programs are very similar and focus on the development of essential language skills such as listening, speaking, writing, reading, and grammar. Differences lie in the course arrangement in the latter two years, where the Business English majors must register more business-related courses than the English literature majors.

Meanwhile, students are still required to take other courses unrelated to English learning, such as laws, Chinese language, politics, and so forth. All the courses related to the English language are delivered to them with English by Chinese lecturers or native language speakers; thus, learners received English input every day from these

courses. So, it is of great necessity for them to develop listening skills in the university.

The listening course as a separate module is delivered in the first two years of four semesters. The series of listening textbooks called *Step by Step 3000: an introduction to listening* (section 1-4), published by East China Normal University Press, is selected for the course books and shows an ascending difficulty level from section 1-4. Every semester the listening teacher is intended to finish one part of the series. In the first two years, students are required or encouraged to take quite a few national and international tests, such as College English Test Band 4 (CET-4), Band 6 (CET-6), and Test for English Majors Band-4 (TEM-4) to gain certificates on language learning for future job-hunting. The series of textbooks are also mainly designed based on comprehension approach (CA) and mainly consist of the test-based comprehension tasks such as selecting true or false statements, multiple-choice, filling-in-blank questions and dictations, with little reference to listening skills. The design of the textbook did not involve tasks to raise learners' metacognitive awareness of listening, but its focus on the achievements from listening tests could drive language instructors to teach for listening tests and focus on listening products.

Most of the students in TLU are from the rural areas of China, where the English teachers did not pay adequate attention to listening instruction (Pei, 2011). Before enrolling into college, these learners spent enormous time and energy to prepare the College Entrance Exam (Gaokao), the competitive high-stake test. The test is very crucial not just for students to select the access to prestigious or commonplace higher institutions (Fang & Warschauer, 2004), but for schools and individual teachers to earn praises and bonuses (Cortazzi & Jin, 1996). Therefore, "[language] teachers ostensibly committed to improving communication skills find it impossible to resist pressures that

too frequently lead them to focus on test preparation" (Guo, Díaz, & Liyanage, 2016, p. 5) and taking the test becomes the central teaching practice (Liyanage, Bartlett, Birch, & Tao, 2012). After entering the university, passing the English tests (TEM-4) for English majors became another requisite for them to obtain a bachelor's degree from the university. In light of this, many university EFL teachers still employed a test-based instruction approach and focused on improving learners' test scores (Huang, 2018; Wang, 2016).

Many Chinese university EFL learners admitted the difficulty of developing the listening comprehension ability (Li, 1995; Xiao, 1991). Also, due to the large population and the expansion of enrollment since 1999, many Chinese universities had large classes (Chen, 2011; Wang & Yan, 2011), with over 50 learners in each class (Hayes, 1997), and so did TLU. The large classes have yielded some problems in English instruction, such as lack of enough interaction between teachers and students, difficulty in managing class activities, and heavy workloads for teachers (Wang & Yan, 2011). Thus, technology could help support individual learners in large classes by creating a self-directed learning environment and decrease the workloads of teachers. Moreover, many listening teachers in Chinese universities neglected to develop listening strategies (Liang & Wei, 2006) and raise learners' metacognitive awareness of listening. For instance, in daily communication with several listening teachers in TLU, they mentioned the importance of repetitive practice of listening comprehension and bottom-up listening practice such as dictation. No one mentioned the role of increasing learners' metacognitive awareness during listening comprehension. Therefore, a web-based metacognitive listening practice could compensate for the lack of attention of the listening teachers to metacognitive awareness development.

Therefore, listening instruction in the Chinese university context also faced the problem of the overemphasis on listening tests and products. Meanwhile, given the large classroom and teachers' lack of attention to the role of metacognitive awareness in the Chinese context, research on the web-based metacognitive listening practice could be more worthwhile to the context.

1.2.3 Problems in the current L2 listening research

During the past decades, researchers (Goh, 2008; Vandergrift, 2004, 2007; Wenden, 1987, 1998) have admitted the role of metacognition in L2 learning and listening development. Metacognition consists of two crucial concepts—metacognitive knowledge and strategy use or metacognitive regulation. Similarly, there are two general trends in the metacognitive intervention of L2 listening with somewhat different focuses. One is metacognitive strategy instruction, and the other is metacognitive instruction (Cross, 2015). Both instructions have the aim to improve L2 learners' metacognitive strategy use. However, metacognitive strategy instruction focused on the explicit instruction of metacognitive strategies while metacognitive instruction aimed to improve L2 learners' metacognitive knowledge as well as metacognitive strategies and other strategies (Cross, 2015). Metacognitive instruction could lead learners through the processes of listening with regular listening activities to develop their self-regulated listening (Vandergrift, 2003a) and metacognitive knowledge of listening which was crucial for independent learning outside the classroom (Wenden, 1998). As of now, most of the metacognitive instruction studies (e.g., Bozorgian, 2014; Cross, 2011; Mahdavi & Miri, 2017; Vandergrift & Tafaghodtari, 2010; Wang, 2016) used the metacognitive cycle (Vandergrift, 2004, 2007) in the research design.

Until now, more positive than negative effects of metacognitive instruction

existed in previous studies on improved listening comprehension ability and metacognitive awareness (Graham & Santos, 2015). However, some limitations still appeared in previous literature. The first limitation is that the effects of metacognitive instruction varied across learners of different proficiency levels. Some studies (Cross, 2011; Vandergrift & Tafaghodtari, 2010) have shown that only less-skilled learners can benefit from metacognitive instruction. However, this conclusion was not confirmed in Taguchi (2017) which indicated that learners needed enough listening practice to be prepared for metacognitive instruction. The conflicting views raised a question "what is the exact proficiency level of learners who could benefit from metacognitive listening?." Thus, it is still necessary to further detect the performance of learners with different proficiency levels at different language learning stages under metacognitive listening instruction. The second limitation is that metacognitive listening research based on the Vandergrift's (2004, 2007) cycle is almost conducted in an in-class context, and therefore little is known whether such metacognitive intervention could work in an out-of-class listening setting, especially in the form of a web-based out-of-class practice. Third, the metacognitive cycle mainly adopts a top-down approach of listening to "stimulate background knowledge so that learners can predict aural content and subsequently monitor the accuracy of their predictions" (Siegel, 2014, p. 24). Since listening consisted of both top-down and bottom-up processing, some researchers (e.g., Goh, 2008; Vandergrift, 2007; Vandergrift & Cross, 2017) called for the investigation of adding a bottom-up section in the current metacognitive listening cycle. For instance, Graham and Santos (2015) claimed "perhaps adding a bottom-up element would have taken the higher proficiency learners beyond their current level of strategy use" (p. 48), that is, adding such a section could overcome the constraints of the proficiency

threshold so that skilled listeners could benefit from the metacognitive instruction as well. Fourth, previous research has already indicated that strategy instruction is also conducive to L2 listeners' confidence and self-efficacy (Graham & Macaro, 2008; Mareschel, 2007), and self-efficacy is associated with metacognitive awareness (Rahimi & Abedi, 2014). As noted by Vandergrift and Cross (2017, p. 7), "It would be still useful to ascertain whether the pedagogy of the original study [metacognitive instruction] helps learners… perceive listening success as something within their control." So far, little research has empirically investigated the effects of web-based metacognitive intervention on listening self-efficacy. Thus, the self-efficacy dimension adds interest and importance to the present study.

To sum up, although metacognitive instruction has received considerable attention in L2 listening research and generated a bulk of positive results in developing learners' listening metacognition and strategies, few studies have investigated metacognitive intervention in a web-based environment and its effects on listening self-efficacy. Meanwhile, given the conflicting views of the effects of metacognitive instruction with different proficiency levels, further investigation was merited on this issue. Besides, few empirical studies have validated the view held by some researchers (Goh, 2008; Graham & Santos, 2015; Vandergrift, 2007; Vandergrift & Cross, 2017), that adding the bottom-up listening activities into metacognitive intervention could benefit a wider range of listeners.

1.3 Rationale of the research

Given the problems mentioned above in listening instruction and research, the rationale of the research was stated in the following.

a. Some research has suggested that for metacognitive instruction, there is a threshold of listening proficiency, above which L2 listeners can only gain little benefit. The issue of the listening threshold is complicated by Taguchi's (2017) indication that much less proficient listeners are also impervious to metacognitive instruction. For this, Taguchi (2017) has suggested that listeners who receive inadequate listening practice may not benefit from metacognitive instruction due to their lack of necessary bottom-up and top-down skills. Therefore, it deserved research to further ascertain the issue of listening threshold in metacognitive instruction.

b. Although the considerable research focused on the in-class metacognitive instruction in L2 listening, little research investigated the effectiveness of metacognitive intervention in reference to CALL (computer-assisted language learning). L2 learners often showed little self-regulation in an out-of-class extensive listening (Goh, 2002). Given the close relationship between self-regulation and metacognition (Zhang & Zhang, 2019), thus it was essential to develop learners' metacognitive awareness in an out-of-class setting. With the growing access to new technologies, the focus of listening research could shift from the classroom to independent learning (Vandergrift, 2007). On the other hand, as a self-paced and self-directed learning environment (Penland, 2015), the web-based learning could offer learners more chance to monitor and self-regulate their learning processes (McGee & Reis, 2012) and listening technologies could motivate listeners to develop the strategy use (Alm, 2013). This advantage of learning technology just corresponded with the thrust of metacognitive instruction to cultivate a self-regulated listener. Thus, integrating the metacognitive instruction with web-based learning may offer learners more opportunities to rehearse the metacognitive strategies that they learned from

metacognitive instruction, facilitating the development their listening comprehension ability.

However, there is a lack of research tackling the metacognitive listening practice under a web-based environment. To this end, the present study aimed to build a metacognitive listening website for learners to practice in an out-of-classroom setting. Additionally, the study investigated learners' experiences and perceptions of this website.

c. Researchers (e.g., Field, 2004; Mareschal, 2007; Tsui & Fullilove, 1998) acknowledged that language listening is an interaction of top-down processing and bottom-up processing. The existing model of metacognitive instruction or Vandergrift's cycle focuses more on the cultivation of learners' top-down processing ability, either the metacognitive knowledge or strategies use (Siegel, 2014). Previous studies (e.g., Cross, 2011; Goh & Taib, 2006; Vandergrift & Tafaghodtari, 2010) revealed that since the skilled listeners have little room to develop through metacognitive instruction because they are more expert in top-down processing in L2 listening (Berne, 2004; Vandergrift, 2007) and transferring metacognitive strategies from L1 to L2 (Vandergrift & Tafaghodtari, 2010) than the less-skilled peers. Therefore, adding a bottom-up phase may lead the skilled listeners beyond the current level of strategy use (Graham & Santos, 2015) and benefit them in L2 listening development. Although previous research (e.g., Mareschel, 2007; Taguchi, 2017) offered listening transcripts for listeners to read and check their understanding after listening, little research has ever attempted to integrate diverse bottom-up listening tasks into metacognitive instruction, especially in a web-based metacognitive listening practice. As stated in Vandergrift (2007), "how (top-down) compensatory strategies and (bottom-up) word segmentation skills are

orchestrated through the effective deployment of metacognitive strategies to build meaning continues to be an important research question for understanding the approach of the skilled L2 listener" (p. 198). Thus, to cover this gap, the present study attempts to integrate bottom-up listening sections into the web-based metacognitive listening practice.

d. Previous research has already indicated that self-efficacy is an critical predictor of L2 learners' academic success (Greenen, Miller, Crownson, Duke, & Akey, 2004), reading (Mills, Pajares & Herron, 2006), writing (Hetthong & Teo, 2013) and listening achievements (Chen, 2007). Meanwhile, self-efficacy is associated with metacognitive awareness (Rahimi & Abedi, 2014) and listening strategies (Kassem, 2015). Some research also reported the benefits of L2 listeners' self-efficacy through strategy (Graham & Macaro, 2008) and metacognitive instruction (Vafaeeseresht, 2015). Even so, the conclusion remains somewhat indefinite due to Taguchi's (2017) finding that the improved self-efficacy is not due to metacognitive instruction but the sheer amount of practice. Thus, it is still interesting and valuable to ascertain the effects of metacognitive instruction on L2 listeners' self-efficacy (Vandergrift & Cross, 2017). Meanwhile, no research had tackled the effects of web-based metacognitive listening practice on listening self-efficacy, which was examined in this study.

Therefore, the present study added some new elements to the field of L2 metacognitive listening instruction. Firstly, to cover the paucity of metacognitive listening research with the CALL (computer-assisted language learning), the present study attempted to establish a web-based metacognitive listening practice based on metacognitive listening cycle (Vandergrift, 2004, 2007). With this web-based metacognitive listening, learners could conduct self-listening and be guided through

metacognitive processes of listening to develop their metacognitive awareness. Secondly, the bottom-up skills training was integrated into the later stages of the metacognitive listening practice. Thirdly, the development of learners' self-efficacy was investigated. Finally, the present study explored the effectiveness of web-based metacognitive listening practice with learners of different proficiency levels.

1.4 Significance of the research

The present study could potentially contribute to the development of Chinese EFL learners' listening comprehension, metacognitive awareness as well as the listening self-efficacy. It could also provide a sample of constructing a web-based metacognitive listening website robustly based on metacognitive listening approach (Cross, 2015; Goh, 2008; Vandergrift & Goh, 2012), involving the development of metacognitive knowledge and strategy use. Under the web-based metacognitive listening practice, learners could progressively control their listening process through, in a regular basis, experiencing the metacognitive processes of listening, reflecting on their metacognitive knowledge, and employing listening strategies to solve their listening problems. This may not just lead to the self-regulated listeners but even the autonomous learners, for this autonomous learning could be transferred to other learning conditions with metacognitive practices (Bransford, Brown, & Cocking, 2000). Meantime, the practice of using metacognitive listening website could ease the burdens of teachers in metacognitive or strategy instruction (Li & Renandya, 2012), especially in large classes. Since the study was conducted in a second-tier university in China, the results could also be generalized into other universities in China.

Also, the findings of the study could add literature to the current research on the

metacognitive instruction of listening, since the mixed results existed from previous studies of metacognitive instruction and rare studies so far have investigated the effects of the web-based metacognitive practice (based on the metacognitive listening approach in particular). Additionally, results in the study could examine the previous assumption concerning the wider benefits to language listeners by integrating bottom-up listening practice into metacognitive intervention and shed more light on the effectiveness of the metacognitive intervention with the listeners of different proficiency levels.

1.5 Research objectives and questions

In light of the previous rationale, the present study has the following objectives:

(1) to investigate the effects of web-based metacognitive listening practice on the development of listening comprehension ability with Chinese university EFL learners at different proficiency levels, in comparison with other online listening conditions.

(2) to investigate the effects of web-based metacognitive listening practice on the development of metacognitive awareness with Chinese university EFL learners at different proficiency levels, in comparison with other online listening conditions.

(3) to investigate the effects of web-based metacognitive listening practice on the development of self-efficacy with Chinese university EFL learners at different proficiency levels, in comparison with other online listening conditions.

(4) to investigate the learners' perceptions of web-based metacognitive listening practice.

The present study will address the following research questions.

Question 1:

What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' listening comprehension ability classified by proficiency levels?

Question 2:

What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' metacognitive awareness classified by proficiency levels?

Question 3:

What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' listening self-efficacy classified by proficiency levels?

Question 4:

What are the learners' perceptions of the web-based metacognitive listening practice?

1.6 Definition of key terms

The following part describes the operational definitions of the key terms in this study.

Listening comprehension ability

Listening comprehension ability was generally defined as "one's ability to comprehend spoken language at the discourse level... that involves the processes of extracting and constructing meaning" (Kim & Pilcher, 2016, p. 159). Here, the listening tasks were mainly referred to as the non-reciprocal listening tasks (Anderson & Lynch,

1988) where the information was transferred unidirectionally (from speaker to listener). Thus, the operational definition of the listening comprehension in this study was to what extent listeners could extract and construct meaning from the unidirectional listening tasks, such as other people's conversations, lectures, news, etc. In the study, the TOEFL tests and TEM-4 tests measured the levels of listening comprehension.

The two terms of "listening comprehension achievement" and "listening comprehension ability" were not distinguished strictly in L2 listening literature. Thus, most of time, the present study tended to use the "listening comprehension ability" as the overarching term to refer to learners' ability of listening comprehension. Also, given that achievement was more detectable than the ability, this study also used the term "listening comprehension achievement" to refer to listening achievement as measured by the English proficiency tests, such as the TOEFL.

Listening self-efficacy

Self-efficacy means the judgment of one's ability to complete a specific behavior and arrive at the desired performance (Bandura 1977, 1986). Self-efficacy of listening in this study referred to L2 listeners' beliefs in fulfilling specific listening tasks. Self-efficacy is task-specific and "not of a general nature" or "personality traits" (Van der Bijl & Shortridge-Baggett, 2002, p. 10), which explains the main differences between self-efficacy and self-confidence or self-esteem which show the individuals' general feeling of confidence and values (Maddux, 2002; Van der Bijl & Shortridge-Baggett, 2002). Thus, the self-efficacy could be a situation-specific self-confidence. The study employed a self-efficacy questionnaire to measure the self-efficacy. The self-efficacy questionnaire tackles learners' beliefs in fulfilling specific listening tasks. However, self-efficacy is closely related to self-esteem or confidence (Afari, Ward, & Khine,

2012). Given that learners were more familiar with the catchword “confidence,” during the interviews and journals, they were only required to report their confidence in listening that could infer the degrees of listening self-efficacy.

Listening strategies

As part of language strategies, listening strategies in the study are defined here as the strategies used by language learners to improve their listening performance and develop their listening ability. Following the classification in O’Malley and Chamot (1990), as well as its adaptation by Vandergrift (1997), listening (comprehension) strategies consist of cognitive, metacognitive and social-affective strategies. Metacognitive strategies are these higher-order mental activities (e.g., planning, monitoring, and evaluating) of directing the listening process. Cognitive strategies refer to the strategies “operates directly on incoming information, manipulating it in ways” (O’Malley & Chamot, 1990, p.44) to improve listening. Socio-affective strategies are those employed by learners to deal with “affective or emotional response […] or draw on peer/teacher support” (Graham & Santos, 2015, p.28) to achieve success in a listening activity. The operational definition of the listening strategies in the study follows the general classification of strategies, involving cognitive, metacognitive and social-affective strategies in listening.

Metacognition

The metacognition represents the high-order cognition and means “thinking and cognition about cognition phenomenon” (Flavell, 1979). Researchers have different views on the categorization of metacognition (Schraw, 1998). Since most L2 studies related to the metacognition focused on the metacognitive knowledge (Flavell, 1979; Wenden, 1987) and metacognitive strategies or regulation (Brown, Bransford, Ferrara,

& Campione, 1983), the metacognition in this study mainly consists of the two dimensions: metacognitive knowledge and the use of metacognitive strategies. Metacognitive knowledge consists of the knowledge of task, person, and strategy. Metacognitive strategies consist of the strategies of planning, monitoring, evaluation and problem-solving. The metacognition is represented by learners' metacognitive awareness, that is, to what extent they are aware of the metacognitive knowledge and strategy use. The present study measured listening metacognitive awareness with Metacognitive Awareness Listening Questionnaire (MALQ).

Metacognitive strategies

Although different researchers have made slightly different classification on this term (e.g., O'Malley & Chamot, 1990; Vandergrift, 1997; Brown, 1987; Osman & Hannafin, 1992), "planning, monitoring, and evaluation are accepted by many as the three central activities" (Greensfeld, 2008, p. 293). Vandergrift and Goh (2012) argued "[all] strategies are metacognitive in that they enable learners to change the way they learn and use language purposefully" (p. 85) and they added "problem-solving" into the list of metacognitive strategy. Since the present study follows the metacognitive instruction principles in Goh (2008) and Vandergrift (2004, 2007), by complying with Vandergrift and Goh's (2012) classification, the metacognitive strategies in the study consist of planning, monitoring, evaluating, and problem-solving.

Perception

According to Cambridge dictionary, perception (perception, 2020) means "the way someone thinks and feels about a company, product, service, etc." Like this definition, the perception in the last research question refers to the way that people think and feel about the web-based metacognitive listening practice and also the experience with it.

Proficiency Levels

Proficiency levels in the study mean the learners' listening proficiency levels before treatment, which were examined with TOEFL listening tests. The mean score (M = 4.5) of the TOEFL tests by all 132 participants indicated that they were at the below low-intermediate proficiency level (ETS, 2019). The participants were further divided into the less-skilled and skilled listeners in each research group based on the mean score (M = 4.5). Those participants in each group scored above the mean score were the skilled listeners, and those below it were the less-skilled listeners.

Top-down and Bottom-up processing

L2 listening researchers (e.g., Tsui & Fullilove, 1998; Field, 2004; Mareschal, 2007) have acknowledged that listening involves the interaction of top-down processing and bottom-up processing. The two types of processing reflect two cognitive processing of opposite directions in language listening. The top-down processing means a listener starts listening by availing himself of world knowledge and contextual knowledge to facilitate his comprehension of particular listening materials. The bottom-up processing implies a listener begins listening process from decoding the small linguistic features of speech (e.g., phonemic segments), moves to the upper level of linguistic elements (e.g., words and sentences) and combines with the world knowledge and context to achieve the comprehension of particular listening materials. The study also follows this classification of these terms.

The web-based metacognitive listening practice

As the core variable, the web-based metacognitive listening practice means the online self-regulated listening practice — which involves learners into planning, monitoring, problem-solving, and evaluation processes while listening and some

bottom-up exercises (e.g., dictation and reading-while-listening) — and self-reflection activities through keeping journals and discussion.

This listening practice built on the tentative metacognitive listening practice framework (See Appendix 2). This framework is based the principles of metacognitive listening instruct-ion from Goh (2008) and Vandergrift and Goh (2012), consisting of two tasks—integrated experiential tasks and guided reflection tasks. The integrated experiential tasks were the online listening tasks integrated with metacognitive activities, to guide learners through the metacognitive processes of planning, monitoring, evaluation, and problem-solving to increase their metacognitive awareness and deployment of strategies. The guided reflection tasks aim to elicit learners' reflections on the metacognitive knowledge of listening (i.e., the task, person, and strategy knowledge), thus increasing their regulation and management of listening process (Wenden, 1998) and more engagement in the integrated experiential tasks. Meanwhile, some bottom-up activities such as partial dictation and listening-while-reading are involved in the integrated experiential tasks in order to allow learners to develop their bottom-up listening skills. Based on previous studies (e.g., Cross, 2011; Vafaeeseresht, 2015; Vandergrift & Tafaghodtari, 2010), the current web-based metacognitive listening practice based on this framework could contribute to the development of metacognitive awareness, self-efficacy, and bottom-up listening skills, thus leading to the overall development of listening comprehension ability. The success in listening comprehension, as mastery experience, could, in turn, raise learners' listening self-efficacy. The improved self-efficacy could also offer learners enduring interest (Bandura, 1989) to engage in listening practice and continue to enhance their listening comprehension ability. Therefore, a double-headed arrow in the figure

indicated the interrelationship between the development of listening comprehension and that of metacognitive awareness, self-efficacy, and bottom-up skills.

1.7 Summary

To sum up, this chapter started introducing the background of the research. Then it discussed the problems in L2 listening instruction from both the general and specific Chinese contexts and in L2 listening research. Next, it illustrated the rationale, significance and objectives of the study. Finally, the research questions and definitions of the key terms were presented. The next chapter would discuss the current literature and theories related to the study.

CHAPTER 2

LITERATURE REVIEW

This chapter provided a detailed review of the literature related to this study. It firstly discussed the nature of listening and two cognitive models of listening. Secondly, it explained the origins and definitions of metacognition and its development in language learning. Thirdly it elaborated on the current research on metacognitive intervention in L2 listening. Fourthly it explicated the web-based listening and metacognitive intervention under the multimedia environment. Furthermore, it elucidated the bottom-up approach of L2 listening and self-efficacy in L2 listening. Finally, it presented a tentative framework of the current metacognitive listening practice.

2.1 Nature of listening

From a cognitive perspective, this section introduced the cognitive models of listening comprehension, and controlled and automatic processing.

2.1.1 Listening as a cognitive process

Researchers (Ahuja & Ahuja, 2007; Sellnow, 2004; Verderber, Verderber, & Sellnow, 2012) acknowledged that hearing and listening were two different but related processes. This view was reflected by the fact that even hearing-impaired people could engage in successful listening (Verderber et al., 2012). According to Abuja and Ahuja (2007), hearing was the preconditions of listening, but listening added the elements of

"comprehension," "attention" as well as "remembering" (p. 13) to hearing and listening process was not complete unless one assigns meaning to a sound. An example of hearing rather than listening is that in a group discussion, one may miss other people's talks when he is focusing on communicating with one friend. Even if he could hear the stream of sounds from other people's talks, he may fail to understand and remember them. Therefore, hearing was a physiological process of receiving sound waves and sending them to the brain, whereas listening was a psychological and cognitive process (Sellnow, 2004; Ahuja & Ahuja, 2007).

2.1.2 Cognitive models of listening

Listening, sometimes termed as listening comprehension, is the first language skill developed by the children (Rost, 1994). Most children with normal hearing need little effort and compulsive schooling to achieve the listening competence (Siegel, 2015), but L2 learners had various problems in their listening comprehension (Goh, 2002). Despite the difference, the researchers hold the consensus that the primary cognitive process of L1 and L2 listening was similar (Buck, 2001; Farch & Kasper, 1986). The following sections introduced two influential models of listening comprehension, namely, the interactive model of top-down and bottom-up processing and Anderson's three-stage model (Graham & Macaro, 2008). The two models could explain the cognitive processes of how L1 or L2 speakers achieve listening comprehension.

2.1.2.1 The interactive model

One fundamental and influential model for understanding the cognitive process of L2 listening is the interactive model of top-down and bottom-up processing (Field, 2004; Lynch & Mendelsohn, 2013; Mareschal, 2007; McLaughlin,

Rossman, & McLeod, 1983; Tsui & Fullilove, 1998).

Bottom-up processing, as the name suggests, means a sequence of processing listening input from smaller units into larger ones to build up the message meaning. In this respect, processing usually starts from the most basic unit phoneme and then moves to a word, chunks, and sentences and draws on the context to make meaning. The primary knowledge source listeners use to complete the processing is linguistic knowledge which involves phonological knowledge, lexical knowledge, syntactic knowledge and even pragmatic knowledge. In this case, listening comprehension from the bottom-up processing perspective could be viewed as decoding (Richards, 1990). Listening based on this processing is also called language-focused listening, where listeners pay deliberate attention to linguistic features (Nation & Newton, 2009). For example, to complete a sentential dictation task, listeners attempted to recognize words in an utterance and constitute these words into a grammatical sentence, based on the lexical, grammatical, and phonological cues.

The top-down processing means that listeners make interpretations through arousing schemata or proposition and resorting to other knowledge sources before decoding the sound streams. So, the process is sequenced from the large units as prior knowledge, pragmatic and discourse knowledge to the linguistic knowledge in order to facilitate decoding speech sound and build meaning. That is, listeners make use of knowledge of "schema" in the long-term memory to understand what is heard (Lynch, 2006). Top-down processing is often meaning-focused (Nation & Newton, 2009) in that learners attend more to the meaning rather than the linguistic information in the aural input. One example was from Richards (1990) that when you were listening to a story, you may activate your "schema" or expectations for the story before listening, such as

"where does the story happen?" "Who are the characters?" "around what event or events does the story turn?" and "what will the outcome be?" (p. 52)

While listening, a learner usually draws on both top-down and bottom-up processes to build up the meaning of speech (Lynch, 2006). For example, a listener may use the schema to infer the unknown words or phrases in the decoding or monitor the decoding processes with context (See the perception and parsing stage in the following section). So, it could make sense that when learners can understand the meaning of some sentences before they start to decode them by recalling non-linguistic knowledge like situational, discourse and world knowledge. In this case, the knowledge gained from top-down processing assisted and encumbered bottom-up processing (Davis & Johnsrude, 2007). Learners with the limitation on linguistic knowledge often resorted to top-down processing to supplement their comprehension gaps in bottom-up processing.

The extent to which listeners employ either type of processing may depend on factors such as the purpose of listening, learner characteristics and the listening context (Vandergrift & Goh, 2012) and listeners' confidence (Field, 2008b). Due to the transient nature of listening, listeners often resorted more to top-down processing than readers (Lund, 1991). Schema was more critical for L2 listeners than the L2 readers (Gavin, 2014) because unlike L2 readers who had enough time to engage in bottom-up processing, L2 listeners must establish comprehension in a short amount of time, thus requiring more creative construction from top-down processing than the accurate recognition of utterance (Pan, 2016). Moreover, some researchers (e.g., Goh, 2008; O'Malley & Chamot, 1990; Vandergrift, 1996) indicated that skilled listeners used more metacognitive strategies than the less-skilled listeners who counted more on

online translation and bottom-up processing than their skilled counterparts (Vandergrift, 2003b). Thus, Pan (2016) mentioned that L2 listeners, notably the less-skilled listeners, should actively employ top-down processing and give up the unrealistic overreliance on the bottom-up processing of decoding every linguistic element in the input.

Therefore, it is of necessity to provide top-down processing training for listeners. Meanwhile, some researchers (e.g., Cross, 2011; Vandergrift & Tafaghodtari, 2010) have indicated that metacognitive listening instruction which is more oriented to the exercise of top-down processing (Siegel, 2014) could improve learners, especially the less-skilled listeners' listening comprehension. On the other hand, some researchers (e.g., Field, 2003, 2008a; Lynch & Mendelsohn, 2013) also suggested that listening instruction should also give particular focus to the development of bottom-up processing skills, such as word-recognition skills. In consideration of the importance of both top-down and bottom-up processing, the present study aimed to develop L2 learners' listening comprehension proficiency via a metacognitive listening approach (top-down oriented) supplemented with bottom-up listening activities.

2.1.2.2 The Anderson's three-stage model

The cognitive processing model proposed by Anderson (1985) consists of three stages of listening comprehension, namely, perceptual processing (or perception), parsing and utilization. The model has enrich the insights into the process of how listeners constructed meaning and provided more room for researchers to explore learners' listening problems. It is noteworthy that these steps operate in a non-linear fashion but also reflect the interactional nature of listening processing, similar to the interactive model of listening.

In the stage of perception, the brain initially encodes and recognizes

the input of as the phonetic representation stored in the working memory while inhibiting the unrecognized sounds from entering the further processing stages. The perception stage is mainly bottom-up processing, but sometimes top-down processing also occurs (e.g., listeners may draw on context to identify specific sounds in meaningful words or expressions). How many of the incoming sound streams listeners could perceive relies on listeners' language proficiency, as skilled listeners could usually make more accurate perceptions. Additionally, L1 influence, speed of the sound stream, dialect, and text familiarity also impact the success of perception (Vandergrift & Goh, 2012). For example, the difficulty of Japanese EFL learners to distinguish /l/ and /r/ in English could distort their perception of English words with the phoneme /r/.

During the stage of parsing, the identified words or chunks are further encoded into a mental representation by drawing on the linguistic knowledge stored in the long-term memory. The parsing stage consists of both bottom-up and top-down processing in that the phonetic representation is parsed for meaning through a set of phonological, syntactical and semantic analysis and monitoring with context or cotext (the words surrounding a particular word or passage within a text that provide context and help to determine meaning). The degree of parsing mainly depends on learners' language proficiency, especially the storage of linguistic knowledge (Vandergrift & Goh, 2012). The product of parsing is to create a mental representation of meaning for the speech sounds.

The utilization stage exhibits a top-down processing, in which the parsed meaningful representation is monitored and enriched with the discourse, prior, and pragmatic knowledge stored in the long-term memory. In this stage, listeners can generate a conceptual framework to help "match their emerging interpretation of the

text or conversation and to go beyond the literal meaning of the input, when warranted" (Vandergrift & Goh, 2012, p. 22).

Usually, native speakers or fluent listeners could undergo the processes of perceptions, praising and utilization rapidly or automatically. However, for most L2 listeners such automaticity is challenging to reach due to limited linguistic knowledge, and these stages are processed in a constrained way so that listeners may halt in one of three stages and failed to construct a tangible meaning. Thus, L1 and L2 listening displayed another two means of processing in information processing theory-controlled processing and automatic processing.

2.1.3 Controlled and automatic processing

According to Shiffrin and Schneider (1977), the brain processed incoming information in either of the two ways: controlled processing or automatic processing. Controlled processing of information usually entails deliberate attention and mental efforts, whereas automatic processing suffers no capacity limitations and is not controlled or inhibited. Most L2 listeners often need "conscious attention and processing of elements in speech stream" (Vandergrift & Goh, 2012, p. 19) while L1 listeners could move back and forth between the top-down and bottom-up processing or Andersons' three stages in a very rapid and effortless way (Field, 2008b). As a cognitive skill, when listening operates in an automatic mode, the attention demands decrease so that the brain retains extra attention for other essential tasks (Williams, Davids, & Williams, 1999). Thus expert listeners could have more opportunity to develop critical listening than less-skilled listeners (Vandergrift & Goh, 2012).

The controlled processing and automatic processing could be viewed as two extremes in a continuum. Automatic processing is parallel across perceptual channels,

memory comparisons, and levels of processing, whereas controlled processing is serial (Wilson & Keil, 2001). The cognitive skills like L2 listening are developed from controlled processing to automatic processing, although L1 listening may not be the case. Therefore, automatic processing is the stage that L2 listeners aim to arrive at and "require an appreciable amount of training to develop fully" (Shiffrin & Schneider, 1977, p. 156).

In summary, this section explained two influential cognitive models of language listening. Both models suggested the interactive nature of the listening process, in which a listener often switched from top-down processing to bottom-up processing to gain comprehension. To attain successful listening, learners should "control both processes well to create a mental representation from what they have heard" (Kurita, 2017). Meanwhile, L1 and L2 listeners differ in the way of processing to be controlled or automatic. L2 listeners are more confined to control processing that with sufficient practice, could be translated into automatic processing.

As a complicated process, L2 listening is affected by many cognitive, affective, and contextual factors, as illustrated in the following section.

2.2 Factors affecting L2 listening comprehension

Vandergrift and Goh (2012) detailed the cognitive, affective and contextual factors affecting L2 listening comprehension.

Cognitive factors involved the linguistic knowledge (vocabulary knowledge, syntactic knowledge, discourse knowledge, and pragmatic knowledge), prior knowledge, L1 listening ability, sound discrimination ability, working memory capacity as well as metacognition. According to Vandergrift and Goh (2012), some of these

factors such as L1 listening ability, sound discrimination ability, working memory capacity, metacognitive and prior knowledge could be transferred by L2 learners from their L1. However, linguistic knowledge formed in the language learning processes and vocabulary knowledge greatly affected L2 learners' listening comprehension (Vandergrift & Baker, 2015, 2018; Zhang & Zhang, 2020). Listening texts loaded with unfamiliar words also block L2 learners' listening comprehension (Carson, 2019).

Affective factors consisted of anxiety, self-efficacy, and motivation. These factors could affect language listeners' attitudes and engagement in listening tasks as well as the experience of success in listening comprehension. According to Vandergrift and Goh (2012), these factors also correlated with each other. For example, a confident listener was "likely more motivated, less anxious and to possess higher levels of self-efficacy" (pp. 72-73).

Contextual factors involved interactive listening, listening in informal and formal learning contexts.

The interactive listening context was a two-way listening context, meaning "the type of listening language learners would like to develop to interact with L2 speakers" (p. 73). This type of listening was susceptible to several affective factors such as willingness to take risks, motivation, fear of losing face, anxiety. Meanwhile, power relations also influenced learners' comprehension in this listening context.

The other two contexts indicated a one-way listening context where L2 learners would like to achieve listening comprehension in informal contexts, the out-of-classroom contexts and the formal contexts, the in-classroom contexts. Moyer (2006) indicated that the quality and quantity of language contact with native speakers in the informal contexts would contribute to L2 listening ability and confidence.

Listening in formal classroom contexts was mostly discussed in L2 listening research (Vandergrift & Goh, 2012). A lecturer's sensation of listeners' needs could impact their listening comprehension (Miller, 2009). Learners need to self-regulate their learning, especially in the academic listening, due to "the huge classes, increased alienation of students and the wide range of lecture types" (Vandergrift & Goh, 2012, p. 75). Besides, learners' observation of the kinetics or the body movement of the speaker could improve their listening comprehension in all these contexts (Vandergrift & Goh, 2012).

Although many factors influenced L2 listening processes, the metacognition penetrated the whole listening process (Vandergrift & Goh, 2012) and was crucial to make a self-regulated listener (Wenden, 1998). As the core concept of this study, the following section would discuss the concept of metacognition and its development.

2.3 Metacognition and its development

Writings on metacognition may date back to at least as far as *De Anima* (On the Soul) and the *Parva* Naturalia of the Greek philosopher Aristotle (Colman, 2015, p.456). Some researchers (Schneider & Lockl, 2002; Al-Shaye, 2002) indicated that the idea of metacognition found its way in the early works of Dewey (1910), Thorndike (1917), Vygotsky (1978, 1986) as well as Piaget (1973). Dewey (1910) ever stated that learning and reading needed such high-order activities as some planning, checking and evaluating. These activities are similar to the metacognitive strategies. Thorndike (1917) ever argued that reading was a sort of reasoning. Vygotsky (1986) stated that the development of knowledge consisted of two main parts, unconscious knowledge acquisition and active control over the knowledge; even at the early school age, "the

high intellectual functions, whose main features are reflective awareness and deliberate control come to the fore in the developmental process" (p. 166). These "high intellectual functions" can be viewed as metacognition that exerts control over the learning process. Vygotsky (1978) emphasized that classroom instructors should cultivate learners' regulation on their learning and make them think on their own. Piaget (1973) stated that teachers could facilitate children's cognitive development by asking them to think about their learning process and strategies.

The modern term "metacognition" expanded from early research on "metamemory" which focused on children's knowledge and thoughts on memory (Flavell, 1971) and was credited to Flavell's (1971, 1976, 1979) and Brown's (1980, 1987) works (Hacker, Dunlosky, & Graesser, 2009).

According to Flavell (1979), metacognition is "one's knowledge concerning one's cognitive processes and products or anything related to them … [and] refers, among other things, to the active monitoring and consequent regulation and orchestration of those processes about the cognitive objects on which they bear, usually in the service of some concrete goal or objective" (p. 232). Flavell (1979) divided metacognition into four components: metacognitive knowledge, metacognitive experiences, goals or tasks, and actions or strategies. All these components interact to affect learners' cognition. Metacognitive knowledge refers to learners' knowledge about factors that influence the course and outcomes of cognitive enterprises and has three categories—person, task, and strategy knowledge. The person knowledge means any knowledge and beliefs of a person about himself and other people as "cognitive processors" (p. 907). For example, a learner knows he is good at English writing but has some shortages in English listening. This self-knowledge can influence his performance in learning situations. The

task knowledge is the knowledge about a task and the demands the task requires of a learner. Such knowledge could help the learner to choose appropriate strategies to tackle the tasks. For example, when a learner knows that listening activities need learner's prediction of the information, he may use the planning strategy during listening. Strategy knowledge means knowledge about the strategies that are likely to facilitate the completion of the tasks. It involves a collection of metacognitive and cognitive strategies. For example, a learner may know that the evaluation of the listening outcomes may be conducive to his L2 listening. Most of the metacognitive knowledge occurs in a combination of two or three categories, for example, "you might believe that you (unlike your brother) should use Strategy A (rather than strategy B) in Task X (as contrasted with Task Y)" (Flavell, 1979, p. 907).

Metacognitive experience meant "any conscious cognitive or affective experiences that accompany and pertain to any intellectual enterprise" (Flavell, 1979, p. 906). For example, one may suddenly be aware that the task he is tackling is similar to the one he did last time, leading him to use the forgoing cognitive and metacognitive strategies to solve the problem at hand. The other example is that one has the sudden feeling that he still needs to do something to complete the task at hand. Metacognitive experiences are often guided and informed by metacognitive knowledge. Moreover, some metacognitive experiences were a kind of conscious metacognitive knowledge (Flavell, 1979).

Goals or tasks meant the objectives of cognitive activity; actions or strategies refer to the actual strategy use that was guided by the metacognitive knowledge and employed to meet these objectives (Flavell, 1979). According to Flavell (1979), "metacognitive experience, combined with additional metacognitive knowledge,

causes you to select and use the cognitive strategy of asking questions of knowledgeable other people" (p. 909). The metacognitive experience, knowledge, and strategy use interacted to achieve the goals of cognitive activity. Note that Flavell (1979) acknowledged the role of strategies in attaining cognitive goals or tasks but did not focus much on metacognitive strategies, which, as stated later, were expanded by Brown et al. (1983).

The following example clarified the way metacognition directs our learning.

> Janice's metacognitive experiences enabled her to ascertain how the job was proceeding. When she noticed that she was applying the wax too thickly, she was making an evaluation or judgment about her performance on a metacognitive level. This type of awareness may be very brief, involving only that instant recognition that things are, or are not, going well. In response to that metacognitive awareness, she began to think and act strategically about what to do to solve the problem. (Almasi & Fullerton, 2012, pp. 18-19)

From the above example, metacognition could lead learners to be aware of the learning process and strategy use "as well as the ability to generalize and transfer [these strategies] to different tasks, contexts, and situations" (Suwanthep, 2002, p. 111).

Slightly different from Flavell's (1976, 1979) conceptualization, Brown et al. (1983) developed the concept of metacognition from an information-processing approach to human thought (Reeve & Brown, 1985). According to Brown et al. (1983), metacognition involved two different but related fields—knowledge about cognition and regulation of cognition, with particular attention on the latter. The knowledge about cognition is close to Flavell's (1979) "metacognitive knowledge" (p. 906). This form of knowledge is often stable and fallible and develop at a late age. The regulation of

cognition, similar to Flavell's (1979) "actions and strategies" (p. 906), consists of the processes of regulating and overseeing learning. These processes consist of activities of planning, monitoring, and checking and are "unstable, and relatively age-independent" (Brown et al., 2003, p. 87). These processes could be viewed as the early classification of metacognitive strategies. Besides, Flavell and Brown held different views on the ages of metacognitive development and the conscious control of metacognitive processes. Flavell indicated that metacognitive development was almost complete by age 8 or 9 (Kreutzer, Lenonard, & Flavell, 1975), and learners needed to consciously control metacognitive processes so that they could be useful (Reeve & Brown, 1985). However, Brown et al. (1983) and Reeve and Brown (1985) demonstrated that metacognitive processes started from early childhood, even if developing quite slowly during the school years, and there was room for metacognitive development even in adolescents and adults.

Additionally, Brown and DeLoache (1978), Brown et al., (1983), and Reeve and Brown (1985) indicated metacognitive processes refer to "the self-regulatory activities of the cognitive system" (Reeve & Brown, 1985, p. 347) which included planning, monitoring, checking and regulating problem-solving behavior; the development of problem-solving skills was attributed to learners' gradually control and regulation of their metacognitive processes. Meanwhile, the awareness of self-regulation activities is contingent on the social interaction with others and "others... initially take responsibility for articulating metacognitive processes" (Reeve & Brown, 1985, p. 347)

Wenden (1987, 1991, 1998) firstly related the concept of metacognition to L2 learning. According to Wenden (1987), the two crucial dimensions of metacognition (i.e., metacognitive knowledge and regulatory skills or metacognitive strategies)

influenced each other. Metacognitive knowledge was constructed and developed through the exercise of regulatory skills and metacognitive knowledge influences learning tasks through regulatory skills.

Wenden (1987, 1998) indicated that the concept of metacognition could broaden the existent insights in L2 research and instruction. In particular, metacognition was closely related to three views in Second Language Acquisition (SLA), namely, learner strategies research and instruction, self-directed language learning and sociocultural theory, all of which advocated the active role for the learner in language learning (Wenden, 1998). Firstly, more awareness of the importance of metacognitive knowledge could refine the existent status of learner strategy research and instruction, since learners with metacognitive knowledge could energize strategy use. Secondly, metacognitive knowledge featured significantly in self-directed learning by leading to the conduction of metacognitive strategies in language learning. Thirdly, the sociocultural theory in considering the factors leading to self-regulated learning often overemphasized the role of interactional settings but ignored that of metacognitive knowledge or beliefs embedded in the settings or elicited through interaction. Wenden (1998) further suggested that metacognitive knowledge is a prerequisite for self-regulation of language learning by empowering the processes of self-regulation and cognitively shape and direct these processes, but domain knowledge was also necessary to complement metacognitive knowledge.

In short, the idea of metacognition is not recent but could be traced back to works of Dewey (1910), Thorndike (1917), Vygotsky (1978, 1986) and Piaget (1976). Reintroduction of metacognition to psychology could be credited to Flavell (1971, 1976, 1979) and Brown (1980, 1987). Besides, it is Wenden (1987, 1998) who firstly

emphasized the role of metacognition in L2 learning. The next section would discuss the relationship between metacognition and L2 listening.

2.4 Metacognition and L2 listening

This section elaborated the relationship between metacognition and L2 listening from the theoretical and empirical perspectives.

2.4.1 Linking metacognition with L2 listening

The relationship between metacognition and L2 listening could be articulated from both theoretical and empirical perspectives. Theoretically, many researchers (e.g., Flavell, 1979; Wenden, 1998; Vandergrift & Goh, 2012) have revealed that metacognition was firmly related to the processes of learning cognitive skills. Flavell (1979) stated that metacognition could offer monitoring, regulation, and orchestration of people's cognitive processes. As L2 learning (or listening) was a complex cognitive skill (O'Malley & Chamot, 1990), it was undoubtedly affected by learners' metacognition. Wang, Haertel, and Walberg (1990) argued that metacognition was one of the most reliable predictors of learning. Via reviewing previous literature, Wenden (1998) stated that metacognition helped improve language learners' self-regulation and drove learners to plan, monitor, and evaluate their learning process. In terms of Vandergrift and Goh (2012), metacognitive awareness could affect "the manner in which learners approach the tasks of listening and learning to listen" (p. 94). On the other hand, L2 listening was, to a large extent, a strategic practice (Field, 2008b), and "listeners with heightened metacognitive awareness can orchestrate the deployment of various strategies according to task and learner variables" (Vandergrift & Goh, 2012, p. 91).

Empirically, findings to date have much validated the relationship. Many researchers (e.g., Goh, 2008; O'Malley & Chamot, 1990; Vandergrift, 2003b) demonstrated that skilled L2 listeners made better use of metacognitive strategies and had more rich storage of metacognitive knowledge about the listening process than less-skilled listeners. For instance, from the think-aloud protocols, Vandergrift (2003b) found with the L2 French learners that the skilled listeners employed more metacognitive strategies than the less-skilled peers and "actively engaged in planning for the task and monitoring incoming input for congruence with expectations to construct a mental representation of the text in memory, that is, to comprehend" (p. 485). Meanwhile, metacognitive awareness was also significantly correlated to L2 listening proficiency (Vandergrift, Goh, Mareschal, & Tafaghodtari, 2006; Tafaghodtari & Vandergrift, 2008; Vandergrift & Baker, 2015). For example, Vandergrift et al. (2006) indicated that metacognitive awareness could significantly predict a 13% variance of listening comprehension; similar results existed in Tafaghodtari and Vandergrift (2008) which found the 3% variance and Goh and Hu (2014) which reported the 22% variance. Additionally, many studies in the past decade (e.g., Vandergrift & Tafaghodtari, 2010; Cross, 2011; Bozorgian, 2014; Wang, 2016; Mahdavi & Miri, 2017) indicated that metacognitive listening instruction could produce beneficial effects on L2 learners' (especially the less-skilled listeners) metacognitive awareness and listening performance. Section 2.5 would review some of these studies.

Since there is a strong theoretical and empirical relationship between listening and metacognition, as demonstrated above, the next section looked at a model integrating cognitive processes of listening with metacognition, proposed by Vandergrift and Goh (2012).

2.4.2 Integrating listening models with metacognition

As previously indicated, as a strong indicator of learning, metacognition could help learners to regulate and monitor the learning processes (Flavell, 1979; Wang, Haertel, & Walberg, 1990; Wenden, 1998) and orchestrate the deployment of cognitive and metacognitive listening strategies (Vandergrift & Goh, 2012). Vandergrift and Goh (2012) proposed an L2 listening model that integrated the interactive model and Anderson's (1985) model with metacognition. In the Vandergrift and Goh's (2012) model, the cognitive processes of perception, parser, and utilization occurred recursively. Such recursion was reflected by the process that "the output from each component of the model was passed on for processing or sent back for further processing, [and] the new incoming aural input was processed and informed by the results of earlier and ongoing cognition" (Vandergrift & Goh, 2012, p. 43). As shown in Figure 2.1, the exchange arrows exhibited a repeated exchange of information in the three stages and the interaction of top-down and bottom-up processing. Discernible in this model is the involvement of metacognition that serves to regulate and control the whole listening process.

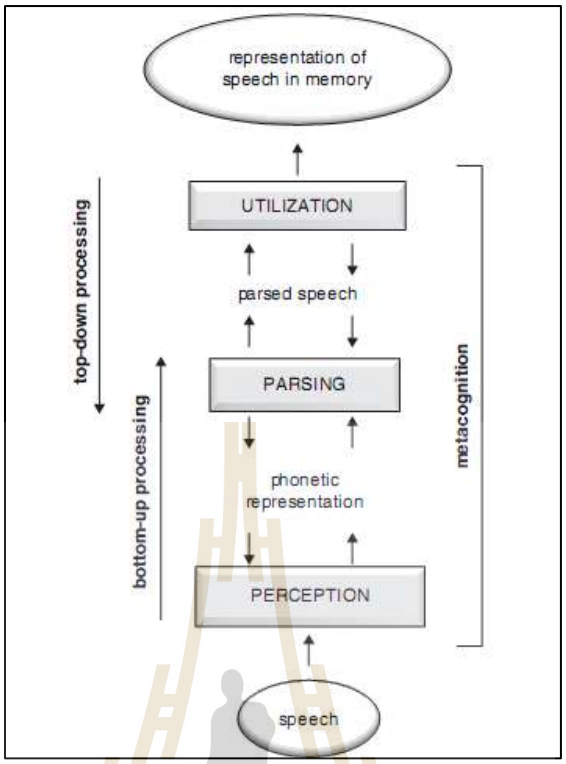

Figure 2.1 Cognitive processes in L2 Listening and their interrelationships (adopted from Vandergrift & Goh, 2012, p. 17)

In conformity with the categorization of metacognition in Flavell (1976), Vandergrift and Goh (2012) indicated that metacognition in L2 listening consists of metacognitive knowledge, metacognitive experience, and strategy use. Metacognitive knowledge in L2 listening includes:

(a) Person knowledge: knowledge about himself as an L2 listener and the beliefs he has about himself that leads to the success or failure of listening.

(b) Task Knowledge: knowledge about the purpose, demands, and nature of L2 listening tasks, such as knowledge of features of the spoken text and the difficulty level of a task.

(c) Strategy knowledge: knowledge about strategies to "accomplish a specific goal, be it achieving comprehension in a specific communicative context or improving

one's listening ability after one term of study" (Vandergrift & Goh, 2012, p. 87).

Metacognitive experience in L2 listening means that listeners, confronted with a listening problem, may recall the experience where they use strategy to tackle a similar listening problem. One example of metacognitive experience was that "listeners, confronted with an unknown sound, may recall a strategy that they used before and use it again to manage the new problem" (Vandergrift & Goh, 2012, p. 86). According to Vandergrift and Goh (2012), some metacognitive experiences could impact the development of metacognitive knowledge, and the use of listening strategies.

Strategy use in L2 listening means the deployment of specific strategies to make listening "easier, faster, more enjoyable, more self-regulated, more effective, or more transferable to new situations" (p. 89). Strategy use is based on strategy knowledge and involves when and how to use strategies appropriately. They further argued that "strategies are [by nature] metacognitive in that they enable learners to change the way they learn and use the language purposefully" (p. 85). Metacognition could be reflected in learners' awareness of metacognitive knowledge and strategy use (metacognitive awareness) that was often measured by MALQ.

Also, Vandergrift and Goh (2012) emphasized the two functions of metacognition on learning: self-appraisal of cognitive state and process and self-management of cognition (Paris & Winograd, 1990). The two functions could help learners regulate the listening processes and facilitate the success of listening comprehension (Vandergrift & Tafaghodtari, 2010). The two functions matched the two elements of metacognition (i.e., metacognitive knowledge and strategy use). Therefore, metacognitive instruction of listening should involve the training of learners' self-evaluation of metacognitive knowledge and self-management of strategy use.

In summary, this section sheds light on the close relationships between metacognition and L2 listening, both theoretically and empirically. Given the close relationships, the following section presented the empirical research of metacognitive intervention in L2 listening.

2.5 Metacognitive intervention in L2 listening

Cross (2015) clarified the two types of metacognitive intervention on L2 listening, that is, metacognitive strategy instruction and metacognitive instruction. Metacognitive strategy instruction was a kind of strategy instruction, while metacognitive instruction was not. According to Cross (2015), metacognitive strategy instruction stressed "enhancing strategy knowledge and use through the teaching of strategies (be they metacognitive, cognitive, or social/affective)" (Cross, 2015, p. 885). Metacognitive instruction, as a process-based approach, aimed to increase both learners' metacognitive knowledge (including person, task, and strategy knowledge) and strategy use to make a self-regulated listener. According to Goh (2008), as a process-based approach, metacognitive instruction could elicit and improve "learners' knowledge about learning to listen, as well as helps learners use effective strategies for managing their comprehension and overall listening development" (p. 192). Thus, the core differences of two lines of research were on the development of metacognition as the holistic construct or the metacognitive strategies. However, both types of instruction emphasized the significant role of metacognition in listening. According to Cross (2015), the pedagogical cycle used in Vandergrift and Tafaghodtari (2010) and the two types of metacognitive instructional activities (i.e., experiential tasks and guided reflectional tasks) in Vandergrift and Goh (2012) represented the metacognitive

instruction paradigm.

Thus, the present reviews covered both types of research on metacognitive strategy instruction and metacognitive instruction, with the focus on the latter, since the present study took the metacognitive instruction as the primary paradigm. The following was a summary of the comparison between metacognitive strategy instruction and metacognitive instruction in L2 listening.

Table 2.1 A comparison of metacognitive strategy instruction and metacognitive instruction in L2 listening

	Metacognitive strategy instruction	Metacognitive instruction
Aim	Development of several listening strategies (metacognitive strategies in particular) at a time	Development of metacognitive knowledge and the use of a combination of strategies
Starting time	Starting from the 1990s	Starting from the mid of 2000
Instructional model	Based on different strategy instruction models	Most studies based on Vandergrift's cycle (2004, 2007)
Instructional features	Explicit (mainly) or implicit instruction	Usually an implicit instruction; Engaging learners into metacognition-arousing listening tasks, discussion, or reflection.

2.5.1 Research on metacognitive strategy instruction

Metacognitive strategy instruction research derives from the development of strategy instruction research. Early research on strategy training focuses on the training of cognitive, metacognitive, and social-affective strategies. Metacognitive strategies may stem from Brown et al. (1983) that describes the metacognitive strategy as the activities in the regulation of cognition. The regulation of cognition and the metacognitive knowledge serve as two distinct but related components under the notion of metacognition (Brown et al., 1983). Although different researchers have made slightly different classification on this term (e.g., O'Malley & Chamot, 1990; Vandergrift, 1997; Brown, 1987; Osman & Hannafin, 1992), "planning, monitoring, and evaluation are accepted by many as the three central activities" (Greensfeld, 2008,

p. 293). With the studies on expert listeners' strategy use, researchers (e.g., Vandergrift, 2003b; Goh, 2002; Yang, 2009) realized the essential role of metacognitive strategies in listening, leading to the rise of literature on metacognitive strategy instruction conducted in varying cultures and with learners of different proficiency levels.

Thompson and Rubin (1996) reported a classroom-based longitudinal study of listening strategy training with L2 Russian learners in the US. These learners were randomly assigned to experimental (N=24) and control groups (N=12). For two years, the experimental group received a strategy-based instruction and the control group a traditional instruction without strategy training. Both groups were required to watch the same listening videos with the same sequence for the same amount of time. The strategy training included the training of metacognitive and cognitive strategies. Results indicated that the experimental group performed significantly better than the control group in video testing after strategy training. No differences were detected in audio testing. For the results, they indicated that the learners' high pre-ETS test scores in the audio listening left little room for them to improve further, and some test items in ETS tests did not parallel the type of instruction. A medium effect size was found in the analysis of the training effects on video listening, about which they pointed out some listening tasks (the interview and news segments) were above the level of the learners' listening proficiency. They further considered that a higher threshold of listening proficiency might be required for the learners to benefit from the strategy instruction with audio texts. However, as they mentioned, this study was limited by the number of samples. Nevertheless, one implication from this study is that the listening assessment should not be much over their level of listening proficiency.

Graham and Macaro (2008) examined the effects of a five-month L2 listening

strategy instruction on learners' listening comprehension and self-efficacy of listening with a pre- and post-test control group design with the delayed post-test. The recruited participants were 107 lower-intermediate learners of French in England (the number later shrank to 59 in the delayed posted test) with three groups: a high scaffolding group (HSG), a low scaffolding group (LSG), and a control group. Three listening proficiency tests were administered at pre-test, post-test, and delayed post-tests. The self-efficacy questionnaires were administered immediately after the pre- and post-listening tests. Both HSG and LSG received explicit strategy instruction, but HSG also kept diaries and received written feedback to raise their awareness of strategy use. The results demonstrated that both experimental groups (HSG and LSG) significantly outperformed the control group in listening comprehension achievements in the post-test and delayed post-tests. However, the comparison of the results between HSG and LSG remained unclear due to their differential performances in post-tests and delayed post-tests. Besides, the HSG and LSG showed more improvement in self-efficacy than the control group. Given these results, the authors stated that the strategy instruction with feedback on connecting the strategy use with successful listening was conducive to the development of listening proficiency and self-efficacy. Despite no significant differences between the HSG and LSG, both groups made reflections during instructions, which rendered these instructions close to the metacognitive instruction. Given this, this study implies that metacognitive instruction could contribute to the development of listening comprehension.

Cross (2009) examined the effects of listening strategy instruction on news videotext comprehension with 15 Japanese advanced level EFL learners. These learners were arranged into the experimental (N=7) and control groups (N= 8). For seven weeks,

both experimental and control groups received lessons based on a pedagogical listening cycle that consisted of pre-listening preparation, monitoring of comprehension, and evaluation of performance. Besides the pedagogical model, the experimental group received an explicit instruction of listening strategies that involved the metacognitive, cognitive, and social-affective strategies while the control group did not. The results indicated that both groups made a significant improvement in listening comprehension, and no significant group difference was detected. However, Cross pointed out that the limitation of the small number of participants and a short time of the explicit strategy instruction in the study may impact the reliability of the findings. The author further suggested that due to the social and cultural norms in Japan, the age difference made the experimental groups reduce collaboration with each other, leading to less improvement of the EG in listening comprehension achievements. Besides, both groups' significant increase could be explained by the nature of the pedagogical cycle that requires them to apply metacognitive strategies to their listening activities. Also, teachers' feedback and support could promote learners to activate and modify strategies during listening. These observations have led the author to argue that the optimal way to strategy instruction is the "combination of collaborative learning and judicious teacher input, and a pedagogical cycle encompassing a task-driven approach" (Cross, 2009, p. 167). Although limited by the number of samples, this study highlights the importance of collaboration and teachers' support in metacognitive strategy instruction.

Coskun (2010) examined the effects of metacognitive strategy training on 40 Turkish university beginning level EFL learners. These participants divided into an experimental group (N=20) and the control group (N=20). The experimental group received 5-week metacognitive strategy training of four metacognitive strategies in

Vandergrift's (1997) list, namely, planning, monitoring, evaluation, and problem identification or solving. These strategies were integrated into Chamot and O'Malley's (1994) Cognitive Academic Language Learning Approach (CALLA) with four steps, namely, preparation, presentation, practice, evaluation, and expansion. The contents in the MALQ were used in the classroom discussion to raise these learners' metacognitive awareness. The listening materials prepared for both groups were the same, but the control group received strategy training. Two listening comprehension tests from the teachers' manual were the pre- and post-tests to indicate the listening comprehension development of the two groups. The results showed that the experimental group performed better in the post-listening test than the control group. However, this study was also limited by the samples and the duration of training.

A replicated study was conducted by Rasouli, Mollakhan, and Karbalaei (2013), with 111 intermediate Iranian EFL learners as the participants. They divided into experimental (N=59) and control groups (N=52). The five-week metacognitive strategy training was carried out for the experimental group by following the CALLA model. Listening materials for the training and tests derived from the textbooks. Results showed that the experimental group significantly surpassed the control group in the improvement of listening performance. Despite the positive findings detected in the above two studies (Coskun, 2010; Rasouli et al., 2013), their studies lack the examination of the development of metacognitive strategy use in order to confirm further that the improvement of listening achievements is due to metacognitive strategy instruction.

Bozorgian (2012) investigated the effects of a strategy-based approach on 28 high-intermediate Iran EFL learners with a single group design. The instruments to

assess the learners' listening proficiency in the pre- and post-tests were IELTS listening tests. Learners were required to take four 70-minute strategy-based listening lessons. The strategy-based approach was an implicit strategy instruction where the researcher integrated the metacognitive strategies (advance organization, directed attention, selective attention, and self-management) into the listening activities without informing learners what these strategies were. Among the participants, four less-skilled listeners and seven more-skilled listeners were selected for analysis according to their pre-test scores with one deviation above or below the mean. Results indicated that less-skilled listeners improved more than more-skilled listeners in listening comprehension achievements. The post-interview showed that the participants improved much in metacognitive awareness. Nevertheless, this study is limited by its lack of the control group and the limited number of participants.

Chou (2017) investigated the effects of a task-based language teaching approach to the metacognitive strategies of listening comprehension with 88 Chinese EFL learners. The experimental group received a strategy-embedded task-based listening instruction (a more implicit strategy instruction), and the control group received an explicit strategy instruction for 16 weeks. The IELTS test was employed to measure learners' listening proficiency, and a questionnaire developed by MALQ and Strategic Self-Regulation model (Oxford, 2011) was used to assess metacognitive awareness. For the task-based instruction, the topics of each lesson in the textbook followed the four Task-Based Language Teaching (TBLT) phases of *task input, pedagogical task work, target task performance, and task follow-up,* proposed by Norris (2009). The control group received an explicit strategy instruction through the presentation and practice of strategies with the listening materials in the textbook. The

results suggested that the experimental group made more significant gains on listening achievements and developed a significantly higher metacognitive awareness than the control group. The author concluded that "the application of TBLT to listening provided a framework that allowed the learners to develop and practice several categories of metacognitive strategy, to link schemata to information in the worksheet and to direct their attention to relevant or important parts before completing the listening tasks…and complement the problem of the unavailability of certain metacognitive strategies" (p. 13). Although without qualitative data to confirm the results, this study pinpoints more benefits of an implicit strategy instruction than an explicit one for EFL learners. The following table summarizes the above-mentioned metacognitive strategy instruction studies.

Table 2.2 Literature related to metacognitive strategy instruction

Author/Date	Purposes	Research Design	Findings	Limitations or implications
Thompson & Rubin (1996)	Identify the effects of the explicit strategy instruction	36 university-level Russian learners in the US; 15 hours for one year; Pre- and post-test control group experiment	Positive effects on video listening comprehension	A limited number of participants The difficulty of listening assessment tasks should not be too much above the levels of listening comprehension ability.
Graham & Macaro (2008)	Identify the effects of the explicit strategy instruction on listening comprehension and self-efficacy	107 low-intermediate British FSL learners Pre- and post-test control group experiment	Positive effects on listening comprehension and self-efficacy; The high scaffolding group showed more improvement.	Some mixed results between less-skilled and high scaffolding groups; No qualitative data to confirm the results
Cross (2009)	Identify the effects of the explicit strategy instruction on video listening	15 advanced Japanese EFL learners; 7w/60 min; Pre- and post-test control group experiment	No between-group differences observed	The small number of participants

Table 2.3 Literature related to metacognitive strategy instruction (Continued)

Author/Date	Purposes	Research Design	Findings	Limitations or implications
Coskun (2010)	Identify the effects of the explicit strategy instruction	40 advanced Turkish EFL learners; 5w; Pre- and post-test control group experiment	Positive effects on listening comprehension	The small number of participants; the short time of treatment
Rasouli, Mollakhan, & Karbalaei (2013)	Identify the effects of the explicit strategy instruction	111 advanced Iranian EFL learners; 5w; Pre- and post-test control group experiment	Positive effects on listening comprehension	The short time of treatment
Bozorgian, 2012	Identify the effects of the explicit strategy instruction	28 high-intermediate level Iranian EFL learners; 7 sessions/70 min; Pre- and post-test single group experiment	Significant improvement of listening comprehension with the less-skilled listeners	No control groups; small number of participants
Chou (2017)	Compare the effects of implicit and explicit strategy instruction	88 Intermediate Chinese EFL learners; 16w/100 min; Two group pre- and post-test experiment	The implicit strategy instruction (based on TBLT) outperformed the explicit instruction in improving listening comprehension and metacognitive awareness.	Lack of qualitative data

In summary, the above literature indicated that most of the metacognitive strategy listening instruction could produce beneficial effects on L2 learners' listening proficiency, with implicit instruction (Chou, 2017) bearing more benefits. According to Table 2.2, the average duration of treatment for most studies is eight weeks, and most studies were in a quasi-experimental design without the triangulation from other qualitative data. Some implications from the above studies are: (a) listening assessment tasks should not be too many above learners listening comprehension ability; (b) enough participants and duration of treatment should be guaranteed; (c) qualitative data were needed to enrich the findings from the quantitative data; (d) strategy instruction

in an implicit way and with supports of reflection could bring out more effects. These implications would be considered in the present research design.

Meanwhile, some researchers (Chen, 2005; Vandergrift, 2007) noticed that as learners often used strategies in an interconnected way, teaching several strategies might not produce expected results (Field, 2001). Therefore, there was a need for a more holistic way of teaching learners to self-regulate a set of metacognitive strategies for their listening. Vandergrift (2004, 2007) and Goh (2008) addressed such need and proposed a process-based instruction or metacognitive instruction of listening. The following section would review the literature on metacognitive instruction.

2.5.2 Research on metacognitive instruction

The present study belongs to the line of metacognitive instruction research by focusing on the development of metacognition as a holistic construct. Since some pioneer works (Goh, 2008; Cross, 2015; Vandergrift & Goh, 2012) clarified the framework of metacognitive listening instruction, many studies (e.g., Mareschal, 2007; Vandergrift & Tafaghodtari, 2010; Cross, 2011; Bozorgain, 2014; Wang, 2016) have investigated the effectiveness of metacognitive instruction. The following sections would illustrate the development of metacognitive instruction and related research.

2.5.2.2 Integrated experiential and guided reflection tasks

Goh (2008) indicated that metacognitive instruction should consist of the development of metacognitive knowledge (i.e., person knowledge, task knowledge, & strategy knowledge) and strategies (i.e., planning, monitoring, & evaluation). To develop them, she further proposed two types of listening tasks: (1) integrated experiential tasks and (2) guided reflection tasks.

The integrated experiential tasks mean integrating learners'

everyday listening tasks with the experiences of metacognitive listening processes of planning, monitoring, problem-solving, and evaluation. Through integrated experiential tasks, learners could be conscious of these processes and "apply this [metacognitive] knowledge to their listening development beyond classroom, be it to explore their own self-concept as listeners, use appropriate strategies during listening or identify factors that influence their own performance in different listening tasks" (Goh, 2008, pp. 199-200).

According to Goh (2008), the purpose of guided reflection tasks was to develop learners' metacognitive knowledge through "draw[ing] out learners' implicit knowledge about L2 listening and at the same time encourage them to construct new knowledge as they make sense of their own listening experiences" (p. 200). These tasks do not merely allow learners to think back about their listening processes, problems, and strategy use but also plan on how to achieve better listening comprehension next time.

Goh (2008) further argued that the two types of listening tasks could result in learners' "self-appraisal and self-regulation of [listening] comprehension and process" (p. 200). Specifically, the purpose of integrated experiential tasks could promote learners' self-regulation of their listening processes with the repeated experiences and implicit learning of listening strategies. At the same time, the guided reflections could allow learners to regularly appraise their metacognitive knowledge and elicit their implicit knowledge of L2 listening. Therefore, the two tasks could generate a "resultant force," contributing to the development of metacognitive knowledge and strategy use.

Notice that these tasks could help develop the two crucial dimensions

of metacognition (metacognitive knowledge and strategy use or regulation of cognition).

2.5.2.3 Vandergrift's cycle

As mentioned, most research on metacognitive instruction drew on the pedagogical listening cycle proposed by Vandergrift (2004, 2007). This cycle also represents the approach of metacognitive instruction, because its focus was not just on the instruction of strategies but "enable listeners to experience, develop knowledge of, and reflect on the social-cognitive processes of listening comprehension" (Vandergrift & Cross, 2017, p.2). This cycle could be viewed mostly as the integrated experiential tasks, interspersed with some guided reflection tasks. In this cycle, the use of strategies was not explicitly taught but implicitly presented and constructed through learners' "thinking-aloud" (Graham & Santos, 2015). Table 2.2 demonstrates the specific stages and the underlying metacognitive processes in this cycle.

Table 2.4 Vandergrift's cycle (adapted from Vandergrift & Goh, 2012, p. 110)

Stages	Metacognitive processes
1. Pre-listening—Planning/predicting Stage	
After learners have been informed of the topic, related words and text type, they predict the types of information and possible words they may hear.	Planning
2. First Listening—First Verification Stage	
a. Learners verify their initial hypotheses, correct as required, and note additional information understood.	Monitoring and Evaluation
b. Learners compare what they have understood/written with a partner, modify as required, establish what still needs resolution, and decide on the important details that still require special attention.	Monitoring, evaluation, and planning Person, task, and strategic knowledge
3. Second Listening—Second Verification Stage	
a. Learners verify points of earlier disagreement, make corrections, and write down additional details understood.	Monitoring, evaluation, and problem-solving
b. Class discussion in which all class members contribute to the reconstruction of the text's main points and most pertinent details, interspersed with reflections on how learners arrived at the meaning of certain words or parts of the text.	Monitoring, evaluation, and problem-solving Task and strategic knowledge

Table 2.5 Vandergrift's cycle (adapted from Vandergrift & Goh, 2012, p. 110) (Continued)

Stages	Metacognitive processes
4. Third Listening—Final Verification Stage Learners listen specifically for the information revealed in the class discussion which they were not able to make out earlier. This listen may also be accompanied by the transcript of all or part of the text.	Monitoring, evaluation, and problem-solving
5. Reflection and Goal-Setting Stage Based on the earlier discussion of strategies used to compensate for what was not understood, learners write goals for the next listening activity.	Planning, evaluation, and problem-solving Person, task, and strategic knowledge

According to Table 2.3, the metacognitive listening cycle consists of five stages. The first stage is the pre-listening stage. In this stage, learners are informed of the topic and text types and required to predict types of information and possible words to hear, and in this way, planning strategies are trained. The second stage is the first verification stage, during which learners verify their previous predictions, add more details, compare and modify what they have understood with the partners and decide other details requiring further attention. This stage leads learners to use the monitoring, evaluation, and planning strategies. Meantime, while evaluating their listening problems and solutions, learners' person, task, and strategy knowledge could also be developed. The third stage is the second verification stage. Like the first verification stage, this stage allows learners to verify their understanding again and jot down additional details. Also, learners join in the class discussion to construct the main points and pertinent details and reflect on how to arrive at the meaning of certain information. Learners are led to draw on monitoring, evaluation, and problem-solving strategies for completing these tasks. Meanwhile, while reflecting on how to achieve more comprehension, learners could develop their task and strategy knowledge. The

fourth stage is the third listening and final verification stage. This stage requires learners to listen the third time for the information they fail to decipher after class discussion. This stage allows learners to practice monitoring and problem-solving strategies. In the final reflection stage, learners evaluate their strategy use and set goals for the following listening practice. This stage could help learners develop evaluation and planning strategies, and person, task, and strategy knowledge.

Note that these stages could form a practice cycle of the metacognitive processes or strategies of planning, monitoring, problem-solving, and evaluation. These strategies are not taught explicitly but integrated into listening tasks and repeatedly exposed to learners. The discussion and reflection parts in this cycle are crucial since they offer the chances for learners to develop their listening metacognitive knowledge. Moreover, the peer interaction of strategies and dialogic reflection during the listening discussion could help learners co-construct listening metacognitive awareness (Mahdavi & Miri, 2017) and sustain less-skilled listeners' motivation during the whole listening process (Cross, 2011).

2.5.2.4 Studies on metacognitive instruction

Many studies have provided much positive evidence for metacognitive instruction. The following review started with the studies of positive findings, then moving to those with uncertain findings.

Goh and Taib (2006) probed into the effects of metacognitive instruction on L2 listening with ten primary school pupils in Singapore. The treatment was eight weeks' metacognitive lessons that included three sections of the test-oriented listening exercises, post-listening reflections, and teacher-facilitated discussion. In the latter two sections, these learners could reflect on and discuss the task knowledge and

strategy knowledge in the listening process. Results uncovered that these learners deepened insights into the nature of listening and showed an increase in strategy knowledge and listening confidence. All learners reported progress in listening ability and the broader use of listening strategies after the treatment. Less-skilled listeners made more gains in listening performance than skilled listeners with two in-house tests. The authors further indicated that "getting the pupils to think about their learning and taking more responsibility for the outcome" could promote their listening motivation. However, this study is limited by the small number of samples and the lack of a control group.

Mareschal (2007) examined the effects of metacognitive instruction (what she called "self-regulatory approach") on ten adult French learners in Canada. They divided into the less-skilled and skilled groups with five in each. The self-regulatory approach aimed to develop learners' metacognitive knowledge and the self-regulation of their listening process by guiding learners to consistently reflect on their metacognitive knowledge and actively solving listening problems. The author employed a "multi-source, multi-method schedule of cyclical data" (p. 36) from questionnaires, stimulated recalls, think-aloud protocols, and listening logs to determine the effects of such a sequence on the participants' gains in comprehension and metacognitive awareness. Results indicated that this approach benefited both less-skilled and skilled learners in improving their metacognitive awareness, strategy use, confidence, and interest in L2 listening, but the benefits were more evident for the less-skilled listeners. Meanwhile, less-skilled learners demonstrated better improvement in listening comprehension success. Despite with detailed description and triangulation from multiple qualitative collection tools, this study is limited for generalization due to

the small sample size.

Vandergrift and Tafaghodtari (2010) examined the effects of the metacognitive instruction on Canadian university French as Second Language (FSL) learners' (N = 106) listening comprehension and metacognitive awareness. In their study, the experimental group came from three intact classes, divided into two proficiency levels according to the mean score of the pre-listening test (M = 4.5). The experimental group received over 13 weeks' metacognitive instruction, while the control group listened to the same text for the same times without any metacognitive guidance. One teacher taught both groups. FSL placement tests as pre- and post-listening tests measured learners' French listening proficiency; the MALQ measured these listeners' development of metacognitive awareness; stimulated-recall sessions were conducted in the middle and at the end of the study to probe more into learners' response on MALQ. Results revealed that the less-skilled listeners in the experimental group reported more significant gains than those in the control group in listening comprehension and one dimension (problem-solving) of metacognitive awareness. The authors suggested that the metacognitive cycle used in the study could lead learners to uncover the listening processes. As for the partial improvement on MALQ by the experimental group, the authors indicated that listeners might misinterpret the MALQ items of (no) mental translation, causing them to underperform on this dimension; also the control group might also reflect on the metacognitive and cognitive listening processes and raise their metacognitive awareness through the exposure to MALQ. One implication from this study is that since learners could misinterpret some items in MALQ, the future researchers should pilot it and clarify the ambiguous items for participants before using MALQ in different contexts.

Cross (2011) reported a similar study with 20 advanced EFL learners

in Japan. They received five lessons (90 minutes for each) of the metacognitive instruction, also based on Vandergrift's (2004, 2007) cycle. They fell into the less-skilled group (N=4) and skilled group (N=4) according to the IELTS scores. The listening materials were two-minute visual BBC TV news items. Results demonstrated that the less-skilled group outperformed the skilled group in the enhancement of listening performance. An additional feature of Cross (2011), as opposed to Goh and Taib (2004) and Vandergrift and Tafaghodtari (2010), was that learners engaged in more discussion activities, almost in each listening stage. Cross pinpointed that this peer discussion with skilled listeners offered less-skilled listeners more possibilities to advance their metacognitive knowledge and strategy use. The main weakness of this study is the paucity of the control group and the small number of participants, which affects its generalization.

Cross (2014) conducted a case study to examine the use of podcasts to develop an advanced Japanese EFL learner's listening meta-textual skills and metacognitive awareness. The whole study lasted nine weeks. In the first four weeks, the researcher interviewed with the learner and discussed the ways to draw on meta-textual skills and the possible sequence to conduct the podcast listening. The sequence was generated based on the guidelines of metacognitive instruction, consisting of integrated experiential activities and guided reflection activities. From week five to nine, the learner completed the tasks on his own. The data collection tools involved learner's journal entries and post-interviews. Results revealed that these activities help increase the listener's metacognitive capacity and listening performance. Meantime, the learner could transfer the metacognitive listening sequence to out-of-class practice. However, this study still has some limitations. The small sample and short length of treatment

time may influence the generalization of the results. Moreover, learners' performance in the task sequence entirely depends on their self-discipline, and the researcher could not guarantee the learners' completion of some tasks, such as checking and refining ideas.

Bozorgian (2014) looked at the effects of metacognitive listening instruction with 30 Iranian high-intermediate EFL learners. These learners received 50 minutes' lessons for eight weeks based on the metacognitive instruction cycle (Vandergrift, 2004). The IELTS test was employed to assess the learners' listening performance before and after the treatment, and the MALQ was used to track learners' development of metacognitive awareness. Four types of listening texts (daily conversation, public speech, academic discussion, and academic lecture) from the local textbook were used in the lessons. Results demonstrated that these learners made significant improvements in listening comprehension ability after metacognitive instruction. Meanwhile, learners significantly improved on two dimensions (i.e., planning-evaluation and problem-solving) of the metacognitive awareness in MALQ. Again, this study is limited by the absence of the control group and the small number of participants.

Fahim and Fakhri (2014) compared the effects of the explicit metacognitive strategy instruction and metacognitive instruction on 90 Iranian intermediate ELF listeners. These participants divided into experimental group one (N=30) and group two (N=30) as well as a control group (N=30). All groups underwent 10-week listening training with 90 minutes each week, yet in different ways. The experimental group one received an explicit instruction of metacognitive strategies adapted from Thompson and Rubin (1996) and Graham and Macaro (2008). In explicit

strategy instruction, several metacognitive strategies were presented and practised linearly for ten weeks. The experimental group two received a metacognitive instruction based on Vandergrift's (2004, 2007) cycle. The control group received the traditional listening instruction without a focus on metacognitive development and discussion. Results indicated that the experimental group two under the metacognitive instruction significantly outperformed the other two groups in the development of listening comprehension ability; the experimental group one also reported more significant growth than the control group. The authors outlined the dialogic interactions as one advantage of metacognitive instruction over the explicit strategy instruction to "help learners move from other-regulation to self-regulation" (Fahim & Fakhri, 2014). They further indicated that the duration of 10 weeks could be appropriate to induce development in listening achievements for the metacognitive instruction and the explicit strategy instruction. However, this study does not investigate the differences of the development in metacognitive awareness under the metacognitive instruction and the explicit strategy instruction.

Yeldham (2016) compared a strategy instruction approach with an interactive instruction approach with Chinese low-intermediate university EFL learners. Two entire classes were assigned to the strategy (N=33) and the interactive strategy groups (N= 34). This strategy instruction drew on Vandergrift's (2007) cycle and explicit instruction of strategies and therefore belonged to the metacognitive instruction since it had the functions of developing metacognitive control. For 22 weeks, both groups received the metacognitive instruction based on Vandergrift's (2004, 2007) cycle for one hour each week. The strategy group received one-hour explicit strategy instruction, and the interactive strategy group received one-hour explicit strategy

instruction or bottom-up skills instruction. In other words, the strategy group received twice explicit strategy instruction more than the interactive group who received extra explicit instruction focusing on the bottom-up skills. A variety of techniques were used to measure listening comprehension, bottom-up skills, strategy use, and learner characteristics. Results indicated that the strategy group showed more improvement than the interactive group in listening comprehension achievements, strategy use, and learner characteristics; the interactive group demonstrated more improvement in bottom-up skills. The researcher further argued that for low-intermediate listeners, it was better to train their listening strategies rather than to use an interactive approach that aims to develop both listening strategies and bottom-up skills. This study revealed that metacognitive instruction towered over the interactive metacognitive instruction with bottom-up training in listening comprehension development.

However, the results produced in the study were non-significant, rendering this conclusion less convincing. This conclusion seems to violate the proposal by the previous researchers that properly adding a bottom-up listening section could produce more robust results and benefit even the skilled listeners. Even so, the interaction group in the study used the standalone bottom-up skills exercise and received the same amount of time (one hour) with bottom-up skills instruction as with the metacognitive instruction, probably allowing learners to focus more on the bottom-up skills development (as shown in the research results) and overshadowed the development of metacognitive awareness and listening comprehension. Therefore, care should be taken in integrating bottom-up listening section with metacognitive instruction. On the other hand, the previous studies (e.g., Cross, 2011; Vandergrift & Tafaghodtari, 2010) showed that less-skilled listeners could benefit more from

metacognitive instruction than the skilled listeners who may need bottom-up skills training to step across the threshold. Therefore, the more benefits of metacognitive instruction could be due to their low-intermediate proficiency. It would be interesting to see the effects of the two different instruction models on the learners of different proficiency levels.

Wang (2016) investigated the impact of metacognitive listening instruction on listening proficiency and metacognitive knowledge with 100 Chinese EFL university students. Listening proficiency levels were assessed by College English Test Band-Four (CET-4). As part of metacognitive instruction, reflective journals were used to identify the improvement of listeners' metacognitive knowledge and required for the experimental group to note down during their learning process. The treatment mirrored stages in Vandergrift's (2004, 2007) cycle, consisting of steps of contextualization, pre-listening, first listening, first pair discussion, second listening, second pair discussion, class discussion, third listening, reflection, and goal-setting. The control group was instructed with a comprehension approach (CA) that consisted of pre-listening, while-listening, and post-listening and focused on listening products. Results revealed no significant differences between the two groups after the intervention, and both groups made a significant improvement on their own. Given the undesirable results, the author explained that the listening exercises for the control group were similar to the test items of the CET-4 test while the treatment in the experimental group did not include such exercises; thus, the listening test was designed to be in favor of the control group. In light of this, the author argued that the effects of the metacognitive cycle were positive on listening achievements since the experimental group indeed made significant gains on the tests. Meanwhile, the journal data indicated

that learners improved on all the three subcategories of metacognitive knowledge, namely, person knowledge, task knowledge, and strategy knowledge. Although the author's argument for the advantage of metacognitive instruction in improving listening performances is not so convincing, as no between-group differences are detected, this study provides a more detailed description of learners' development of metacognitive knowledge with their reflective journals.

Mahdavi and Miri (2017) probed into the metacognitive instruction with 60 high-beginner Iranian EFL learners with a special focus on learners' co-shaping of metacognition. These learners were classified into the process-based and product-based instruction groups. The process-based group followed the four-week metacognitive instruction (90 minutes each week) based on Vandergrift's (2004) cycle, while the product-based group received the conventional listening instruction that did not involve listeners into the reflection of strategy use and discussions. The instruments for the pre- and post-tests were the MALQ and listening proficiency tests. The findings revealed that the process-based group significantly outperformed the product-based group on the gains of listening comprehension and metacognitive awareness. They further used the "microgenetic" (p. 7) analysis from social-cultural theory to examine the learners' dialogues during the metacognitive instruction, indicating that the participants were co-shaping their listening metacognitive awareness during the discussion. This study echoes Cross (2009, 2011) and Fahim and Fakhri (2014) to highlight the importance of discussion in metacognitive listening instructions.

Bozorgian and Alamdari (2018) investigated the effects of metacognitive instruction with more dialogic interactions on 180 advanced Iranian EFL learners' multimedia listening comprehension and metacognitive awareness. The study

included two experimental groups and one control group with 60 participants in each group. Both experimental groups received a metacognitive instruction based on the metacognitive listening cycle with five listening stages (Vandergrift & Goh, 2012). However, the treatment for the experimental group two involved more dialogic interactions and reflections in almost every stage of listening than the group one. The control group listened to the same multimedia listening texts the same number of times without exposure to any metacognitive intervention. All interventions lasted for ten weeks, with 60 minutes each week. The results showed that metacognitive instruction with dialogic interaction could contribute more to the listening comprehension development than metacognitive instruction with little interaction and conventional listening instruction. For this, they pointed out that interaction within metacognitive instruction could improve learners' multimedia awareness of attention, reasoning, and reflection. However, the metacognitive instruction exerted more benefits in metacognitive awareness development than the metacognitive instruction with dialogic interaction. The authors argued that learners in interaction "shared their [person] knowledge" and did not consider it as their own (p. 148). Nevertheless, the authors did not use qualitative data to strengthen the findings of metacognitive development.

Although the above studies pinpointed the beneficial effects of metacognitive listening instruction on listening comprehension ability, still some studies failed to reveal these effects, as illustrated in the following.

Rahimi and Katal (2013) investigated the effects of metacognitive instruction on L2 listening and speaking proficiency with an upper-intermediate level of Iranian EFL learners. Fifty participants divided into an experimental and a control group. The treatment for the experimental group was designed based on Vandergrift and

Tafaghodtari's (2010) cycle. The control group received a three-phase listening instruction (pre-listening, listening, and post-listening) without reference to listening strategies. The MALQ and TOEFL tests were utilized to assess the degree of these learners' metacognitive awareness and their listening and speaking proficiencies. The whole experiment was conducted for 16 sessions, 30-40 minutes for each session. The results indicated that the experimental group outperformed the control group in the improvement of metacognitive awareness and speaking proficiency. No significant differences existed between the two groups in the development of listening achievements. The study suggested that specific metacognitive activities and guidance could increase learners' knowledge about how to listen and manage their listening. The authors contended that the improvement of speaking proficiency might be explained by the growth of listening strategy use and awareness that assisted listeners in minimizing speech production planning time and moving through the four stages of speaking more rapidly and efficiently. They further stated that the non-significant results in listening improvement might be due to the impacts of the overall learners' proficiency level, and the length of the treatment time.

Previous studies found that (Cross, 2011; Goh & Taib, 2006; Mareschal, 2007; Vandergrift & Tafaghodtari, 2010) that less-skilled listeners could gain more growth in listening comprehension ability from metacognitive instruction than their skilled peers. Compared with less-skilled listeners, the skilled listeners "had already reached a comparatively solid level of understanding and orchestration of bottom-up and top-down skills and strategies so that the impact of participating in the pedagogical cycle of teaching metacognitive listening strategies made little difference to their comprehension" (Cross, 2011, p 7). The authors indicated that the recruited

participants were at the upper-intermediate level, beyond the threshold of the effectiveness of the metacognitive strategy instruction. However, this study did not perform a detailed analysis of the development in the sub-factors of MALQ to enrich these findings on learners' metacognitive awareness.

Taguchi (2017) made a quasi-experimental study to investigate the effects of metacognitive instruction with Japanese EFL university learners. Both the experimental group and control group attended the same listening course that consisted of three listening activities (multiple-choice questions, pronunciation, and dictation exercises) in every unit of 14 units. The experimental group received metacognitive instruction in the third listening activity of 20 minutes every week for eight weeks. Results indicated that both the experimental group and the control group made significant improvements in different listening tests. At the same time, both groups demonstrated a significant improvement in self-efficacy, but not in metacognitive awareness. The study detected significant correlations between listening achievements, self-efficacy, and metacognitive awareness. The author mentioned that no better improvement in listening achievements by the experimental group might be attributed to their low language proficiency which made them not well-prepared for the metacognitive strategy instruction; and therefore, due to their limited language proficiency, making them aware of these strategies may not facilitate their listening performance. This argument resounded to the view in Thompson and Rubin (1996), who indicated that further research should extend the teaching period of metacognitive instruction sessions for learners to know some necessary listening skills and metacognitive strategies. As for the improvement of self-efficacy by both two groups, the authors suggested that the improvement could be due to a large amount of listening

practice. However, this study is still limited to generalization by its small sample size.

Table 2.6 Literature related to metacognitive instruction

Author/Date	Purposes	Research Design	Findings	Limitations or implications
Goh & Taib (2006)	Identify the effects of metacognitive instruction	10 ESL pupil learners in Singapore; 8 weeks; Pre- and post-test single group experiment	Better improvement by the less-skilled listeners	No control groups; small number of participants; the short time of treatment
Mareschal (2007)	Identify the effects of metacognitive instruction	10 Intermediate Canadian FSL learners; 9w/90-120 min; Qualitative design multiple data collection tools	The less-skilled listeners achieved better improvement in listening comprehension and strategy use.	No quantitative analysis
Vandergrift & Tafaghodtari (2010)	Identify the effects of metacognitive instruction	106 Canadian university FSL learners; 13 weeks; Pre- and post-test control group experiment and think-aloud	The less-skilled listeners achieved better improvement in listening comprehension and metacognitive awareness.	Learners misunderstood some items in MALQ; the importance of clarifying the MALQ items
Cross (2011)	Identify the effects of metacognitive instruction on video news listening	20 advanced Japanese EFL learners; 5w/90 min; Pre- and post-test control group experiment	Better improvement by the less-skilled listeners in listening comprehension.	The small number of participants lack of a control group the short time of treatment peer interaction could promote the learning of strategies.
Rahimi & Katal (2013)	Identify the effects of metacognitive instruction on L2 listening and speaking	50 advanced Iranian EFL learners; 16w/30-40min; Pre- and post-test control group experiment	Positive effects on metacognitive awareness and speaking proficiency, but not in listening comprehension	Lack of a detailed analysis of sub-factors in MALQ
Cross (2014)	Identify the effects of metacognitive instruction in a case study	One advanced Japanese EFL learner 4w instruction and 4w self-practice	The metacognitive instruction and practice could improve the learner's metacognitive awareness and listening comprehension.	Small sample No quantitative data Lack of ways to monitor learners' performance in the practice process.
Bozorgian (2014)	Identify the effects of metacognitive instruction	30 high-intermediate Iranian EFL learners; 8w/50 min; Pre- and post-test single group experiment	Positive effects on listening comprehension	A small number of participants; lack of a control group

Table 2.7 Literature related to metacognitive instruction (Continued)

Author/Date	Purposes	Research Design	Findings	Limitations or implications
Fahim & Fakhri (2014)	Compare the effects of metacognitive instruction and explicit strategy instruction	90 intermediate Iranian EFL learners; 10w/90 min; Two-group pre- and post-test design	The metacognitive instruction group significantly outperformed the strategy group in improving listening comprehension.	No investigation in the development of metacognitive awareness
Yeldham (2016)	Compare the effects of metacognitive instruction and interactive instruction	67 low-intermediate Taiwanese EFL learners; 22w/60min; Two-group pre- and post-test design	Better performance by the metacognitive instruction in listening comprehension and strategy use.	Conclusions were inferred from insignificant results; It is better to train listening strategies rather than bottom-up skills for low-intermediate learners.
Wang (2016)	Identify the effects of metacognitive instruction	100 Chinese EFL learners; 10w/60 min; Pre- and post-test control group experiment; Reflective journals	The less-skilled listeners achieved better improvement in listening comprehension and metacognitive awareness.	No quantitative data on the metacognitive awareness
Mahdavi & Miri (2017)	Identify the effects of metacognitive instruction and roles of dialogues	60 Iranian EFL learners; 4w/90min; Pre- and post-test control group experiment; micro-genetic analysis	Positive effects on listening comprehension and metacognitive awareness.	The short time of treatment; participants could co-shape their listening metacognitive awareness during the discussion
Taguchi (2017)	Identify the effects of metacognitive instruction	38 Japanese EFL university learners; 8w/20min; Pre- and post-test control group experiment	No advantage was detected from the metacognitive instruction over traditional instruction in listening comprehension and self-efficacy.	The small number of participants
Bozorgian & Alamdari (2018)	Compare the effects of metacognitive instruction with more interaction with metacognitive instruction	180 advanced Iranian EFL learners; 10w/60min; Three-group pre- and post-test design	The metacognitive instruction with more interaction yielded more benefits to the development of listening comprehension ability than the metacognitive instruction with little interaction.	Lack of qualitative data in analyzing the metacognitive awareness

In summary, most reviewed studies above demonstrated that metacognitive instruction could contribute to learners' listening comprehension and less-skilled listeners made more listening achievements than their skilled counterparts (Cross, 2011; Goh & Taib, 2006; Mareschal, 2007; Vandergrift & Tafaghodtari, 2010; Wang, 2016). Also, the metacognitive instruction had an advantage over the traditional listening instruction and the metacognitive strategy instruction in improving listening comprehension (Fahim & Fakhri, 2014).

Most studies used a quantitative two-group pre- and post-test design with an average length of treatment for ten weeks and did not involve the triangulation from the qualitative data; some studies accentuated the role of discussion in helping learners share, reflect on, and construct their metacognitive awareness (Bozorgian & Alamdari, 2018; Cross, 2011; Fahim & Fakhri, 2014; Mahdavi & Mrir, 2017). Meanwhile, Yeldham (2016) showed that adding a bottom-up listening instruction in metacognitive instruction may not overtake the metacognitive instruction in developing listening comprehension. The average duration of metacognitive instruction was ten weeks, which, as Fahim and Fakhri (2014) argued, was a proper time-length to witness the effects of metacognitive instruction.

Some implications could be adopted from the review of previous studies on metacognitive instruction as follows: (a) enough time of treatment and number of participants should be considered; (b) triangulation from qualitative data should be necessary to enrich the findings and complement the shortage of quasi-experimental studies; (c) offering learners enough time for discussion and reflection was necessary in metacognitive instruction to develop them metacognitive knowledge; (d) care should be taken in adding the bottom-up listening section. Bottom-up listening

activities should be added at the post-listening stage and should not be emphasized as much as metacognitive instruction. The present research design would consider these implications.

Since metacognitive instruction is to develop a self-regulated listener, it just matches one crucial goal of education to cultivate an autonomous learner who could take charge of his own learning. The following section introduced the concept of learner autonomy.

2.6 Learner autonomy

As early as the 16th century, Renaissance humanists "enshrines the principle of independent free inquiry and learning by the individual…" (Harrington, Marshall, & Muller, 2012, p. 256). According to Immanual Kant, autonomy "is the foundation of human dignity and the source of all morality" (Hill, 1991, p. 43). Autonomy is also "the essential aim of education" (Hill, 1991, p. 43). In terms of Holec (1981), learner autonomy refers to "the ability to take charge of one's own learning" (p. 3). Learner autonomy is concerning the other similar terms, such as "learner independence," "self-direction," "autonomous learning," and "independent learning" (Palfreyman, 2003).

Benson (1997) discussed three ways of learner autonomy:

(a) the technical perspective, skills, or strategies for unsupervised learning: specific activities or processes in relation to learner strategies.

(b) psychological perspective, the attitudes, and cognitive abilities for learners to take responsibility for their learning.

(c) a political perspective, empowerment, or emancipation of learners by giving learners control over the content and processes of learning.

The concept of learner autonomy is primarily supported by the constructionist approach of learning, in which knowledge is constructed rather than learned by the learner, who plays an active role in learning. Constructivism supports self-directed learning and self-access to promote autonomy (Holec, 1988). Yager (2000) stated that the constructivist way of learning encourages and accepts learners' initiation of ideas, testing their ideas, and making self-analysis. Besides, learner autonomy is also related to critical theory. Consistent with constructivism, the critical theory also implies that knowledge is constructed rather than acquired, but it foregrounds social contexts and constraints in learning (Benson, 2014). Learners' autonomy grows when they "become more critically aware of the social context of their learning and the constraints it implies, the contingency of what is presented to them as the 'target language,' and the potential for social change implicit in language learning" (Benson, 2014, p. 24).

Learner autonomy is related to self-regulation and self-evaluation (Masouleh & Jooneghani, 2012). Some researchers (e.g., Kumaravadivelu, 2006; Thanasoulas, 2000; Rao, 2003) stressed the relationship between learner autonomy and metacognition by discussing the ways of using metacognitive activities (e.g., planning, monitoring, and evaluation) to improve learner autonomy. For example, Thanasoulas (2000) and Rao (2003) suggested the use of evaluation sheets and portfolios to help learners identify problems and seek solutions. Kumaravadivelu (2006) suggested the use of diaries and discussions to help learners achieve autonomy and self-awareness.

Autonomy is the ultimate goal of language learning (Haque, 2019). Many researchers suggested that metacognition was a main predictor of learners' autonomy (Cubukcu, 2009; Haque, 2018; Zhiri, 2019). Also, researchers have indicated that learning with technologies or blended learning could support the autonomous learning

(Maher, 2019) since it provided a self-paced and self-directed learning environment (Penland, 2015) and required of learners more monitoring and regulation in their learning processes (McGee & Reis, 2012). Meanwhile, access to technologies could make learners more active and independent in "determining their own objectives and syllabi as well as the path and timing" (Raya & Fernandez, 2002, p. 64). In this sense, metacognitive instruction under blended learning should have the particular advantage of cultivating an autonomous learner. The following section would introduce the concept of blended learning.

2.7 Blended learning

This section introduced the definition and advantages of blended learning with technology.

2.7.1 Definition of blended learning

The term "blended learning" is often interchangeably used with "technology-mediated learning, "hybrid learning," "web-enhanced instruction," as well as "mixed-mode" instruction (Li & Cheung, 2013). Graham, Allen, and Ure (2003) lists the three standard definitions in the following.

1. Combining instructional modalities
2. Combining instructional methods
3. Combining online and face-to-face instruction

Many researchers (e.g., Akkoyunlu & Soylu, 2006; Graham, 2006; Stubbs, Martin & Endlar, 2006; Thorne, 2003) have advocated the third definition since it "reflects the historical emergence of blended learning systems" (Graham, 2006, p. 4).

According to Thorne (2003), "blended learning is the most logical and

natural evolution of our learning agenda. It suggests an elegant solution to the challenges of tailoring learning and development to the needs of individuals. It represents an opportunity to integrate the innovative and technological advances offered by online learning with the interaction and participation offered to the best of traditional learning. It can be supported and enhanced by using the wisdom and one-to-one contact of personal coaches" (p. 16).

Blended learning could consist of a variety of technologies in learning, such as multimedia technology, CD-ROM video streaming, Virtual classrooms, Voicemail, email and conference calls, online text animation, and video-streaming.

2.7.2 Advantages of blended learning

The most conspicuous benefit of blended learning lies in its flexibility and convenience for learning (Gedik, Kiran, & Ozden, 2012; Graham, 2006; Thorne, 2003). Leaners in the interactive technology generation are "not always comfortable with the information transmission approach of large lectures" (Garrison & Vaughan, 2008, p. ix). Blended learning has the potential "to create learning experiences that can provide the right learning at the right time and in the right place for each and every individual, not just at work, but in schools, universities and even at home" (Thorn, 2003, p. 18).

Additionally, blended learning could increase learners' learning attitudes, academic performance, and learning engagement more than the traditional way of learning (Alexander, 2010; Ophir, Nass, & Wagner, 2009; Saritepeci & Cakir, 2015). Blended learning could also offer learners the simultaneous independent and collaborative experiences, leading to their improvement of satisfaction and success of a course (Garrison & Kanuka, 2004). Besides, blended learning could provide a substantial return to the investment and is cost-effective for the educational institutes in

the long run (Graham, 2006). Moreover, blended learning could facilitate a self-paced and self-directed learning environment (Penland, 2015), resulting in the autonomous learning; learners could have more chance to monitor and self-regulate their learning processes in order to succeed in the blended learning environment (McGee & Reis, 2012). The last point suggested that blended learning may have more advantages for learners to use metacognitive strategies to regulate their learning.

Nevertheless, some cautions should be exercised in conducting blended learning. Technological tools in blended learning should be up to date, reliable, and easy to use so that they could enhance the learning processes (Garrison & Kanuka, 2004); Learners need enough IT literacy and adequate support for them to get access to learning materials and attain the learning goals. (Garrison & Kanuka, 2004; Alexander, 2010); Besides, it could be challenging to manage group work in a blended setting (Wicks, Craft, Mason, Gritter, & Bolding, 2015).

To sum up, this section discussed the concepts of learner autonomy and blended learning. Learners' autonomy is essential both in humanism and education. Blended learning could help facilitate metacognitive processes and learner autonomy. This brings out the necessity of the present study to investigate the metacognitive intervention in a web-based blended environment that could require learners to use more metacognitive strategies and make these strategies easier to be transferred to the self-learning environment.

With technologies as the core element, blended learning was often regarded as the computer-assisted language learning in L2 learning. The present study investigated the web-based listening, as one form of blended learning. The following section introduced the two concepts of CALL and web-based learning.

2.8 Web-based language listening

This section introduced the CALL, web-based learning, user interface and experience, as well as the research on web-based listening.

2.8.1 CALL and web-based language learning

Computer-assisted language learning (CALL) could trace back to the 1960s when the PLATO (Programmed Logic for Automatic Teaching Operations) project was initiated at the University of Illinois (Marty, 1981). According to Levy (1997), CALL meant "the search for and study of applications of the computer in language teaching and learning" (p. 1). Here the applications of computers could be extended to a wide range of multimedia tools such as websites, mobile phones, podcasts, and personal digital assistants (PDAs). Butler-Pascoe (2011) discussed three stages of CALL, from the employment of courseware in the 1960s, through the emergency and utilization of multimedia in the 1990s to the extensive use of web 2.0 tools in 21 centuries. However, CALL is still a new field for research and instruction "since it has often been considered rather too technical and not pedagogically informed enough by classroom teachers, or alternatively, not technically sophisticated enough by those from a computing background" (Thomas, Reinders, & Warschauer, 2013, p. 3).

One form of using computer applications in language learning is the web-based language learning, also called online learning. Regarding Britannica Encyclopedia, a website means "a collection of files and related resources accessible through the World Wide Web and organized under a particular domain name" ("website," n.d.). In this definition, a website is referred to as the world wide web that is free to use by anyone. The website was firstly created by British CERN (The

European Organization for Nuclear Research) physicist Tim Berners-Lee in 1990. Websites are usually written in HTML (HyperText Markup Language) and are accessed by browsers. A website is usually hosted on a web server, the HTTP (HyperText Transfer Protocol) server. Websites can be accessed by many computer-based or Internet-enabled devices of various sizes, including desktop computers, laptops, tablet computers, and smartphones. Also, the miscellaneous multimedia contents could be published on a web page to enrich the functionality of websites. Felix (2001) indicated that websites have become a critical source of information and provide a considerable number of tasks for language learners, e.g., web quests, web concordance, and collaborative writing. Due to the growing popularity, widening accessibility, and enriching functionality, "CALL has recently become more widely accepted as a recognized area of scholarship" (Thomas et al., 2013, p. 3), and web-based language learning is gradually featuring in CALL. In particular, the emergence of web 2.0 technologies and applications (e.g., blogs, wikis, podcasting, photo, video sharing) in the 2000s allows learners to become not merely consumers but also the contributors of learning content and materials (Thomas et al., 2013; Warschauer & Grimes, 2007). Although web-based language learning may inherently engage language learners, due to the integration of a host of multimedia components such as music, video, text, and animation, such attraction may not last a long time (Reeves & Reeves, 1997). Therefore, motivation aspects should be considered in web-based language learning design "as rigorously as any other pedagogical dimensions" (Reeves & Reeves, 1997, p. 42).

Researchers (Hassenzahl, 2001; Kim, Park, Hassenzahl, & Eckoldt, 2011) indicated that user interface (UI) and user experience (UX) were crucial in sustaining users' usage frequency and interest as well as an enjoyable experience. Thus, UI and

UX of a website deserve consideration when engaging learners in web-based learning. The following section would expand the concepts of UI and UX.

2.8.2 User Interface (UI) and User Experience (UX)

User interface means "the part of a computer and its software that people can see, hear, touch, talk to or otherwise understand or direct" (Galitz, 2007, p. 4). For web design, user interface refers to the design of the interaction between computers and users. The user interface has two essential components: input and output. "Input" means how users convey information and their needs to computers, and "output" means how computers respond to users. Good interface design needs "a mix of well-designed input and output mechanisms that satisfy the user's needs, capabilities, and limitations in the most effective way possible" (Galitz, 2007, p. 4).

Interface design is crucial since it could influence the users' experiences in a plethora of ways. For example, if the layout and appearance of the web pages are confusing and redundant, the users' performance to execute the tasks on the websites will be undermined. Also, poor design could lead to some negative affective emotions, such as aggravation, frustration, and increased stress. Against this, a bright and efficient web interface could enhance users' experience and confidence in task implementations.

User experience is a broad term "since it can extend nearly everything in someone's interaction with a product" (Goodman, Kuniavsky, & Moed, 2013, p. 43). Keskinen (2015) defined user experience as "a user's subjective opinion about a certain statement about the system in a certain context at that time" (p. 11). This definition indicated the three core components—user, system, and context—to be considered in the user experience evaluation. He contended that, although interchangeably used, usability and user experience differed in that user experience could only be determined

by the users, while usability could be assessed objectively by experts.

Tullis and Albert (2013) suggested the three main features of user experience:

"1. A user is involved.

2. That user is interacting with a product, system, or really anything with an interface.

3. The users' experience is of interest and observable or measurable." (p. 4).

Here, the user's behavior or interaction is viewed as the premise of user experience, as they stated, "there has to be behavior, or at least potential behavior, to be considered as user experience" (p. 4). Hassenzahl (2001) proposed a model of user experience (See Figure 2.2)

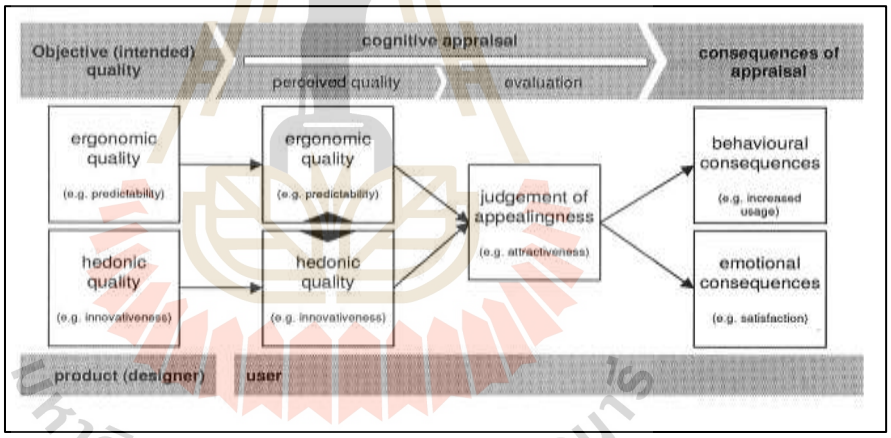

Figure 2.2 User experience model (adapted from Hassenzahl, 2001)

Here, UX could divide into two distinct quality aspects: ergonomic quality and hedonic quality. Ergonomic quality (EQ) means "the usability of the product, which addresses the underlying human need for security and control" (Hassenzahl, 2001, p. 483) and is related to the task-oriented aspects of the product. A good EQ will make task implementation in a product effective and efficient. Hedonic quality (HQ) "refers to quality dimensions with no obvious—or at least a second-order—relation to task-

related goals such as originality, innovativeness, and so forth" (p. 483). HQ deals with users' needs for "novelty or change and social power (status) induced, for example, by visual design, sound design, novel interaction techniques, or novel functionality" (p. 483). By combining the two qualities, users could shape an overall judgment of the product attractiveness. He also indicated that the assessment of user experience should take into account the subjective nature of attractiveness, such as the perceived fun and enjoyment in using a product.

Hassenzahl (2001) further indicated that the appraisal of the user experience was similar to the cognitive appraisal that led to two outcomes or benefits. One was the behavioral consequences related to increased or decreased usage frequency, time, and quality of work results. The second was the emotional consequences, such as increased or decreased enjoyment, interest, and satisfaction. In view of this, the user experience appraisal may affect learners' performance and self-efficacy in web-based listening.

Based on the Hassenzahl's (2001) model, Laugwitz, Schrepp, and Held (2008) developed the user experience questionnaire (UEQ, See Appendix 3) to offer "an easy to apply, reliable and valid measure for user experience" (p. 12). The questionnaire measures end-users' perceived ergonomic quality and hedonic quality on a product. Besides, this questionnaire also measured people's directed perception of the attractiveness of a product, as a complement to their perceived quality features. This questionnaire has been validated with a set of data analysis, suggesting a satisfactory degree of reliability and construct validity. Thus it has become "a widely used tool to measure user experience" (Schrepp, Hinderks, & Thomaschewski, 2014, p. 103).

Besides the questionnaires, researchers (Goodman et al., 2003; Keskinen, 2015) have suggested many data collection methods such as interviews, observations,

diaries, and so on to assess user experience.

In sum, given that learners' experiences in web-based learning may generate behavioral and emotional outcomes and thus impact their learning performance and self-efficacy. Therefore, the present study would examine the user experience. The following section would discuss the web-based listening.

2.8.3 Research on web-based language listening

Language listening, mainly one-way listening, is by nature inextricably associated with technology since people need the functions of the devices such as radios, televisions, CD-players, or computers to receive the aural input. However, language listening received less research with technology than other skills (Stockwell, 2007). With the advancement of modern technology, researchers have been exploring a wide diversity of new computer-based applications in language listening such as caption/subtitle (e.g., Hsieh, 2019; Yang & Chang, 2014), personal digital assistant (e.g., Chen & Chang, 2011), mobile applications (Read & Barcena, 2016), online websites (e.g., Cheng & Zhang, 2011), word recognition software (e.g., Hulstijn, 2003) as well as podcasts (e.g., Cross, 2014).

Web-based language learning has several advantages in facilitating learners' listening comprehension. Firstly, learners could control their own pace in listening as well as the scripts' delivery and speech speed (Robin, 2007). Secondly, learners could repeatedly expose to the listening content due to the reiterative nature of web-based listening (Verdugo & Belmonte, 2007). Thirdly, learners could receive immediate feedback (Hoven, 1999) by checking their understanding on their own. Fourthly, web-based language learning could shed two main obstacles, namely, inadequate resources and lack of professional skills, especially in listening and speaking instructions (Chen

& Zhang, 2011).

Therefore, as mentioned by Paulsen (2001), it is “no longer a question of whether to take advantage of these electronic technologies in foreign language instruction, but of how to harness them and guide our students in their use” (para. 2). Meantime, researchers (Leloup & Ponterio, 2007; Lu, 2010; Sun, Chang, & Yang, 2011) indicated that it may be a daunting experience for learners to access the sea of authentic listening materials and the proper guidance or scaffolding by the teachers are also essential to produce positive and lasting effects in online autonomous learning and reduce learners’ frustration.

So far, research studies investigating the effects of using web-based resources in language learning and listening practice have produced mixed findings.

Kung and Chuo (2002) examined the learners’ perceptions of English learning through websites with Taiwanese EFL learners. Forty-nine learners were involved in the study and used five English learning websites as their out-of-class learning practice. Learners were firstly trained in 50 minutes’ session to get familiar with the computer facilities and the five websites. During two weeks, learners completed assignments by using these websites. Data were finally collected via post-questionnaires to observe learners’ perceptions of the use of websites for English learning. Results indicated that learners had an overall positive attitude toward web-based English learning. The authors further suggested that language teachers should offer enough guidance in web-based learning.

Absalom and Rizz (2008) compared the effectiveness of online listening tasks and text-based tasks. 14 Italian learners fell into two groups conducting different tasks. Data derived from pre- and post-study interviews, learners’ responses to tasks,

and weekly evaluation of tasks. The findings indicated that learners who performed online listening tasks seemed to retain more vocabulary and information than those with online text-based tasks. Meanwhile, online listening tasks could trigger learners' higher levels of anxiety but a stronger desire to understand the text than online text-based tasks. The authors suggested that listening tasks were "psychologically taxing" (p. 62) in generating more motivation than text-based tasks, and listening tasks should not be varied as much as the text-based tasks. They further concluded that a systemic integration of listening tasks could promote language acquisition. However, the study is limited by its small size of samples and the sole qualitative data of learners' perceptions. It would be more robust to employ quantitative measurements to detect learners' development of vocabulary acquisition.

Similar positive results were found in Sun et al. (2011) that investigated the effects of integrating extended online thematic listening practice into language course instruction on Taiwanese university EFL learners. Thirty-five students from diverse majors joined in the study. As a supplement practice for reading and writing courses, the extended online thematic listening tasks were developed so that learners could practice listening out of the classroom. The website provided many learning aids such as pre-listening, post-listening, glossary, and so forth. The topics of the listening materials were similar to those in the coursebook of reading and writing. Results from pre- and post-tests comparisons showed that learners made significant improvements from the listening practice. Meanwhile, learners' enthusiasm towards online listening was decreasing as the semester progressed with diminishing efforts as learners had many other duties near the end of the semester. The author suggested that since "online listening is highly self-directed and self-paced" (p. 122), the teacher should offer

enough scaffolding such as time management skills for learners to practice in the online listening successfully.

However, Chen and Zhang (2011) did not detect the effectiveness of web-based learning on learners' listening comprehension with Chinese EFL learners. Their study recruited five hundred fifty-six first-year non-English majors that divided into experimental (N=296) and control groups (N=260). The online learning system adopted *The New Era Interactive English*, developed by Tsinghua University Press. The system contained four main components, namely, authentic videos, flexible control mechanisms, advanced speech recognition technology, and automatic feedback mechanisms, "provid[ing] learners with individualized and flexible access to authentic language and cultural materials and practice opportunities with instant feedback" (p. 10). Results showed that no significant differences were between web-based learning and traditional method of instruction regarding listening achievements. However, learners exhibited positive attitudes toward online listening activities, and less-skilled listeners were more motivated to join in online listening practice than their skilled counterparts.

Despite the mixed findings in research on the web-based language listening, researchers (e.g., Kung & Chuo, 2002; Leloup & Ponterio, 2007; Sun et al., 2011) have agreed that teachers need to give students appropriate supports and integrate online listening tasks with classroom instruction. However, so far, only a few studies have investigated the metacognitive intervention of listening in the CALL environment. The following section would review these studies.

2.9 Metacognitive intervention in the CALL environment

Thus far, little research has tackled the metacognitive intervention of listening in the CALL environment. Here reviewed were some rare research studies that examined the metacognitive strategy instruction and metacognitive instruction in L2 listening with computer-based technology such as web-based listening, podcasts, and mobile applications.

Alm (2013) reported learners' strategy use and perception on an extensive listening course using podcasts with 28 L2 intermediate German learners. The course employed three technologies: podcasts for listening materials, blogs for learner journals, and a class wiki. Suitable audio and video podcasts were selected and posted on the class wiki by the researcher. Learners were required to single out their podcasts, keep their listening activities in blog journals, and comment on their classmates' blog journals for the 13 weeks. MALQ and focus-group interviews were used to detect learners' strategy use and perception in the tasks. Results showed that participants enjoyed the listening activities and preferred the video listening to audio listening since they could receive the additional support from video listening (Pavio, 1986); meanwhile, learners used a diversity of strategies to regulate their listening and achieve comprehension. The author maintained that the interest from the learners towards the technology could positively influence their strategy use, and the pre-set learning goals could allow learners to use the functions of the podcast to develop their problem-solving and directed attention strategies. However, the lack of the pre-test and control group, and the small sample limited the reliability of the results. Despite this, this study implied that online reflection and discussion and technologies could motivate learners to listen and develop metacognitive awareness.

Barbosa-Hernández (2012) examined the effects of online-based activities on 6 Spanish L2 learners' listening comprehension for five weeks. Learners were given hints to use the metacognitive strategies of planning, monitoring, problem-solving, and evaluating while listening. These strategies were adjusted according to different listening materials. The role of the researcher was to monitor learners' activities. The researcher carried out two phases of research. In the second phase, the learners could freely single out the listening activities they wanted. This study drew on the data collection tools of questionnaires, reflective journals, and interviews. The results revealed that learners improved their cognitive and metacognitive strategies, such as selective listening. The researcher further suggested that the online listening practice with metacognitive strategy use could contribute to their disciplined listening process and were conducive to autonomous learning; online activities were especially useful for populations who had no time for face-to-face lessons. However, this research was still limited by the small number of participants.

Chang and Chang (2014) examined the effects of online videotext self-dictation-generation (SDG) on learners' strategy use with EFL learners in Taiwan. Participants received 18 weeks of online video text SDG activities combined with strategy instruction and metacognitive development. In the first eight weeks, learners received listening strategy instruction, and in the following weeks they conducted the online video-SDG activities and answered some metacognitive questions such as "Do you have problems in figuring out the words?" and "What are the strategies that made you understand the words you underlined?." The data were from an online learning platform, questionnaires, a focus-group interview, and pre- and post-achievement tests. The results showed that the treatment successfully improved the participants' metacognitive

knowledge, strategy use, and listening performance. The authors further alluded to three crucial factors that could lead to the successful development of listening metacognitive awareness. The first is to construct a technology-based friendly, and flexible environment to involve learners in the process of retrospection on self-concept in L2 listening. The second is to offer learners more opportunities to practice listening strategies. The third is to arrange group work in designing listening activities. Nevertheless, the study was limited for generalization due to the lack of a control group. Meantime, the overemphasis on the dictation activities could drive these learners to assign more attention to bottom-up processing than the metacognitive awareness development.

Read and Barcena (2016) investigated metacognitive listening development with a social mobile-assisted listening application, ANT (Audio News Trainer). The application employed a set of activities and questions, such as online reflection, some metacognitive questions, Facebook discussion to improve learners' metacognitive awareness and strategy use. Interaction protocols and questionnaires were used to detect the progress of metacognitive awareness and strategy use. Results showed that less-skilled learners made an evident improvement in metacognitive awareness, while skilled learners made no differences; learners were found to have developed more self-regulation and formed a more structured way of listening than before. Despite the innovative operations, the study did not use no quantitative data to track the development of listening comprehension and metacognitive awareness, leading to some threats to the validity of the conclusions.

In a nutshell, the section reported some studies on metacognitive intervention in L2 listening in a multimedia environment. Some of the interventions (Alm, 2013;

Chang & Chang, 2014) were carried out inside the classroom and others (Barbosa-Hernández, 2012; Read & Barcena, 2016) outside the classroom. All these studies demonstrated the positive results on the development of learners' metacognitive awareness and listening comprehension. However, most of these studies adopted only the qualitative data collection tools and lacked the use of the control group in research design, and none of them aimed to develop a web-based self-directed listening practice based on the metacognitive cycle.

As mentioned, listening is an interaction of top-down and bottom-up processing. However, metacognitive instruction favors the top-down processing of listening, involving little bottom-up training. Some researchers (Goh, 2008; Graham & Santos, 2015; Vandergrift & Tafaghodtari, 2010) called for adding some bottom-up activities to metacognitive instruction so as to achieve more successful outcomes. The following section would review the bottom-up approach to L2 listening.

2.10 Bottom-up approach to L2 listening

Although the L2 listening research focus has switched to strategy and metacognitive listening intervention, highlighting the top-down processing, some researchers (Field, 2003, 2008a; Hulstijn, 2003; Lynch & Mendelsohn, 2013) made the caution that the training of bottom-up processing in L2 listening should not be neglected but given special attention. Vandergrift and Goh (2012) stated that bottom-up skills constitute a significant challenge for L2 listeners. Lynch and Meldelsohn (2013) indicated that "if... top-down process is important, bottom-up listening is indispensable" (p. 184). A successful listener should not just learn to compensate for their listening breakdowns by skillfully using the top-down strategies, but also need to use "form-

oriented L2 listening skills effectively in bottom-up processing" (Lynch & Meldelsohn, 2013, p. 193). Meanwhile, researchers (Field, 2008a, Siegel & Siegel, 2013) suggested that bottom-up activities should receive more attention in listening lessons and could be integrated into listening lessons or targeted to the trouble areas in the comprehension break-downs.

The emphasis of the bottom-up skills training is because listening comprehension is not just impacted by the high-level understanding based on the world and contextual knowledge, but the misinterpretation of minor sounds or words (Field, 2003; Yeldham, 2016). Field (2003) indicated that listeners might misinterpret "I won't go to London" to "I want to go to London" (p. 325). For the language like English, the sound streams of words are often influenced by the phonological rules as liaison, assimilation, and elision in connected speech (Field, 2003). Therefore, adequate bottom-up skills offered the raw materials for listeners to arrive at precise meaning (Field, 2003) and could help constrain listeners' top-down processing by limiting the interpretation of an utterance (Wu, 1998). Meanwhile, due to the transient nature of listening, L2 speech segmentation could rarely be monitored consciously and easily interfered by L1, thus requiring extensive practice (Hulstjin, 2003).

One of core bottom-up skills for listening is often referred to as the skills of word recognition (Rost, 2015) or lexical segmentation (Field, 2003) or word segmentation (Vandergrift & Goh, 2012), indicating how well learners could perceive and recognize words from the sound stream. Word recognition was the commonest "perceptual cause" of comprehension breakdowns (Field, 2003). The automatization at the lower levels of word recognition and sentence parsing could free more attention of listeners to focus on the higher level of processing to construct meaning (Harrington, 2001; Hulstjin,

2003; Rost, 2002).

2.10.1 Bottom-up listening activities

Hulstjin (2003) indicated that "any successful language program should consist of tasks in which learners can automatize their bottom-up processing of linguistic information (p. 424). L2 listening researchers up to date have suggested many ways to improve word recognition ability in connected speech. Richards (2008) mentioned some traditional listening activities on bottom-up processing such as dictation, cloze exercise, and some multiple choices. Field (2003) suggested the use of dictation or other boundary detecting activities to raise learners' awareness of ambiguous word boundaries and help them notice the contraction, weak forms, chunks, and assimilation in utterances. Vandergrift and Goh (2012) suggested some bottom-up listening activities such as selecting appropriate texts, reducing listening speed, repetition, raising awareness of the irregularities in spoken English, cloze exercises, dictation, reading while listening, dictogloss, and "i Minus 1" listening (the reduction of difficulty levels of listening). Those above bottom-up listening activities required listeners of "close and detailed recognition, and [bottom-up] processing of input" (Richards, 2008, p. 5), promoting the development of word-recognition skills. Despite the diversity of bottom-up listening activities, these activities "although compelling for their potential to help L2 learners improve the bottom-up dimension of listening, are not yet supported with empirical evidence" (Vandergrift & Goh, 2012, p. 163). Moreover, some researchers (Hoeflaak, 2004; Hulstijin, 2003) advocated the use of technology to develop L2 listeners' bottom-up skills. For instance, Hulstijin (2003) suggested the use of the software *Listening123* that could play the text fragment by fragment with delayed text display for developing learners' ability of word-recognition.

2.10.2 Research on bottom-up listening instruction

Thus far, some research studies have examined the effects of dictation on L2 learners' listening comprehension and yielded some positive results. For example, Kiany and Shiramiry (2002) investigated the effects of dictations on Iranian elementary EFL learners' listening comprehension ability. Sixty elementary EFL learners were chosen as the subjects and assigned to the experimental (N=30) and control (N=30) groups. Two English proficiency tests, as the pre- and post-tests, measured the development of listening comprehension ability. The experimental group was given 11 dictations besides the listening exercise in the textbook, while the control group received the listening exercises only. Results indicated that after the treatment, the experimental group outperformed the control group in listening comprehension ability.

Similar results were reported in Kuo (2010) that examined the effects of partial dictation of an English teaching radio program on intermediate Taiwanese EFL learners' listening comprehension. The study adopted a single group design. The listening pre- and post-tests used the listening sections of an American Language Course Placement Test (ALCPT). The author designed complex partial dictation handouts for learners to complete in eight weeks. Results suggested a significant improvement in these learners' listening comprehension. The effectiveness of the tasks was also confirmed from learners' perceptions elicited by the post-questionnaires. The author suggested that this program should be a feasible way to improve language listeners' word recognition skills and listening comprehension.

Other studies have examined the mode of listening-while-reading on L2 listening comprehension. This mode could promote the form and meaning matching, help develop aural vocabulary, and facilitate recall and decrease the troubles of fast

speed rates (Goh, 1999; Chang, 2009; Chang & Read, 2006).

Chang (2009) investigated the effects of different listening modes (listening-while-reading, listening only) on listening comprehension with 84 Taiwanese college EFL learners. These learners received two listening tasks in two listening modes. These scores of the two tasks were used to compare listening performance. Data were collected with immediate post-test perception questionnaires. Results indicated that learners gained 10% more comprehension in the listening-while-reading mode. Meanwhile, learners showed a strong preference for listening-while-reading mode because this mode could make tasks easy, induce their interest and attract attention. The author suggested it should be better to adopt the listening-while-reading mode in long-term listening instruction than just to improve listening scores in the short term.

Similar results were in Chang (2011) that examined the development of Taiwanese EFL learners' listening fluency by extensively listening to audiobooks. The experimental group was required to read and listen to audiobooks and provided weekly report while the control group received traditional listening instruction. Listening fluency tests (with multiple choice and dictation tasks) and vocabulary level tests were used to measure the development of listening fluency and vocabulary gains. Results revealed that listening-while-reading group improved significantly on the dictation tasks, suggesting the improvement in listening fluency. Moreover, the experimental group improved more on general vocabulary gains than the control group. However, there were only seven participants in the experimental group that limited the generalization of the results.

Still, some researchers investigated the effects of other bottom-up processing activities on listening comprehension. For instance, Siegel and Siegel (2013)

examined the effects of a diverse collection of bottom-up listening activities on Japanese EFL learners' bottom-up listening ability. These listening activities were counting words, identifying lexical differences, syntactic predicting, highlighting connected speech, filling in blanks and dictation. For 14 weeks, learners took the listening lessons with six bottom-up listening activities. Pre- and post-tests employed dictation tasks due to their "capacity for integrating various bottom-up processes" (p. 13). Post questionnaires were to examine learners' perceptions of these bottom-up tasks. Results showed that learners gained significant improvement in bottom-up listening ability. Learners perceived the filling in blanks, dictation and practising connected speech as useful for their listening improvement, but they showed enjoyment for all these activities.

Khuziakhmetov and Porchesku (2016) conducted a small-scale study to examine the effects of training on learners' perceptions of frequent aural input on listening comprehension ability. Two groups of Russian EFL learners were assigned into experimental (N= 8) and control group (N= 9). Both groups received similar language instruction each week for about 90 minutes, but extra listening training was given to the experimental group for the last 10-15 minutes in class. The extra listening training focused on helping learners recognize the linguistic features of frequent English words and sentences, such as the stressed vowel, long-short vowels, minimal pairs, and so on. Results indicated that the experimental group showed more significant improvement than the control group in recognizing words and comprehension texts. The authors further indicated that training of the surface level of speech perceptions could leave more attention and memory capacity for learners to process at other cognitive levels (Sekerina, 2006; Khuziakhmetov & Porchesku, 2016).

In summary, the development of bottom-up skills could not be neglected but highlighted in L2 listening. Until now, researchers have proposed various bottom-up listening activities and some, such as dictation and listening-while-reading, have been empirically validated. In the present study, the main bottom-up listening tasks were dictation and listening-while-reading which were involved in the later stages of the metacognitive listening practice; besides, the speed control and the posts on connected speech and weak forms on the website could also help improve the learners' bottom-up listening skills.

Metacognition is also related to the concept of self-efficacy that is critical to self-regulation (Maddux, 2002). The following section reviewed the concept of self-efficacy and the related research in L2 listening.

2.11 Self-efficacy and L2 listening

This section reviewed the definition and sources of self-efficacy, and the research on self-efficacy and L2 listening.

2.11.1 Definition of self-efficacy

The concept of self-efficacy came from social psychology and was first coined by Bandura (1977) to refer to the judgment of one's ability to complete a specific behavior and arrive at the desired performance. The meaning of the concept expanded to indicate one's "beliefs about their capacities to exercise control over the events that affect their lives" (Bandura, 1989, p. 1175). Self-efficacy beliefs could significantly influence human motivations, achievements, as well as psychological well-being (Bandura, 1992, 1995). Maddux (2002) mentioned that "self-efficacy is defined and measured not as a trait but as beliefs about the ability to coordinate skills and ability to

attain desired goals in particular domains and circumstances" (p. 278), suggesting that self-efficacy is task-specific and "not of a general nature" or "personality traits" (Van der Bijl & Shortridge-Baggett, 2002, p. 10). That could account for the differences between self-efficacy and other trait-like terms such as self-esteem and self-confidence which represented the individuals' general feeling of confidence and values (Maddux, 2002; Van der Bijl & Shortridge-Baggett, 2002). Moreover, self-efficacy could influence self-regulation in the ways of setting goals, maintaining persistence as well as affecting the efficiency and effectiveness of problem-solving and decision making (Maddux, 2002). Since self-regulation is also greatly influenced by metacognitive processes (Wenden, 1998; Brown et al., 1983), self-efficacy is inherently related to metacognition.

2.11.2 Sources of self-efficacy

Bandura (1994, 1995) maintained that there are four sources of self-efficacy, namely, mastery experiences, vicarious experiences, social persuasion and physiological and emotional states.

According to Bandura (1994), "the most effective way of creating a strong sense of efficacy is through mastery experiences" (p. 2) since they offer the real evidence on how to achieve success. Success could consolidate one's self-efficacy while constant failures will damage it, especially before the self-efficacy is established. Bandura also mentioned that the "resilient sense of efficacy" (p. 2) requires experiences of both success and failures, as easy success will lead to the expectation of quick results and are easily discouraged by failure.

The second source is called vicarious experiences, the experiences from social models. By viewing the successful experiences of others, people could raise their

beliefs of achieving similar ability to succeed. The modelling influences are strongly impacted by the observers' perceived similarities to the models. If people perceive their models are very similar and close to themselves, they are easily influenced by the models' behavior and outcomes it generates.

The third source is social persuasion, that is, others' encouraging words often improve one's self-efficacy. People who are persuaded to possess some capabilities to achieve success will exert more efforts than those who are doubted on their capabilities. However, unrealistic boosts in efficacy may lead to some disappointing results of efforts that undermines one's self-efficacy. Bandura (1994) suggested that successful efficacy builders do not just convey positive appraisals but create situations for mastery and vicarious experiences.

The ultimate source is physiological and emotional states which also influence ones' self-efficacy. Stress reactions, tensions, and negative moods often debilitate the judgment of capabilities and vice versa. Compared with these emotional and physical reactions, what is more important is how one perceived them. People with high self-efficacy can perceive their affective or physical states as facilitating the performance while those with self-doubts regard these states as debilitating factors. Therefore, L2 practitioners provide learners' scaffolding regarding these sources to improve learners' self-efficacy in language learning.

2.11.3 Research on self-efficacy and L2 listening

According to Bandura (1990), self-efficacy was related to learners' attributions; namely, the learners who attributed the success or failure of a task to the factors under their control usually had high self-efficacy while these who attributed the success of tasks to the factors out of their control may have low self-efficacy. The less

controllable process of L2 listening often made listeners attribute their lack of listening success to factors beyond their control, thus leading to the low self-efficacy (Graham, 2011; Graham & Macaro, 2008). Therefore, self-efficacy was important for the development of listening comprehension ability (Graham, 2011). Previous research studies revealed that self-efficacy was a strong predictor of academic achievements (Greenen et al., 2004), reading (Mills, Pajares, & Herron, 2006), writing (Hetthong & Teo, 2013) and listening proficiency (Chen, 2007). Meanwhile, some researchers have found the relationship between the self-efficacy and listening strategy (Kassem, 2015) and metacognitive awareness (Rahimi & Abedi, 2014) and listening strategies. For example, Kassem (2015) investigated the relationships between listening self-efficacy and the listening strategies of cognitive, metacognitive, and socio-affective strategy with Egyptian EFL learners. Results demonstrated that listening self-efficacy was strongly correlated with cognitive and metacognitive strategies and moderately with the socio-affective strategies. Rahimi and Abedi (2014) investigated the relationships between listening self-efficacy and metacognitive awareness with Irian EFL learners. The listening self-efficacy was significantly to some aspects of metacognitive awareness (planning-evaluation, (no) mental translation, and problem-solving).

However, only a limited number of research studies considered the development of listening self-efficacy with the strategy or metacognitive instruction and indicated a complex picture of the development of self-efficacy, as shown in the following.

As formerly mentioned, Graham and Macaro (2008) examined the effects of a five-month L2 listening strategy instruction on learners' listening comprehension and self-efficacy of listening. It used a pre- and post-test control group design with the

delayed post-test with three listening groups: a high scaffolding group (HSG), a low scaffolding group (LSG), and a control group. Three listening proficiency tests were administered at pre-test, post-test and delayed post-tests. Both HSG and LSG received explicit strategy instruction, but HSG also kept diaries and received written feedback to raise their awareness of strategy use. The results demonstrated that the HSG reported more improvement in self-efficacy than LSG and the control group. Given these results, the authors stated that the strategy instruction with feedback on connecting the strategy use with successful listening was conducive to self-efficacy. Similar to reflection activities in metacognitive instruction, the diaries and written feedback in the HSG group could allow learners to reflect on their metacognitive knowledge. This study thus could provide evidence that metacognitive instruction may show an advantage over the explicit strategy instruction on the development of listening comprehension and self-efficacy.

The evidence was found in Vafaeeseresht (2015) which observed the effects of metacognitive listening instruction on 57 pre-intermediate Iranian L2 listeners' development of self-efficacy. The participants were divided into the control group (N=28; 15 females & 13 males) and experimental group (N=29; 14 females & 15 males). To measure the self-efficacy of listening, the author designed the listening self-efficacy questionnaire in consideration of some criteria in Zimmerman (2000) and Bandura (2006), such as the domain-specific features of self-efficacy, measure of "performance capabilities, not personal qualities" (p. 84), focusing on the present state, not in the future or past. This questionnaire consisted of 20 items on an 11-point scale from "Not at all sure (0%)" to "Completely sure (100%)." For seven weeks of 20 sessions, the experimental group received the metacognitive instruction based on Vandergrift (2007),

while the control group did not. The results showed that the experimental group outperformed the control group in the improvement of listening self-efficacy. However, the short discussion of results and the small number of samples limited the reliability of the study.

However, the evidence did not emerge in Taguchi (2017) which investigated the effects of metacognitive instruction on Japanese EFL university learners' listening comprehension and self-efficacy. Both the experimental group and the control group attended the same listening course. The experimental group received 20-minute metacognitive instruction each week for eight weeks. Results indicated that both the experimental group and the control group made significant improvements in different listening tests. At the same time, both groups showed a significant improvement in self-efficacy. The authors further suggested that the improvement of self-efficacy in both groups could be due to the sheer amount of listening practice, as it was sensible that the long-term listening practice could contribute to more successful listening (mastery) experiences (Bandura, 1994), leading to more self-efficacy. However, this study was still limited for generalization by its small sample size.

In sum, the previously reviewed studies (Graham & Macaro, 2008; Taguchi, 2017; Vafaeeseresht, 2015) have provided some evidence of the effects of metacognitive instruction or strategy instruction on L2 learners' listening self-efficacy, accompanied with the development of listening comprehension ability. However, the evidence did not appear in Taguchi (2017). The mixed findings lead to the necessity to explore this issue further. Meanwhile, it also remained unknown whether L2 listeners' self-efficacy could be developed through the web-based metacognitive listening practice that was explored in the study. The final section in this Chapter delineated the

tentative framework of the current web-based metacognitive listening practice, based on principles of metacognitive instruction and relevant previous research.

2.12 Tentative framework of the metacognitive listening practice

Figure 2.3 shows the tentative framework of the current metacognitive listening practice. This framework mainly drew on the two crucial tasks in metacognitive instruction: the integrated experiential tasks and guided reflection tasks (Goh, 2008). The integrated experiential tasks represented the daily listening tasks embedded with metacognitive activities. For this study, the integrated experiential tasks built up based on the pedagogical cycle of metacognitive instruction (Vandergrift, 2004, 2007; Vandergrift & Goh, 2012) and were a set of online self-directed listening tasks, distributed each week. In the self-directed listening tasks, learners regularly responded to the questions to go through the processes of planning, monitoring, and evaluation. Different from the pedagogical cycle, the self-directed listening tasks did not involve peer discussion while learners were conducting listening tasks since peer discussion was challenging to conduct in an online self-listening environment. However, the guided reflection tasks could compensate for this. In the study, the guided reflection tasks were in the form of diaries and online discussion (after listening). Through the guided reflection tasks of reflective journals and online discussion, learners could reflect on or share their listening strategies and problems to develop their metacognitive knowledge (person, task, & strategy knowledge), thus increasing their regulation and management of listening process (Wenden, 1998) and more engagement in the integrated experiential tasks. Since the integrated experiential and guided reflection tasks mainly focused on top-down processing, some bottom-up listening activities were

added in the post-listening stages (after the third listening) of the integrated experiential tasks, where learners had attained enough comprehension so that they could leave more attention to developing bottom-up skills. However, as mentioned, bottom-up listening tasks should not be made to outweigh metacognitive listening activities or be over-emphasized in case learners may switch their attention to be indulged in developing word recognition skills, leading to the inefficient word-by-word translation during listening. Based on previous studies (e.g., Vafaeeseresht, 2015; Vandergrift & Tafaghodtari, 2010), the two tasks (the guided reflection tasks and the integrated experiential tasks) which built up the web-based metacognitive listening practice could increase learners' metacognitive awareness and self-efficacy. Combined with some bottom-up listening activities, they also aimed to improve learners' bottom-up listening skills.

Meanwhile, the three overlapping circles of self-efficacy, metacognitive awareness, and bottom-up listening skills showed the correlation between the three. As indicated, self-efficacy and metacognition were interrelated conceptually, and some researchers (Hayat & Shateri, 2019; Vrugt, 2004) witnessed the interplay of self-efficacy and the use of metacognitive strategies. Also, the development of bottom-up listening skills could allow learners to assign more attention to the use of strategies and meaning construction (Swan & Walter, 2017), leading to the success of listening comprehension, as a kind of mastery experience, impacts the self-efficacy. The improved self-efficacy could offer learners enduring interest (Bandura, 1989) to engage in listening practice and enhance their listening comprehension ability by developing both the top-down and bottom-up processing skills. Therefore, a double-headed arrow in the figure indicated the interrelationship between the development of listening

comprehension and that of metacognitive awareness, self-efficacy, and bottom-up listening skills.

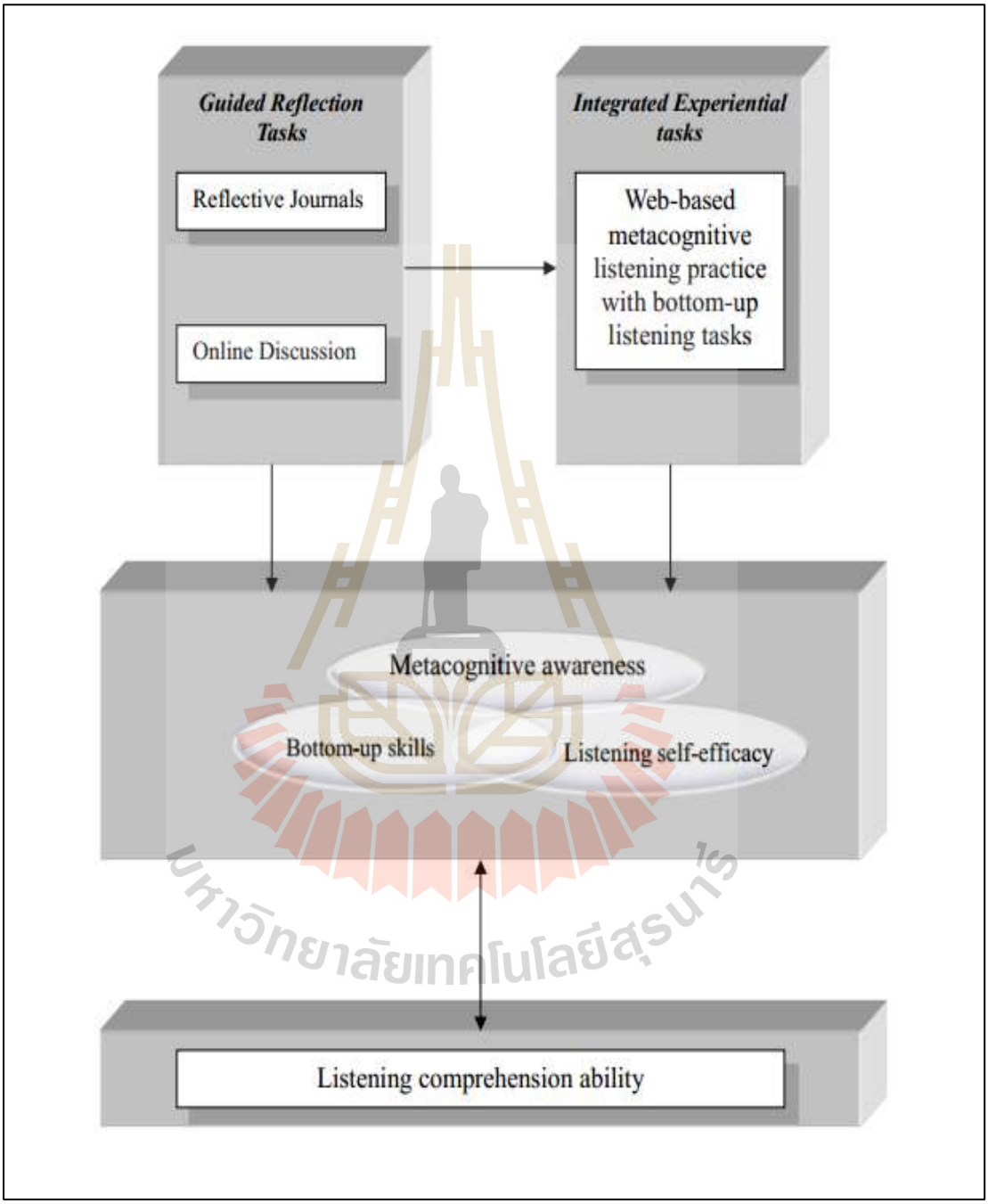

Figure 2.3The tentative framework of the metacognitive listening practice

2.13 Summary

To sum up, this chapter firstly described the nature of listening and two cognitive models of listening. Then, it detailed the definitions of metacognition and its development in language learning, followed by an examination of the current research on metacognitive intervention in L2 listening. Next, it looked at literature related to web-based listening and metacognitive intervention under the multimedia environment. Moreover, it explained the bottom-up approach of L2 listening as well as self-efficacy in L2 listening. Finally, it depicted a tentative framework of the current metacognitive listening practice. The next chapter would discuss the methodology of the study.

CHAPTER 3

METHODOLOGY

This chapter illustrated the methodology used in the study. Firstly, it presented the research questions and how the research was designed. Then it introduced the research setting, participants, and data collection tools. This was followed by an elaboration on the research variables, listening materials, as well as the construction of the current listening websites. After that, it spelled out the treatment, procedures as well as how the data were analyzed. The last section discussed the rigor of the research design.

3.1 Research design

The present study adopted a mixed-method design. As the quantitative part, the study employed a quasi-experiment method with a convenient sampling, for it was challenging to achieve purely random samples in a natural university setting. In order to compensate for the potential shortcomings in the quasi-experiment, the comparative group was made similar to the experimental group, and the samples were described thoroughly (Fraenkel, Wallen, & Hyun, 2011), and triangulation from the qualitative data could serve to confirm the results from the experiment. The study adopted the three-group pre- and post-test design with two experimental groups and one control group. The two experimental groups were the web-based metacognitive listening group (MG) and the web-based bottom-up listening group (BG). The control group was the web-based traditional listening group (TG). Given that the web-based metacognitive

listening included some bottom-up listening activities, designing two experimental groups could more precisely detect the effectiveness of metacognitive intervention by controlling the variable of bottom-up listening. The data collection tools for the quantitative part were listening proficiency tests and questionnaires,

The qualitative part was to add additional information to flesh out and enrich the results from the quasi-experiment. The qualitative data were collected from interviews and journals. The whole study lasted for 15 weeks in one semester, 12 weeks (90 min each week) for the treatment, and three weeks before and after for the administration of the pre- and post-tests, pre-treatment training, and post interviews. According to Fahim and Fakhri (2014), ten weeks could be a good duration to witness the effects of metacognitive instruction; therefore, 12 weeks should be enough for the web-based metacognitive listening training.

The research design was shown in the following:

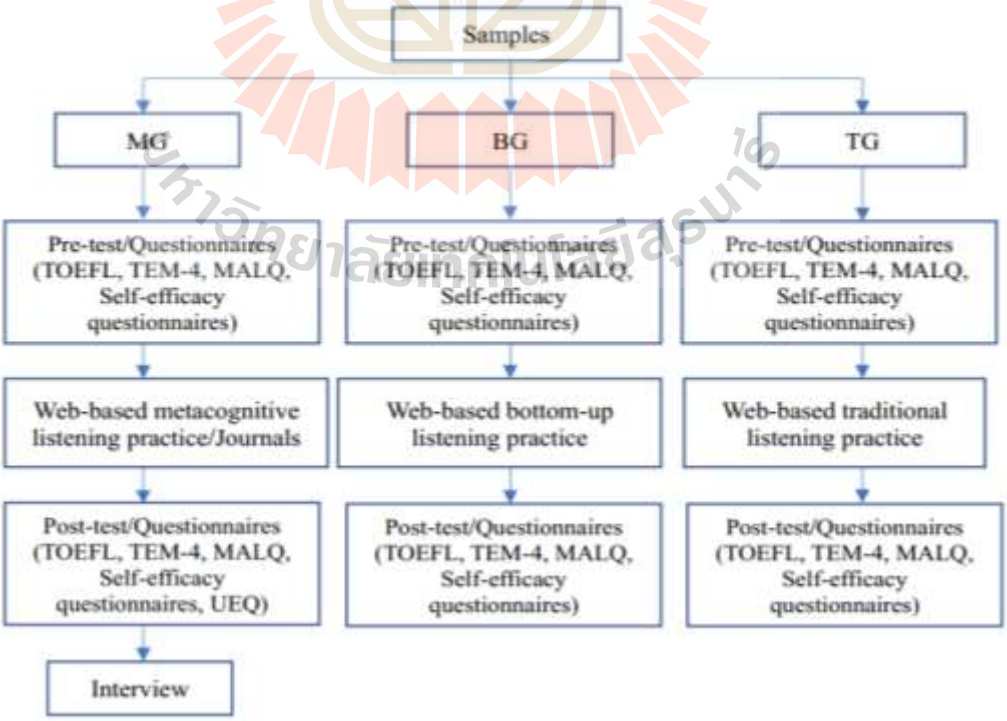

Figure 3.1 The flowchart of the research design

3.2 Settings and participants

The research setting of the present study is Tongling University (TLU), located in Tongling city of Anhui Province, China. Tongling University is a second-tier university in China. This university features the financial and accounting subjects, committed significantly to cultivating the professional abilities of students in finances and economics.

This study was conducted in the English Language Program at TLU. The participants in the present study were the first-year students of three classes (N = 150) in the English Language Program at TLU during the second semester of 2018 - 2019. According to a pre-experimental survey, these participants were from ages 18-22 with 131 female and 19 male learners. Most had the formal English education for 12 years. None had the experiences of studying in native English-speaking countries ever. Most mentioned that the best way to improve listening comprehension was to do more listening practice through watching movies or news or listening to some test materials.

The three whole classes were labeled the MG, the BG, and the TG, with 50 participants in each group. However, this number shrank to 132 (44 in the MG, 45 in the BG, 43 in the TG) in the final data analysis, for some learners failed to complete all practices or questionnaires or withdraw from the study. The mean score (M = 4.5) from the pre- TOEFL listening test by all 132 participants indicated that they were in a below low-intermediate proficiency level (ETS, 2019). The participants were further divided into the less-skilled and skilled listeners in each research group based on the mean score (M = 4.5) (See Table 3.1). Those participants in each group scored above the mean score were the skilled listeners, and those below it were the less-skilled listeners.

Table 3.1 Number of participants in each group

	MG	BG	TG
Less-skilled	24	24	22
Skilled	20	21	21
Total	44	45	43

Participants in all three groups were at a below low-intermediate level. At the time of the study, they were required to take 90 hours' listening lessons each week. The textbook for the lesson was *Step by Step 3000, volume 2.* The listening text consisted of 12 units, where the first 11 units involved listening comprehension tasks (e.g., multiple-choice, true or false) or dictation tasks (filling in the blanks) with 11 different topics and the last unit was a separate dictation practice. The three groups were taught by one teacher who had listening teaching experience for more than ten years. The teacher indicated that she taught almost one unit each week. She was only informed of a study to be carried out for improving her students' listening comprehension ability, but not of the specific details about the contents of the study.

The researcher in the present study assumed the role of an instructor, a rater, and a coder. As an instructor, the researcher provided explicit training for the participants in all groups to introduce how to use the website to practice listening. As a primary rater and coder, the researcher rated learners' listening test scores and the scores of questionnaires and coded learners' self-reflective journal entries and interview transcripts.

3.3 Data collection instruments

3.3.1 Listening assessment instruments

The present study employed the listening sections from the Test of English as a Foreign Language (TOEFL IBT) and Test for English Majors – Band-4 (TEM-4)

to assess participants' listening comprehension achievements. The employment of two tests other than one in the pre-tests could provide more reliable information about the participants' listening comprehension ability.

The TOEFL is one of the most influential language standardized tests since 1964. Launched by Educational Testing Service (ETS), it has been used as part of the requirements for admission to North American universities and widely employed in language assessment and educational measurement (Chen, 2010). Its quality has long been maintained and improved by the TOEFL Program and TOEFL Board. The reliability of the TOEFL Listening Section is high, with the reliability coefficient of 0.85 (Educational Testing Service, 2011). Sawaki and Nissan (2009) examined the criterion-related validity of TOEFL listening sections and indicated that the Pearson correlation coefficient (r) ranged from 0.56 to 0.74, suggesting a strong correlation.

The present TOEFL tests came from the sample listening test (See Appendix 4) in *The Official Guide to the TOEFL IBT* (Educational Testing Service, 2009). The real TOEFL Tests authors edited this book, and thus its reliability and validity can be ensured. The researcher also transformed the original audio-visual tests into paper-based tests for the convenience of administration. Learners were required to finish the listening sections of the TOEFL sample tests in one hour, a standard duration for TOEFL tests. Until the time of the study, these participants never took or prepared for the TOEFL tests. The current TOEFL listening tests consisted of 4 lectures and 2 conversations with 34 items. The raw scores of the 34 items were counted into the scale scores (the total score is 30 point).

TEM-4 was a standardized criterion-referenced test administered by the Chinese National Advisory Committee for Foreign Language Teaching (NACFLT).

This test was usually administered once at the end of the second university year for English majors to assess their English achievements in the two-year study. This test was necessary for English majors at Tongling University, for their graduation was impacted by whether they could pass the TEM-4. After 2000, TEM-4 tests involved more authentic listening materials (The TEM Test Centre, 1997). Since launched in 1992, this test endured a long-term validation. From 1993-1999, a Sino-British cooperative validation study investigated the reliability and validity of the test and indicated that the test was reasonably reliable (the Cronbach's alpha = 0.85) and valid (The TEM Test Centre, 1997, as cited in Jin & Fan, 2011). The TEM Test Centre (1997) revealed that the average internal consistency coefficient from 2008 to 2010 was 0.84. Although the TOEFL test was more famous with its high reliability and validity, participants in the current study were more familiar with TEM-4 tests, since passing the exam was one of the compulsive targets of English majors in Tongling University.

Besides the TOEFL tests, the second pre- and post-listening tests in the study used the real TEM-4 question papers of 2012 and 2013. A pre-treatment survey revealed that all the participants never used these questions papers. The listening sections of the TEM-4 tests (See Appendix 5) used in this study consisted of three conversations, three passages, and five pieces of news with 30 multiple-choice items. The total score of the TEM-4 is 30 points, with one item one point.

3.3.2 Questionnaires

The present study used four questionnaires: the background questionnaire, the metacognitive awareness listening questionnaire (MALQ), the listening self-efficacy questionnaire, and user experience questionnaire (UEQ). In order to decrease the misinterpretation, all questionnaires were translated into Chinese. To make their

metacognitive awareness and self-efficacy related to authentic listening experiences, the researcher administered these questionnaires immediately after the TEM-4 tests.

3.3.2.1 Background questionnaire

Due to the convenient sampling used in the study, it is necessary to state as detailed information of the participants as possible. Thus, a background questionnaire (See Appendix 6) was administered before the experiment to collect the detailed demographic information of the subjects that includes age, gender, educational backgrounds, English learning experiences, and their interests in English learning.

3.3.2.2 Metacognitive Awareness Listening Questionnaire (MALQ)

The second questionnaire used in the study is MALQ (See Appendix 7) that was administered before and after the experiment to examine the variation of their metacognitive awareness. Developed and validated by Vandergrift et al. (2006), this questionnaire used a 5-point Likert scale and consisted of 21 items, covering five factors: planning-evaluation, directed attention, person knowledge, (no) mental translation, and problem-solving. Many studies (e.g., Bozorgian, 2014; Bozorgian & Alamdari, 2018; Mahdavi & Miri, 2017; Rahimi & Katal, 2013; Vandergrift & Tafaghodtari, 2010) employed MALQ in their studies and indicated that the MALQ was above an acceptable level in terms of the internal consistency reliability (the coefficient $\alpha > 0.7$).

The researcher translated the questionnaire into Chinese and modified some expressions of items according to the pilot study (Appendix 30) to reduce the ambiguity and learners' misinterpretation. For example, some learners in the pilot study interpreted the item "*I try to translate keywords as I listen*" regarding (no) mental translation strategy as a selective attention strategy. Thus, to avoid this misinterpretation,

this item was rewritten to "*I try to translate some words from English to Chinese as I listen.*"

The Item-Objective Congruence (IOC) method was used to check the content validity of the questionnaire of the Chinese version questionnaire (See Appendix 8). Two associated professors and one full professor in the English Language Study field examined the with a 3-point scale evaluation form (1 = relevant, 0 = uncertain, -1 = irrelevant). According to Brown (1996), an acceptable value of the IOC index should be no less than 0.5 (≥ 0.5). The results indicated that the value IOC for the translated MALQ was 0.84, meaning that the content validity of the Questionnaire was acceptable.

Besides, the researcher piloted and checked the reliability of the translated self-efficacy questionnaire in the study with 100 English learners in TLU (who are not the participants in the study) and the resulting coefficient α was 0.87.

3.3.2.3 Self-efficacy questionnaire

The present self-efficacy questionnaire (See Appendix 9) was adapted from that of Graham and Macaro (2008). Compared with some listening self-efficacy questionnaires (e.g., Kassem, 2015; Taguchi, 2017), Graham and Macaro's (2008) questionnaire approached listeners' beliefs in the ability to manage specific listening comprehension skills and thus could better reflect the task-specific nature of self-efficacy. The adapted questionnaire in the present study was more specific than the original one in Graham and Macaro (2008) in that it examined learners' self-efficacy on specific listening tasks of conversations, lectures or passages, and news. The questionnaire used a 100-point scale and consisted of 11 items, examining learners' self-efficacy of listening skills with three types of listening (conversations, lectures or

passages, & news). Following Graham and Macaro (2008), for listening to conversations and lectures or passages, the questionnaire examined their beliefs into the ability to listen for the main idea, details, speakers' opinions, and the inference of words. Due to objectivity in journalism, speakers usually remained objective in reporting news. Thus, the self-efficacy of listening for speakers' opinions was excluded in the news listening section of the questionnaire.

The questionnaire was translated by a professor in English translation and submitted to an expert panel — consisting of two professors and one associate professor in English Language Studies field — to resolve some inadequate expressions or words. This questionnaire was administered following the learners' completion of TEM-4 tests so that they could make a more authentic judgment on their self-efficacy after dealing with different types of listening tasks.

The Item-Objective Congruence method was used to check the content validity of the translated self-efficacy questionnaire (See Appendix 10). Two associated professors and one full professor in the English Language Study field examined the questionnaire with a 3-point scale evaluation form (1 = relevant, 0 = uncertain, -1 = irrelevant). The results indicated that the value of IOC for the self-efficacy questionnaire was 0.94, meaning that the content validity of the Questionnaire was acceptable.

Besides, the researcher piloted and checked the reliability of the translated self-efficacy questionnaire in the study with 100 English learners in TLU (who are not the participants in the study) and the resulting coefficient α was 0.86.

3.3.2.4 User Experience Questionnaire (UEQ)

The present study employed the UEQ constructed and validated by

Laugwitz et al. (2008). The UEQ (See Appendix 3) was built based on Hassenzahl's (2001) model of user experience. According to this model, the ergonomic quality means the effectiveness and efficiency of a product to complete a target task, reflecting the human need for security and control, while the hedonic quality means the non-task related quality of a product, such as originality and innovativeness. The combination of ergonomic and hedonic quality could reflect users' evaluation of the appealingness towards the target product (Hassenzahl, 2001).

UEQ had six scales: attractiveness, perspicuity, efficiency, dependability, stimulation, and novelty. According to Schrepp (2019), attractiveness means users' overall impression of the product; perspicuity means the extent to which the product was easy to use; efficiency means the extent to which the tasks could be solved without unnecessary efforts; dependability means the extent to which the product is dependable and predictable, and could achieve the expected goal; stimulation means the extent to which the product is motivating and exciting; novelty means the extent to which the product is innovative and engage the users. According to the user experience model (Hassenzahl, 2001), perspicuity, efficiency, and dependability were under the ergonomic quality dimension; and stimulation and novelty were under the hedonic quality dimension. For the current study, the target product was the metacognitive listening website for the MG.

Laugwitz et al. (2008) made validation of the UEQ with several studies with participants in Germany and the USA. All showed that the reliability of UEQ was above the acceptable level on each scale, with the coefficient $\alpha > 0.60$. The questionnaire was also translated by a professor in English translation and submitted to an expert panel - consisting of two professors and one associate professor in English

Language Study field - to resolve some inadequate expressions or words. The Item-Objective Congruence method was used to check the content validity of the translated UEQ (See Appendix 11). Also, two associated professors and one full professor in the English Language Study field examined the questionnaire with a 3-point scale evaluation form (1 = relevant, 0 = uncertain, -1 = irrelevant). The results indicated that the value of IOC for the self-efficacy questionnaire was 0.82, meaning that the content validity of the Questionnaire was acceptable.

Besides, the researcher piloted and checked the reliability of the translated UEQ in the study with 100 English learners in TLU (who are not the participants in the study) and the resulting coefficient α was 0.88.

3.3.3 Interview

A individual semi-structured interview was conducted one week after the experiment. The purpose of the interview was to elicit the participants' attitudes and perceptions towards the web-based metacognitive listening practice. The researcher prepared some guided interview questions in connection with four research questions (See Appendix 12), but in practice, the deviation from the guided questions was also possible (Friedman, 2012). These guided questions were validated by three experts in the English Language Studies field.

Nineteen participants in the MG were purposefully selected to the interview with ten selected from the skilled group and nine of the less-skilled group with their consent. This number exceeded 30% of the total number of the MG and reached the saturated number of interviewees (N = 12) (Guest, Bunce, & Johnson, 2006). With the consent of interviewees, the interview process was recorded digitally for further references. Furthermore, to abridge possible misinterpretation, the interview was

conducted in Chinese.

3.3.4 Reflective journal

As part of document data, reflective journals provide "the advantage of being in language and words of participants who have already given thoughtful attention to them" (Creswell, 2012, p. 223); so, this type of data is ready for analysis without necessary transcription needed for interview data. In the present study, during the 12-week experiment, the participants in the MG were required to keep seven reflectional journals (1 in 10 days). Before treatment, the guided questions (See Appendix 13) grounded in the research questions as prompts were given to them so that they could make reflections based on these prompts, although they were not required to follow these prompts rigidly. These guided questions were also validated by three experts in the English Language Study field.

After completing each journal, they were required to photograph and submit it online to the researcher. Then the researcher checked the journals and provided feedback for each learner within a week and frequently reminded those inactive participants to submit their journals on time. The feedback (See Appendix 14), as a kind of scaffolding in the metacognitive listening practice, draws learners' attention to "the link between the strategies they have used and their learning outcomes" (Graham & Macaro, 2008, p. 755).

3.4 Variables of the present research

For the quantitative design, the study had two independent variables and three dependent variables. The independent variable of the current study were three types of treatment: web-based metacognitive listening practice, bottom-up listening practice,

and traditional listening practice. The other independent variable was listening proficiency levels. The dependent variables in the study are listening comprehension achievements, metacognitive awareness, and self-efficacy. TOEFL listening sample tests and TEM-4 tests measured listening comprehension proficiency. The adapted MALQ and self-efficacy questionnaires assessed the metacognitive awareness and self-efficacy of listening. The effects of the independent variables on these dependent variables were analyzed through the software *Statistic Package of Social Science* (SPSS).

3.5 Listening materials

The present listening practice for all three groups mainly employed 2 to 5 minutes' video lectures and news (See Table 3.2 and Appendix 15) of an average speech rate at around "140±20 wpm" (Baker, Downton, & Newell, 1980, p.450). These listening materials are mainly spoken by British or American people and derived from YouTube, Ted Talks, as well as other news websites. Turel (2004, 2014) suggested that audio-visual listening should be longer than audio-only listening and 3-5 minutes to be the appropriate duration of audio-visual listening for intermediate students. The selection of lectures and news was due to their widespread emergence in the listening textbooks for the current learners. Meanwhile, the visual listening task may produce more benefits for learners than audio-only listening tasks (Günbaş & Gözüküçük, 2020). Besides, the Automated Readability Index (ARI) for listening materials was ranging from 3-13, indicating these listening texts were suitable for the college students. The varying degrees of difficulty also met the need for extensive listening for learners to build confidence and deploy strategies (Vandergrift & Goh, 2012).

Each week, two sets of listening practice with the same topic were posted on the websites for the three groups. The first 11 topics of these listening materials on the website were the same as the 11 topics in 11 units of the learners' listening textbook. Since the language teacher stated that she finished almost one unit in one week, thus each week, the topic of web-based listening practice could nearly correspond with the topic of in-class listening lessons. The closeness with the textbooks could make learners perceive the web-based listening practice as assignments for their listening lessons and motivate them to engage in the listening tasks. Since the listening tasks for the BG and TG were more straightforward than those for the MG, the MG may spend more time on their listening practice than the other two groups. Therefore, in an attempt to reduce the unwanted impact of time duration on the listening comprehension achievements, the BG and TG were assigned one extra TEM-4 listening comprehension task each week (See Appendix 16), besides completing two pieces of listening tasks.

Table 3.2 The listening materials in the web-based listening practice

Week	Listening Topics	Source	Length	Theme	Types	ARI
1	Migrant Families	Aljazeera English	2m35s	Family	News	9.9
	Father and Daughter reunite	YouTube	4m01s		News	3.1
2	The introvert and extrovert	YouTube	3m49s	Personality	Lecture	13.2
	Anxiety from Brexit	Aljazeera English	2m55s		News	9.1
3	Interview with Steve Jobs	YouTube	3m34s	Success	News	6.9
	Success of instant pot	YouTube	3m51s		News	6.3
4	Robots taking our jobs	Aljazeera English	3m03s	Career	News	9.2
	Veterans back to work	Fox news	3m25s		News	9.1
5	Walking back to solve problems	TED Talk	4m09s	Creativity	Lecture	3.8
	Thinking in a different way	TED Talk	2m56s		Lecture	7.4
6	Every kid is a champion	TED Talk	5m05s	Champion	Lecture	2.8
	Men's 100-meter race	YouTube	3m45s		News	3.3
7	Transform noise to music	TED Talk	6m25s	Leisure	Lecture	6
	Travel around the world	Aljazeera English	2m38s		News	7.6

Table 3.3 The listening materials in the web-based listening practice (Continuous)

Week	Listening Topics	Source	Length	Theme	Types	ARI
8	Live a zero-waste life	TEDx	5m01m	Environ-ment	Lecture	6.2
	Innovative waste management	CNN	3m05s		News	10.7
9	President's address to shuttle disaster	YouTube	3m19s	Disaster	News	10
	Japan earthquake	YouTube	3m35s		News	10.2
10	Geography and health	YouTube	5m28s	Health	Lecture	4.6
	Aflac's Duck eases kids with cancer	YouTube	3m24s		News	7.4
11	Mysterious underwater space	TED Talk	3m57s	Space	Lecture	13.4
	Rubbish in the space	Aljazeera English	2m57s		News	10.7
12	Renaissance art and architecture	TED Talk	2m41s	Art	Lecture	9.7
	Glimpse of Syrian beauty	VOA news	3m15s		News	12.7

3.6 Construction of the current listening websites

Three websites for the MG, BG, TG built on WordPress platform. WordPress is a Content Management System (CMS) that could make websites building much more accessible and convenient than the traditional way of building websites through HTML codes, CSS (Cascading Style Sheets), and flash. Therefore, building websites through a content management system is popular nowadays. The Automattic Company reported that, until 2014, tens of thousands of new WordPress websites were created every day. Meanwhile, in 2012 the official WordPress repository hosted over 32000 plugins and 2500 themes, with the exclusion of commercial theme sellers and independent developers (Williams, Damstra, & Stern, 2015). WordPress has powered many famous company websites such as CNN blogs, Reuters, Forbes, GM, Sony, and so on.

Due to its open-source nature as well as plentiful already-made plugins and themes, the WordPress platform allows developers to simply locate, integrate and use many functions to enrich their websites. As noted by Williams et al. (2015), "WordPress could empower the 'lower-tech' users to be publishers" (p. 4). Therefore, for some language

teachers or practitioners who lacked knowledge of writing codes, the WordPress platform could provide an already-made website framework. Many plugins available online could help fulfill the main functions needed for constructing listening websites.

3.6.1 Building listening practice websites based on WordPress

To build a website on the WordPress platform needs a hosting server and domain name. Web hosting could make the website accessible on the internet. The domain name is the website address that internet users could visit through their internet access devices such as computers, tablets, and mobile phones.

The web hosting server offered by the hosting provider SiteGround was used to host the website. This hosting provider offers the package of hosting and domain names for customers to choose from. It also provided the service of the one-key website building and 24/7 online support. After building the website, the researcher selected a responsive website theme and took advantage of a few plugins in WordPress to fulfill different functions to develop web-based listening. Additionally, since the distance of users could impact the performance speed of the website, to optimize the video streaming in listening practice, the CDN (Content Delivery Network) techniques were used to store the videos on CDN serves which could choose the best serving nodes to respond to the users' requests of video contents.

The interaction in the listening practice was realized by the online questionnaires embedded into the present listening websites. The online questionnaire could automatically note down learners' responses for the research to track. The multiple-page structure of an online questionnaire could satisfy the design of the listening tasks with several listening phrases (e.g., the first listening, the second listening, and the third listening). The other functions in the questionnaires, such as

"skip logic" and "carry forward responses" were also useful for learners in the MG to check and regulate their listening comprehension. For example, the function of "skip logic" could allow learners to choose to skip listening or not according to the degrees of their comprehension; the function of "carry forward responses" could carry forward their predictions to the place where learners need to make verification, and thus allow learners to verify their predictions by checking them. Most importantly, the online questionnaire had the function of auto-saving learners' responses in the listening tasks so that they would not lose their answers in case the webpages collapsed for unknown reasons.

The following sections introduced the specific contents for each listening website.

3.6.2 The website for the MG (See Appendix 17)

In building the website for the MG, the researcher selected a responsive theme that could switch websites to different interfaces according to end-users' accessing devices. Some plugins, such as *bbpress*, *show-hide, and video speed control,* were used for developing the listening website. The bbpress plugin could help establish a customized login panel so that the researcher could manage the users' activities. Meanwhile, this plugin could also help build a forum inside the website to serve the online discussion. The use of show-hide plugin could simplify the contents on a single web page and lead to a concise interface by hiding some contents through the manipulation of the users. For instance, on the website, learners could make the video players hide or show with clicks when they were completing the tasks on a web page. The video speed control could offer learners the opportunities to regulate the speech rate of listening.

The website mainly consisted of four sections consisting of *listening practice, listening strategies, knowing listening, and connected speech*. These sections were represented by four conspicuous icons in the middle of the homepage, by clicking on which learners could enter these sections.

As the core section, the *listening practice* section was where learners do the exercises. As mentioned, two sets of listening practice were posted on this section each week. The weekly topic of the listening practice closely followed up the unit topic in the textbook. The listening page consisted of the listening video and step-by-step listening tasks. Learners' responses were auto-saved while they were conducting the practice. The researcher could track their responses and progress through the admin panel.

The *listening strategies* section presented the strategy knowledge of listening. Adapted from Vandergrift (1997), it introduced a list of listening strategies under three overarching strategies: cognitive (e.g., prediction, inference, and note-taking), metacognitive (e.g., planning, monitoring, and evaluation), and socio-affective strategies (e.g., cooperation, reducing anxiety, and self-encouragement). Also, this section provided the checklist of listening strategies based on MALQ for learners to do a self-check.

The *knowing listening* section listed several articles about listening processes and factors impacting listening. It was the place where learners could learn more about listening tasks to increase their task knowledge.

The last section was called "*connected speech*" which listed some bottom-up listening knowledge such as some common weak forms (e.g., "ənd/ən" for the word "and") and connected speech (e.g., the assimilation of /t//j/ into /ʧ/).

Besides the above sections, the website also provided a discussion forum where learners could share their listening problems and strategies with other learners; a classical music player was made so that learners could choose to listen to the classical music to alleviate anxiety.

Learners were required to complete two sets of listening practice but could choose to use other functions and materials on the website at their will. To establish communication between the researcher and learners, the researcher left the instant messaging app (QQ) ID for these learners. Learners could contact the researcher through the QQ at any time if they had problems or difficulties in the listening process.

3.6.3 The website for the BG (See Appendix 18)

The plugins such as *bbpress (to make a login panel)*, *show-hide (to make the page concise), and video speed control (to allow learners to control the playback speed)* used in the MG website were also applied to the websites for the BG. The BG website consisted of two main sections: the video listening section and the audio listening section that appeared as two noticeable icons in the middle of the homepage. Learners could enter the two sections by clicking the icons. In the video listening section, learners watched the same videos like those in the MG and answered some listening comprehension questions, after which they would do the same bottom-up listening tasks such as sentential dictation tasks or read the transcripts while listening as did by the MG. In the audio listening section, learners took the extra test-based listening comprehension tasks in order to roughly catch up with the duration the experimental group spends on listening practice. Each week, the BG group was required to complete two sets of video listening tasks and one audio listening task. No discussion forum was built for the BG website, but learners could contact the researcher through QQ (the

popular mobile instant messaging application in China) at any time if they had problems or difficulties in the listening process. Besides the listening sections, the website also consisted of the "*connected speech*" section which listed some bottom-up listening knowledge such as some common weak forms (e.g., "ənd/ən" for the word "and") and connected speech (e.g., the assimilation of /t//j/ into /ʧ/).

3.6.4 The website for the TG (See Appendix 19)

Similar to the BG website, the TG website also consisted of two main sections: the video listening section and the audio listening section. In the video listening section, learners watched the same videos as those in the other two groups and completed the listening comprehension questions, after which they would check the listening transcripts. In the audio listening section, they also took the extra test-based listening comprehension tasks. Each week, the TG was required to complete two sets of video listening tasks and one audio listening task. No discussion forum was built, and no bottom-up listening knowledge was posted for the TG website, but learners could contact the research through QQ at any time if they had problems or difficulties in the listening process. Besides, since the speech rate control could contribute to the development of bottom-up listening skills (Mcbride, 2011), the website for the TG did not include the speed control function and the section of the bottom-up listening knowledge as in the websites of MG and BG. The main contents in the three websites for the MG, BG, and TG were demonstrated in Table 3.2.

Table 3.4 Contents in the three websites for the MG, BG, and TG

Website Contents	MG group	BG group	TG group
Listening practice	Metacognitive listening practice with bottom-up listening tasks (video)	Video listening practice with bottom-up listening tasks; Audio listening practice	Video listening practice; Audio listening practice
Bottom-up knowledge/ functions	Connected speech & weak forms; Speech rate control	Connected speech & weak forms; Speech rate control	
Other features	Instruction page; Strategy checklist, Knowledge about listening; Discussion panel; Classical music player	Instruction page	Instruction page

3.7 Treatment

Each week over 12 weeks, the MG, BG, and TG were required to complete two sets of listening tasks on different listening websites as out-of-class assignments. One Chinese English teacher taught the in-class listening lessons for the three groups. Learners logged in before taking the listening practice so that their responses and activity history could be documented automatically and tracked by the researcher through the admin panel.

3.7.1 Web-based metacognitive listening practice

The MG was required to complete the web-based metacognitive listening practice for 12 weeks. The design of the listening practice was grounded in the framework (see section 2.12). The two kinds of bottom-up listening tasks: sentential dictations and reading-while-listening were integrated into the third listening stage of the listening practice. The effectiveness of the two listening tasks was confirmed in some previous studies (e.g., Chang, 2009; Kiany & Shiramiry, 2002). In order to increase the task diversity, for the two sets of listening practice learners need to fulfill

in each week, the sentential dictation tasks were placed in the first set while the reading-while-listening tasks were in the second set. To increase conciseness and reduce the repetitive questions as suggested by learners in the pilot study (See Appendix 30), the number of questions about strategy use and listening problems in the second set of listening practice were made less than that in the first set. Even so, both two sets of listening practice (See Appendix 20) consisted of 5 sub-stages, namely, planning stage, first listening, second listening, third listening, and listening reflection, as shown in the following.

- In the planning stage, learners read the listening topic and some tricky words. In what follows, they answered some questions to plan their listening goals, strategy use and potential listening problems, and make predictions of information and possible words. This stage involved learners in the planning process, elicited, and developed their person, task, and strategy knowledge.
- Learners watched the video clip for the first time. Then they verified their predictions and supplemented more information. As mentioned, the "carry forward response" function of the website could carry forward their predictions to this stage so that learners could read their predictions and verify them. After predictions, they evaluated the effectiveness of strategies and planned new strategies for the second listening. This stage engaged learners in the monitoring and evaluation processes and elicited the task and strategy knowledge.
- Learners watched the video clip for the second time. Then they verified their listening again and supplemented the missing information in the first

listening, re-evaluated the effectiveness of listening strategies and the degrees of comprehension. They were suggested to listen again if they perceived the low degrees of comprehension of the video clip. Afterwards, they were required to answer two to three listening comprehension questions and write a summary of the listening. After completion, they could check the answers. This stage engaged learners in monitoring, evaluation, and problem-solving processes and elicited the person and strategy knowledge.

- Learners watched the video clip for the third time. While listening, they were required to complete the sentential dictation tasks or read aloud the transcripts. For reading aloud the transcripts, they could read many times. Then, they wrote the difficult words during listening and evaluated the difficulty level of the listening materials and their general performance. This stage could help develop learners' bottom-up skills and involved them in the evaluation and problem-solving processes and elicited the task knowledge and person knowledge.
- In the last stage, learners again reflected on the useful strategies and listening problems by selecting on a checklist of listening strategies and listening problems; they could also add their problems or strategies on the lists. This stage involved learners into the evaluation and problem-solving processes and elicited their person, task, and strategy knowledge.

Notice that the first set of listening practice closely follow up the above stages. Since the second set of listening practice each week was more concise, it omitted some questions in above stages to elicit learners' metacognition knowledge but still followed

up the steps to guide learners into the process of planning, monitoring, problem-solving, and evaluation.

Learners in the MG were also required to enter the names, student ID, and practice starting and ending time during the listening practice. In order to avoid misunderstanding, some of the tasks were shown in Chinese and English. The checklists of listening strategies and listening problems derived from lists in MALQ and learners' reflective journals. The interface of listening practice in the MG website was shown in Appendix 21.

3.7.2 Web-based bottom-up listening practice

Learners in the BG were required to complete two sets of video listening tasks and one audio listening task each week.

For the two sets of video listening tasks, learners were suggested to watch the same videos two times; then, they completed the comprehension questions and summarized the listening contents. After that, while watching the video for the third time, they coped with the sentential dictation or reading-while-listening tasks. The sentential dictation tasks were placed in the first set of listening practice while the reading-while-listening tasks were in the second set.

As pointed out before, since these tasks for the BG were less demanding than those given to the MG, one extra audio listening comprehension task was posted on the website for learners to complete each week. The audio listening tasks mimicked the test questions in TEM-4 tests, and the materials included conversations and passages. Appendix 22 and 23 showed the practice plan and the website practice interface for the BG

3.7.3 Web-based traditional listening practice

Like the BG, the TG was also required to complete two sets of video listening tasks and one audio listening task each week.

For the two sets of video listening tasks, learners were suggested to watch the same videos three times; then, they completed the comprehension questions and summarized the listening contents. One extra audio listening comprehension task was posted on the website for these learners to complete each week. The audio listening tasks mimicked the test questions in TEM-4 tests, and the materials consisted of conversations and passages. Appendix 24 and 25 showed the practice plan and the website practice interface for the TG

All three groups were required to listen to the videos three times, although they could listen more according to their degrees of comprehension.

3.8 Procedure

The study lasted for 15 weeks in the second semester of 2018-2019.

In the first week, the information sheet and consent forms (See Appendix 26), approved by the Research Ethics Committee (REC) of Suranaree University of Technology, were read to and signed by the participants. Then, learners in all three groups took the listening sections in TOEFL and TEM-4 tests and completed the background questionnaires, MALQ, and self-efficacy questionnaires. In the second week, the researcher implemented a 90-minute pre-listening training (See Appendix 27, 28, & 29) for each group to introduce the functions of the website and how to use the website to do the listening practice.

From the 3rd week to the 14th week, all groups completed two sets of web-based listening tasks each week. The listening tasks were posted on the website each week so

that learners had no chance to complete more practice in advance. Learners in the MG were required to keep seven reflective journals during the period (around one in 10 days). Learners submitted their journals immediately after completion and received the researcher's feedback. Given that the learners in the MG indicated the overload of listening tasks for them, the researcher only held two online discussion activities for learners to share their listening problems and listening strategies. Also, in this period, the BG and TG fulfilled the listening tasks on their website. All listening tasks were also posted on the website each week. Learners could seek help from the researcher if they had difficulties or problems in listening practice. Near the end of each week, the researcher reminded the learners in the three groups who failed to complete the listening practice promptly.

In the 15th week, TOEFL, TEM-4 tests, the post-test questionnaires of MALQ, and self-efficacy questionnaires were administered to all three groups. Meanwhile, the UEQ was administered to the MG. Nineteen participants in the MG were randomly selected with their consent to join in a semi-structural interview held by the researcher.

The timeline of the research was shown in Figure 3.2.

Figure 3.2 The timeline of the research

3.9 Data analysis

Both collected quantitative and qualitative data were analyzed as described below. The quantitative data derived from TOEFL and TEM-4 tests, MALQ, self-efficacy questionnaires and UEQ. The qualitative data were journal and interview data.

The paired sample T-test and One-way ANOVA (The one-way analysis of variance) were used to analyze the TOEFL and TEM-4 test, MALQ, and self-efficacy scores. The Wilcoxon Signed-Rank test was used when the assumptions of ANOVA were violated. The significant p-value was set at 0.05. The data of UEQ were analyzed with the data analysis tool online (Schrepp, n.d.), which could provide the analysis of reliability, descriptive statistics, and the evaluation of the data with built-in benchmarks.

The qualitative data (including an interview and journal data) were analyzed with content analysis. Content analysis is "a research method that uses a set of procedures to make the valid inference from text" (Weber, 1985, p.9).

The researcher transcribed the interview and journal data in verbatim and with content analysis, coded and recoded them to identify the themes regarding learners' development of listening comprehension ability, metacognitive awareness, self-efficacy of listening, and perceptions of the web-based metacognitive listening practice. The researcher analyzed metacognitive awareness regarding the five factors in MALQ: planning-evaluation, directed attention, person knowledge, (no) mental translation, and problem-solving. According to Vandergrift et al. (2006), the five-factor model of metacognitive awareness was the optimal one to correlate with learners' listening comprehension ability. To increase the coding reliability, another researcher helped recode these data again with the original themes. After negotiation, we reached the final themes by controlling the percentage of agreement at 90%, a good indicator for the

inter-rater reliability. 9 less-skilled and 10 skilled listeners form the MG were randomly selected for the post-interview with their consent. To ensure confidentiality, the researcher used name codes (IL or IS plus the number) in the presentation of the interview data. IL meant the interviewees of the less-skilled listeners while IS the interviewees of the skilled listeners. For instance, “IL3” meant the less-skilled interviewee NO.3, while “IS3” meant the skilled interviewee NO.3.

3.10 Rigor of the research design

The present study employed a set of data collection tools, namely, tests, questionnaires, interviews, and journals, which altogether could triangulate the data collection process. The quantitative data gained from proficiency tests and questionnaires could indicate the development of listening comprehension ability, metacognitive awareness, listening self-efficacy, and learners’ perceptions towards the web-based metacognitive listening practice and these results could also be enriched and validated from the qualitative data from interviews and reflective journals.

The researcher made the first coding of the interview and journal data. By referring to the first coding results, another Ph.D. candidate in English Language Study was invited to re-analyze the data and made another coding. After negotiation, we arrived at the final coding by controlling the rate of consistency at 80-90%, as a “good rule of thumb” for inter-rater reliability (Vogt, Gardner, & Haeffele, 2012, p. 322). Feedback was also received from the research committee, the professors and colleagues within the research process since the closeness of the researcher “frequently inhibit[ed] his or her ability to view it with real detachment” (Shenton, 2004, p.67).

3.11 Pilot study and modifications in the main study

The researcher conducted the pilot study (See Appendix 30) from March to June in 2018 with 67 participants. The main study includes some modifications to the pilot study, shown as follows:

a. Different from the two-group design in the pilot study, the main study consisted of three groups. As mentioned, adding a bottom-up listening group could help detect the effectiveness of metacognitive intervention more precisely by controlling the variable of bottom-up listening, as learners in the MG also did some bottom-up listening tasks in their listening practice.

b. The main study involved 132 participants with more than 40 participants in each of the three groups. This sample size was more substantial than that in the pilot study.

c. The main study excluded the examination of gender differences, because of the small number of the recruited male participants.

d. In the main study, learners were given timely feedback to their journals to establish the connection between their successful listening performance and strategy use.

e. The more specific self-efficacy questionnaire, adapted from Graham and Macaro (2008) and addressed learners' self-efficacy in specific listening tasks, was used in the main study. Meanwhile, some items in MALQ were rewritten to reduce the ambiguity and misinterpretation (e.g., "I try to translate keywords as I listen" was changed into "I try to translate some words from English to Chinese as I listen").

e. Compared with the websites in the pilot study, those in the main study had quicker video streaming via CDN and had the function of auto-saving responses in

practice.

g. To familiarize learners with the process of listening practice, In the main study learners were given time to do the listening practice under the guidance of the researcher in the first training lesson. Each week, the researcher tracked learners' responses and reminded the learners who failed to complete the listening practice promptly.

3.12 Summary

In summary, this chapter introduced the research methodology from many facets. Firstly, it illustrated the research design. Then, it presented the settings, participants, and data collection tools in the study, followed by a discussion of the variables of the research. Afterwards, it illustrated the listening materials, websites construction, treatment and research procedures. Finally, it described the data analysis, the rigor of the research design, and the modifications from the pilot study. The next chapter would detail the results of the research.

CHAPTER 4

RESULTS

This section reported the results of the study related to the four research questions. As a mixed-method design, it illustrated both quantitative and qualitative results. The quantitative results derived from the analysis of data collected with quantitative research tools (i.e., TOEFL and TEM-4 listening tests, MALQ, self-efficacy questionnaires, and UEQ). The qualitative results emanated from the post- interviews and reflective journals.

4.1 Quantitative Results

This section reported the quantitative results from TOEFL and TEM-4 listening tests, MALQ, self-efficacy questionnaires, and UEQ.

4.1.1 Development of listening comprehension

To detect the homogeneity of listening comprehension ability between three groups of the less-skilled and skilled listeners, One-way ANOVA test was used to compare the differences of pretest scores of TOEFL and TEM-4 tests among the three listening groups classified by the less-skilled and skilled listeners, as seen in Table 4.1.

Table 4.1 Comparison of the pretest scores of TOEFL and TEM-4 tests between the three groups

Test	Source	Sum of Squares	df	Mean Square	F	p
TOEFL	**LS †**	8.63	2	4.32	2.04	0.14
	SK	29.12	2	14.56	1.36	0.27
	Total	15.54	2	7.77	0.52	0.60
TEM-4	**LS**	33.60	2	16.80	2.13	0.13
	SK	7.86	2	3.93	0.55	0.58
	Total	37.18	2	18.60	2.47	0.09

†LS = Less-skilled listeners; SK = skilled listeners

Table 4.1 indicates no significant differences in the pretest scores of TOEFL and TEM-4 by the less-skilled ($F(2, 67) = 2.04$, $p = 0.14$; $F(2, 67) = 2.13$, $p = 0.13$), skilled ($F(2, 59) = 1.36$; $p = 0.27$; $F(2, 59) = 0.55$, $p = 0.58$), and total listeners ($F(2, 129) = .52$; $p = 0.60$; $F(2, 129) = 2.47$, $p = 0.09$). The results indicated that all three groups were homogeneous ($p < 0.05$) in listening proficiency before treatment.

4.1.1.1 Results from the less-skilled listeners

The researcher firstly described the mean scores and standard deviations in pretest and posttest of TOEFL and TEM-4 in each less-skilled group. Then the paired sample T-tests were used to compare the pretest and posttest scores. The results were shown in Table 4.2.

Table 4.2 The descriptive statistics and the differences of pretest and posttest of TOEFL and TEM-4 of the less-skilled listeners

Less-skilled listeners	Source	TEM-4		TOEFL	
		x̄	SD	x̄	SD
Pretest	MG (N= 24)	12.42	2.28	1.96	1.55
	BG (N= 24)	13.79	3.34	1.92	1.59
	TG (N= 22)	13.96	2.70	1.18	1.18
Posttest					
	MG (N= 24)	13.88	2.70	4.83	3.53
	BG (N= 24)	13.96	3.42	4.33	2.79
	TG (N= 22)	13.82	2.50	2.95	3.24
Comparison		**Pretest-Posttest**			
		MD†	**Sig.**	**MD**	**Sig.**
	MG (N= 24)	-1.46	0.02*	-2.87	0.00*
	BG (N= 24)	-0.17	0.85	-2.42	0.00*
	TG (N= 22)	0.13	0.85	-1.77	0.02*

*$p < 0.05$; †MD means the mean differences

Table 4.2 demonstrates that the less-skilled listeners in all three groups showed improvement of listening comprehension ability from the comparison of the pretest and posttest scores in TOEFL listening tests. The less-skilled listeners in the MG gained significant improvement in the TEM-4 tests ($p = 0.02$).

The researcher further compared the differences of posttest scores of TOEFL and TEM-4 tests among the less-skilled listeners in the three listening groups (MG, BG, and TG), shown in Table 4.3

Table 4.3 Comparison of the posttest scores of TOEFL and TEM-4 tests of the less-skilled listeners between the three groups

Test	Source	Sum of Squares	df	Mean Square	F	Sig.
TOEFL	**Less-skilled**	43.02	2	21.51	2.10	0.13
TEM-4	**Less-skilled**	0.23	2	0.16	0.01	0.99

Table 4.3 demonstrates that no significant differences existed in the posttest scores of TOEFL and TEM-4 tests by the less-skilled ($F(2, 67) = 2.10$, $p = 0.13$; $F(2, 67) = .01$, $p = 0.99$) among the three groups. Overall, the less-skilled listeners in all three groups gained significant improvement in listening comprehension achievements measured by the TOEFL. However, only the less-skilled listeners in the MG showed significant improvement in listening comprehension achievement measured by the TEM-4. Thus, the web-based metacognitive listening practice could produce more benefits for the less-skilled listener than other two listening conditions.

4.1.1.2 Results from the skilled listeners

Likewise, the researcher described the mean scores and standard deviation in pretest and posttest of TOEFL and TEM-4 in each skilled group. Then the paired sample T-tests were used to compare the pretest and posttest scores. The results were shown in Table 4.4.

Table 4.4 The descriptive statistics and the differences of pretest and posttest of TOEFL and TEM-4 of the skilled listeners

Skilled listeners	Source	TEM-4		TOEFL	
		$\bar{x}$	SD	$\bar{x}$	SD
Pretest	MG (N= 20)	13.65	2.50	8.50	4.90
	BG (N= 21)	14.05	3.20	6.86	1.80
	TG (N= 21)	14.52	2.20	7.33	2.37
Posttest					
	MG (N= 20)	16.30	2.54	7.80	5.20
	BG (N= 21)	13.38	3.02	6.05	3.76
	TG (N= 21)	14.10	2.17	5.71	3.89
Comparison		**Pretest-Posttest**			
		MD†	**Sig.**	**MD**	**Sig.**
	MG (N= 20)	-2.48	0.00*	0.70	0.58
	BG (N= 21)	0.64	0.48	0.81	0.33
	TG (N= 21)	0.42	0.55	1.62	0.06

*$p < 0.05$; †MD means the mean differences

Table 4.4 shows that the skilled listeners in all three groups did not showed significant differences between the pretest and posttest scores in TOEFL listening tests. For the TOEFL and TEM-4, the mean scores of posttest of the BG and TG were lower than those of the pretest, suggesting that the skilled listeners were more resistant to listening interventions than the less-skilled counterparts. However, the skilled listeners in the MG should significant improvement in the TEM-4 tests ($p = 0.00$).

The researcher further compared the differences of posttest scores of TOEFL and TEM-4 tests among the skilled listeners in the three listening groups (MG, BG, and TG), shown in Table 4.5.

Table 4.5 Comparison of the posttest scores of TOEFL and TEM-4 tests of the skilled listeners between the three groups

Test	Source	Sum of Squares	df	Mean Square	F	Sig.
TOEFL	**Skilled**	51.02	2	25.53	1.37	0.26
TEM-4	**Skilled**	94.28	2	47.14	6.97	0.00*

*$p < 0.05$

Table 4.5 pinpoints non-significant differences between the skilled listeners of the three groups on the posttest scores of TOEFL tests ($F (2, 59) = 1.37$, p

= 0.26), but significant differences on TEM-4 tests (F (2, 59) = 6.97, p = 0.00). Since the significant differences existed in the skilled listeners in the post-TEM-4 scores, the Turkey HSD Post-hoc test was performed to make the pairwise comparisons with the skilled listeners among the three groups, as depicted in Table 4.6.

Table 4.6 Pairwise comparisons of post-TEM-4 tests with the skilled listeners

Dependent Variable	(I)Group	(J)Group	MD (I-J)	Std. Error	Sig.
Post-TEM-4 scores	MG	BG	2.78	0.79	0.00*
	BG	TG	-0.69	0.79	0.66
	TG	MG	-2.10	0.79	0.03*

*p < 0.05; †MD means the mean differences

Table 4.6 demonstrates that for skilled listeners, the post-TEM-4 test mean scores by the MG were statistically significantly higher than those by the BG (p = .00) and TG (p = .03). No significant difference existed between the BG and TG (p = .66). The result indicated that for the skilled listeners, the web-based metacognitive listening practice demonstrated a clear advantage over the bottom-up listening and traditional listening practice in improving listening comprehension ability, while no significant differences were detected between the bottom-up listening and traditional listening practice.

In general, the skilled listeners were more resistant to improve their listening comprehension ability with listening interventions, as shown by the TOEFL listening scores. However, like the less-skilled listeners, the skilled listeners could receive more benefits from the web-based metacognitive listening practice than the other two listening conditions (the web-based bottom-up and traditional listening practice).

4.1.2 Development of metacognitive awareness

Metacognitive awareness was measured with MALQ in the study. Since MALQ consisted of five factors: planning-evaluation, directed attention, person knowledge, (no) mental translation, and problem-solving, the following results listed the development of the five factors in the MALQ in the three groups. To detect the homogeneity of metacognitive awareness between three groups of less-skilled and skilled listeners, One-way ANOVA test was used to compare the differences of pretest scores of TOEFL and TEM-4 tests among the three listening groups of less-skilled and skilled listeners, as seen in Table 4.7.

Table 4.7 Comparison of pretest scores of MALQ between the three groups

Source	Factors	Sum of Squares	df	Mean Square	F	Sig.
Less-skilled listeners	Planning- evaluation	0.98	2	0.49	0.86	0.43
	Directed Attention	1.39	2	0.69	1.21	0.30
	Person Knowledge	1.95	2	0.97	1.75	0.18
	(no) Mental Translation	1.34	2	0.67	1.11	0.34
	Problem-solving	2.98	2	1.49	2.47	0.09
	Total	17.79	2	8.89	2.47	0.09
Skilled listeners	Planning- evaluation	1.63	2	0.82	1.53	0.22
	Directed attention	0.43	2	0.21	0.57	0.57
	Person knowledge	0.68	2	0.34	0.50	0.61
	(No) mental translation	0.71	2	0.35	0.51	0.60
	Problem-solving	3.01	2	1.50	2.74	0.07
	Total	18.55	2	9.28	2.59	0.08

Table 4.7 demonstrates no significant differences in the pretest scores of MALQ at all five factors of the less-skilled and skilled listeners between the three groups: planning-evaluation ($F(2, 67) = 0.86$, $p = 0.43$; $F(2, 59) = 1.53$, $p = 0.22$), directed attention ($F(2, 67) = 1.21$, $p = .30$; $F(2, 59) = 0.57$, $p = 0.57$), person knowledge ($F(2, 67) = 1.75$, $p = .18$; $F(2, 59) = 0.50$, $p = 0.61$), (no) mental translation ($F(2, 67) = 1.11$, $p = 0.34$; $F(2, 59) = 0.51$, $p = 0.60$), and problem-solving ($F(2, 67) = 2.47$, $p = .09$; $F(2, 59) = 2.59$, $p = 0.07$). Also, there was no significance in the total

scores (F (2, 67) = 2.47, p = .09; F (2, 67) = 2.59, p =0.08). The results suggested that the less-skilled and skilled listeners displayed the homogeneity in metacognitive awareness before treatment.

4.1.2.1 Results of the less-skilled listeners

Here, the researcher presented the mean scores in pretest and posttest of MALQ in each less-skilled group. Then the paired sample T-tests were used to compare the pretest and posttest scores. The results were shown in Table 4.8.

Table 4.8 The descriptive statistics and the differences of pretest and posttest of MALQ of the less-skilled listeners

Less-skilled listeners	Source	Metacognitive awareness				
		Planning-evaluation (x̄)	Directed attention (x̄)	Person knowledge (x̄)	(No) mental translation (x̄)	Problem-solving (x̄)
Pretest	MG (N= 24)	2.79	3.33	2.08	2.72	2.83
	BG (N= 24)	2.70	3.39	2.06	2.90	2.74
	TG (N= 22)	2.50	3.06	1.71	3.06	2.35
Posttest						
	MG (N= 24)	3.51	3.43	2.25	2.51	3.40
	BG (N= 24)	3.09	3.35	2.25	2.96	3.15
	TG (N= 22)	3.02	3.19	1.93	3.03	2.77
Comparison		**Pretest-Posttest**				
		Sig.	**Sig.**	**Sig.**	**Sig.**	**Sig.**
	MG (N= 24)	0.00*	0.64	0.13	0.35	0.00*
	BG (N= 24)	0.03*	0.78	0.32	0.72	0.04*
	TG (N= 22)	0.02*	0.43	0.22	0.88	0.02*

*p < 0.05

Table 4.8 shows that the less-skilled listeners in all groups gained more scores in the posttest at almost all aspects of metacognitive awareness. Also, the less-skilled listeners in all three groups displayed significant improvement in two aspects of metacognitive awareness (planning-evaluation and problems-solving). However, no significant differences were detected in other aspects of metacognitive awareness (Directed attention, person knowledge, (no) mental translation, and problem-solving). All learners' pretest scores of directed attention were above 3, implying that

these learners have held the strategy of the directed attention quite well before treatment.

The researcher further compared the differences of posttest scores of MALQ among the less-skilled listeners in the three listening groups (MG, BG, and TG) via the One-way ANOVA, shown in Table 4.9.

Table 4.9 Comparison of posttest scores of MALQ of the less-skilled listeners between the three groups

Source	Factors	Sum of Squares	df	Mean Square	F	Sig.
Less-skilled listeners	Planning- evaluation	3.30	2	1.65	5.03	0.00*
	Directed Attention	0.67	2	0.33	0.99	0.37
	Person Knowledge	1.56	2	0.78	1.33	0.27
	(no) Mental Translation	3.69	2	1.85	3.18	0.05*
	Problem-solving	4.66	2	2.33	6.60	0.00*
	Total	16.77	2	8.39	2.47	0.09

*$p < 0.05$

Table 4.9 demonstrates that significant differences existed between the three groups of the less-skilled listeners in the posttest MALQ scores at the three factors: planning-evaluation ($F (2, 67) = 5.03$, $p = 0.00$), (no) mental translation (marginally significant, ($F (2, 67) = 3.18$, $p = 0.05$), and problem-solving ($F (2, 67) = 6.60$, $p = 0.00$). No significant differences were observed in the aspects of directed attention, person knowledge, and total post-test scores. To further explore the significant differences between the three factors, the Turkey HSD post hoc test were conducted on the three significant results, as seen in Table 4.10.

Table 4.10 Pairwise comparisons of planning-evaluation, (no) mental translation and problem-solving with less-skilled listeners

Factors	(I) Group	(J) Group	MD (I-J) †	Std. Error	Sig.
Planning-evaluation	MG	TG	0.49	0.17	0.01*
	TG	BG	-0.07	0.17	0.91
	BG	MG	-0.42	0.17	0.04*
(No) mental Translation	MG	TG	-0.52	0.22	0.06
	TG	BG	0.07	0.22	0.93
	BG	MG	0.44	0.22	0.11
Problem-solving	MG	TG	0.63	0.18	0.00*
	TG	BG	-0.38	0.18	0.08
	BG	MG	-0.25	0.17	0.32

*$p < 0.05$; †MD= mean differences

Table 4.10 reveals that in general, the less-skilled listeners in the MG achieved higher mean scores in the post-test than the other two groups in the planning-evaluation and problem-solving. For the planning-evaluation, the less-skilled listeners in the MG significantly outscored those in the TG ($p = .01$) and the BG ($p = .04$); for the problem-solving, the less-skilled listeners in the MG significantly exceeded those in the TG ($p = .00$). However, the TG showed the highest mean scores in the (no) mental translation, although no significant differences existed among the three groups.

Taken together, the less-skilled listeners in all groups made significant improvement in two aspects of metacognitive awareness (i.e., planning-evaluation and problem-solving). However, the web-based metacognitive listening practice could exert better effects on the development of the two aspects — planning-evaluation and problem-solving — than the other two listening conditions (web-based bottom-up and traditional listening practice). However, no significant differences were detected on the other three factors of metacognitive awareness. Although the TG learners gained best performance on the aspect of (no) mental translation in the posttest, seemingly due to their higher scores on this aspect in the pretest.

4.1.2.2 Results of the skilled listeners

Likewise, the researcher depicted the mean scores in pretest and posttest of MALQ in each skilled group and then used the paired sample T-tests to compare the pretest and posttest scores. The results were shown in Table 4.11.

Table 4. 11 The descriptive statistics and the differences of pretest and posttest of MALQ of the skilled listeners

Skilled listeners	Source	Metacognitive awareness				
		Planning-evaluation (x̄)	Directed attention (x̄)	Person knowledge (x̄)	(No) mental translation (x̄)	Problem-solving (x̄)
Pretest	MG (N= 20)	2.72	3.51	2.08	3.01	2.91
	BG (N= 21)	2.48	3.30	2.06	2.84	2.41
	TG (N= 21)	2.32	3.43	1.71	3.10	2.84
Posttest						
	MG (N= 20)	3.31	3.46	2.73	2.73	3.20
	BG (N= 21)	2.96	3.44	2.25	2.71	2.93
	TG (N= 21)	2.88	3.23	1.93	3.29	3.07
Comparison		Pretest-Posttest				
		Sig.	**Sig.**	**Sig.**	**Sig.**	**Sig.**
	MG (N= 20)	0.00*	0.65	0.21	0.09	0.77
	BG (N= 21)	0.01*	0.40	0.26	0.56	0.00*
	TG (N= 21)	0.03*	0.09	0.11	0.34	0.16

*$p < 0.05$

Table 4.11 demonstrates that the skilled listeners in three groups showed some increase in the posttest scores of planning-evaluation, person knowledge, and problem-solving. All groups made significant improvement in planning-evaluation while only the BG made significant improvement in problem-solving, given that they held lowest scores in the pretest. Most learners held a rather high score of directed attention and (no) mental translation in the pretest, which may render them little room to develop. Thus, many skilled listeners of three groups showed decrease in the two aspects in the posttest. Even so, no significant differences were detected in the three aspects of metacognitive awareness (directed attention, person knowledge, (no) mental translation, and problem-solving).

Again, One-Way ANOVA was implemented to check the differences of the post-test scores of MALQ as shown in Table 4.12.

Table 4.12 One-way ANOVA test of post-test scores of MALQ with the skilled listeners

Source	Factors	Sum of Squares	df	Mean Square	F	Sig.
Skilled listeners	Planning- evaluation	2.15	2	1.07	3.39	0.04*
	Directed attention	0.71	2	0.35	1.20	0.31
	Person knowledge	1.34	2	0.67	1.27	0.29
	(No) mental translation	4.40	2	2.20	6.27	0.00*
	Problem-solving	0.75	2	0.38	1.39	0.26
	Total	9.08	2	4.54	1.61	0.21

*p < 0.05

Table 4.12 demonstrates that for the skilled listeners, significant differences existed between the three groups in the post-test MALQ scores at two factors: planning-evaluation (F (2, 59) = 3.39, p = 0. 04), (no) mental translation (F (2, 59) = 1.27, p = 0. 00). No differences were in the factors of directed attention, person knowledge, and problem-solving, and the total post-test scores. To further explore the significant differences, the Turkey HSD post hoc test were conducted, as seen in Table 4.13.

Table 4.13 Pairwise comparisons of planning-evaluation and mental translation with the skilled listeners

Factors	(I) Group	(J) Group	MD (I-J) †	Std. Error	Sig.
Planning-evaluation	MG	TG	0.43	0.18	0.04*
	TG	BG	-0.09	0.17	0.87
	BG	MG	-0.35	0.18	0.13
(No) mental Translation	MG	TG	-0.55	0.18	0.01*
	TG	BG	0.57	0.18	0.01*
	BG	MG	-0.02	0.18	0.99

* p < 0.05 †MD = mean differences

Table 4.13 reveals that for the skilled listeners, the MG gained better performance in the post-test scores of planning-evaluation, significantly than the TG (p =.04), and non-significantly than the BG. However, the posttest mean scores on (no) mental translation in the TG were significantly higher than those in the MG (p =.01) and the BG (p = 0.01).

Taken together, the skilled listeners did not show as much improvement as their less-skilled peers and most made improvement in planning-evaluation. Most skilled listeners made a decline in the posttest scores of directed attention and (no) mental translation. Again, the web-based metacognitive listening practice could produce better effects on the development of one aspect of metacognitive awareness (i.e., planning-evaluation) with the skilled listeners, especially than the traditional listening practice. However, the skilled listeners in TG significantly overrode those in the MG and BG in the performance of (no) mental translation. No significant differences were found on the other three factors of metacognitive awareness.

To sum up, the less-skilled listeners in all groups manifested better improvement of metacognitive awareness than the skilled listeners. All less-skilled listeners made significant improvement in the two factors (i.e., planning-evaluation and problem-solving) of metacognitive awareness. However, all skilled listeners in three groups showed significant improvement only in the factor of planning-evaluation. Besides the web-based metacognitive listening practice exerted better effects on the two factors (i.e., planning-evaluation and problem-solving) of metacognitive awareness than the other two listening conditions with the less-skilled listeners and the one factor (i.e., planning-evaluation) with the skilled listeners. However, the TG achieved the best performance in the (no) mental translation, and the

skilled listeners of the TG significantly overrode those of the MG and BG on this factor in the posttest scores.

4.1.3 Development of listening self-efficacy

The listening self-efficacy was analyzed in terms of three different listening tasks (i.e., conversations, lectures or passages, and news) addressed in the self-efficacy questionnaire. One-way ANOVAs were used to detect the differences of the pre-test self-efficacy scores with the less-skilled and skilled listeners between three groups, as seen in Table 4.14.

Table 4.14 One-way ANOVA test of pre-test scores of self-efficacy

Source	Tasks	Sum of Squares	df	Mean Square	F	Sig.
Less-skilled	Conversations	6787.74	2	3393.87	15.88	0.00*
	Lectures/passages	4607.08	2	2303.54	13.04	0.00*
	News	4675.53	2	2337.76	13.37	0.00*
Skilled	Conversations	925.74	2	462.87	1.74	0.18
	Lectures/passages	1830.14	2	915.07	5.00	0.01*
	News	1183.71	2	591.85	3.24	0.046*

* $p < 0.05$

Table 4.14 suggests significant differences in most of pre-test self-efficacy scores among three groups (except on self-efficacy of conversations by the skilled listeners). Due to the heterogeneity in most pre-test scores, it would be irrational to compare the post-test scores among the three groups. Therefore, in the following analysis of self-efficacy development, the researcher attempted to compare the gained scores, namely, the post-test scores minus the pre-test scores, in order to examine the progress of self-efficacy in the three groups.

4.1.3.1 Results of the less-skilled listeners

The researcher presented the mean scores and standard deviations in pretest and posttest of self-efficacy scores with less-skilled listeners in three groups. Then the paired sample T-tests were used to compare the pretest and posttest scores. The results were shown in Table 4.15.

Table 4.15 The descriptive statistics and the differences of pretest and posttest self-efficacy scores by the skilled listeners

Less-skilled listeners	Source	Conversations		Lectures/ passages		News	
		x̄	SD	x̄	SD	x̄	SD
Pretest	MG (N= 24)	30.67	13.10	26.21	13.96	17.38	11.24
	BG (N= 24)	54.64	18.04	45.23	13.91	36.91	14.18
	TG (N= 22)	38.63	12.41	29.93	12.01	22.39	14.11
Posttest							
	MG (N= 24)	42.45	17.24	40.97	15.33	38.43	17.15
	BG (N= 24)	47.14	15.55	43.49	18.14	41.03	16.37
	TG (N= 22)	40.05	17.33	36.04	16.26	29.67	14.87
Comparison		Pretest-Posttest					
		MD†	Sig.	MD	Sig.	MD	Sig.
	MG (N= 24)	-11.78	0.00*	-14.76	0.00*	-21.05	0.00*
	BG (N= 24)	7.50	0.11	1.74	0.68	-4.12	0.38
	TG (N= 22)	-1.42	0.55	-6.11	0.06	-7.28	0.04*

*p < 0.05 †MD= mean differences

Table 4.15 shows that the less-skilled listeners in the MG gained significant improvement in the self-efficacy of all three listening tasks, those in the TG did only in the self-efficacy of news, but those in the BG did not make improvement. The less-skilled listeners in the MG showed the highest gained scores of the self-efficacy in all three tasks, while those in the BG demonstrated the lowest scores and did not show improvement in self-efficacy.

Then, One-way ANOVA test was used to compare the differences of gained self-efficacy scores with the less-skilled listeners among the three groups, as seen in Table 4.16.

Table 4.16 One-way ANOVA test of gained scores of self-efficacy with the less-skilled listeners

Source	Tasks	Sum of Squares	df	Mean Square	F	Sig.
Less-skilled	Conversations	4287.83	2	2143.92	7.60	0.00*
	Lectures/passages	3133.72	2	1566.86	5.53	0.01*
	News	3799.92	2	1899.96	5.87	0.00*

* $p < 0.05$

As observed in Table 4.16, significant differences existed between the three groups in the gained self-efficacy scores of all three listening tasks of conversations (F (2, 67) = 7.60, p = 0. 00), lectures or passages (F (2, 67) = 5.53, p = 0. 01), and news (F (2, 67) = 5.87, p = 0. 00). The Turkey HSD post hoc tests were used to detect the pairwise differences of listening self-efficacy scores as revealed in Table 4.17.

Table 4.17 Pairwise comparisons of gained self-efficacy scores with the less-skilled listeners

Tasks	(I) Group	(J) Group	MD (I-J) †	Std. Error	Sig.
Conversations	MG	TG	10.36	4.85	0.09
	TG	BG	8.92	4.96	0.18
	BG	MG	-19.28	4.96	0.00*
Lectures/ passages	MG	TG	8.65	4.86	0.18
	TG	BG	7.85	4.97	0.26
	BG	MG	-16.50	4.97	0.00*
News	MG	TG	13.78	5.20	0.03*
	TG	BG	3.16	5.31	0.82
	BG	MG	-16.93	5.31	0.01*

* $p < 0.05$; †MD= mean differences

Table 4.17 reveals that the MG significantly outperformed the BG in the gained self-efficacy scores of all listening tasks (p = 0.00, 0.00, 0.01) and the TG in the news (p = 0.03). The results suggested that the web-based metacognitive listening practice could produce better effects on the development of self-efficacy of all the three listening tasks with the less-skilled listeners than the other two groups. The

bottom-up listening practice showed the least improvement in the listening self-efficacy among the three groups.

4.1.3.2 Results of the skilled listeners

Again, presented in Table 4.18 were the mean scores and standard deviations in pretest and posttest of self-efficacy scores with the skilled listeners in three groups, as well as the comparisons between the pretest and posttest scores.

Table 4.18 The descriptive statistics and the differences of pretest and posttest self-efficacy scores by the skilled listeners

Skilled listeners	Source	Conversations		Lectures/ passages		News	
		x̄	SD	x̄	SD	x̄	SD
Pretest	MG (N= 20)	40.10	15.27	30.15	12.08	24.45	11.78
	BG (N= 21)	49.55	16.98	42.43	15.39	33.75	13.79
	TG (N= 21)	45.85	16.61	40.98	12.80	33.85	14.72
Posttest							
	MG (N= 20)	45.35	19.23	46.05	17.29	40.00	18.00
	BG (N= 21)	44.00	16.05	43.24	11.81	36.68	11.65
	TG (N= 21)	54.50	15.69	48.18	16.708	43.46	14.79
Comparison		Pretest-Posttest					
		MD†	Sig.	MD†	Sig.	MD	Sig.
	MG (N= 20)	-5.25	0.28	-15.90	0.00*	-15.55	0.00*
	BG (N= 21)	5.17	0.13	-1.13	0.74	-3.22	0.39
	TG (N= 21)	-8.95	0.01*	-7.18	0.04*	-9.63	0.00*

*p < 0.05; †MD= mean differences

Table 4.18 shows that, the skilled listeners of the MG gained significant improvement in self-efficacy of the lectures or passages and news, those of the TG in self-efficacy of all three listening tasks, and those of the BG did not show improvement. The skilled listeners in the MG showed the highest gained scores of the self-efficacy in the tasks of the lectures and news. Also those in the BG gained lowest scores.

Again, One-way ANOVA test was conducted to compare the differences of gained self-efficacy scores with the skilled listeners among the three

groups, as seen in Table 4.19.

Table 4.19 One-way ANOVA test of gained scores of self-efficacy with the skilled listeners

Source	Tasks	Sum of Squares	df	Mean Square	F	Sig.
Skilled- listeners	Conversations	2303.00	2	1151.50	3.84	0.03*
	Lectures/passages	2345.67	2	1172.83	4.59	0.01*
	News	1633.86	2	816.93	3.24	0.046*

* $p < 0.05$

Table 4.19 demonstrates that for the skilled listeners, there was a statistically significant difference among the three groups in the gained self-efficacy scores of all three listening tasks: conversations (F (2, 59) = 3.84, p = 0. 03), lectures or passages (F (2, 59) = 4.59, p = 0. 01), and news (F (2, 59) = 3.24, p = 0. 046). To further explore the significant differences of gained self-efficacy among the three groups, the Turkey HSD post hoc tests were used to detect the pairwise differences, as revealed in Table 4.20.

Table 4.20 Pairwise comparisons of gained self-efficacy scores with the skilled listeners

Tasks	(I) Group	(J) Group	MD (I-J)	Std. Error	Sig.
Conversations	MG	TG	-3.40	5.41	0.80
	TG	BG	14.20	5.34	0.03*
	BG	MG	-10.8	5.41	0.12
Lectures/ passages	MG	TG	8.69	5.00	0.20
	TG	BG	6.40	4.93	0.40
	BG	MG	-15.09	5.00	0.01*
News	MG	TG	5.93	4.96	0.46
	TG	BG	6.68	4.90	0.37
	BG	MG	-12.61	4.96	0.04*

* $p < 0.05$

Table 4.20 indicates that for the skilled listeners, the MG significantly outperformed the BG in the gained scores of lectures or passages and news. However, no significant differences existed between the MG and TG in the self-efficacy scores. The results suggested that the web-based metacognitive listening practice could

produce better effects on the development of self-efficacy of the two listening tasks of lectures or passages and news with the skilled listeners, especially than the bottom-up listening practice.

To summarize, the less-skilled and skilled listeners indicated an almost similar trend in the development of listening self-efficacy in that the MG showed the best improvement of self-efficacy, the TG the medium improvement, and the BG the least improvement in nearly all three types of listening. The less-skilled listeners in the MG yielded somewhat more robust results than their skilled peers in the development of self-efficacy. Meantime, task types were also found to count in the effectiveness of the web-based metacognitive listening practice on the self-efficacy. More improvement of the MG was found in the tasks of lectures or passages and news than in conversations, which could confirm the task-specific nature of self-efficacy since the listening materials used for the web-based listening practice were mainly lectures and news.

4.1.4. Perceptions of metacognitive listening practice

Listeners' perceptions towards the web-based metacognitive listening practice were examined quantitatively with the UEQ (User Experience Questionnaire). Since the research questions only approached the perceptions towards the web-based metacognitive listening practice with the less-skilled and skilled listeners in the MG. The data of UEQ were analyzed with the UEQ data analysis tool (Schrepp, n.d.).

4.1.4.1 Perceptions of the less-skilled listeners

The researcher presented the mean scores and the standard deviations of the six scales in UEQ by the less-skilled listeners, seen in Table 4.21.

Table 4.21 Mean scores and standard deviations of the six scales with the less-skilled listeners

Dimensions	Scales	Mean	SD	N
Attractiveness	*Attractiveness*	2.08	0.55	24
Ergonomic quality	*Perspicuity*	1.75	0.75	24
	Efficiency	1.85	0.63	24
	Dependability	2.06	0.57	24
Hedonic quality	*Stimulation*	2.05	0.62	24
	Novelty	2.21	0.64	24

According to the Schrepp (2019), the mean scores between -0.8 and 0.8 indicated a neural evaluation of the corresponding scale; values above 0.8 suggested a positive evaluation, and values below -0.8 represented a negative evaluation. In terms of this criterion, Table 4.21 shows these learners performed positive evaluations on each scale, with the mean above 0.8 in each scale, indicating they had good experiences to work with the web-based metacognitive listening practice. Meanwhile, learners had a general better evaluation of the attractiveness and hedonic quality (stimulation and novelty) than ergonomic quality (especially, the perspicuity and efficiency) of the website.

In order to generate a more reliable evaluation and detect whether the web-based metacognitive listening practice had sufficient user experience (Schrepp, Hinderks, & Thomaschewski, 2017), the data analysis tools (Schrepp, n.d.) provided the analysis of comparing the mean scores with a benchmark. This benchmark was made based on a large sample of user experience data from 401 studies concerning different internet products (business software, web pages, webshops, social networks, etc.). The results after the analysis were depicted in Table 4.22.

Table 4.22 Comparison of the mean scores to the benchmark

Scale	Mean	Evaluation	Interpretation
Attractiveness	2.08	Excellent	In the range of the 10% best results
Perspicuity	1.75	Good	Above 75% results and below 10% results
Efficiency	1.85	Excellent	In the range of the 10% best results
Dependability	2.06	Excellent	In the range of the 10% best results
Stimulation	2.05	Excellent	In the range of the 10% best results
Novelty	2.21	Excellent	In the range of the 10% best results

Table 4.22 shows that the listeners' experiences of the web-based metacognitive listening practice was excellent compared with the benchmark, with scores on most scales above 90% results. The less-skilled listeners showed the excellent experiences towards the attractiveness, efficiency, dependability, stimulation, and novelty. Only the evaluation of perspicuity was a little lower than that in other scales. In short, the less-skilled listeners had great experiences with the website.

4.1.4.2 Perceptions of the skilled listeners

Similarly, the mean scores and the standard deviations of the six scales in UEQ by the skilled listeners were presented in Table 4.23.

Table 4.23 Mean scores and standard deviations of the six scales with the skilled listeners

Dimensions	Scales	Mean	SD	N
Attractiveness	*Attractiveness*	1.68	1.04	20
Ergonomic quality	*Perspicuity*	1.40	0.95	20
	Efficiency	1.44	0.90	20
	Dependability	1.56	0.94	20
Hedonic quality	*Stimulation*	1.63	0.99	20
	Novelty	1.70	0.97	20

Table 4.23 shows the skilled listeners also performed positive evaluations on each scale, although the average scores in each scale were less than those of the less-skilled listeners. Meanwhile, these listeners also had a better evaluation of the attractiveness and hedonic quality (stimulation and novelty) than ergonomic quality

(notably, the perspicuity and efficiency) of the website.

Likewise, the results of the comparison with the benchmark was presented in Table 4.24.

Table 4.24 Comparison of the mean scores to the benchmark

Scale	Mean	Evaluation	Interpretation
Attractiveness	1.68	Good	Above 75% results and below 10% results
Perspicuity	1.40	Above Average	Above 50% results and below 25% results
Efficiency	1.44	Above Average	Above 50% results and below 25% results
Dependability	1.56	Good	Above 75% results and below 10% results
Stimulation	1.64	Excellent	Above 75% results and below 10% results
Novelty	1.70	Excellent	In the range of the 10% best results

Table 4.24 reveals that the listeners' experience of the web-based metacognitive listening practice was above average compared with the benchmark, with scores on most scales above 50% results. The skilled listeners showed the best experiences towards the hedonic quality of the website (i.e., stimulation and novelty). Their evaluations on efficiency and perspicuity were rather lower than those in other scales. This implied that they still held suggestions of improving the conciseness and efficiency of the web-based metacognitive listening practice. In a nutshell, learners had good experiences with the website and believed that the website could bring them an improvement in listening achievements.

4.1.5 Summary of quantitative results

In summary, this section presents the quantitative results from listening tests (TOEFL and TEM-4) and questionnaires (MALQ, Self-efficacy questionnaires, and UEQ) to respond to the four research questions regarding the development of listening comprehension ability, metacognitive awareness of listening, and the self-efficacy of listening and learners' perceptions to the web-based metacognitive listening practice.

Firstly, most less-skilled listeners in all groups showed improvement in listening comprehension ability. However, most skilled listeners remained resistant to improvement except those in the MG shown in TEM-4. Besides, the less-skilled listeners and the skilled listeners could receive more benefits from the web-based metacognitive listening practice than the other two listening conditions (the web-based bottom-up and traditional listening practice).

Secondly, the less-skilled listeners in three groups showed improvement in planning-evaluation and problem-solving. Given more proficient in most metacognitive awareness, the skilled listeners in three groups showed less improvement than the less-skilled listeners and most demonstrated the improvement in planning-evaluation. However, the web-based metacognitive listening practice exerted better effects than the other two types of listening practice in improving the planning-evaluation and problem-solving for the less-skilled listeners, and the planning-evaluation for the skilled listeners. However, the skilled listeners in the TG reported more improvement than those in the other two groups. No significant differences between the three groups were found on the directed attention and person knowledge with both the less-skilled and skilled listeners.

Thirdly, the less-skilled and skilled listeners suggested an almost similar trend in the development of listening self-efficacy in that the MG showed the best improvement of self-efficacy, the TG the medium improvement, and the BG the least improvement in nearly all three types of listening (except in the performance of the skilled listeners in the conversation listening). Thus, the web-based metacognitive listening practice gained an advantage over the web-based bottom-up and traditional listening practice in improving listening self-efficacy. The less-skilled listeners in the

MG also demonstrated somewhat more solid results than the skilled listeners in the improvement of self-efficacy. Meantime, more improvement was found in the tasks of lectures or passages and news than in conversations, attesting to the task-specific nature of self-efficacy.

Lastly, the UEQ results revealed that both the less-skilled and skilled listeners in the MG held positive evaluation towards the web-based metacognitive listening practice. Their scores on perspicuity and efficiency were relatively less than those on the other four scales. The less-skilled listeners had better experiences than the skilled listeners and showed excellent evaluation in almost all scales.

4.2 Qualitative Results

This section illustrated the qualitative results from the interviews and reflective journals. The two types of qualitative results would be reported separately in the following.

4.2.1 Results from interviews

This section presented the interview results of less-skilled and skilled listeners.

4.2.1.1 Interview results of the less-skilled listeners

9 less-skilled listeners received the interview. For ensuring the confidentiality, the following quoted excerpts ended with the name codes (IL plus the number). IL meant the interviewees of the less-skilled listeners. For instance, “IL3” meant the less-skilled interviewee NO.3.

4.2.1.1.1 Perceived improvement of listening comprehension ability

All less-skilled responders stated the progress of listening ability. Some of the improvement was reflected by their more success in completing listening tasks, more patience, more logical understanding, and better listening state, as seen in Excerpt 4.1.

Excerpt 4.1

I got improved in filling the blank, listening to numbers, and answer the listening comprehension questions. (IL2)

While listening, I could get a more logical understanding than before. (IL7)

According to Excerpt 4.1, IL2 and IL7 reported the improvement of listening comprehension ability by gaining more success in completing listening tasks and more logical comprehension. It verified the finding in the qualitative data mentioned previously that the less-skilled listeners in the MG made significant improvement in the listening comprehension ability.

4.2.1.1.2 Perceived improvement of planning-evaluation, directed attention, and problem-solving

Most learners reported the improvement of metacognitive awareness of planning-evaluation, directed attention, and problem-solving. Most of the less-skilled listeners perceived the awareness of reflection, selective attention, prediction, and problem-solving. Excerpt 4.2 shows some learners' views on the development of the three factors of metacognitive awareness.

Excerpt 4.2

Every time (through reflection), I wrote down my deficiencies, and when I listened next time, I reviewed these difficulties and deficiencies. (IL5)

Reflection must be helpful. Through reflection, you could find some problems that you failed to realize during listening. (IL9)

Different from before, now I focus more on the keywords rather than to grasp the meaning of a whole sentence. (IL7)

(The useful strategy is) to make a prediction before listening. (IL4)

> I become more focused because listening is more interesting in this semester. Last semester we just listened to the audio. This semester we have the videos. (IL8)

From Excerpt 4.2, IL5 and IL9 indicated that they were using the strategies of reflection (evaluation) and problem-solving. It seems that the two strategies were interconnected, since when some one is reflecting on the past listening performance, he would usually try to figure out some ways to address his previous listening problems. Meanwhile, IL7 and IL4 realized the significance of focusing more on keywords and prediction for their listening. IL8 noticed the tangible improvement in concentration. However, IL8 indicated that the improved concentration was due to the involvement of videos in listening practice, rather than metacognitive listening activities.

4.2.1.1.3 Negative person knowledge and entanglement of mental translation.

Most learners still perceived difficulty and anxiety in listening comprehension process. These perceptions were closely related to the listening tasks they were undertaking, seen in Excerpt 4.3.

Excerpt 4.3

> I think listening is more difficult than before, probably because the listening materials I get exposed to are more difficult than before. (IL2)
>
> I feel difficult to understand the listening with accents or pronounced with weak forms or connected speech, (IL5)
>
> When I fail to understand parts of listening, I feel very anxious. (IL7)
>
> Every time before I started listening, I felt anxious for quite a long time. Especially in the test, I was very anxious. (IL9)

From Excerpt 4.3, these learners' negative perceptions of listening difficulty or anxiety could be exacerbated by losing comprehension, taking listening tests, or facing difficult listening tasks with accents, connected speech, and weak forms. But one listener IL1 realized the improvement in the person knowledge,

seen in Excerpt 4.4.

Excerpt 4.4

Listening is still difficult for me, but not as difficult as before. (IL1)

Although the listener admitted the difficulty of listening, she compared the present perception with her old ones, and displayed the improvement in the person knowledge. It seems that most listeners did not realize the progress of person knowledge, but just perceived the current situation of listening difficulty and anxiety.

Some less-skilled listeners held the awareness in avoiding mental translation, but still they were still entangled with mental translation, as depicted in Excerpt 4.5.

Excerpt 4.5

I think I couldn't avoid mental translation. If I didn't translate, I couldn't understand. (IL1)

I tried (to avoid mental translation). But I could not avoid it. (IL2)

I felt it is impossible to avoid mental translation. My first impression of listening is to translate what comes into my head. (IL8)

Now when I am doing listening practice on the website, I will consciously control myself not to translate in mind. (IL9)

According to Excerpt 4.5, IL9 mentioned her conscious efforts in avoiding mental translation, while IL1, IL2, and IL8 indicated the impossibility to avoid mental translation.

4.1.1.1.4 Limited improvement in listening confidence

Most less-skilled listeners reported evident improvement of listening confidence, as revealed in Excerpt 4.6.

Excerpt 4.6

Yes, I feel more confident because I could persist in listening for such a long time. (IL3)

Yes, I become more confident. (IL5)

I feel a little improvement in confidence. But I couldn't complete the tasks in listening tests. I didn't perform well in the listening practice of CET-4 and TEM-4. (IL1)

As observed in Excerpt 4.6, IL3 and IL5 showed noticeable

improvement, while L1 indicated a slight improvement in listening confidence. The differences between IL1 and IL3's perceptions of listening confidence could be attributed to the differences in their perceived success in listening activities, which reflected the importance of mastery experiences to self-efficacy. According to Bandura (1994), success in completing tasks could build up learners' self-efficacy, while perceived difficulty on tasks may lead to failures that undermined their perceived self-efficacy.

However, still some learners did not perceive the improvement, as seen in Excerpt 4.7.

Excerpt 4.7

I didn't feel more confident, because I think listening is more difficult than before. (IL2)

I think there is no improvement in confidence. I am afraid of listening tests. (IL7)

Excerpt 4.7 shows that IL2 perceived difficulty of listening tasks affected her judgment on listening confidence. IL7 reported no progress in confidence, for she was "afraid" of listening tests, which verified the view that learners' emotional and psychological state could also impact the perceived self-efficacy (Bandura, 1994).

4.1.1.1.5 Affirmation and modification towards the metacognitive listening practice

Most less-skilled interviewees pinpointed the positive perceptions and showed preferences towards the metacognitive listening website, as demonstrated in Excerpt 4.8.

Excerpt 4.8

The interface is very good. The font and color are very simple and direct. (IL7)

I think the website has a complete set of functions that could serve those who want to practise listening. (IL9)

> I like the metacognitive listening practice, because here we could detect the listening problems and deficiencies in our listening and find solutions to solve them. In the test, we couldn't find these things. (IL4)

Excerpt 4.8 shows that IL7 and IL9 indicated they had good experiences on the website due to the concise interface and innovative design with some new functions. IL4 enjoyed the metacognitive listening practice due to her learned strategy of problem-solving. This result also confirmed the results in UEQ, where learners approved of the novelty, perspicuity, and dependability of this website.

However, some mentioned some suggestions to modify the website and showed some preferences for the traditional listening practice, as seen in Excerpt 4.9.

Excerpt 4.9

> I think It is better to add the practice of number listening or dictation on the website. (IL6)

> I think there should be fewer questions (about the planning, strategies, and problems) before listening. (IL8)

> I like traditional test-based listening because it is easy for me to improve the scores. (IL1)

In terms of Excerpt 4.9, IL6 the lack of some bottom-up listening tasks in the website and IL1 showed preferences for the test-based listening practice. These learners' more focus on bottom-up listening tasks and test-based listening may render them feel that the metacognitive listening website was not as efficient to improvement their listening comprehension ability as the test-based listening practice. IL8 indicated the overloaded metacognitive questions, which may impact their perceptions of the perspicuity of the website. These findings were consistent with that in UEQ, where the learners demonstrated a general positive evaluation of the website while the perspicuity and efficiency were relatively lower than other scales.

In a nutshell, this section presented the interview results with

less-skilled listeners to answer the four research questions. All less-skilled listeners indicated that they improved in listening comprehension. For metacognitive awareness, most less-skilled listeners perceived improvement only in planning-evaluation, directed attention, and problem-solving. These listeners still held negative person knowledge towards listening tasks and held mixed feelings towards the (no) mental translation. Besides, most less-skilled listeners showed improvement in listening confidence which was also impacted by the task difficulty and their emotional states. Finally, the less-skilled listeners indicated the perceptions of affirmation and modification towards the metacognitive listening website.

4.2.1.2 Interview results of the skilled listeners

Ten skilled listeners received the interview. Name codes (IS plus the number) were also used in the data presentation. IS meant the interviewees of the skilled listeners. For instance, “IS3” meant the skilled interviewee NO.3.

4.2.1.2.1 Limited improvement of listening comprehension ability

Some skilled interviewees commented that they had made a noticeable improvement while other responders reported a slight improvement, shown in Excerpt 4.10.

Excerpt 4.10

Yes, I have improved quite a lot, because I have practised for such a long time. (IS3)

(I have improved) a little bit, but not much. (IS5)

Yes, I have (got improved). While listening, I could grasp more details and become more patient than before. (IS8)

According to Excerpt 4.10, IS3 showed notable improvement in listening comprehension ability while IS5 indicated a slight improvement; IS8 indicated the improvement by gaining more comprehension of

details and more patience.

4.2.1.2.2 Perceived improvement of planning-evaluation, directed attention, and problem-solving

Most skilled interviewees reported the improvement of metacognitive awareness of planning-evaluation, directed attention, and problem-solving. Similar to the less-skilled interviewees, most of the skilled listeners perceived the improvement or awareness of reflection, selective attention, prediction, and problem-solving. Excerpt 4.11 shows some learners' views on the development of the three factors of metacognitive awareness.

Excerpt 4.11

Through reflection, I could adjust listening habits and learn some listening strategies. (IS3)

Reflection is helpful because it makes me realize the listening problems so that I could make some changes in the next listening. (IS4)

Through prediction, I may grasp the main idea of the following listening… I could make more predictions than before because of the listening website. (IS7)

So now, I focus more on the whole sentence and the main idea rather than every word. (IS10)

(The most improvement is) being more focused than before. (IS2)

From the above excerpt, IS3 and IS4 indicated the usefulness of reflection and problem-solving strategies. Their statements also imply that reflection could contribute to the development of the problem-solving strategy. IS7 and IS10 realized the improvement of prediction and selective attention strategies. IS2 was aware of the development in directed attention.

4.2.1.2.3 Negative person knowledge and mixed perceptions of (no) mental translation

Like the less-skilled responders, most skilled responders also

perceived difficulty and anxiety in listening comprehension process. These perceptions were also related to the listening tasks they were undertaking, seen in Excerpt 4.12.

Excerpt 4.12

It is quite difficult, especially when I couldn't understand some words. (IS4)

Words of connected speech usually are difficult for me. (IS5)

But I am still anxious when I am going to take a test. (IS6)

Some listening tasks with quick speed rates are still difficult for me. (IS8)

No (listening is not difficult), I think writing is the most difficult skill, and I always think like this. (IS10)

According to Excerpt 4.12, the statements by IS4, IS5, IS6, and IS8 indicated their perceived difficulty of listening was affected by test listening tasks and features of difficult listening materials such as connected speech, new words, and quick speech rate. Although IS10 did not perceive much difficulty in listening, she emphasized it was not new, thus not because of the metacognitive listening practice.

Some skilled responders pinpointed the improvement in (no) mental translation, while still some indicated the fluctuation or benefits of making mental translation, as shown in Excerpt 4.13.

Excerpt 4.13

I have improved a little (in avoiding mental translation). I will remind myself not to do it. (IS4)

I have improved a little (in avoiding mental translation). But I think my listening is not so good that I could avoid translation. Some listening tasks are really difficult, and I couldn't help translating. (IS8)

I did not avoid mental translation. I think translation into Chinese could leave a deep impression of what I heard…I could recall what I heard by using the translation. (IS1)

According to Excerpt 4.13, IS4 demonstrated the limited improvement, but IS8 suggested that the difficulty of listening tasks may impact the (no) mental translation. IS1 reported no improvement in (no) mental translation by indicating that mental translation was a beneficial strategy that could help them recall their listening.

4.2.1.2.4 Limited improvement of listening confidence

Some skilled listeners reported notable improvement in listening confidence while others indicated slight or no improvement. Excerpt 4.14 listed the statements of some learners regarding the improvement of listening confidence.

Excerpt 4.14

I felt a little improved in listening confidence. For some listening practice, I will be confident if I grasp some skills. (IS4)

My listening confidence is better than before. But I am still anxious when I am going to take a test. (IS6)

I don't feel more confident… listening is still difficult. (IS7)

According to Excerpt 4.14, IS6 reported the evident improvement in listening confidence while IS4 showed the slight improvement; still, IS4 and IS6 indicated that listening confidence was affected by the ability to use skills or taking listening tests; IS7 showed no improvement in listening confidence due to her perceived difficulty of listening.

4.2.1.2.5 Affirmation and modification towards the metacognitive listening practice

Similar to the less-skilled listeners, most skilled interviewees held perceptions of affirmation and showed preferences towards metacognitive listening website, as demonstrated in Excerpt 4.15.

Excerpt 4.15

The website is quite good. The green color on the practice page looks concise and refreshing. (IS4)

It is quite good, and the form of practice is quite innovative. (IS9)

I prefer this kind of listening practice. Because in test-based listening, we only focus on how to figure out the answers, and some information about listening is neglected. In this kind of listening practice, I could make prediction and verification through listening. (IS4)

Excerpt 4.15 shows that IS4, IS9 had good experiences on the website due to the concise interface and innovative design with metacognitive

activities. IS4 prefered the metacognitive listening practice, which helped her develop metacognitive strategies in the listening practice. These findings were consistent with learners' affirmation of the novelty, dependability, and perspicuity of this website.

Even so, still some skilled listeners suggested modifying the website and showed some preferences for the traditional listening practice, as seen in Excerpt 4.16.

Excerpt 4.16

> However, there are too many questions in the front of each listening task every week. These questions ask about the listening strategies and problems. (IS7)
>
> I think the test-based listening is more systemic and has some questions to answer. It is more complete [than the traditional listening practice]and help improve my listening scores. (IS10)

In terms of Excerpt 4.16, IS7 indicated the existence of excessive metacognitive questions in the metacognitive listening practice, and IS10 showed preferences to the traditional listening practice for it could help improve their listening scores. Their views could reflect the relatively lower perspicuity and efficiency in the UEQ.

In summary, this section presented the interview results with skilled listeners, which were like those of the less-skilled listeners. Most skilled responders indicated perceived improvement in listening comprehension ability. For metacognitive awareness, most skilled listeners perceived improvement only in planning-evaluation, directed attention, and problem-solving. These listeners still held negative person knowledge towards listening tasks and limited improvement in (no) mental translation. Besides, skilled listeners reported the development of listening confidence in different degrees. In the end, the skilled listeners indicated the perceptions of affirmation and modification towards the metacognitive listening website.

4.2.1.3 Summary of the interview results

In a nutshell, both the less-skilled and skilled listeners in the MG showed a similar pattern in the development of listening comprehension ability, metacognitive awareness, and self-efficacy, and perceptions of the metacognitive listening website.

Most responders indicated perceived improvement in listening comprehension ability, although the skilled listeners indicated the limited improvement. For metacognitive awareness, most listeners perceived improvement only in planning-evaluation, directed attention, and problem-solving. Most of the less-skilled and skilled listeners manifested the negative person knowledge. The less-skilled listeners felt entangled with mental translation while the skilled listeners held the mixed perceptions of (no) mental translation. Besides, both listeners reported the limited improvement of listening confidence. In the end, both the less-skilled and skilled listeners indicated the perceptions of affirmation and modification towards the metacognitive listening website.

4.2.2 Results from reflective journals

This section presented the journal results of the less-skilled and skilled listeners. Although learners were required to keep seven journals within 12 weeks, not all learners kept all journals. Since it would be difficult to detect the potential development for learners who kept very few journals, selected for further analysis were the learners who kept more than three journals, viz, more than half of the required times. Totally 39 learners (20 less-skilled listeners and 19 skilled listeners) kept more than three journals, accounting for 85% of the entire number of participants.

4.2.2.1 Journal results of the less-skilled listeners

Of 24 less-skilled listeners, 20 (83%) listeners kept more than 3 journals, and 17 (71%) listeners kept more than 5 journals. According to the forgoing norm, the results involved the analysis with 20 listeners' journals. The researcher used the name codes (RL plus the number) and the specific time of the journal (a colon plus the number) in the following data presentation. For instance, a statement ended with "RL3:3" meant that the statement was written by the less-skilled listener NO.3 in his or her third journal.

4.2.2.1.1 Perceived improvement of listening comprehension ability

Most less-skilled skilled listeners reported their improvement in listening comprehension ability in different times of journals, as seen in Excerpt 4.17.

Excerpt 4.17

I felt my listening ability was improved and became used to watching videos without subtitles. (RL5:7)

I could gain more listening comprehension now. (RL13:2)

With two weeks' listening practice, I became more interested in this kind of practice, and my listening ability was improved. (RL3:2)

Excerpt 4.17 indicated that the three learners realized their improvement of listening ability in different stages of listening practice, with their more comprehension or interest in this kind of listening.

4.2.2.1.2 Perceived improvement of planning-evaluation, directed attention, and problem-solving

Like the interview results, most less-skilled listeners reported the awareness or improvement of planning-evaluation, directed attention, and problem-solving strategies, seen in Excerpt 4.18.

Excerpt 4.18

I should not understand each word and each sentence but grasp the main idea first. (RL4:3)

I should make a long-term listening plan and persist in following the plan. (RL15:3)

I need to make a prediction and have the contents and ideas in my mind before listening. (RL17:2)

Now I could focus more attention on long-term listening than before. (RL10:5)

I need to use my methods to solve these problems, and I should not just listen. (RL11:1)

Excerpt 4.18 RL4, RL15, and RL17 reported the use of strategies of planning, selective attention, reflection, and prediction in different times of journals. RL10 reported the directed attention strategy in the 5th journal. RL11 realized the strategy of problem-solving in the first journal.

Also, most learners reported the directed attention strategy in the first journals, shown in Excerpt 4.19.

Excerpt 4.19

I should remind myself to calm down and focus on what I am listening (RS15:1).

I should become more calmed and concentrated (RL14:1).

Excerpt 4.19 indicated that RL14 and RL15 have realized the strategy of directed attention in the first journal.

4.2.2.1.3 Mixed perceptions of person knowledge and (no) mental translation

Some learners reported their improvement in perceived difficulty of listening and reducing anxiety, while others associated their listening difficulty with different listening tasks. Excerpt 4.20 revealed some of their statements.

Excerpt 4.20

Listening is not so frightening as it was before. I should not be nervous. (RL16:7)

I have made some changes in listening attitudes…I do not think that listening is difficult now. (RL18:5)

I felt difficult to understand listening with fast speed, new words, and connected speech. (RL12:6)

I had difficulty in understanding the speakers with accents from different countries. (R16:6)

From Excerpt 4.20, RL16 and RL18 improved in his

perceived difficulty of listening in different times of journals; Similar to the interview data, RL12 and RL16 linked their perceived listening difficulty with difficulty in task features such as fast speech rate, accents, and new words.

Some less-skilled listeners reported the awareness or improvement of avoiding mental translation, while half of the less-skilled listeners did not mention this in their journals, as shown in the Excerpt 4.21.

Excerpt 4.21

I should not translate word by word, which will make me lose a lot (RL6:3).

One serious problem of me is that I like making the mental translation from English to Chinese in listening. (RL3:1).

With more practice and awareness (of avoiding translation), I now solved the problem (of mental translation). (RL3:7).

From Excerpt 4.21, RL6 made a salient report on the strategy of avoiding mental translation; the next two statements indicated that RL3 could finally use the strategy of avoiding mental translation, which was her problem in the 1st week.

4.2.2.1.4 Limited improvement of listening self-efficacy

Almost half of less-skilled listeners reported evidence of improvement in learners' self-efficacy, as shown in Excerpt 4.22.

Excerpt 4.22

I need to improve my listening confidence. (RL15:4)

I have improved my listening confidence with more and more training in listening. (RL20:3)

According to Excerpt 4.22, RL15 and RL20 indicated an evident progress of listening confidence in the fourth and third journals during the period of listening practice.

To sum up, most less-skilled listeners reported improvement in listening comprehension ability and listening self-efficacy. For metacognitive awareness, most less-skilled listeners reported improvement in planning-evaluation,

directed attention, and problem-solving. The less-skilled listeners showed mixed perceptions of person knowledge and (no) mental translation. Besides, they demonstrated limited development of self-efficacy.

4.2.2.2 Journal results of the skilled listeners

19 skilled listeners kept more than 3 journals and were involved in the analysis. Similarly, the name codes (RL plus the number) and the specific time of the journal (a colon plus the number) were used in the following data presentation. For instance, a statement ended with "RS3:3" meant that the statement was written by the skilled listener NO.3 in his or her third journal.

4.2.2.2.1 Perceived improvement of listening comprehension ability

Still most skilled listeners reported their improvement in listening comprehension ability, as revealed in Excerpt 4.23.

Excerpt 4.23

At the very beginning, I could hardly catch up with the listening speed, but now I felt much better. (RS8:4)

I have made some progress since I could understand over half of the content in the last practice. (RS16:2)

In terms of Excerpt 4.23, RS8 and RS16 realized their improvement of listening comprehension ability with more comprehension and better adjustment to the fast speech rate.

4.2.2.2.2 Percieved development of planning-evaluation, directed attention, and problem-solving.

Similar to the less-skilled listeners, most skilled listeners also indicated improvement or awareness of planning-evaluation, directed attention, and problem-solving strategies

All 19 skilled listeners reported improvement in the planning-evaluation with increased awareness or use of strategies of planning,

reflection, prediction, self-management, or selective attention. Excerpt 4.23 showed some of these learners' statements.

Excerpt 4.23

What I learned through these exercises is to prepare before listening (RS9:7)

After listening, I should reflect on where I performed well and where I underperformed. (RS10:3)

I should concentrate on and memorize the keywords. (RS2:2)

One of my insights is to make a bold prediction of words and contents in the listening. (RS15:7)

I felt the progress of being concentrated during listening, and I could be patient in dealing with listening with a quick speech rate. (RS3:4)

I think the processes of finding, analyzing, and solving problems give me impetus and improve my listening ability. (RS7:7)

According to Excerpt 4.23, RS9, RS10, RS2 and RS15 reported strategies of planning, reflection, selective attention, and prediction, which represented their awareness of planning-evaluation. RS3 indicated the improvement of directed attention. RS7 realized the usefulness of problem-solving strategy. Like the less-skilled listeners, most skilled listeners reported the directed attention in the first journals.

4.2.2.2.3 Mixed perceptions of person knowledge and mental translation

Some skilled listeners reported the progress in person knowledge with less perceived difficulty and anxiety in listening tasks, as revealed in Excerpt 4.24.

Excerpt 4.24

After several weeks of practice, I now become less nervous during listening and do not give up even some difficult listening materials. (RS5:2)

After a period of practice, listening is not as difficult as imagined. (RS12:3)

Excerpt 4.24 manifested that RS5 and RS12 improved in their perceived difficulty of listening or reducing anxiety, due to several weeks of listening practice.

Like the less-skilled listeners, some skilled listeners

mentioned that the perceived difficulty and anxiety vary among different listening tasks, as seen in Excerpt 4.25.

Excerpt 4.25

Listening was still difficult when it involved many new words, long sentences, fast speech rates. (RS6:1)

I felt frustrated with listening to news reports…I am more familiar with topics close to daily life. (RS7:5)

From Excerpt 4.25, the skilled listeners RS6 and RS7 also associated the perceived difficulty with some difficult listening tasks (e.g., news listening) and task features (e.g., new words, long sentences, and fast speech rate).

Also, similar to the interview results, some skilled listeners reported the strategy use and progress of (no) mental translation in their journals while some reported the fluctuation or benefits of using mental translation, as seen in Excerpt 4.26.

Excerpt 4.26

Trying to avoid translation could improve my listening comprehension. (RS4:4)

As for avoiding mental translation, I could make it most of the time now. (RS16:3)

Sometimes, getting the answers of listening questions needs understanding. By partial translation, I could make better responses to some listening questions. (RS18:1)

I didn't make mental translation for short and simple sentences, but I did it for long and difficult sentences. (RS6:5)

According to Excerpt 4.26, RS4 and RS16 reported the usefulness and progress of the strategy of (no) mental translation. RS18 mentioned some positive sides of mental translation in promoting comprehension. RS6 indicated that the use of (no) mental translation strategy depended on different language structures. The mixed perceptions of person knowledge and (no) mental translation may impede their development in these factors.

4.2.2.2.4 Limited improvement of listening self-efficacy

Around half of the skilled listeners reported the

improvement in listening confidence, as seen in Excerpt 4.27.

Excerpt 4.27

This listening practice has brought me high confidence in listening. (RS12:1)

My listening confidence is weak. (RS13:1)

My listening confidence has arrived at a medium level. (RS13:4)

According to Excerpt, 4.27, RS12 indicated the progress of listening confidence; RS13's two journal entries indicated an improvement from a weak level of listening confidence in the 1st journal to a medium level in the 4th journal.

In summary, most skilled listeners expressed an improvement in listening comprehension ability and perceived self-efficacy. For metacognitive awareness, most skilled listeners reported improvement in planning-evaluation, directed attention, and problem-solving. The skilled listeners held mixed perceptions of person knowledge and (no) mental translation, indicating that the perceived person knowledge and (no) mental translation may fluctuate with different listening tasks.

4.2.2.3 Summary of journal results

In summary, both the less-skilled and skilled listeners in the MG showed a similar pattern in the development of listening comprehension ability, metacognitive awareness, and self-efficacy from the journal data. Most less-skilled and skilled listeners perceived improvement in listening comprehension ability. For metacognitive awareness, they perceived improvement only in planning-evaluation, directed attention, and problem-solving, but held mixed perceptions towards person knowledge and (no) mental translation. Besides, they demonstrated limited improvement in self-efficacy.

4.3 Summary

This chapter examined the results of the current study. Both quantitative results (from listening tests and questionnaires) and qualitative results (from interviews and journals) were detailed in line with the four research questions. The quantitative results were as follows:

a. The less-skilled listeners in three listening groups (MG, BG, and TG) showed improvement in developing listening comprehension ability. The web-based metacognitive listening practice showed an advantage over the web-based bottom-up listening practice and traditional listening practice in the development of listening comprehension ability, for both the less-skilled and skilled listeners.

b. The less-skilled listeners in three listening groups (MG, BG, and TG) showed more improvement in developing metacognitive awareness than the skilled listeners. For both the less-skilled and skilled listeners, most improvement was found in planning-evaluation and problem-solving than other factors. The web-based metacognitive listening practice exerted better effects on the two factors than the other two groups, notably for the less-skilled listeners.

c. Both the less-skilled and skilled listeners in the MG showed the best improvement of self-efficacy, those in the TG the medium improvement, and those in the BG the least improvement in nearly all three types of listening. This indicates that the web-based metacognitive listening practice exerted better effects on listening self-efficacy than the other two listening conditions, for both the less-skilled and skilled listeners.

d. Both less-skilled and skilled listeners in the MG had positive evaluation in the web-based metacognitive listening practice. The less-skilled listeners demonstrated better experiences than the skilled listeners.

The qualitative results were as follows:

a. Most less-skilled and skilled listeners in the MG reported the development of listening comprehension ability in the interview and journal data.

b. Most less-skilled and skilled listeners in the MG reported the evidence of the development of three factors of metacognitive awareness —planning-evaluation, directed attention, and problem-solving — in the interview and journal data. However, these learners demonstrated the mixed perceptions towards person knowledge and use of (no) mental translation.

c. Most less-skilled and skilled listeners in the MG reported the limited improvement of listening self-efficacy in the interview and journal data.

d. Most less-skilled and skilled listeners held the perceptions of affirmation and modification towards the metacognitive listening website.

The next chapter would turn to the discussion of the research results.

CHAPTER 5

DISCUSSION

This chapter delineated the discussion of this study. It started with a restatement of the research questions and results related to learners' development of listening comprehension ability, metacognitive awareness, and self-efficacy and learners' perceptions of the web-based metacognitive listening practice. In what follows, a detailed discussion was initiated regarding these results.

This study addressed the following four research questions.

Question 1:

What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' listening comprehension ability classified by proficiency levels?

Question 2:

What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' metacognitive awareness classified by proficiency levels?

Question 3:

What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' listening self-efficacy classified by proficiency levels?

Question 4:

What are the learners' perceptions of the web-based metacognitive listening?

5.1 Development of listening comprehension

Most less-skilled listeners in all groups gained improvement in listening comprehension ability, as seen from the TOEFL listening tests, but only the MG showed significant improvement in TEM-4 tests. However, most skilled listeners remained resistant to improvement except those in the MG shown in TEM-4. Thus, it could be observed that the less-skilled listeners and the skilled listeners could receive more benefits from the web-based metacognitive listening practice than the other two listening conditions (the web-based bottom-up and traditional listening practice). The interview and journal data could also corroborate the improvement of listening comprehension ability by learners in the MG where most of the less-skilled and skilled listeners reported improvement in the listening comprehension ability.

The better improvement in listening comprehension by the MG suggested the effectiveness of the current web-based metacognitive listening practice. This result bolstered many previous studies (e.g., Cross, 2011; Goh & Taib, 2006; Vandergrift & Tafaghodtari, 2010; Bozorgian, 2014; Marechal, 2007) which documented positive effects of metacognitive instruction on listening comprehension. For example, by examining a metacognitive instruction based on the guided reflection and discussion, Goh and Taib (2006) found the positive effects of this training on young learners' listening ability from pre- and post-listening tests and learners' reports. The young learners in the study "attributed this improvement to their growing ability to manage the listening process" (p. 228). Using a self-regulatory approach based on Vandergrift's cycle (Vandergrift, 2004), Marechal (2007) found that less-skilled listeners reported a considerable improvement in listening comprehension ability in their thinking-aloud protocols. Vandergrift and Tafaghodtari (2010) also found that the less-skilled L2

listeners with metacognitive instruction significantly outperformed those in the traditional listening instruction in the development of listening comprehension ability. For this, they indicated that learners' frequent involvement in the metacognitive processes could facilitate their acquisition of implicit knowledge about L2 listening and automatization of the cognitive and metacognitive strategy use. A similar study by Cross (2011) also witnessed the development of listening comprehension ability by the less-skilled listeners. He further indicated that besides the frequent engagement into the metacognitive task sequence, the "conscious and consistent sharing and reflecting on their strategic behaviors… may facilitate and strengthen skills development" (p. 414). As such, the present web-based metacognitive listening practice based on Vandergrift's cycle (2004, 2007) could engage learners into the cognitive and metacognitive processes of listening, automatizing the strategy knowledge, and fortifying their management of listening, contributing to learner autonomy (Holec, 1981). Furthermore, the follow-up journal reflections also elicit and develop their metacognitive knowledge and reinforce the strategy use. Moreover, the study could further confirm the effectiveness of the metacognitive intervention, as the web-based metacognitive listening practice produced more benefits than the web-based bottom-up listening practice.

Meanwhile, as suggested by previous researchers (Goh, 2008; Graham & Santos, 2015; Vandergrift & Tafaghodtari, 2010), the delayed integrated bottom-up listening tasks could allow learners to assign more attention to the word-recognition skills with comprehension fulfilled and to avoid plunging into the word-by-word translation. Therefore, learners' development in listening comprehension achievements could be attributed to the effectiveness of the current web-based metacognitive listening practice

that resulted in the development of metacognitive knowledge and more skillful use of listening strategies and bottom-up listening skills.

Previous studies have documented that skilled listeners often stayed resistant to metacognitive instruction (Cross, 2011; Marechal, 2007; Rahimi & Katal, 2013; Vandergrift & Tafaghotari, 2010). However, the significant improvement with the skilled listeners in the MG was therefore encouraging and could validate the assumption of previous studies (Goh, 2008; Graham & Santos, 2015; Vandergrift & Tafaghodtari, 2010) that with the integration of delayed bottom-up listening activities, metacognitive listening training could even benefit skilled listeners. The integrated bottom-up listening activities could provide learners "with the opportunity to focus on the form of each fragment after the first effort of extracting the meaning …[and the] training in detailed decoding helps learners improve their skill in handing high-speed input, for immediate comprehension…" (Jensen & Vinther, 2003, pp. 403-405). Skilled listeners with the rich repertoire of metacognitive knowledge and the better orchestration of listening strategies (Vandergrift & Tafaghodtari, 2010), therefore, could benefit more from this type of integrated listening practice than the metacognitive instruction only.

Interestingly, skilled listeners in three groups (MG, BG, and TG) reported a decline in the posttest scores of TOEFL, although the MG showed the least decrease. On the one hand, these skilled listeners had less room to develop than the less-skilled listeners. On the other hand, given the listening as a difficult skill (Chang & Read, 2006; Vandergrift & Tafaghodtari, 2010; Martínez-Flor & Usó-Juan, 2006) and difficulty of TOEFL tests, the current limited span of training may not be enough to improve the performance in the TOEFL tests for the skilled listeners.

To sum up, the current web-based metacognitive listening practice hold an

advantage over the other two types of web-based listening practice in improving the less-skilled and skilled listeners' listening comprehension ability. The improvement of listening comprehension in the MG could verify the effectiveness of the web-based metacognition listening practice. By the metacognitive listening activities and reflective journals, learners in the MG could develop their metacognitive awareness, leading to the self-regulation of the listening process and the success of listening achievements. Besides, the better improvement of the skilled listeners in the MG could verify the previous assumption related to the benefits of integrated bottom-up listening tasks. The difficulty of TOEFL tests may impede the skilled listeners from improving the listening performance in the tests.

Besides the beneficial effects on listening comprehension ability, the web-based metacognitive listening practice also exerted some positive effects on some learners' metacognitive awareness, related to the second research question, as discussed in the following section.

5.2 Development of metacognitive awareness

The data from MALQ indicated most of the less-skilled or skilled listeners in three groups (MG, BG, and TG) made more improvement in planning-evaluation and problem-solving than other factors of metacognitive awareness. Besides, the web-based metacognitive listening practice exerted better effects also on the two factors: planning-evaluation (for the less-skilled and skilled listeners) and problem-solving (for the less-skilled listeners) than the other two listening conditions. The three groups almost did not show improvement in three factors (i.e., directed attention, person knowledge, and (no) mental translation) with both the less-skilled and skilled listeners. The qualitative

data also partly verified the improvement of the MG in the two factors of metacognitive awareness. Most less-skilled and skilled listeners from either the interview or journal data reported their improvement in the planning-evaluation, and problem-solving process.

The better development of planning-evaluation and problem-solving by the MG is closely aligned with Vandergrift and Tafaghodtari (2010) and Bozorgian (2014). Vandergrift and Tafaghodtari (2010) found that with the less-skilled Canadian FSL (French as a Second Language) listeners, metacognitive instruction generated a significant improvement in the strategy of problem-solving but not in other factors of metacognitive awareness. Bozorgian (2014) reported the significant improvement with the high-intermediate Iranian EFL learners after metacognitive instruction in two factors of metacognitive awareness: planning-evaluation and problem-solving, which was precisely congruent with the results in the present study. Both researchers pointed out the observed effectiveness of metacognitive instruction on the development of problem-solving. The two studies provided some possible explanations regarding the selective effects of metacognitive instruction on metacognitive awareness. Bozorgian (2014) suggested that the lack of enough development in (no) mental translation might be due to the recruited participants being proficient enough to avoid mental translation, leaving little room to be further explored. Vandergrift and Tafaghodtari (2010) explained the limited effects of metacognitive instruction on some factors of metacognitive awareness by pinpointing the effects of the exposures to items in MALQ by the control group. Through selecting the degree of agreement on each item in MALQ, learners could also reflect on the metacognitive processes of listening. Some of the above explanations could be applied to the present study. Although the present

participants were low-proficiency listeners, they all had learned English for over 12 years, which may prepare them with enough knowledge of some factors of metacognitive awareness (e.g., directed attention). Learners of the BG and TG could also make some improvements in metacognitive awareness (i.e., planning-evaluation and problems-solving) due to the two times of exposure to MALQ.

Besides, the better performance by the MG in planning-evaluation and problem-solving may stem from the task-settings in the metacognitive listening practice. Many previous studies, including the present one, built the metacognitive training on the metacognitive instruction cycle (Vandergrift, 2004, 2007). By nature, this cycle is a top-down oriented listening instruction model, leading listeners to experience the metacognitive strategies of planning, monitoring, evaluation, and problem-solving until they achieved comprehension. The focus on these core metacognitive strategies in the cycle could explain why the MG showed noticeable achievements on the planning-evaluation and problem-solving. The MG may also develop their problem-solving strategies by engaging in the evaluation tasks or keeping journals by reflecting on listening problems and solutions. However, no activities were specially designed in the Vandergrift's cycle (Vandergrift, 2004, 2007) or the web-based metacognitive listening practice to improve learners' concentration (directed attention), tune-up their perceived difficulty and anxiety (person knowledge), and decrease the use of mental translation. Learners must develop these strategies via their reflection on their metacognitive knowledge or the problem-solving process. Even if learners in the MG had the possibility of improving their strategy use (e.g., (no) mental translation) and the perceived person knowledge through reflection on the listening problems, little target practices were given them to practice these strategies, and little guidance was given to

them to adjust their perceptions towards listening difficulty and anxiety. Consequently, as shown by some learners' reports from interviews and journals, their perceptions towards listening difficulty and anxiety may fluctuate with different listening tasks. Therefore, given the task-settings, it is of no surprise to observe that the MG made a noticeable improvement in only planning-evaluation and problem-solving but not in others when compared with the other two groups.

Meanwhile, the other two groups also demonstrated significant improvement in planning-evaluation (the less-skilled and skilled listeners) and problem-solving (the less-skilled listeners). This could be due to the listening-to-summarize tasks in both websites and the advantages of the web-based listening practice. Rukthong and Brunfaut (2020) found that the listening-to-summarize tasks could activate listeners' use of some metacognitive strategies, such as planning, selective attention, monitoring, and evaluation. Meanwhile, this result could also be explained with the advantages of the blended learning or the web-based listening practice. Also, previous researchers indicated that blended learning could induce autonomous learning by providing a self-paced and self-directed learning environment (Penland, 2015) and requiring learners to actively manage and monitor their learning process (Dabbagh & Bannan-Ritland, 2005). Thus, the present web-based metacognitive listening practice with a responsive design made it easy for learners to access with multiple internet-based devices, creating a ubiquitous listening environment so that learners could freely arrange their listening process. For example, they could single out an appropriate time point to practise, control listening speed rate to facilitate their comprehension, pause when they fail to comprehend, review strategies before listening, or modify strategy use after listening. This self-regulation process could allow learners, consciously or not, to rehearse the

metacognitive strategies of planning, monitoring, evaluation, and problem-solving they learned from the web-based metacognitive listening practice, furthering the development of these strategies. As mentioned, the exposures to MALQ, as the metacognitive knowledge, just strengthen the self-regulation process and facilitate the use of metacognitive strategies.

Besides, no significant improvement on person knowledge and (no) mental translation by both the less-skilled and skilled listeners in the MG could be reflected by their mixed perceptions on the two factors. The interview and journal data revealed that many less-skilled and skilled listeners thought that the listening difficulty and anxiety were affected by listening tasks and few listeners could discern the progress in person knowledge. Similarly, many listeners indicated that the use of (no) mental translation was dependent on the specific tasks and sometimes, the mental translation was conducive to listening comprehension. Therefore, the mixed views towards the person knowledge and the effectiveness of (no) mental translation may block the further development in the two factors of metacognitive awareness. This could also explain nonsignificant improvement of the two factors by listeners in the other two groups.

Nevertheless, unlike the MALQ results, both the less-skilled and skilled listeners in the MG reported improvement in directed attention. Although the MALQ results of directed attention seem somewhat divergent with the results from the interview and journal data, a close examination of the qualitative results suggested some consistency. Both the less-skilled and skilled listeners in the MG reported the noticeable progress of directed attention from the interview and journal data. However, the journal data also disclosed that most listeners in the MG started reporting the progress and awareness of this strategy from the first journal. This raised the possibility that these learners had

already known this strategy before they took the metacognitive listening practice. Goh and Taib (2006) indicated that the directed attention strategy was commonly reported by young ESL listeners in the early stage of instruction. Thus, this strategy could be more easily strengthened with listening practice than other strategies, for L2 listening itself requires learners of enough concentration to achieve comprehension. Meanwhile, as demonstrated in the interview data, some learners stated that they could become more concentrated in test-based listening. That is to say, the metacognitive listening practice may not play a key role in improving these learners' awareness and use of directed attention. If this is the case, the development of directed attention could also be stimulated by other listening conditions, which accordingly explains the non-significant differences in directed attention among the three groups.

One surprising finding was that the less-skilled and skilled listeners in the TG made significantly better performance than those in the MG and BG. The best performance by the TG may be ascribed to the bottom-up listening tasks in the MG and BG websites. The bottom-up listening tasks may tempt learners in these groups to raise more attention to the word-by-word translation, as a necessary process to complete the dictation tasks. Their mixed perceptions about the role of mental translation in listening could be further verified by some MG listeners' reports in the interview and journals, which may block their development of (no) mental translation strategy. On the contrary, the tasks for the TG mainly aimed for the comprehension of listening texts without the requirement of the word-by-word understanding, which might promote the development of the (no) mental translation strategy with the help of MALQ. Hence, it was explainable that the skilled listeners in the TG achieved the best performance in (no) mental translation, as compared with those in the MG and BG.

Furthermore, the skilled listeners in three groups gained less improvement than their less-skilled listeners. Also, the skilled listeners in the MG obtained less robust results in the development of metacognitive awareness than their less-skilled listeners. This finding was consistent with some previous studies (Cross, 2011; Mareschal, 2007; Vandergrift & Tafaghodtari, 2010). These studies suggested a threshold of listening proficiency, "beyond which effects of [metacognitive instruction] are minimal" (Cross, 2011, p. 408), because "skilled listeners had already reached a comparatively solid level of …orchestration of bottom-up and top-down skills and strategies" (p. 414). That is, they could already use a variety of strategies to regulate their listening process (Vandergrift & Tafaghodtari, 2010), leaving little room for further development of metacognitive awareness.

To put it in a nutshell, the better performance by the MG in planning-evaluation and problem-solving than other two groups could be as a result of the general task-settings in the metacognitive listening cycle which highlighted some factors (i.e., planning-evaluation and problem-solving) and overshadowed the others (i.e., directed attention, (no) mental attention, and person knowledge) in MALQ. Also, most less-skilled and skilled listeners in three groups showed improvement in two factors (planning-evaluation and problem-solving) of metacognitive awareness. This result may be due to their exposures to the MALQ and more opportunities of self-regulation in the web-based listening environment. The little improvement by most listeners in person knowledge and (no) mental translation could be explained by learners' mixed perceptions of person knowledge and (no) mental translation. Besides, the better performance in (no) mental translation by the TG could be due to the lack of bottom-up listening tasks (such as dictation) for the traditional listening website so that they

could resort less to the mental translation. Furthermore, non-significant differences in directed attention may be due to the learners' good mastery of this strategy and the ease of development. Less development by the skilled listeners may be caused by their richer repertoire of metacognitive awareness.

The following section discussed the findings of self-efficacy development.

5.3 Development of listening self-efficacy

Results from self-efficacy questionnaires revealed a similar trend of self-efficacy development with both the less-skilled and skilled listeners. MG showed the best improvement of self-efficacy, the TG the medium improvement, and the BG the least improvement in nearly all three types of listening. This finding indicates that the web-based metacognitive listening practice gained an advantage over the other two listening conditions in improving the listening self-efficacy. The evident improvement in self-efficacy by the MG was also verified by learners' reports on the improvement of listening confidence from the interview and journal results.

Rahimi and Abedi (2014) ever found that listening self-efficacy was significantly correlated with the planning-evaluation, (no) mental translation, and problem-solving. Somewhat consistent with the finding, the striking improvement of self-efficacy by the MG could be partly due to these learners' reported development of metacognitive awareness in the planning-evaluation and problem-solving. The development of planning-evaluation could promote their regulation of listening confidence and emotional states during listening, leading to the development of listening self-efficacy. On the other hand, learners' development in problem-solving ability could allow them to solve more problems in the listening process, resulting in more successful listening

experiences, creating the mastery experience (Bandura, 1994) and leading to the development of listening self-efficacy. Given the present web-based metacognitive listening practice built on the principles of metacognitive instruction, the salutary effects on listening self-efficacy in the present study could support the Vafaeeseresht (2015). Vafaeeseresht (2015) investigated the effects of metacognitive instruction on Iranian EFL listeners' listening self-efficacy and found that the metacognitive instruction could significantly improve these learners' listening self-efficacy. Also, it confirmed the statement in Vandergrift and Cross (2017) that the metacognitive instruction should improve "learners' beliefs regarding their own ability to be successful listeners should grow and, concomitantly, their motivation to engage in future listening tasks" (Vandergrift & Cross, 2017, p.7). It could also further validate the relationship between metacognitive awareness and self-efficacy of listening (Rahimi & Abedi, 2014). Besides, good experiences by the MG towards the web-based metacognitive listening practice also generated positive emotion states from the listeners, which according to Bandura (1994), could facilitate the improvement of self-efficacy.

On the other hand, the BG demonstrated the least improvement in self-efficacy of listening was. It is possible that the listening tasks for the BG focusing much on the sentential dictation without any guidance on the metacognitive awareness may lead these learners to use mental translation and focus on the piecemeal comprehension of listening, which increased their cognitive overload (Vandergrift, 1998), negatively affecting their self-efficacy (Zheng, 2012).

Besides, in line with Gramham and Macaro (2008), the development of self-efficacy could also be due to the reflective journals and feedback. Gramham and

Macaro (2008) examined effects of strategy instruction with reflections on L2 listeners' self-efficacy. Their study showed that learners scaffolded by diaries and feedback could gain more improvement in listening self-efficacy than those without the scaffolding. According to them, the strategy instruction with feedback could help learners to establish the connections between the success of listening comprehension and the use of strategies so that learners could attribute the success or failure of listening comprehension to factors within their control and form the internal causes to achieve success in listening comprehension. Besides, reflective journals may offer learners more chance to contemplate on their listening experiences and modify these processes with learned strategies, facilitating the emergence of mastery experiences of listening. Therefore, the reflective journals and feedback which could induce the mastery experiences and social persuasion contributed to the development of listening self-efficacy.

Furthermore, the results on the development of self-efficacy in conversation listening by all groups were less sturdy than those in the listening of lectures or passages and news. For instance, the gained self-efficacy scores in the conversation listening by the MG were almost less than half of the scores in the other two types of listening. This result pinpointed the task-specific nature of listening self-efficacy. It was explainable because most of the listening materials in the online listening practice for the three groups were lectures and news. Learners should be much easier to establish confidence with these two types of listening, to which they frequently got exposed in this semester. Also, the results of development by the less-skilled listeners in the MG were somewhat more robust than those by the skilled listeners. As compared with the TG, only the less-skilled listeners in the MG showed significantly better improvement of self-efficacy in

the listening of lectures or passages and the gained scores by less-skilled listeners in the MG were higher than those by skilled listeners in the listening of conversations and news. The less-skilled listeners' more improvement in self-efficacy was probably due to the less-skilled learners' more improvement in metacognitive awareness, especially the planning-evaluation and problem-solving, as shown in the MALQ results.

Notice that caution should be exercised in the interpretation of the results about the self-efficacy of listening. In consideration of the significant differences in the pre-test self-efficacy scores among the three groups, the present results derived from the analysis of learners' gained scores, rather than their post-test scores. Although the analysis of gained scores produced significant differences among the three groups, the possibility still existed that the higher pre-test scores of self-efficacy may bring out a ceiling effect, impacting the improvement of self-efficacy in the post-test.

To sum up, the development of self-efficacy in the MG could be due to the improvement of some metacognitive awareness, journal feedback, and positive attitudes towards the treatment. The improvement in some factors of metacognitive awareness due to the web-based metacognitive listening practice could promote their regulation of listening confidence and emotional states, resulting in more self-efficacy. The journals and feedback could enhance their perceptions of mastery experience and yield more social persuasion, while the positive attitudes could increase their emotional states while listening, all contributing to the development of self-efficacy. Meanwhile, the more robust results of the less-skilled listeners in the MG could be induced by their more improvement in metacognitive awareness. Besides, the least improvement of self-efficacy in the BG could be as a result of their overemphasis on bottom-up listening tasks, increasing their cognitive load. The next section moved to the discussion of

learners' perceptions of the present metacognitive listening practice.

5.4 Perceptions of the metacognitive listening practice

The results from UEQ indicated that both the less-skilled and skilled listeners showed positive evaluations towards the web-based metacognitive listening practice. Their scores on the perspicuity and efficiency were relatively less than those on the other four scales. These findings were consistent with interview results where the less-skilled and skilled listeners held affirmation towards this practice. Meanwhile, the less-skilled listeners had better experiences than the skilled listeners and showed excellent evaluation in almost all scales.

The less-skilled and skilled listeners in the MG held positive evaluation in all scales (i.e., *attractiveness, perspicuity, efficiency, dependability, stimulation,* and *novelty*) of UEQ, which could be due to the existence of metacognitive activities, their perceived progress in listening comprehension ability and strategy use, and some operations in constructing the listening website, such as reducing repetitive questions, CDN techniques (to speed up the streaming of videos), responsive interface (to adjust to different internet devices), and adding the function of auto-saving the responses. Firstly, learners' high scores on novelty may come from metacognitive listening tasks. The metacognitive listening tasks made the listening website different from other listening websites and innovative for the learners. Secondly, learners' high scores on the stimulation and attractiveness could be due to the existence of videos that rendered the listening practice more engaging and motivational for the learners, as reported in the interview data. Meanwhile, learners' perceived progress in listening comprehension and the use of listening strategies could also motivate and attract them to take the

listening practice, thus strengthening their perceived stimulation and attractiveness. Thirdly, the perspicuity of the website could come from the responsive design that makes the website concise and clear, when accessed via mobile phones.

Besides, our attempts to shed the number of metacognition-induced questions in the second listening practice each week may also lead to learners' perceived perspicuity of the listening practice, as some learners suggested in interviews that they feel pleasant about this arrangement. Fourth, learners' perceived progress in listening comprehension and the use of listening strategies could also lead learners to perceive the listening website to be efficient, supportive, and dependable, resulting in their perceived dependability and efficiency in UEQ. The high dependability may also due to the existence of the function of auto-saving the responses on the website, which could make the learner feel safe to answer questions without worrying about losing their answers. Fifth, learners' perceived development in listening comprehension ability and reduced metacognition-induced questions may result in their perceived efficiency of this listening website.

However, both the less-skilled and skilled listeners' relatively lower scores in the efficiency and perspicuity than other scales in UEQ could be caused by their perceived problems in listening websites. From the interviews, some learners suggested reducing the listening questions and extending the intervals of asking these questions. These suggestions still reflected the existence of excessive metacognition-induced questions that may decrease their perceived efficiency and perspicuity of the listening website. Meanwhile, the perceived efficiency may often be affected by their perceived slowness of the website and concerns about the listening test results. In the interview, some learners indicated the slowness of the website and held that test-based listening was

necessary to improve their listening comprehension. Since test-oriented education prevailed in the Chinese context (Guo, Diaz, & Liyanage, 2016; Hu & West, 2015), concerns about listening test results could result in the perception that the metacognitive listening practice was not so efficient in improving test scores as the test-based listening.

Also, the better improvement in metacognitive awareness and self-efficacy by the less-skilled listeners in the MG could contribute to their better experiences in the website than the skilled listeners. For example, that the less-skilled listeners perceived the excellent efficiency and dependability reflect their acknowledgement of the efficiency and reliability of the web-based metacognitive listening practice in improving their metacognitive awareness, self-efficacy, and listening comprehension ability.

The user experience can produce behavioral and emotional consequences (Hassenzahl, 2001). Here, the positive experiences may bring about more engagement and positive emotions in the listening practice, leading to the desired effects of metacognitive listening training. Also, researchers have shown that emotions could impact learners' metacognitive processes, such as problem-solving and strategy thinking (Fredrickson, 2001; Valiente, Swanson, & Eisenberg, 2012) and self-efficacy. Therefore, positive emotions may accelerate learners' development of metacognitive awareness and self-efficacy.

Bandura (1989, 1994) already indicated the interplay of learners' experiences and self-efficacy. Successful mastery experiences or achievements and their perceived emotional states could influence learners' perceptions of self-efficacy. In turn, high perceived self-efficacy could reduce learners' stress and anxiety and increase their motivation and interest in specific activities, leading to more achievements. According

to Bandura (1989), “people display enduring interest in activities at which they feel self-efficacious and from which they derive self-satisfaction” (p. 48). Some researchers (e.g., Hayat & Shateri, 2019; Vrugt, 2004) also indicated that self-efficacy could stimulate people’s more use of metacognitive strategies. Therefore, the positive emotional states from the listening practice could reduce learners’ anxiety and increase listening self-efficacy. The improved self-efficacy of listening could, in turn, strengthen their interest and positive attitudes towards the listening practice, increase their use of metacognitive strategies, resulting in more successful listening experiences that accordingly could boost the development of perceived self-efficacy of listening.

Therefore, the good experiences during the web-based metacognitive listening practice may bring about more engagement in listening practice, and accelerate the development of metacognitive awareness and self-efficacy, resulting in the overall improvement of listening comprehension ability.

5.5 Summary of discussion

To sum up, this section was about the discussion of the research findings.

Firstly, the noticeable improvement of listening comprehension by listeners in the MG could confirm the positive effects of the metacognition listening practice and integrated bottom-up listening practice, leading to the self-regulation of the listening process, the success of listening achievements, and benefiting a wider range of listeners. Skilled listeners in three groups (MG, BG, and TG) reported a decline in the posttest scores of TOEFL, which could reflect the complexity of listening comprehension and difficulty of TOEFL tests.

Secondly, the better performance by the MG in planning-evaluation and problem-

solving than other two groups could be as a result of the general task-settings in the metacognitive listening cycle which highlighted some factors (i.e., planning-evaluation and problem-solving) and overshadowed the others (i.e., directed attention, (no) mental attention, and person knowledge) in MALQ. Also, most less-skilled and skilled listeners in three groups showed improvement in two factors (planning-evaluation and problem-solving) of metacognitive awareness, which may be due to their exposures to the MALQ and more opportunities of self-regulation in the web-based listening environment. Furthermore, non-significant differences in directed attention may be due to the learners' good mastery of this strategy and the ease of development. However, the little improvement by most listeners in person knowledge and (no) mental translation could be explained by learners' mixed perceptions of person knowledge and (no) mental translation. Less development by the skilled listeners may be caused by their richer repertoire of metacognitive awareness. Besides, the better performance in (no) mental translation by the TG could be due to the lack of bottom-up listening tasks (such as dictation) for the traditional listening website so that they could resort less to the mental translation.

Thirdly, the striking development of self-efficacy by the MG could be attributable to the improvement of metacognitive awareness, journal feedback, and their positive perceptions towards the web-based metacognitive listening practice. These listeners' improvement of some factors of metacognitive awareness (i.e., planning-evaluation and problem-solving) due to the web-based metacognitive listening practice could promote their regulation of listening confidence and emotional states, resulting in more self-efficacy. The journals and written feedback could improve their perceptions of mastery experience and increase the social persuasion, while the positive attitudes could

increase their emotional states while listening, all contributing to the development of self-efficacy. The least improvement of self-efficacy by the BG could be due to their overemphasis on the bottom-up listening tasks that intensified their cognitive load during listening.

Lastly, both the quantitative (from the UEQ) and qualitative results (from the interviews) revealed that both the less-skilled and skilled listeners in the MG had good experiences towards the web-based metacognitive listening practice. These good experiences could be because of the existence of metacognitive activities, their perceived progress in listening comprehension ability and strategy use, and some operations in constructing the listening website. Meanwhile, the more improvement in metacognitive awareness and self-efficacy by the less-skilled listeners in the MG could contribute to their better experiences in the website than the skilled listeners. The pleasant experiences may also increase learners' engagement in the listening practice and facilitate the development of metacognitive awareness and self-efficacy.

The next chapter moved on to the conclusion where the main research findings, implications, limitations of the study, and suggestions for further research were elucidated.

CHAPTER 6

CONCLUSION

This chapter served as the conclusion of the study. It firstly summarized the main findings responding to four research questions. Then it examined the theoretical and practical implications arising from the study. Lastly, it elucidated the limitations and suggestions for further research.

6.1 Summary of the research findings

This section summarized the main findings of the research regarding the four research questions.

RQ1: What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' listening comprehension ability across proficiency levels?

This study revealed that web-based metacognitive listening practice has salutary effects on the listening comprehension ability of low proficiency Chinese EFL learners. Besides, the web-based metacognitive listening practice gained an advantage over the web-based bottom-up and traditional listening practice in improving listening comprehension ability with both the less-skilled and the skilled listeners. This result could further confirm the effectiveness of metacognitive instruction by previous studies (e.g., Bozorgian, 2014; Cross, 2011; Goh & Taib, 2006; Marechal, 2007; Vandergrift & Tafaghodtari, 2010). Also, it could lend support to the assumption (Goh, 2008; Graham

& Santos, 2015; Vandergrift & Tafaghodtari, 2010) that the integration of bottom-up activities into metacognitive listening practice could benefit more listeners. However, the difficulty of TOEFL tests may impede the skilled listeners from improving listening performance in the tests.

RQ2: What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' metacognitive awareness across proficiency levels?

The study concluded that the web-based metacognitive listening practice could yield beneficial effects on two factors (i.e., planning-evaluation and problem-solving) of metacognitive awareness with the low proficiency Chinese EFL learners. Also, the web-based metacognitive listening practice had an advantage over the web-based bottom-up and traditional listening practice in the improvement of the two factors of metacognitive awareness, most notably with the less-skilled listeners. This result was consistent with previous studies on metacognitive instruction, suggesting the effectiveness of the metacognitive intervention on metacognitive awareness. However, the task-settings in the metacognitive cycle, the exposure to MALQ, and the complexity of some strategies may give rise to non-significant differences in other factors of metacognitive awareness (i.e., directed attention, person knowledge). Besides, the lack of bottom-up listening training makes the TG protrude from the other groups in the development of (no) mental translation. Additionally, In light of the rich repertoire of metacognitive awareness before treatment, the skilled listeners demonstrated less development in metacognitive awareness than less-skilled listeners.

RQ3: What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' listening self-efficacy across proficiency levels?

The study indicated that the web-based metacognitive listening practice could

contribute to the development of listening self-efficacy with the Chinese low proficiency EFL learners. Meanwhile, the web-based metacognitive listening practice gained an advantage over the web-based bottom-up and traditional listening practice in the improvement of the listening self-efficacy. Learners' development of self-efficacy could be traceable to their improvement of metacognitive awareness and constant feedback, improving their regulation of listening confidence and fostering the internal causes of listening success. Meanwhile, the less-skilled listeners of the MG demonstrated somewhat more sturdy results than the skilled listeners, possibly due to their more improvement in metacognitive awareness. On the other hand, the least improvement was detected in the BG, probably because they undertook the bottom-up listening practice without metacognitive intervention, which may direct their attention to the piecemeal comprehension of listening and mental translation, thus increasing the cognitive load and obstructing the development of self-efficacy. The developmental patterns of listening self-efficacy with different listening types could also confirm the task-specific nature of self-efficacy.

RQ4: What are the learners' perceptions of the web-based metacognitive listening practice?

The data from UEQ and interviews indicated that both the less-skilled and skilled listeners had good experiences towards the web-based metacognitive listening practice with positive evaluation on each scale of UEQ. The positive evaluation could be attributed to the existence of metacognitive activities, their perceived progress in listening comprehension ability and strategy use, and some operations in constructing the listening website. Also, the less-skilled listeners have better experiences on the website than the skilled listeners, probably triggered by their more improvement in

metacognitive awareness and self-efficacy. The pleasant experiences could increase learners' engagement in the listening practice and facilitate the development of metacognitive awareness and self-efficacy.

In conclusion, the study showed that the web-based metacognitive listening practice could effectively develop listening comprehension ability, metacognitive awareness, and listening self-efficacy with the low proficient Chinese EFL listeners.

6.2 Theoretical implications

Some theoretical implications arose from this study and were illustrated in the following.

The results of the present study could add literature to the current scarce research investigating the effects of the metacognitive intervention under CALL (computer-assisted language learning listening) on listening comprehension, metacognitive awareness, and self-efficacy. The advantage of the web-based metacognitive listening practice alluded to the positive effects of the metacognitive instruction cycle and supported the previous studies of metacognitive instruction (e.g., Bozorgian, 2014; Cross, 2011; Goh & Taib, 2006; Marechal, 2007; Vandergrift & Tafaghodtari, 2010).

Furthermore, the significant improvement in listening comprehension by the skilled listeners in the MG could partially substantiate the assumption by previous researchers (Goh, 2008; Graham & Santos, 2015; Vandergrift & Tafaghodtari, 2010) concerning the broader benefits to listeners by integrating bottom-up listening practice into metacognitive intervention. However, the integrated bottom-up listening practice with metacognitive intervention may benefit skilled listeners more than the less-skilled listeners in the development of listening comprehension. Meanwhile, the bottom-up

listening practice only may not achieve noticeable benefits to the low proficiency listeners in listening comprehension, unless it was integrated with the metacognitive activities. On the other hand, the overemphasis on the bottom-up listening practice may lead learners to attend to the word-by-word translation of listening, thus blocking the development of (no) mental translation and self-efficacy.

Lastly, learners may have differential difficulties regarding different factors of metacognitive awareness. Many listeners may have developed the strategy of directed attention early, and this strategy could be strengthened with the increasing amount of listening practice. Nevertheless, some factors of metacognitive awareness (e.g., person knowledge and (no) mental translation) could be more challenging to develop than others and were easier to affected by the specific listening tasks.

Besides the theoretical implications, the study also carried some pedagogical implications, as shown in the following section.

6.3 Pedagogical implications

Firstly, the present study could offer a "low-tech" sample for language practitioners to design a web-based metacognitive self-listening environment, contributing to the development of listening comprehension, metacognitive awareness, and self-efficacy. The web-based listening practice could supplement the in-class listening instructions, especially those deficient in the development of metacognitive awareness or in a large class where language teachers faced the challenges to cater for each learner. One of the advantages of web-based listening was to allow listeners to move step by step on their own track (Guo, 2009). This self-directed metacognitive listening environment may offer more opportunities for learners to practise the

metacognitive strategies than in-class metacognitive instruction, leading to the autonomous listeners who can control their own listening (Holec, 1981).

Furthermore, with the web-based metacognitive listening practice, a flipped classroom or blended learning could also be initiated where learners could perform the metacognitive listening practice outside the classroom, while they entered discussion and reflections and received feedback from teachers or peers on their listening problems and strategies inside the classroom. Meanwhile, the metacognitive listening website, which regularly leads learners through the metacognitive processes of planning, monitoring, evaluation, and problem-solving, could ease the challenge of learners' lack of self-regulation in the blended learning (Rasheed, Kamsin, & Abdullah, 2020). Also, some of the techniques, such as responsive interface (to adjust to different internet devices), embedded online questionnaires, and CDN techniques (to speed up the streaming of videos) used in the present study to construct or optimize the listening websites could be applied to construct other listening websites.

Another implication for the language practitioners was that integrating the bottom-up listening activities with metacognitive listening practice did make positive effects on the development of listening comprehension ability. However, as shown in the study, the bottom-up listening practice alone with comprehension could not gain an advantage over the traditional listening comprehension practice for the current low proficiency listeners. Meanwhile, excessive focus on bottom-up listening activities may not benefit the low proficiency listeners in the development of listening comprehension ability, but increase learners' attention to piecemeal comprehension, leading to more use of mental translation and decreasing the listening self-efficacy.

Thirdly, the study resounded to the call for more support and scaffolding in web-

based self-directed listening practice. Reeves and Reeves (1997) showed that although attraction to learners could happen in a web-based learning environment, such attraction may not last long. Extra supports might be more necessary for learning conditions outside the classroom, where learners were easily discouraged when confronted with unexpected difficulties in learning. Thus, constant support and feedback could improve their engagement in online listening activities (Kung & Chuo, 2002). Also, the study confirmed Graham and Macaro (2008) that more feedback could increase learners' control over their listening performance with listening strategies, thus improving their listening self-efficacy.

Fourthly, since learners' experiences may impact their engagement of listening practice and self-efficacy, they should be considered in designing a web-based listening practice. In the present study, good experiences might impact learners' engagement in the listening practice, the development of metacognitive awareness and self-efficacy. The listening websites need to be piloted and optimized to reduce the potential problems affecting learners' experiences in the websites.

The last section demonstrated some limitations of the study and suggestions for further research.

6.4 Recommendations for further research

Nevertheless, this study also had some limitations and issues which deserved further investigation.

The first limitation is the sample size. Although 150 participants were recruited into the present study, after screening, 132 participants were involved in the final analysis (44 in the MG, 45 in the BG, 43 in the TG). The further division on proficiency

levels yielded no more than 30 skilled or less-skilled listeners in each sub-group. Therefore, the limited number of participants may blur some results of the study, lower the possibility of yielding significant results, and impact the generalization of the results. Thereby, further research could replicate the study with a larger sample size.

Secondly, although the second set of practice was sort of different from the first one each week, the metacognitive listening practice in the study had few diversified listening tasks and metacognitive activities. Learners may be tired of repetitive listening tasks each week, especially the exposure to repetitive metacognition-induced questions that some learners may view as tangential to their listening development. As Vandergrift and Tafaghodtari (2010) noted, "this approach [metacognitive approach] to listening could become tedious if always carried out in the same way" (p. 491). This tiredness was not undetected by the current listeners who suggested extending the time length of asking similar metacognition-induced questions. Most importantly, the diverse tasks should be framed under the metacognitive approach to involve learners in metacognitive processes and develop their metacognitive knowledge.

On the other hand, due to the task-settings, the metacognitive cycle (Vandergrift, 2004, 2007) may be insufficient in developing some factors of metacognitive awareness, such as directed attention, (no) mental translation, and person knowledge. Therefore, the web-based metacognitive listening practice should consider adding more tasks to develop these overshadowed factors. Meantime, some listening strategies (e.g., (no) mental translation) may be challenging to develop than others (e.g., directed attention) and should be given more attention in instruction or practice. Therefore, further research could structure the metacognitive listening tasks each week to make them more engaging to learners and assign more attention to some problematic or dimmed factors

(e.g., (no) mental translation or person knowledge) of metacognitive awareness.

Thirdly, the present study detected the vantage of the web-based metacognitive listening practice over the web-based bottom-up and traditional listening practice in improving listening comprehension ability, metacognitive awareness, and self-efficacy. Nevertheless, note that the current metacognitive listening practice also involved the bottom-up listening tasks. Thus, it remained a moot question whether the effects of the integrated metacognitive listening practice could outweigh those of the metacognitive listening practice without bottom-up listening activities. Although some advantages of the integrated metacognitive listening practice emerged (e.g., more improvement in listening comprehension by the skilled listeners) by comparing the results of the present study with some of the previous studies of metacognitive instruction, this conclusion should be treated circumspectly since different learning situations and participants exist in the present and previous studies. Further research is, therefore, necessary to determine with certainty whether the integration of the web-based metacognitive intervention with bottom-up listening could produce more benefits than metacognitive intervention or not. Previous researchers have shown different views on this point. Some researchers (Goh, 2008; Graham & Santos, 2015; Vandergrift & Tafaghodtari, 2010) indicated that the adding of bottom-up listening activities at the later stage of listening comprehension could produce more robust results, while Yeldham (2016) demonstrated that the interaction group with metacognitive instruction and bottom-up skills instruction failed to outperform the metacognitive instruction group. There is a possibility that Yeldham (2016), with more attention to bottom-up skills training, failed to integrate them into metacognitive listening instruction properly. This issue still deserves to be further explored.

Meanwhile, given the diverse bottom-up listening tasks or skills to be developed as shown in Vandergrift and Goh (2012), the question remains as to which bottom-up listening tasks or skills could be best integrated into the metacognitive listening training to produce more fruitful results in listening comprehension development. In the same vein, there is little knowledge about the exact differences between the effects of metacognitive instruction inside the classroom and the current web-based self-directed metacognitive listening intervention. Thus, future work could hopefully address this issue by making an empirical comparison between the two types of interventions.

Fourthly, the discussion panel was marginalized and only held twice in the present study, given that many learners were busy with the listening tasks. Since previous studies (e.g., Bozorgian & Alamdari, 2018; Cross, 2011; Mahdavi, & Miri, 2017; Saito & Akiyama, 2018) have indicated the crucial role of discussion within listening in developing learners' metacognitive awareness, motivation, and listening skills, further researchers could encourage more discussion of learners in the web-based metacognitive listening practice in consideration of working loads of other listening tasks. Again, it is still open to question which of the two, discussion or reflective journals, could better contribute to the development of metacognitive awareness. However, the discussion in the present study only took place after learners had completed their listening comprehension, and it was still different from the discussion during the listening process as encouraged in the metacognitive instruction. Thus, the technologies of constructing an online discussion panel during listening practice could be explored.

Lastly, as indicated before, results about the development of self-efficacy should be treated cautiously because of the significant differences in the pre-test self-efficacy

scores among the three groups. Ceiling effects could not be excluded when the results were interpreted. Further research with the control of the self-efficacy levels before the metacognitive intervention could generate more reliable results on the development of self-efficacy.

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APPENDIX A

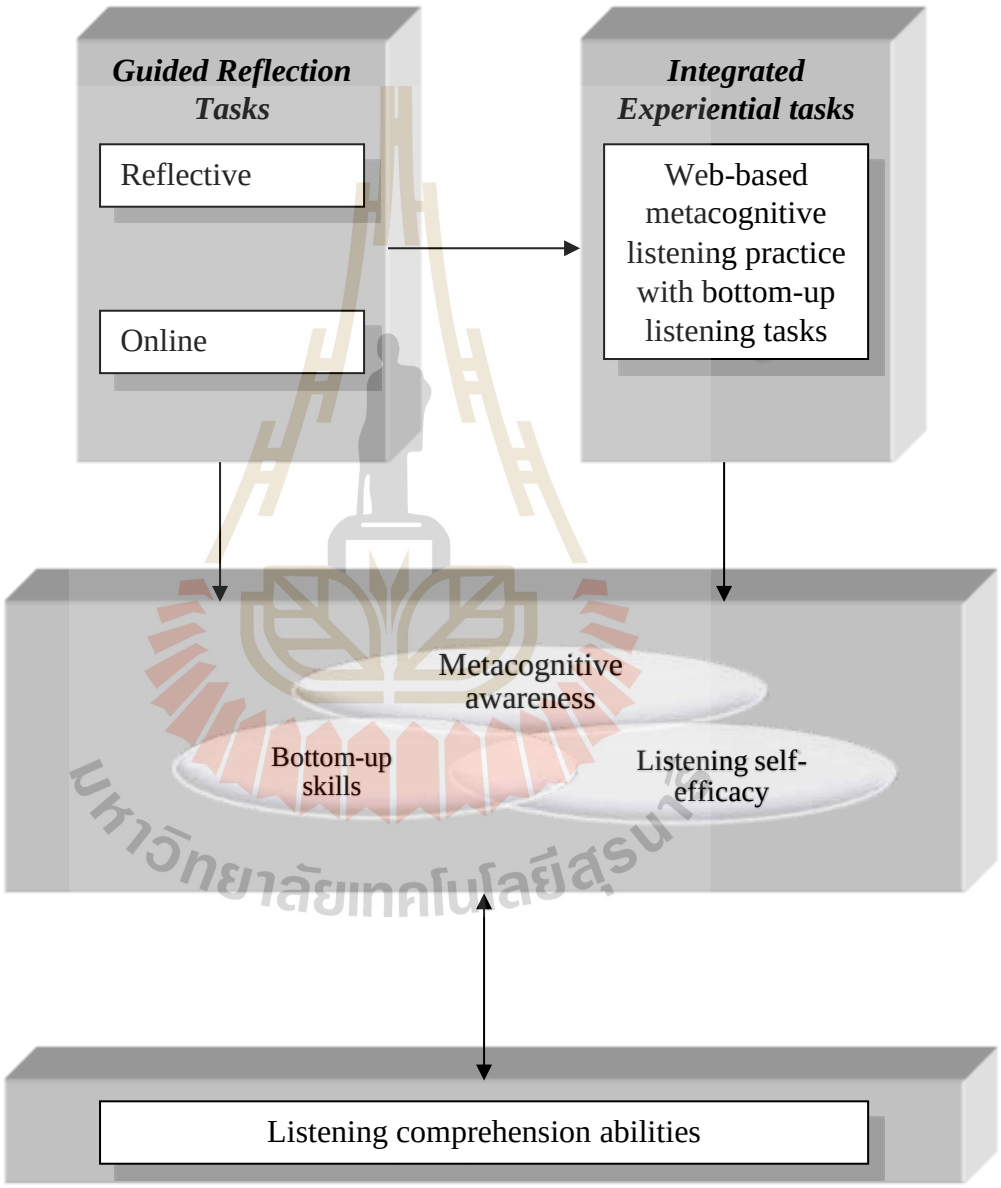
VANDERGRIFT'S CYCLE

(Adapted from Vandergrift & Goh, 2012)

Stages	Metacognitive processes
1.Pre-listening—Planning/predicting Stage	
After learners have been informed of the topic, related words and text type, they predict the types of information and possible words they may hear.	Planning
2. First Listening—First Verification Stage	
a. Learners verify their initial hypotheses, correct as required, and note additional information understood.	Monitoring and Evaluation
b. Learners compare what they have understood/written with a partner, modify as required, establish what still needs resolution, and decide on the important details that still require special attention.	Monitoring, evaluation, and planning Person task, and strategic knowledge
3. Second Listening—Second Verification Stage	
a. Learners verify points of earlier disagreement, make corrections, and write down additional details understood.	Monitoring, evaluation, and problem-solving
b. Class discussion in which all class members contribute to the reconstruction of the text's main points and most pertinent details, interspersed with reflections on how learners arrived at the meaning of certain words or parts of the text.	Monitoring, evaluation, and problem-solving Task and strategic knowledge
4. Third Listening—Final Verification Stage	
Learners listen specifically for the information revealed in the class discussion which they were not able to make out earlier. This listen may also be accompanied by the transcript of all or part of the text.	Monitoring, evaluation, and problem-solving
5. Reflection and Goal-Setting Stage	
Based on the earlier discussion of strategies used to compensate for what was not understood, learners write goals for the next listening activity.	Planning, evaluation, and problem-solving Person, task, and strategic knowledge

APPENDIX B

CURRENT METACOGNITIVE LISTENING FRAMEWORK



APPENDIX C

USER EXPERIENCE QUESTIONNAIRE

(adapted from Laugwitz et al., 2008)

For the assessment of the website, please fill out the following questionnaire. The questionnaire consists of pairs of contrasting attributes that may apply to the website. The circles between the attributes represent gradations between the opposites. You can express your agreement with the attributes by ticking the circle that most closely reflects your impression.

Example:

attractive	☐☐☐☐☐☐☐	unattractive

This response would mean that you rate the application as more attractive than unattractive.

Please decide spontaneously. Don't think too long about your decision to make sure that you convey your original impression.

Sometimes you may not be completely sure about your agreement with a particular attribute or you may find that the attribute does not apply completely to the particular website. Nevertheless, please tick a circle in every line.

It is your personal opinion that counts. Please remember: there is no wrong or right answer!

Please assess the website now by ticking one circle per line.

	1 2 3 4 5 6 7		Factors
Annoying	○ ○ ○ ○ ○ ○ ○	Enjoyable	**Attractiveness**
Not understandable	○ ○ ○ ○ ○ ○ ○	Understandable	**Perspicuity**
Creative	○ ○ ○ ○ ○ ○ ○	Dull	**Novelty**
Easy to learn	○ ○ ○ ○ ○ ○ ○	Difficult to learn	**Perspicuity**
Valuable	○ ○ ○ ○ ○ ○ ○	Inferior	**Stimulation**
Boring	○ ○ ○ ○ ○ ○ ○	Exciting	**Stimulation**
Not interesting	○ ○ ○ ○ ○ ○ ○	Interesting	**Stimulation**
Unpredictable	○ ○ ○ ○ ○ ○ ○	Predictable	**Dependability**
Fast	○ ○ ○ ○ ○ ○ ○	Slow	**Efficiency**
Inventive	○ ○ ○ ○ ○ ○ ○	Conventional	**Novelty**
Obstructive	○ ○ ○ ○ ○ ○ ○	Supportive	**Dependability**
Good	○ ○ ○ ○ ○ ○ ○	Bad	**Attractiveness**
Complicated	○ ○ ○ ○ ○ ○ ○	Easy	**Perspicuity**
Unlikable	○ ○ ○ ○ ○ ○ ○	Pleasing	**Attractiveness**
Usual	○ ○ ○ ○ ○ ○ ○	Leading edge	**Novelty**
Unpleasant	○ ○ ○ ○ ○ ○ ○	Pleasant	**Attractiveness**
Secure	○ ○ ○ ○ ○ ○ ○	Not secure	**Dependability**
Motivating	○ ○ ○ ○ ○ ○ ○	Demotivating	**Stimulation**
Meets expectations	○ ○ ○ ○ ○ ○ ○	Did not meet expectations	**Dependability**
Inefficient	○ ○ ○ ○ ○ ○ ○	Efficient	**Efficiency**
Clear	○ ○ ○ ○ ○ ○ ○	Confusing	**Perspicuity**
Impractical	○ ○ ○ ○ ○ ○ ○	Practical	**Efficiency**
Organized	○ ○ ○ ○ ○ ○ ○	Cluttered	**Efficiency**
Attractive	○ ○ ○ ○ ○ ○ ○	Unattractive	**Attractiveness**
Friendly	○ ○ ○ ○ ○ ○ ○	Unfriendly	**Attractiveness**
Conservative	○ ○ ○ ○ ○ ○ ○	Innovative	**Novelty**

APPENDIX D

SAMPLE OF TOEFL LISTENING TESTS

Directions: Listen to Track 22.

Directions: Now answer the questions.

1. What do the speakers mainly discuss?
   - (A) Why the woman has little in common with her roommates
   - (B) How the woman can keep up in her academic studies
   - (C) The woman's adjustment to life at the university
   - (D) The woman's decision to transfer to another university

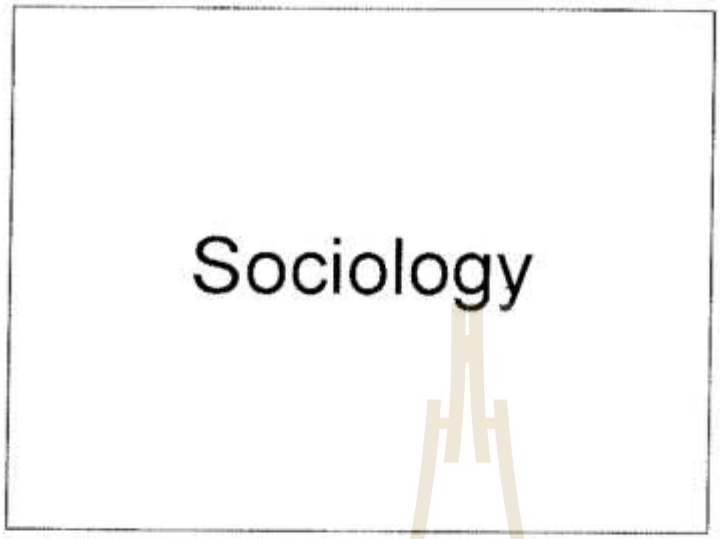
2. Why does the woman mention her hometown?
   - (A) To draw a contrast to her current situation
   - (B) To acknowledge that she is accustomed to living in big cities
   - (C) To indicate that she has known some people on campus for a long time
   - (D) To emphasize her previous success in academic studies

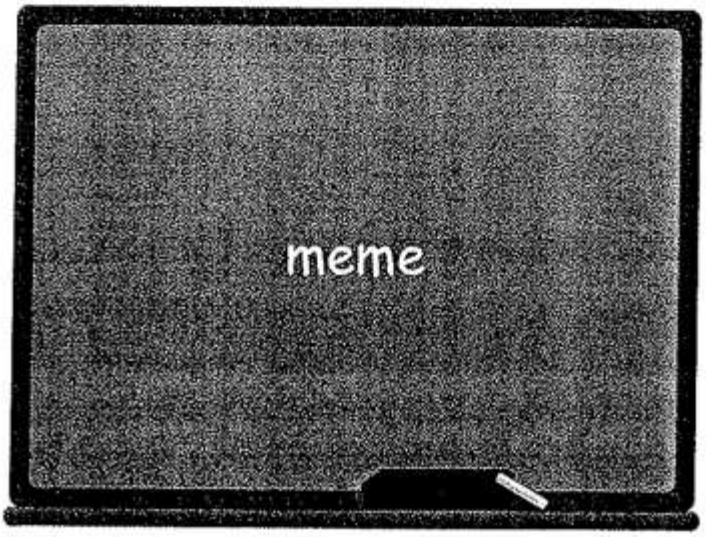
3. What does the woman imply about the incident that occurred in her sociology class?
   - (A) She was embarrassed because she gave an incorrect answer.
   - (B) She was upset because the professor seemed to ignore her.
   - (C) She was confused by the organization of the professor's lecture.
   - (D) She was surprised by the comments of the other students.

4. According to the counselor, why should the woman visit her professor's office? *Choose 2 answers.*
   - [A] To offer a compliment
   - [B] To offer to help other students
   - [C] To introduce herself
   - [D] To suggest ways of making the class more personal

5. What does the woman imply about joining the string quartet?
   - (A) It would enable her to continue a hobby she gave up when she was ten.
   - (B) It would allow her to spend more time in her major area of study.
   - (C) It would help her stop worrying about her academic studies.
   - (D) It would be a way to meet students with similar interests.

Directions: Listen to Track 23.



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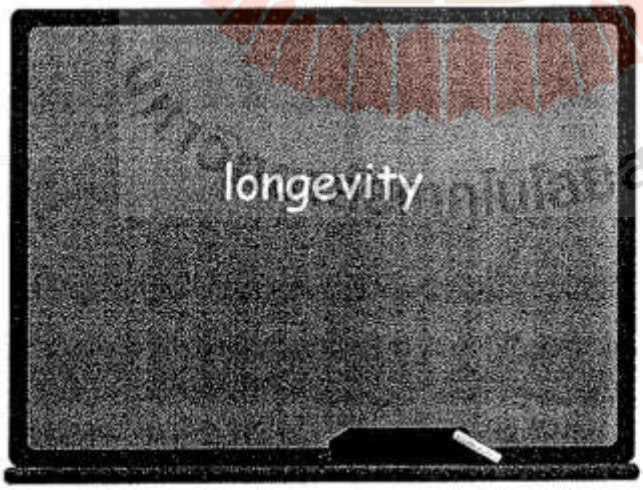
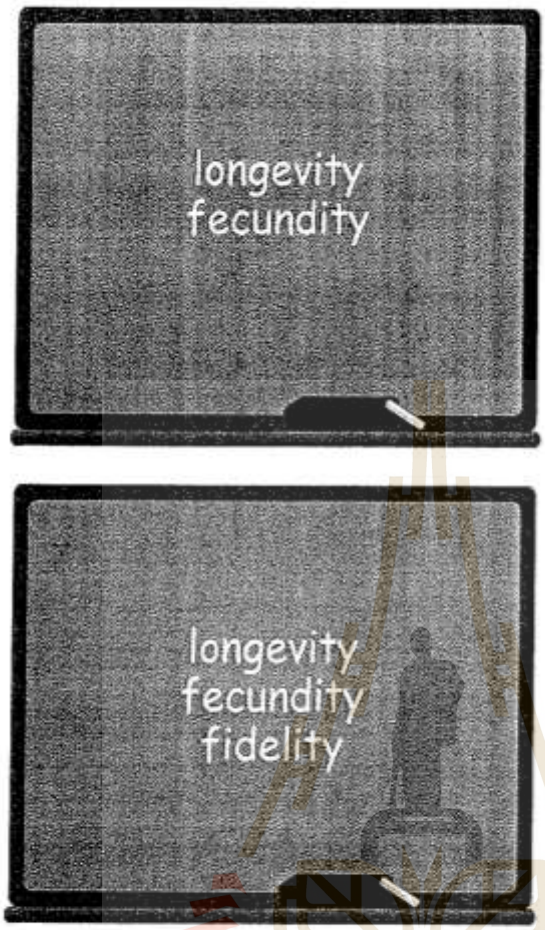

longevity



Directions: Now answer the questions.

6. What is the main purpose of the lecture?

   Ⓐ To introduce a method that can help students remember new information
   Ⓑ To introduce a way to study how information passes from one person to another
   Ⓒ To explain the differences between biological information and cultural information
   Ⓓ To explain the differences between stories, songs, and other pieces of information

7. Why does the professor tell the story about alligators?

   Ⓐ To explain the difference between true and false stories
   Ⓑ To draw an analogy between alligator reproduction and cultural transmission
   Ⓒ To give an example of a piece of information that functions as a meme
   Ⓓ To show how a story can gradually change into a song

8. According to the professor, which of the following are examples of meme transfer? *Choose 2 answers.*

[A] Telling familiar stories
[B] Sharing feelings
[C] Composing original music
[D] Learning a scientific theory

9. What example does the professor give of a meme's longevity?

Ⓐ A story has been changing since it first appeared in the 1930s.
Ⓑ A person remembers a story for many years.
Ⓒ A gene is passed on through many generations without changing.
Ⓓ A song quickly becomes popular all over the world.

10. What does the professor compare to a housefly laying many eggs?

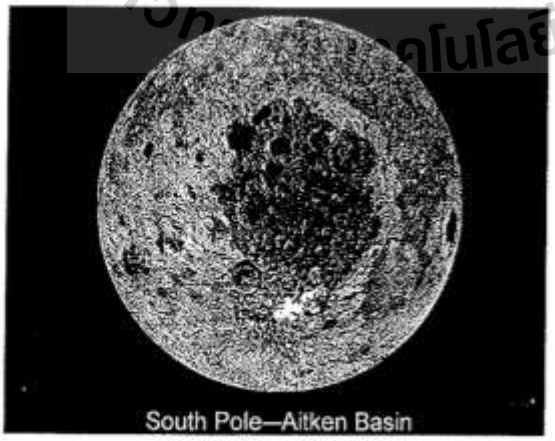
Ⓐ A child learning many different ideas from his or her parents
Ⓑ Alligators reproducing in New York sewers
Ⓒ Different people remembering different versions of a story
Ⓓ A person singing the "Twinkle, twinkle" song many times

11. Listen to Track 24.

Ⓐ To explain why some memes do not change much
Ⓑ To ask the students for their opinion about songs as memes
Ⓒ To acknowledge a problem with the meme theory
Ⓓ To ask the students to test an idea about memes

Note: The actual lecture contains color images. The colors from one image are cussed by the professor. You do not need to see the colors to understand the lec or to answer the questions.

Directions: Listen to Track 25.



Directions: Now answer the questions.

12. What is the main purpose of the lecture?
    - (A) To explain why scientists disagree about the age of the Moon
    - (B) To present arguments in favor of another Moon landing
    - (C) To explain how scientists discovered a crater on the far side of the Moon
    - (D) To review some findings of a recent mission to the Moon

13. What does the professor imply about the spacecraft Clementine?
    - (A) It sent back the first color photographs of the Moon.
    - (B) It was powered by solar energy.
    - (C) It landed on the far side of the Moon.
    - (D) It flew over the Moon's polar regions.

14. Why does the professor mention the Moon's mantle?
    - (A) To explain how scientists are able to estimate the age of meteor impacts
    - (B) To indicate what part of the Moon could provide key evidence about the Moon's composition
    - (C) To explain how scientists know that meteors penetrate the Moon's crust
    - (D) To point out an obvious difference between the Moon and Earth

15. Why is the South Pole–Aitken Basin thought to be exceptionally old?
    - (A) The walls of the Basin are more reflective than those of most other craters.
    - (B) Testing of rocks from the Basin's floor proved them to be as old as the Moon itself.
    - (C) Many small craters have been detected at the bottom of the Basin.
    - (D) A large amount of dust has been detected in and around the Basin.

16. Why does the professor consider it important to find out if water ice exists on the Moon? *Choose 2 answers.*

[A] Water ice could be processed to provide breathable air for astronauts.
[B] One component of water ice could be used as a fuel for rockets.
[C] Water ice could contain evidence of primitive life on the Moon.
[D] Water ice could be tested to find out what type of meteors crashed into the Moon.

17. Listen to Track 26.

(A) It is likely that the current age estimates for the South Pole–Aitken Basin are based on incorrect assumptions.
(B) It is disappointing how little the technology to analyze Moon rocks has advanced since the days of the Moon landings.
(C) Too few of the original Moon-rock samples were dated accurately.
(D) It is important to obtain a more precise determination of the Moon's age.

Directions: Listen to Track 27.

Directions: Now answer the questions.

18. What is the conversation mainly about?

(A) An assignment about which the student would like advice
(B) Concerns as to whether the student should be in the professor's course
(C) The selection of films to be viewed by students in a film theory course
(D) The structure and sequence of courses in the Film Department

19. What is the professor's attitude toward the student's high school film course?

Ⓐ He does not consider it satisfactory preparation for the class he teaches.
Ⓑ He does not think that literary works should be discussed in film classes.
Ⓒ He believes that this type of course often confuses inexperienced students.
Ⓓ He feels that the approach taken in this course is the best way to learn about film.

20 Why was the student permitted to sign up for the professor's film theory course?

Ⓐ Her high school course fulfilled the requirement for previous course work.
Ⓑ The computer system that usually blocks students was not working properly.
Ⓒ An employee in the department did not follow instructions.
Ⓓ The professor made an exception in her case.

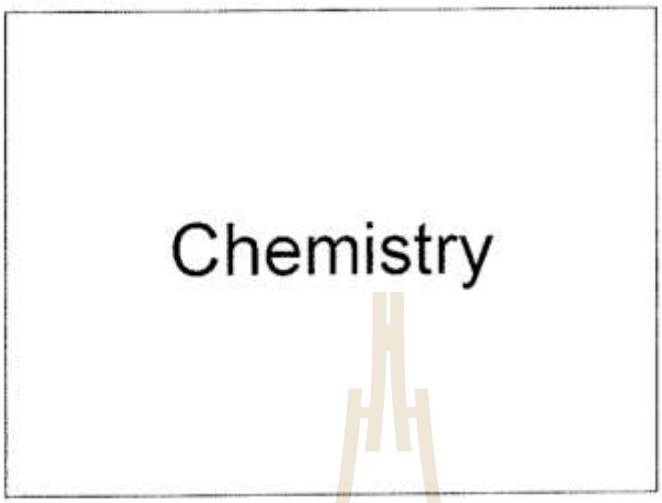
21. Why does the professor decide to allow the student to remain in his class?
Choose 2 answers.

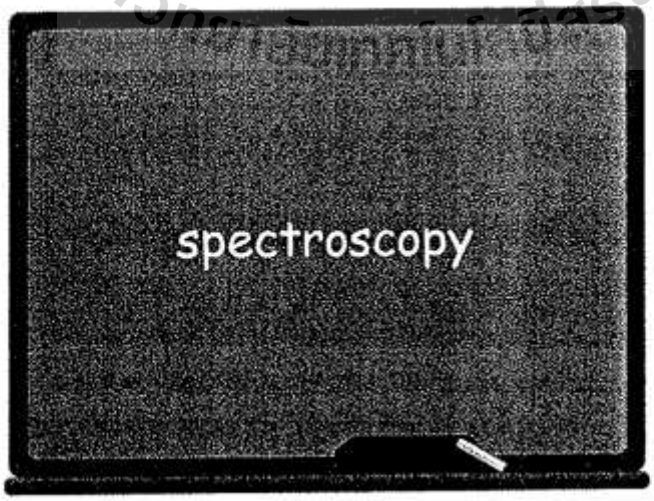
[A] She needs to take the course in order to graduate.
[B] He is impressed with her eagerness to continue.
[C] She convinces him that she does have adequate preparation for the course.
[D] He learns that she is not studying film as her main course of study.

22. What does the professor advise the student to do in order to keep up with the class she is in?

Ⓐ Take the introductory course
Ⓑ Watch some video recordings
Ⓒ Do extra reading
Ⓓ Drop out of her marketing class

Directions: Listen to Track 28.





Directions: Now answer the questions.

23. What is the main purpose of the lecture?

Ⓐ To discuss recent innovations in laboratory equipment
Ⓑ To give an example of a practical use for a particular scientific technique
Ⓒ To familiarize students with the chemical composition of paint pigments
Ⓓ To show how researchers were able to restore a particular work of art

24. What does the professor imply when he mentions an art historian?

Ⓐ Art historians have been learning how to use spectroscopes.
Ⓑ Scientists need to learn how art historians analyze paintings.
Ⓒ Confirming the authenticity of artworks requires collaboration.
Ⓓ Spectroscopic analysis can help identify a painter's techniques.

25. Why does the professor discuss the presence of zinc in paint pigments?

Ⓐ To explain why some paints may deteriorate over the course of time
Ⓑ To stress the need for caution when attempting to restore old artworks
Ⓒ To show how pigments differ from varnishes and binding agents
Ⓓ To show how spectroscopy can help establish the age of a painting

26. According to the professor, what is the primary advantage of spectroscopy over other laboratory methods for analyzing artworks?

Ⓐ It does not damage the artworks.
Ⓑ It provides a more accurate analysis than other methods do.
Ⓒ It uses equipment that can be transferred to other locations.
Ⓓ It can be used by individuals with little scientific training.

27. What is one way the professor mentions that chemists can help with art restoration?

(A) By re-creating the pigments and binding agents used by artists of earlier eras
(B) By removing pigments and binding agents that dissolve paintings over time
(C) By creating protective coatings of paint that do not damage original paintings
(D) By developing ways to safely remove paint added by previous restorers

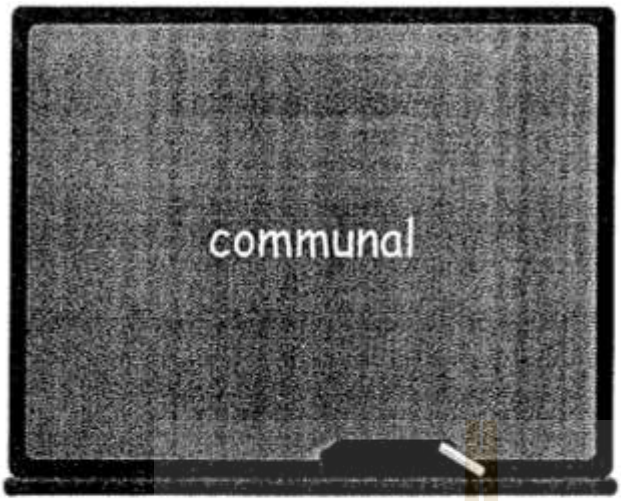
28. Listen to Track 29.

(A) He is searching for a synonym for the term.
(B) He is not sure how much information the students need.
(C) He is going to briefly address a related topic.
(D) He is giving the students a writing assignment.

Directions: Listen to Track 30.

Literature

folktales
fairy tales



Directions: Now answer the questions.

29. What is the lecture mainly about?

Ⓐ Oral traditions in folktales and fairy tales
Ⓑ Common characters and plots in folktales and fairy tales
Ⓒ Differences between folktales and fairy tales
Ⓓ Hidden meanings in folktales and fairy tales

30. What does the professor mean when he says that folktales are communal?

Ⓐ They vary little from one community to another.
Ⓑ They serve to strengthen ties among individuals within a community.
Ⓒ They relate important events in the history of a community.
Ⓓ They can be adapted to meet the needs of a community.

31. Why does the professor clarify the concept of a "fairy"?

Ⓐ To explain the origins of the term "fairy tale"
Ⓑ To eliminate a possible definition of the term "fairy tale"
Ⓒ To support a claim about the function of fairy tales
Ⓓ To indicate that fairies are a major element in fairy tales

32. What does the professor say about the setting of fairy tales?

Ⓐ The tales are usually set in a nonspecific location.
Ⓑ The location is determined by the country of origin of a tale.
Ⓒ The tales are set in a location familiar to the author.
Ⓓ A storyteller varies the location of a tale depending on the audience.

33. In the lecture, the professor discusses characteristics of folktales and fairy tales. Indicate the characteristics of each type of tale. *Put a check in the correct boxes.*

	Folktales	Fairy Tales
Their appeal is now mainly to children.		
The plot is the only stable element.		
The tales are transmitted orally.		
There is one accepted version.		
Characters are well developed.		
The language is relatively formal.		

34. Listen to Track 31.

Ⓐ To support the student's statement
Ⓑ To ask the student to clarify her statement
Ⓒ To find out if the students know what story the line comes from
Ⓓ To clarify the relationship between time and space in fairy tales

APPENDIX E

SAMPLE OF TEM-4 LISTENING TESTS

PART II LISTENING COMPREHENSION [20 MIN]

In Sections A, B and C you will hear everything ONCE ONLY. Listen carefully and then answer the questions that follow. Mark the best answer to each question on Answer Sheet Two.

SECTION A CONVERSATIONS

In this section you will hear several conversations. Listen to the conversations carefully and then answer the questions that follow.

Questions 1 to 3 are based on the following conversation. At the end of the conversation, you will be given 15 seconds to answer the questions. Now, listen to the conversation.

1. What are they mainly talking about in the conversation?

   A. Transport. B. Customers. C. Relocation. D. Restaurants.

2. Which of the following is mentioned by Tim as a good reason for moving?

   A. More office space. B. Convenient parking. C. Fewer office workers. D. A near-by train station.

3. Why is Jane worried about winter in the new location?

   A. It is much colder there. B. There are few activities.
   C. There are no good restaurants. D. There is no cinema or theatre.

Questions 4 to 7 are based on the following conversation. At the end of the conversation, you will be given 20 seconds to answer the questions. Now, listen to the conversation.

4. Miss Parkinson became interested in her own business .

   A. before she worked for the media company B. when she was on holiday five years ago
   C. after she went to therapists and classes D. after her friend recommended it to her

5. Why did she ask her teachers to teach her at home?

   A. She was busier than before. B. It was more convenient.
   C. She liked to exercise at home. D. She was given a promotion.

6. Which of the following is NOT true according to the conversation?

   A. She recommended people to take classes. B. She was willing to pay more for classes at home.
   C. She left her job immediately after her promotion. D. She regarded the business as a pastime at first.

7. Why did she finally leave her job?

   A. She got bored with her job. B. She saw an opportunity. C. She needed the money. D. She was forced to leave.

Questions 8 to 10 are based on the following conversation. At the end of the conversation, you will be given 15 seconds to answer the questions. Now listen to the conversation.

8. Which of the following is NOT mentioned about the single-lens reflex?

A. Different lenses can be used. B. Focusing is easier.

C. You can see what you are taking. D. It is cheaper and lighter.

9. According to the shop assistant, the main difference between the two types of cameras lies in _____.

A. lens B. price C. weight D. size

10. It can be inferred from the conversation that the customer is more likely to buy _____ in the end.

A. a single-lens camera B. nothing C. a rangefinder camera D. several lenses instead

SECTION B PASSAGES

In this section, you will hear several passages. Listen to the passages carefully and then answer the questions that follow.

Questions 11 to 13 are based on the following passage. At the end of the passage, you will be given 15 seconds to answer the questions. Now, listen to the passage.

11. Which of the following details about the front of the house is CORRECT?

A. The front is pink. B. The curtain is drawn. C. No window can be seen. D. There are two doors.

12. What is to the immediate left side of the house?

A. A washing line. B. Another house. C. A flat area. D. A chimney.

13. Where is the small town in the picture?

A. Between two hills. B. Further to the left of the house. C. At the back of the house. D. At the side of a hill.

Questions 14 to 17 are based on the following passage. At the end of the passage, you will be given 20 seconds to answer the questions. Now, listen to the passage.

14. When did Ben first become interested in Mongolia?

A. When he grew up. B. When he learned Mongolian.

C. When he returned home. D. When he was nine years old.

15. Where did he spend most of his teenage years?

A. In Mongolia. B. In the Arab world. C. In his hometown. D. In some other regions.

16. We learn from the passage that Ben _____ while doing his master's degree.

A. became interested in classical Mongolian B. learned classical and modern Mongolian

C. gave up modern Mongolian D. mastered modern Mongolian

17. Which of the following details is NOT true according to the passage?

A. Ben wants to visit Mongolia when the weather is warm. B. Ben considers the travel expense reasonable. C. The trip today is expensive considering inflation. D. Ben was unable to travel to Mongolia in 1971.

Questions 18 to 20 are based on the following passage. At the end of the passage, you will be given 15 seconds to answer the questions. Now, listen to the passage.

18. Which is the height of towers at Sky Greens vertical farm?

A. 9 meters. B. 20 meters. C. 100 meters. D. 40 meters.

19. Which of the following is NOT true according to the passage?

A. The farm sells its vegetables to a local supermarket. B. The farm uses less water and energy to grow vegetables.

C. The farm causes less pollution in its production. D. The farm sells at the same price as imported produce

20. According to the passage, one particular advantage of the Sky Green is _____.

A. local climate B. local support C. plan for expansion D. closeness to the city

SECTION C NEWS BROADCAST

In this section, you will hear several news items. Listen to them carefully and then answer the questions that follow.

Questions 21 and 22 are based on the following news. At the end of the news item, you will be given 10 seconds to answer the questions. Now, listen to the news.

21. According to the passage, Turkish police were unsure about
    A. when the woman was killed
    B. the main cause of the death
    C. the woman's identity
    D. why she failed to return home
22. How many people had been detained by Turkish police?
    A. 9. B. 19. C.22. D. 33.

Questions 23 and 24 are based on the following news. At the end of the news item, you will be given 10 seconds to answer the questions. Now, listen to the news.

23. What is the situation now in Kidal according to the news?
    A. Islamist militants are still in control of the town.
    B. French forces have entered the town.
    C. French are going to land at the airport.
    D. Islamist militants are attacking the airport.
24. Why did the French launch the military operation?
    A. To control Kidal airport.
    B. To protect the town.
    C. To protect the capital Bamako.
    D. To fight against Islamist militants.

Questions 25 and 26 are based on the following news. At the end of the news item, you will be given 10 seconds to answer the questions. Now, listen to the news.

25. Which of the following is TRUE about the immigration reform?
    A. It was proposed by a group of senators.
    B. Mr Obama had carried out the reform.
    C. Illegal immigrants would soon be given citizenship.
    D. The reform failed to improve the current system.
26. According to Obama's 2011 blueprint, how long would it take for illegal immigrants to gain citizenship?
    A. Eight years. B. Five years. C. Thirteen years. D. Eleven years.

Questions 27 and 28 are based on the following news. At the end of the news item, you will be given 10 seconds to answer the questions. Now, listen to the news.

27. What is Lorraine Melvill's business?
    A. Running a plastic surgery clinic.
    B. Arranging for surgery and safaris.
    C. Providing consultancy to local people.
    D. Organizing trips to UK and American.
28. Which of the following statements is NOT true according to the news item?
    A. Local African clients helped keep her business going.
    B. Her clients were unable to pay her the money.
    C. Her business was affected by the global financial crisis.
    D. She still had as many European clients as before.

Questions 29 is based on the following news. At the end of the news item, you will be given 5 seconds to answer the question. Now, listen to the news.

29. What is the main idea of the news item?
    A. Foreign investment in unstable regions.
    B. BP's presence in North Africa.
    C. Security concerns in risky countries.
    D. Protection for foreign oil workers.

Questions 30 is based on the following news. At the end of the news item, you will be given 5 seconds to answer the question. Now, listen to the news.

30. What is the main message of the news item?
    A. London attracts shoppers from all over the world.
    B. Most people in Nigeria live in poverty.
    C. Wealthier Nigerians become a big spender.
    D. People from the Middle East are the most wealthy.

APPENDIX F

BACKGROUND QUESTIONNAIRE

Please take several minutes to answer the following questions concerning your previous English learning experience and other background information. **All the information will be kept confidential and please answer the questions as precisely as possible.**

1. Name
2. Age
3. Gender
4. Hometown
5. How long have you learned English?
 (a) 1 to 2 years
 (b) about 6 years
 (c) 6- 12 years
 (d) More than 12 years

6. Have you ever been to English speaking countries?
 (a) Yes
 (b) No

7. Are you interested in English learning?
(a) Not at all
(b) A little bit
(c) Neutrally
(d) Quite interested
(e) Very interested

8. Have you ever taken CET-4 and TEM-4?
(a) No
(b) Only CET-4
(c) Both CET-4 and TEM-4

9. How many scores you made in your final listening exam last term?

10. How often do you practice listening?
(a) Never
(b) Seldom
(c) Once a month

(d) Once or twice one week
(e) More than twice one week
(f) Others

11. Are you confident with your listening?
(a) Not at all
(b) A little bit
(c) Neutrally
(d) Quite confident
(e) Very confident

12. In what way do you often practice listening?
(a) Taking test papers
(b) Listening to English news or other materials
(c) Watching Videos or movies
(d) Communicating with foreigners
(e) Others

13. What do you think is the most effective way to improve your listening ability?

APPENDIX G

METACOGNITIVE AWARENESS LISTENING QUESTIONNAIRE (MALQ)

(Adapted from Vandergrift & Goh, 2012)

Scale	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Factors
	1	2	3	4	5	
1. Before I start to listen, I have a plan in my head for how I am going to listen.				1 2 3 4 5		Planning-evaluation
2. I focus harder on the text when I have trouble understanding				1 2 3 4 5		Directed attention
3. I find that listening is more difficult than reading, speaking, or writing in English.				1 2 3 4 5		Person knowledge
4. I translate English to Chinese in my head as I listen.				1 2 3 4 5		Mental translation
5. I use the words I understand to guess the meaning of the words I don't understand.				1 2 3 4 5		Problem-solving
6. When my mind wanders, I recover my concentration right away.				1 2 3 4 5		Directed attention
7. As I listen, I compare what I understand with what I know about the topic.				1 2 3 4 5		Problem-solving
8. I feel that listening comprehension in English is a challenge for me.				1 2 3 4 5		Person knowledge
9. I use my experience and knowledge to help me understand.				1 2 3 4 5		Problem-solving
10. Before listening, I think of similar texts that I may have listened to.				1 2 3 4 5		Planning-evaluation
11. I translate some words from English to Chinese as I listen.				1 2 3 4 5		Mental translation
12. I try to get back on track when I lose concentration.				1 2 3 4 5		Directed attention
13. As I listen, I quickly adjust my interpretation if I realize that it is not correct.				1 2 3 4 5		Problem-solving

Scale	Strongly Disagree	Mildly Disagree	Neutral	Mildly Agree	Strongly Agree	Factors
	1	2	3	4	5	
14. After listening, I think back to how I listened, and about what I might do differently next time.				1 2 3 4 5		Planning-evaluation
15. I don't feel nervous when I listen to English.				1 2 3 4 5		Person knowledge
16. When I have difficulty understanding what I hear, I give up and stop listening.				1 2 3 4 5		Directed attention
17. I use the general idea of the text to help me guess the meaning of the words that I don't understand.				1 2 3 4 5		Problem-solving
18. I translate English into Chinese word by word, as I listen.				1 2 3 4 5		Mental translation
19. When I guess the meaning of a word, I think back to everything else that I have heard, to see if my guess makes sense.				1 2 3 4 5		Problem-solving
20. As I listen, I periodically ask myself if I am satisfied with my level of comprehension.				1 2 3 4 5		Planning-evaluation
21. I have a goal in mind as I listen.				1 2 3 4 5		Planning-evaluation

APPENDIX H

IOC ANALYSIS OF THE MALQ

Item No.	Dimensions	Expert 1	Expert 2	Expert 3	Total Score
1	Planning-evaluation	1	1	1	1
10		1	0	1	0.67
14		1	-1	1	0.33
20		1	1	1	1
21		1	1	0	0.67
2	Directed attention	0	1	1	0.67
6		1	1	1	1
12		-1	1	1	0.33
16		1	1	1	1
3	Person knowledge	1	1	1	1
8		1	1	0	0.67
15		1	1	1	1
4	Mental translation	1	1	1	1
11		1	0	1	0.67
18		1	1	1	1
5	Problem-solving	0	1	1	0.67
7		1	0	1	0.67
9		1	1	1	1
13		-1	1	1	0.33
17		1	1	1	1
19		1	1	1	1

IOC Formula: $\frac{\sum x}{n}$

IOC Value = 0.79 >0.5

***IOC Value was 0.79, which was above the 0.5. Therefore, the questionnaire was acceptable in terms of content validity.

APPENDIX I

THE LISTENING SELF-EFFICACY QUESTIONNAIRE

(adapted from Graham & Macaro, 2008)

Circle the number on the line below that shows how sure you are that you could listen to texts like those you have just heard and do the following:

Conversation listening

1. Understand the gist of what you hear.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

2. Understand the details of what you hear.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

3. Work out the meaning of unknown or incomprehensible words in listening.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

4. Recognise speakers' opinions expressed in the text.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

Lecture or passage listening

1. Understand the gist of what you hear.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

2. Understand the details of what you hear.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

3. Work out the meaning of unknown or incomprehensible words in listening.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

4. Recognise speakers' opinions expressed in the text.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

News listening

1. Understand the gist of what you hear.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

2. Understand the details of what you hear.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

3. Work out the meaning of unknown or incomprehensible words in listening.

0	10	20	30	40	50	60	70	80	90	100
Not sure		Somewhat unsure			Fairly sure		Very sure			Completely sure

APPENDIX J

IOC ANALYSIS OF THE LISTENING SELF-EFFICACY QUESTIONNAIRE

Item No.	Tasks	Expert 1	Expert 2	Expert 3	Total Score
1	Listening of Conversations	1	1	1	1
2		1	1	1	1
3		1	1	1	1
4		1	0	1	0.67
5	Listening of Lectures or Passages	1	1	1	1
6		1	1	1	1
7		1	1	0	0.67
8		1	1	1	1
9	Listening of News	1	1	1	1
10		1	1	1	1
11		1	1	1	1

IOC Formula: $\frac{\sum x}{n}$

IOC Value = 0.94 >0.5

***IOC Value was 0.94, which was above the 0.5. Therefore, the questionnaire was acceptable in terms of content validity.

APPENDIX K

IOC ANALYSIS OF THE UEQ

Item No.	Dimensions	Expert 1	Expert 2	Expert 3	Total Score
1	Attractiveness	1	1	1	1
12		-1	1	1	0.33
15		1	1	1	1
16		1	1	1	1
24		1	1	0	0.67
25		1	1	1	1
2	Perspicuity	1	1	1	1
4		1	0	1	0.67
13		-1	1	1	0.33
21		1	1	1	1
3	Novelty	1	1	1	1
10		1	1	1	1
15		1	1	0	0.67
26		1	1	1	1
5	Stimulation	1	1	1	1
6		0	1	1	0.67
7		1	1	1	1
18		1	1	1	1
8	Dependability	1	1	1	1
11		1	0	1	0.67
17		1	1	1	1
19		-1	1	1	0.33
9	Efficiency	1	1	1	1
20		-1	1	1	0.33
22		1	1	0	0.67
23		1	1	1	1

IOC Formula: $\frac{\sum x}{n}$

IOC Value = 0.82 >0.5

***IOC Value was 0.82, which was above the 0.5. Therefore, the questionnaire was acceptable in terms of content validity.

APPENDIX L

GUIDED QUESTIONS FOR THE POST-SEMI-INTERVIEWS

These questions are designed to answer the four corresponding research questions marked in the brackets.

1. What do you learn from this semester's listening practice? (Q 1, 2, 3)

2. Do you think you have improved in your listening ability? (Q 1)

3. Do you have a different understanding about L2 listening from the past? (Q 2)

4. Does L2 listening just mean taking the test or mean other things? (Q 2)

5. Do you feel you are more confident in listening and language learning than before? (Q 3)

6. Do you think the listening strategies can help your listening? If yes, what are they? (Q 2)

7. Will you continue use these strategies in your future listening? (Q 2)

8. What are the difficulties did you have in doing the listening practice? (Q 2)

9. How is your experiences in the listening website? And do you have suggestions to modify the listening website? (Q 4)

10. Which kind of listening practice do you prefer as an online listening practice? the traditional test-based practice or the current one? (Q 4)

APPENDIX M

GUIDED QUESTIONS FOR REFLECTIVE JOURNALS

Learners were suggested to keep journals based on these guided questions, but they did not need to follow these questions rigidly.

1. Am I making progress in listening? (Q1 : listening comprehension ability)

2. Do I become more focused in listening? (Q2: Directed attention)

3. Do I find listening comprehension is not as difficult as I thought? (Q2: Person knowledge)

4. Are there any changes on my understanding of listening? (Q2: Person knowledge)

5. Do I try to avoid English to Chinese Translation in my mind during listening? (Q2: avoiding mental translation)

6. Am I become less nervous during listening? (Q2: Person knowledge)

7. Am I become more confident in listening? (Q3: listening self-efficacy)

8. Are there any problems in my listening? What are the effective skills or methods to improve my listening? (Q2: Problem-solving)

APPENDIX N

EXAMPLE OF FEEDBACK

The feedback emphasizes learners' progress could be attributed to strategies they used. Also, learners are suggested to try some strategies to solve the problems they reported.

Thank you for your interesting reflections. In your reflection, I can see you have summarized many listening problems and skills. Some of these skills such as focusing on key information, prediction and concentrate before listening could lead to the progress of your listening comprehension.

I agree with your view to improve your listening confidence. Also, when you think the passage was fast, you could try to listen with a slower speed first and then listen with a normal speed.

I am very glad to see your reported progress. You have realized that your progress was due to the problem-solving process you did in the past weeks. When you feel difficult to concentrate, try to find a quiet place or listen to some classical music. Fighting!

I am very glad to see your reported progress again. some of the strategies you listed last time are helping with your progress. I agreed with what you mentioned about the usefulness of selective attention in improving your listening comprehension abilities. Besides, don't see the practice as any kind of testing, which may make your more anxious.

Well done, I look forward to reading your next reflection.

APPENDIX O

LISTENING MATERIALS

Week	Listening Topics	Source	Length	Theme	Types	ARI*
1	Migrant Families	Aljazeera English	2m35s	Family	News	9.9
	Father and Daughter reunite	YouTube	4m01s		News	3.1
2	The introvert and extrovert	YouTube	3m49s	Personality	Lecture	13.2
	Anxiety from Brexit	Aljazeera English	2m55s		News	9.1
3	Interview with Steve Jobs	YouTube	3m34s	Success	News	6.9
	Success of instant pot	YouTube	3m51s		News	6.3
4	Robots taking our jobs	Aljazeera English	3m03s	Career	News	9.2
	Veterans back to work	Fox news	3m25s		News	9.1
5	Walking back to solve problems	TED Talk	4m09s	Creativity	Lecture	3.8
	Thinking in a different way	TED Talk	2m56s		Lecture	7.4
6	Every kid deserves a Champion	TED Talk	5m05s	Champion	Lecture	2.8
	Men's 100-meter race	YouTube	3m45s		News	3.3
7	Transform noise to music	TED Talk	6m25s	Leisure	Lecture	6
	Travel around the world	Aljazeera English	2m38s		News	7.6
8	Live a zero-waste life	TEDx	5m01m	Environ-ment	Lecture	6.2
	Innovative waste management	CNN	3m05s		News	10.7
9	President's address to shuttle disaster	YouTube	3m19s	Disaster	News	10
	Japan earthquake	YouTube	3m35s		News	10.2
10	Geography and health	YouTube	5m28s	Health	Lecture	4.6
	Aflac's Duck eases kids with cancer	YouTube	3m24s		News	7.4
11	Mysterious underwater space	TED Talk	3m57s	Space	Lecture	13.4
	Rubbish in the space	Aljazeera English	2m57s		News	10.7
12	Renaissance art and architecture	TED Talk	2m41s	Art	Lecture	9.7
	Glimpse of Syrian beauty	VOA news	3m15s		News	12.7

*ARI means the Automated Readability Index, which was examined on the website https://www.webfx.com/tools/read-able/

APPENDIX P

EXTRA LISTENING MATERIALS FOR THE BG AND TG

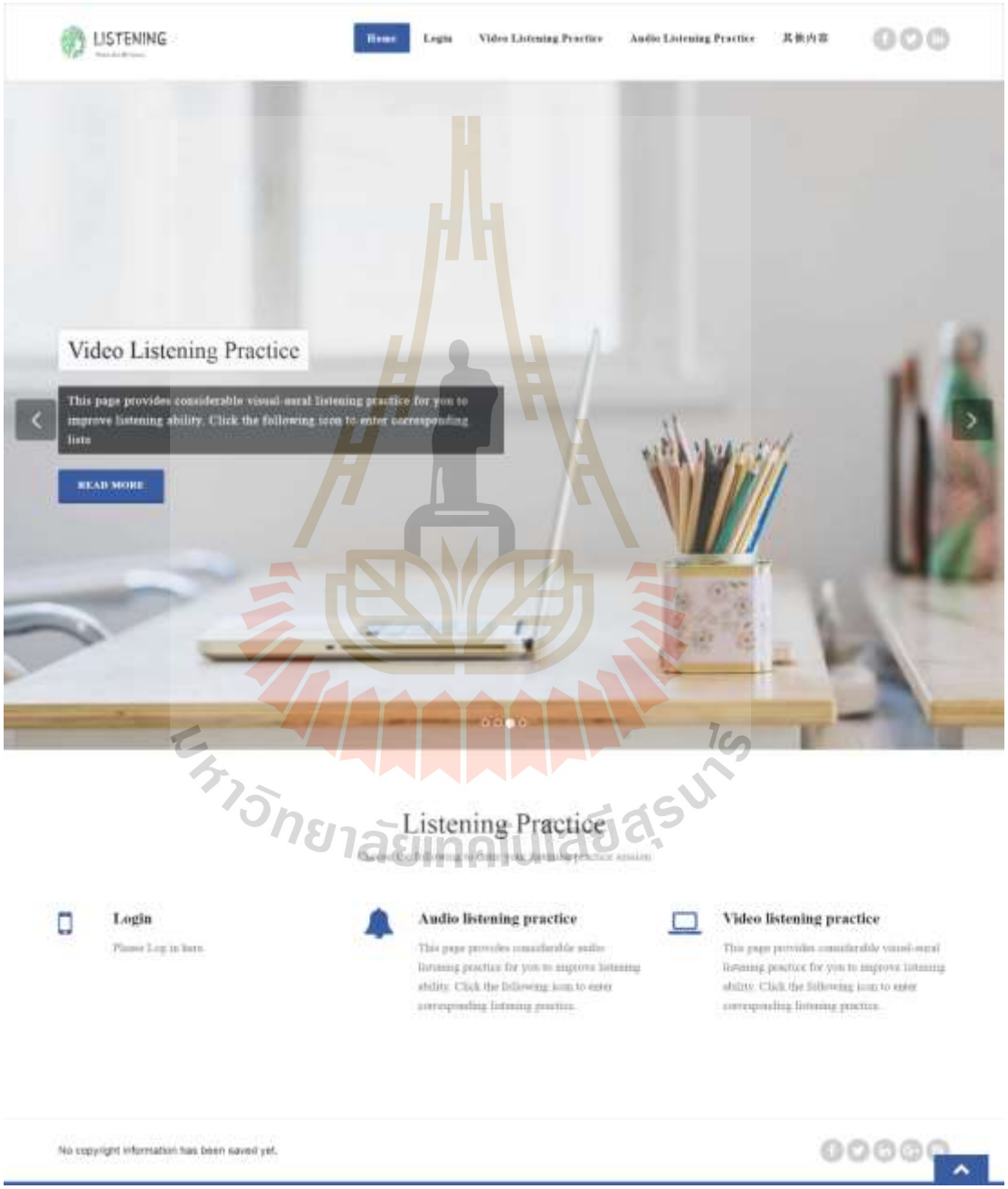
Week	Listening Topics	Source	Length	Types
1	Conversation on receptionist	TEM-4	2’39’’	Conversation
2	Conversation on Dennis Hutton	TEM-4	3’26’’	Conversation
3	Passage on deer	TEM-4	2’55’’	Lecture
4	Introduction to house	TEM-4	3’04’’	Passage
5	Passage on Janet James	TEM-4	3’04’’	Passage
6	Conversation between friends	TEM-4	2’56’’	Conversation
7	Conversation on girls’ high school	TEM-4	2’41’’	Conversation
8	Passage on Larry	TEM-4	3’20’’	Passage
9	Passage on Phillis Wheatley	TEM-4	3’04’’	Passage
10	Passage on humor	TEM-4	2’52’’	Passage
11	Conversation between neighborhoods	TEM-4	3’02’’	Conversation
12	Passage on Edgar Allen Poe	TEM-4	3’16’’	Passage

APPENDIX Q

LISTENING WEBSITE FOR THE MG

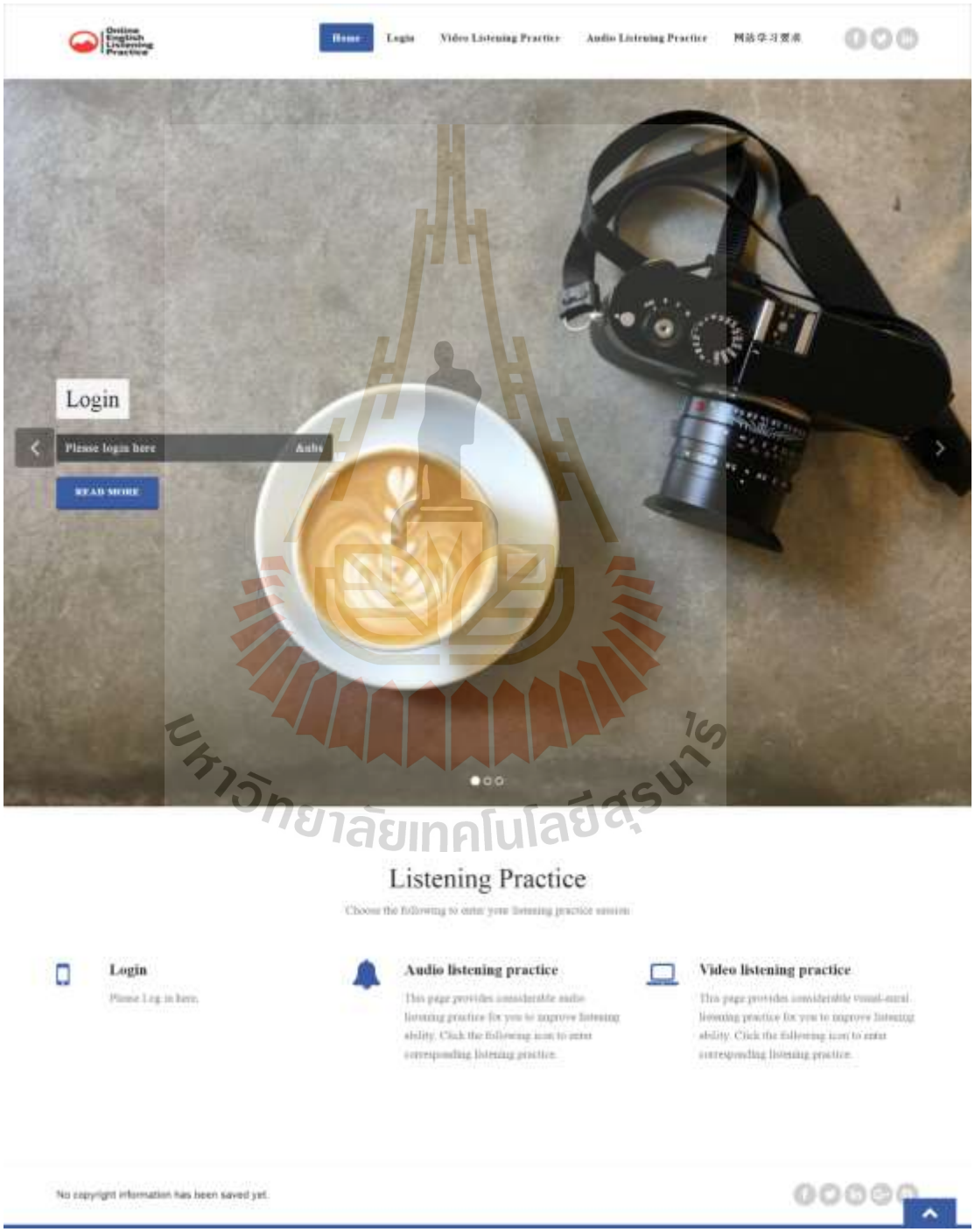
APPENDIX R

LISTENING WEBSITE FOR THE BG



APPENDIX S

LISTENING WEBSITE FOR THE TG



APPENDIX T

PRACTICE PLANS FOR THE MG

Week One Practice One

Topic	**Migrant Families**	**Duration**	**2'35''**
Objectives	To develop the listening comprehension ability To develop the use of metacognitive strategies To develop the metacognitive knowledge To develop the bottom-up skills		
Stage One Planning	**Learners completed following tasks before listening.**		**metacognitive awareness or skills to develop**
	a. Read the listening topic and some difficult words from the listening.		Planning
	b. Select your listening purpose. (make selection or supplement extra information)		Planning
	c. Write down what the topic reminds you of.		Planning
	d. Predict at least five content words or phrases		Planning
	e. Predict at least four pieces of information		Planning
	f. Predict the possible difficulties from the listening.		Planning/ person knowledge
	g. Select the strategies you could use in the upcoming listening. (make selections or adding your own strategies).		Planning/task and strategy knowledge
Stage Two First Listening	**Learners started listening for the first time. After that, they did the following tasks.**		**metacognitive awareness or skills to develop**
	a. Verify the number of your predicted words (making selections)		Monitoring/ evaluation
	b. Verify the number of your predicted information. (making selections)		Monitoring/ evaluation
	c. Modify your prediction and write three more pieces of information from the first listening.		Monitoring/ evaluation/ problem-solving
	d. Verify your predicted difficulties and the effectiveness of strategies (make selection)		Monitoring
	e. Write down the strategies you will use in the second listening.		Planning/ task and strategy knowledge

Stage Three Second Listening	**Learners started listening for the second time. After that, they did the following tasks.**	
	a. Write down two more pieces of information from the second listening.	Monitoring/ problem-solving
	b. Verify the effectiveness of predicted strategies. (make selections)	Monitoring/ evaluation/strategy knowledge
	c. Evaluate your understanding level and listen again if you need. (make selections)	Monitoring/ evaluation
	d. Answer (2 or 3) listening comprehension questions and summarize the listening contents.	Problem-solving
Stage Four Third Listening	**Learners started listening for the third time. After that, they did the following tasks.**	
	a. Complete the sentential dictation based on the listening transcripts.	Problem-solving/ Bottom-up skills
	b. Check the listening scripts.	Bottom-up skills
	c. Write down at least five difficult words or phrases from your listening.	Bottom-up skills
	d. Select the difficult levels of listening materials. (make selections)	Evaluation/ person knowledge
	e. Evaluate your listening performance. (make selections)	Evaluation/ person knowledge
Stage Five Listening Reflection	**Learners completed the following tasks**	
	a. Choose the difficulty you met during the listening. (make selections or add your own problems)	Problem-solving/ evaluation/ person knowledge
	b. Choose the effective strategies you use in the listening and you will use in the next listening practice. (make selections or add your own strategies)	Problem-solving/ evaluation/ task and strategy knowledge

Week One Practice Two

Topic	**Father and Daughter Reunion**	**Duration**	**4'01''**
Objectives	To develop the listening comprehension ability To develop the use of metacognitive strategies To develop the metacognitive knowledge To develop the bottom-up skills		
Stage One Planning	**Learners completed following tasks before listening.**		**metacognitive awareness or skills to develop**
	a. Read the listening topic and some difficult words from the listening.		Planning
	b. Select your listening purpose. (make selection or supplement extra information)		Planning
	c. Write down what the topic reminds you of.		Planning
	d. Predict at least five content words or phrases.		Planning
	e. Predict at least four pieces of information.		Planning
Stage Two First Listening	**Learners started listening for the first time. After that, they did the following tasks.**		**metacognitive awareness or skills to develop**
	a. Verify the number of your predicted words. (making selections)		Monitoring/ evaluation
	b. Verify the number of your predicted information. (making selections)		Monitoring/ evaluation
	c. Modify your prediction and write three more pieces of information from the first listening.		Monitoring/ evaluation/ problem-solving
Stage Three Second Listening	**Learners started listening for the second time. After that, they did the following tasks.**		
	a. Write down two more pieces of information from the second listening.		Monitoring/ problem-solving
	b. Verify the effectiveness of predicted strategies. (make selections)		Monitoring/ evaluation/strategy knowledge
	c. Answer (2 or 3) listening comprehension questions and summarize the listening contents.		Problem-solving
Stage Four Third Listening	**Learners started listening for the third time. After that, they did the following tasks.**		
	a. Read the transcript while listen		Bottom-up skills
	b. Write down at least five difficult words or phrases from your listening.		Bottom-up skills
	c. Select the difficult levels of listening materials. (make selections)		Evaluation/ person knowledge
	d. Evaluate your listening performance. (make selections)		Evaluation/ person knowledge

Stage Five Listening Reflection	**Learners completed the following tasks**	
	a. Choose the difficulty you met during the listening. (make selections or add your own problems)	Evaluation/ person knowledge
	b. Choose the effective strategies you use in the listening and you will use in the next listening practice. (make selections or add your own strategies)	Planning/ evaluation/ task strategy knowledge

- Each week, the MG was required to complete two sets of listening practice following the steps in the above table.

APPENDIX U

THE INTERFACE OF LISTENING PRACTICE IN THE MG WEBSITE

Week Ten - Practice One

Now you are on the journey of practice, Good Luck!!!

Before You Start

1. Enter your name : *

_____

2. Enter your student's ID *

_____

3. Please enter the start time : ___(Hour) : ___ (Minute) *

Planning Your Listening

Before starting listening, please carefully read about the **TOPIC** of the listening and some difficult **WORD OR EXPRESSIONS** you will meet (you can note them down on paper). Then, please answer the questions 1-6. （在正式开始听力之前，请仔细阅读以下的内容，并对听力的内容和方式进行预测，回答以下 6 个问题。）

You will hear a LECTURE (你将听到一篇演讲).

a. The Topic of this listening is about *Geography and health*”（该听力的话题为“地理与健康”）

b. Pay attention to the following difficult words or expressions you will meet in the listening (you can use a dictionary to look them up):

geographic, recuperate, Genetics, allergy, train wreck, atlases (地图册)

1. Select your purpose of this listening?

(You can choose more than one answer.) *

□ To have more fun in listening.
（变得更享受或喜爱听力）

□ To improve my listening ability.
(提升我听力能力）

□ To improve my listening confidence
(提升听力自信心)

□ To find my listening problems and try to solve them.
（解决和发现听力问题）

□ To try to take advantage of listening skills.
(学着将一些技巧用在听力中)

□ To make more progress
（取得更多地进步, 比上次听到更多的信息。）

□ Other goals, such as
(我有其他的听力目标：比如)_____*

2. What does the topic ---"Geography and health" remind you of? *

（简要地描述下该话题让你想起了什么）

_____

3. Write down at least five words or phrases (they should be nouns, verbs or adjectives) you may hear in the listening. (请写下至少 5 个你认为会出现在听力中的重要单词或词组，注意要是名词，动词和形容词或词组。) *

_____

4. Predict four pieces of information you may hear and marked with a..., b..., c...., d....

（请写下至少 4 条你认为会出现在听力中的信息，并在其前面标注序号。如 a,...; b,...; c, ...;d...) *

_____

5. Predict what difficulties you may meet in the following listening?

(预测一下你将会遇到哪些听力困难？) *

_____

6.Choose the skills you find effective in your listening? (Choose more than one)

（你觉得在本次听力过程会采取哪些听力策略,去解决这些困难？）

(You can choose more than one answer.) *

□ To listen with purposes and plans.
(带有目的性和计划性的听)

□ To make myself concentrated.
(使自己更加地专注)

□ To make predictions with background knowledge and verify these predictions.
(听之前充分利用背景知识进行预测，并对预测的内容进行确认)

□ To predict and infer unknown information during listening.
听(力中也要积极预测和推测未知的内容)

□ To keep myself confident in listening.
(保持自信心)

□ Not to give up even if I could not understand. Keep calm and listening again.
(听力中遇到听不懂的内容，不要放弃。保持平和心态，继续听)

□ To evaluate and reflect on my listening problems and skills after listening.
(听完后对自己听力问题和技巧进行评价和反思)

□ To avoid mental translation of each sentence during listening.
(避免将听力中的每个句子直接在脑海进行英汉翻译)

□ To take note of some key words quickly during listening.
(听得时候快速将一些关键句和词记下来)

□ To pay special attention some important words or sentences.
(专注一些关键词或关键句，可以适当忽略一些无关紧要的单词或句子)

□ Other skills, such as
(其他策略)：_____

First Listening

Now, please Click the top-left button to begin your first listening; while listening, you are suggested to write down some important information. （点击右上角听力按钮，现在开始进行第一遍听力，听完后才可以进行下一页练习，听的时候可以拿起纸笔记录一些重要的信息。）

After First Listening

Please answer the following question to verify and evaluate your listening.
第一遍听力结束，请回答下面问题。

1. Select how many words you correctly predicted? (you can read your predictions below.) 听力中出现了几个你预测的单词。 *

○1-2 words
○3-5 words
○more than 5 words
○None
Your predictions: [q6]

2. Select how many pieces of information you corrected selected? (You can look at your predictions below.) 你预测对了几条信息。 *

○One
○Two
○Three
○More than three
○None
Your predictions: [q7]

3. Write three more pieces of information and modify your previous prediction below. (这里写下至少 3 条之前没有预测到的信息, 并标明序号。) *

_____

4. Did you meet the difficulties you mentioned before? （你遇到了之前所提到的困难吗？） *

○ Yes, I did. (遇到了)
○ No, I didn't. (没有遇到)
○I met other difficulties, such as (我遇到其他的困难，比如)
_____ *

5. Do you use the strategies you mentioned before? Why? (你用到之前想到的策略了吗？) *

○ Yes(有)
○ No, because (没有，因为) _____ *

6. What skills you will use in your second listening? (在第二遍听力过程中，你决定要用哪些技巧和策略来听懂更多的内容呢？) *

_____

Second Listening

Now Click the **top-left button** again and begin your second listening. After second listening, please answer the questions following on the next page（点击右上角听力按钮，现在开始进行第二遍听力，听完后才可以进行下一页练习。）.

1. Please write the information you failed to predict or understand in your first listening (at least two pieces of information) 请写至少两条下上次没有听到信息，并标注序号。 *

_____

2. Do the skills you mentioned before improve your second listening? why?（之前提到的策略是否提升了第二次听力理解？） *

○Yes, because _____

○No, because _____

3. Select how much of the listening you can understand now?（你觉得现在你理解了多少？） *

○A. Almost nothing（几乎听不懂）

○B. Less than 40 % （少于 40%）

○C. About 50 % （大概一半）

○D. More than 60 % （超过 60%）

○E. Almost all （几乎全部听懂）

*if learners choose A, B, C, this sentence will appear to remind them to listen again.

It seems you fail to reach a good comprehension and please click the top-left button to listen again before moving on.

Please answer the following content-based questions. after that, you could choose to read the answers.

4. What did doctors often neglect, according to the speaker?
（根据该演讲者，医生们经常会忽视什么？）

_____

5.What are the two prescriptions the speaker gave in the video?
（演讲者开了哪两个药方或给了哪两个建议？）

_____

6. Briefly summarize the listening(总结一下这篇听力内容)？ *

Hint: You could use the linking words in the summary (firstly, secondly, then, after that, finally)

_____

* learners could choose to read the answers here

Third listening 😎😎

In the third listening, you are going to work on some listening tasks below.

（下面进行第三遍听力。在第三遍听力中，你需要进行一个听写填空的练习，即根据录音，填补下面的原文。）

1. Listen and fill in the blanks (write the answers below the passage, and you can listen more than once).

Tip: Write down on the paper first and then fill in the blanks.（请将答案写在原文后面的空格上，建议同学们先写在纸上，再输入这里。）

Can geographic information make you healthy? In 2001 I got hit by a train. My train was a heart attack. I found myself in a hospital in an intensive-care ward, recuperating from emergency surgery. And I suddenly realized something: that I was completely in the dark. I started asking my questions, "Well, why me?" "Why now?" "Why here?" "Could my doctor have warned me?" So, what I want to do here in the few minutes I have with you is really talk about what is the formula for life and good health. Genetics, lifestyle and environment. That's going to sort of contain our risks,___1____. Well, I understand the genetics and lifestyle part. And you know why I understand that? ____2____. Have you ever had to fill out those long, legal-size forms in your doctor's office? I mean, if you're lucky enough you get to do it more than once, right? (Laughter) Do it over and over again. And they ask you questions about your lifestyle and your family history, your medication history, your surgical history, your allergy history ... did I forget any history? But this part of the equation I didn't really get, and I don't think my physicians really get this part of the equation. What does that mean, my environment? Well, it can mean a lot of things. This is my life. These are my life places. We all have these. While I'm talking I'd like you to also be thinking about: How many places have you lived? Just think about that, you know, wander through your life thinking about this. And you realize that you spend it in a variety of different places. You spend it at rest and you spend it at work. And if you're like me, you're in an airplane a good portion of your time, traveling some place. So, it's not really simple when

somebody asks you, "Where do you live, where do you work, and where do you spend all your time? And where do you expose yourselves to risks that maybe perhaps you don't even see?" Well, when I have done this on myself, I always come to the conclusion that ____3___. And I don't wander far from that place for a majority of my time, even though I'm an extensive global trekker. Look at the kind of data that's available. This data's from all over the world -- countries spend billions of dollars investing in this kind of research. Now, I've circled the places where I've been. Well, by design, if I wanted to have a heart attack I'd been in the right places. Right? So, how many people are in the white? How many people in the room have spent the majority of their life in the white space? Anybody? Boy, you're lucky. How many have spent it in the red places? Oh, not so lucky. There are thousands of these kinds of maps that are displayed in atlases all over the world. They give us some sense of what's going to be our train wreck. But none of that's in my medical record. And it's not in yours either. What I'd like to leave you for are two prescriptions. Okay, number one is,___4____. It's called geomedicine. There are about a half a dozen programs in the world right now that are focused on this. And they're in the early stages of development. These programs need to be supported, and we need to teach our future doctors of the world the importance of some of the information, I've shared here with you today. The second thing we need to do is while we're spending billions and billions of dollars all over the world building an electronic health record, we make sure we put a place history inside that medical record. It not only will be important for the physician; it will be important for the researchers that now will have huge samples to draw upon. But it will also be useful for us. I could have made the decision, if I had this information, not to move to the ozone capital of the United States, couldn't I? I could make that decision. Or I could negotiate with my employer to make that decision in the best interest of myself and my company. With that, I would like to just say that Jack Lord said this almost 10 years ago. Just look at that for a minute. That was what the conclusion of the Dartmouth Atlas of Healthcare was about, was saying that we can explain the geographic variations that occur in disease, in illness, in wellness, and how our healthcare system actually operates. That was what he was talking about on that quote. And I would say he got it right almost a decade ago. So, I'd very much like to see us begin to really seize this as an opportunity to get this into our medical records. So with that, I'll leave you that in my particular view of view of health: Geography always matters. And ___5____. Thank you. (Applause)

[矩阵文本题] *

1	_____
2	_____
3	_____
4	_____
5	_____

* learners could choose to check their answers with the transcripts.

Transcript

Can geographic information make you healthy? In 2001 I got hit by a train. My train was a heart attack. I found myself in a hospital in an intensive-care ward, recuperating from emergency surgery. And I suddenly realized something: that I was completely in the dark. I started asking my questions, "Well, why me?" "Why now?" "Why here?" "Could my doctor have warned me?" So, what I want to do here in the few minutes I have with you is really talk about what is the formula for life and good health. Genetics, lifestyle and environment. That's going to sort of contain our risks, ○1and if we manage those risks, we're going to live a good life and a good healthy life. Well, I understand the genetics and lifestyle part. And you know why I understand that?○2 Because my physicians constantly ask me questions about this. Have you ever had to fill out those long, legal-size forms in your doctor's office? I mean, if you're lucky enough you get to do it more than once, right? (Laughter) Do it over and over again. And they ask you questions about your lifestyle and your family history, your medication history, your surgical history, your allergy history ... did I forget any history? But this part of the equation I didn't really get, and I don't think my physicians really get this part of the equation. What does that mean, my environment? Well, it can mean a lot of things. This is my life. These are my life places. We all have these. While I'm talking I'd like you to also be thinking about: How many places have you lived? Just think about that, you know, wander through your life thinking about this. And you realize that you spend it in a variety of different places. You spend it at rest and you spend it at work. And if you're like me, you're in an airplane a good portion of your time, traveling some place. So, it's not really simple when somebody asks you, "Where do you live, where do you work, and where do you spend all your time? And where do you expose yourselves to risks that maybe perhaps you don't even see?" Well, when I have done this on myself, I always come to the conclusion that ○3I spend about 75 percent of my time relatively in a small number of places. And I don't wander far from that place for a majority of

my time, even though I'm an extensive global trekker. Look at the kind of data that's available. This data's from all over the world -- countries spend billions of dollars investing in this kind of research. Now, I've circled the places where I've been. Well, by design, if I wanted to have a heart attack I'd been in the right places. Right? So, how many people are in the white? How many people in the room have spent the majority of their life in the white space? Anybody? Boy, you're lucky. How many have spent it in the red places? Oh, not so lucky. There are thousands of these kinds of maps that are displayed in atlases all over the world. They give us some sense of what's going to be our train wreck. But none of that's in my medical record. And it's not in yours either. What I'd like to leave you for are two prescriptions. Okay, number one is, ○4we must teach physicians about the value of geographical information. It's called geomedicine. There are about a half a dozen programs in the world right now that are focused on this. And they're in the early stages of development. These programs need to be supported, and we need to teach our future doctors of the world the importance of some of the information, I've shared here with you today. The second thing we need to do is while we're spending billions and billions of dollars all over the world building an electronic health record, we make sure we put a place history inside that medical record. It not only will be important for the physician; it will be important for the researchers that now will have huge samples to draw upon. But it will also be useful for us. I could have made the decision, if I had this information, not to move to the ozone capital of the United States, couldn't I? I could make that decision. Or I could negotiate with my employer to make that decision in the best interest of myself and my company. With that, I would like to just say that Jack Lord said this almost 10 years ago. Just look at that for a minute. That was what the conclusion of the Dartmouth Atlas of Healthcare was about, was saying that we can explain the geographic variations that occur in disease, in illness, in wellness, and how our healthcare system actually operates. That was what he was talking about on that quote. And I would say he got it right almost a decade ago. So, I'd very much like to see us begin to really seize this as an opportunity to get this into our medical records. So with that, I'll leave you that in my particular view of view of health: Geography always matters. And ○5I believe that geographic information can make both you and me very healthy. Thank you. (Applause)

3. Look at the listening script above, write down the most difficult words or expressions (usually you should write at least five).（哪些单词和词组阻碍了你的听力, 把它们写下来并读一下。至少写 5 个） *

_____

4.Select the difficulty level of the listening material?（你认为这篇听力有多难吗？） *

○A. Very Easy

○B. Easy

○C. Neutral

○D. Difficult

○E. Very difficulty

5. Are you satisfied with the present listening，why? *

○A. Strongly Satisfied, because _____

○B. Satisfied, because _____

○C. Neutral, because _____

○D. Dissatisfied, because _____

○E. Strongly Dissatisfied, because _____

Reflection on your listening

Now think carefully about your performance in the listening and make some reflections.

1. Choose the difficulties you met in the listening practice? (多选)（总结一下本次听力中都遇到了哪些困难？）(You can choose more than one answer.) *

□ I am not familiar with the topic. (我对话题不太熟悉)

□ I cannot recognize words we know. （我无法听懂一些认识的单词）

□ I have difficulty in catching up with the listening speed. （我很难跟上听力的速度

□ I fail to concentrate while listening. （听的过程中，我很难专注）

□ I feel nervous while listening. （听的时候，我感到紧张）

□ I will quickly forget what is heard. （我很快就忘了之前听到的内容）

□ I will understand the words but not the sentences. （我能听懂单词，但听不懂

□ I will neglect other parts when thinking about meaning of some parts. （想着某

□ others （其他的问题） _____

2.Choose the skills you find effective in your listening? (多选)（本次听力之后，你觉得哪些技巧可以提升听力？ 你可以在"其他"一栏填写其他的技巧和策略）  (You can choose more than one answer.) *

□ To improve my listening confidence. (继续提升自己的听力自信心)

□ To become concentrated. (变得专注)

□To make predictions with background knowledge and verify these predictions. (听之前充分利用背景知识进行预测，并对预测的内容进行确认)

□ To make my listening plans. (建立自己的听力计划)

□To predict and infer unknown information during listening. (听力中也要积极预测和推测未知的内容)

□To pay special attention some important words or sentences. (专注一些关键词或关键句，可以适当忽略一些无关紧要的单词或句子)

□Not to give up even if I could not understand. Keep calm and listening again. (听力中遇到听不懂的内容，不要放弃。保持平和心态，继续听)

□To avoid mental translation of each sentence during listening. (避免将听力中的每个句子直接在脑海进行英汉翻译)

□To take note of some key words quickly during listening. (听得时候快速将一些关键句和词记下来)

□To evaluate and reflect on my listening problems and skills after listening. (听完后对自己听力问题和技巧进行评价和反思)

□Other skills, such as (其他策略)： _____

3. Please pay attention to the difficulties and skills in the present listening. Think about how to solve these difficulties and try to apply these skills to the next listening.

About to Finish

You are about to finish the practice, and before leaving the listening practice, you can listen again if you want.

1. Choose the ending time 请选择听力结束时间：___：___ *

2. This is the end of listening practice. See you next time!! 本次听力练习到此结束，谢谢你的配合， 下次再见哦！

Week Ten - Practice Two

Now you are on the journey of practice, Good Luck!!!

Before You Start

1. Enter your name : *

_____

2. Enter your student's ID *

_____

3. Please enter the start time : ___(Hour) : ___ (Minute) *

Planning Your Listening

Before starting listening, please carefully read about the **TOPIC** of the listening and some difficult **WORD OR EXPRESSIONS** you will meet (you can note them down on paper). Then, please answer the questions 1-6.

You will hear a piece of news (你将听到一则新闻).

1. The Topic of this listening is about "Aflac Duck eases children with cancer" （该听力的话题为"用于减轻癌症中孩子痛苦的 Aflac duck 非洲鸭"）

2. Pay attention to the following difficult words or expressions you will meet in the listening (you can use a dictionary to look them up):

diagnosed, daunting process, bathe, leverage (利用), iterate (反复运作，调试).

1. Select your purpose of this listening?
[多选题] *

□To try to take advantage of listening skills. (学着将一些技巧用在听力中)

□To improve my listening ability.（提升我听力能力）

□To improve my listening confidence (提升听力自信心)

□To have more fun in listening.（变得更享受或喜爱听力）

□To find my listening problems and try to solve them.（解决和发现听力问题）

□To make more progress（取得更多地进步, 比上次听到更多的信息。）

□我有其他的听力目标：比如 _____*

2. What does the topic --- "Aflac Duck eases children with cancer" remind you of?

_____

3. Write down at least five words or phrases (they should be nouns, verbs or adjectives) you may hear in the listening. (请写下至少 5 个你认为会出现在听力中的重要单词或词组，注意要是名词，动词和形容词或词组。) *

_____

4. Predict four pieces of information you may hear and marked with a..., b..., c...., d.... (请写下至少 4 条你认为会出现在听力中的信息，并在其前面标注序号。如 a,...; b,...; c, ...;d...) *

_____

First Listening

Now, please Click the top-left button to begin your first listening; while listening, you are suggested to write down some important information. （点击右上角听力按钮，现在开始进行第一遍听力，听完后才可以进行下一页练习，听的时候可以拿起纸笔记录一些重要的信息。）

After First Listening

Please answer the following question to verify and evaluate your listening.
第一遍听力结束，请回答下面问题。

1. Select how many words you correctly predicted? (you can read your predictions below.)听力中出现了几个你预测的单词。 *

○1-2 words
○3-5 words

○more than 5 words
○None
Your predictions: [q6]

2. Select how many pieces of information you corrected selected? (You can look at your predictions below.) 你预测对了几条信息。 *

○One
○Two
○Three
○More than three
○None
Your predictions: [q7]

3. Write three more pieces of information and modify your previous prediction below. (这里写下至少 3 条之前没有预测到的信息, 并标明序号。) *

_____

Second Listening

Now Click the **top-left button** again and begin your second listening. After second listening, please answer the questions following on the next page.（点击右上角听力按钮，现在开始进行第二遍听力，听完后才可以进行下一页练习。）

1. Please write the information you failed to predict or understand in your first listening (at least two pieces of information) 请写至少两条下上次没有听到信息，并标注序号。 *

_____

2. Select how much of the listening you can understand now?（你觉得现在你理解了多少？） *

○A. Almost nothing（几乎听不懂）

○B. Less than 40 %（少于 40%）

○C. About 50 %（大概一半）

○D. More than 60 %（超过 60%）

○E. Almost all（几乎全部听懂）

*if learners choose A, B, C, this sentence will appear to remind them to listen again.

It seems you fail to reach a good comprehension and please click the top-left button to listen again before moving on.

Please answer the following content-based questions. after that, you could choose to read the answers.

3. How can the Aflac duck ease children' pains in the cancer treatment? （Aflac duck是如何减轻癌症中孩子的痛苦的？）*

_____

4. What do the workers do to the ducks before they are shipping? （工作人员在这些鸭子运输和寄送前会做些什么？）*

_____

5. Please summarize the listening.（请总结下这篇听力内容。）Hint: You could use the linking words in the summary (firstly, secondly, then, after that, finally)

_____

* learners could choose to read the answers here

Third listening 😎😎

In the third listening, you are going to work on some listening tasks below. （在第三遍听力中，你需要完成以下听力任务。）

1. Please read the script and listen to the video at the same time (you can do this as many times as you want).（现在你要做的是在听听力的同时，阅读下面的听力文本，要确保听读同时进行, 你可以反复多读几遍）

What if we could make a change in the lives of children with cancer right now. I was told it I'm sorry your daughter has cancer, and I was just in total shock. Everything's really new in the beginning and I have no idea what to expect. Each year more than 15,000 kids are diagnosed with cancer in the US and the average length of treatment is a thousand days. And so we thought about the need for emotional comfort for these children, and now we have the opportunity to bring the latest in social robotics into the field of medicine, bringing comfort and joy through this daunting process. What we try to do here is to give children the tools to understand what's going on and to empower them. For our family and for Wyatt the best use would be to help them communicate and a friend to comfort him when he's having treatment. Play is natural to a child. Play is really how they learn and how they process, so we leverage play and some of the latest technology to create healthcare tools for kids with illness. Everybody knows the Aflac duck, we wanted to bring the Aflac duck to life into a caring companion for children with cancer. It responds and moves in a lifelike and natural way, they could feed their Docks, bathe their ducks and when you tap these different cards to the Ducks chest. It behaves with that feeling to help children communicate their feelings. By the time the duck is shipping, we will have spent 18 months designing testing and iterating with hundreds of families doctors and experts. [Music] First and foremost, the duck is a constant companion for children throughout their treatment journey. [He's kind of cute. Can this one be just breathing, I am going to match the breathing. Just a tiny bit faster.] perhaps the most important of all, the Ducks can share in the patient's experience. I think it's so awesome. You just feel comfort, you know, with something like that. I really like the Aflec to be your friend to help you get through all your tough times here. I think the duck has a potential to

have a huge impact on our patients, our families and our health care program as a whole. If she had something to sit with her, something take her through it, a friend that will always be there and it would help a lot of kids.
-Have you read the above transcript?

-Yes

-No

2. Look at the listening script above, write down the most difficult words or expressions (usually you should write at least FIVE words).（哪些单词和词组阻碍了你的听力, 把它们写下来并读一下。至少写 5 个）*

_____

3.Select the difficulty level of the listening material?（你认为这篇听力有多难吗？）*

○A. Very Easy

○B. Easy

○C. Neutral

○D. Difficult

○E. Very difficulty

4. Are you satisfied with the present listening，why? (你对本次的听力表现满意吗？) *

○A. Strongly Satisfied, because _____

○B. Satisfied, because _____

○C. Neutral, because _____

○D. Dissatisfied, because _____

○E. Strongly Dissatisfied, because _____

Reflection on your listening

Now think carefully about your work in the listening and make some reflections.

1. Choose the difficulties you met in the listening practice? (多选)（总结一下本次听力中都遇到了哪些困难？）[多选题] *

□I am not familiar with the topic. (我对话题不太熟悉)

□I cannot recognize words we know. （我无法听懂一些认识的单词）

□I have difficulty in catching up with the listening speed. （我很难跟上听力的速度）

□I fail to concentrate while listening. （听的过程中，我很难专注）

□I feel nervous while listening. （听的时候，我感到紧张）

□I will quickly forget what is heard. （我很快就忘了之前听到的内容）

□I will understand the words but not the sentences.（我能听懂单词，但听不懂句子）

□I will neglect other parts when thinking about meaning of some parts. （想着某一部分的时候，会忽略听其他部分）

□others （我遇到一些其他的问题）_____*

2.Choose the skills you find effective in your listening? (多选)（本次听力之后，你觉得哪些技巧可以提升听力？ 你可以在"其他"一栏填写其他的技巧和策略）[多选题] *

□ To keep myself on track, when I am distracted. (在分心的时候，要使自己更加地专注)
□To make predictions with background knowledge and verify these predictions. (听之前充分利用背景知识进行预测，并对预测的内容进行确认)
□To avoid mental translation of each sentence during listening. (避免将听力中的每个句子直接在脑海进行英汉翻译)
□To improve my listening confidence. (继续提升自己的听力自信心)
□ To Listen together with my friends. (和同伴一起听)
□To pay special attention some important words or sentences. (专注一些关键词或关键句，可以适当忽略一些无关紧要的单词或句子)
□Not to give up even if I could not understand. Keep calm and listening again. (听力中遇到听不懂的内容，不要放弃。保持平和心态，继续听)
□ To make my listening plans. (建立自己的听力计划)

□To predict and infer unknown information during listening. (听力中也要积极预测和推测未知的内容)
□To avoid mental translation of each sentence during listening. (避免将听力中的每个句子直接在脑海进行英汉翻译)
□To take notes during listening. (听得时候做一些记录)

□To evaluate and reflect on my listening problems and skills after listening. (听完后对自己听力问题和技巧进行评价和反思)
□ To Plan some strategies before listening. (听之前想一下如何利用一些听力技巧)

□ To Listen to some classical music and reduce my anxiety. (听之前，听一些音乐让自己放松下来，不要紧张)
□Other skills, such as (其他策略)：_____

3. Please pay attention to the difficulties and skills in the present listening. Think about how to solve these difficulties and make more use of these skills in the next listening.

About to Finish

You are about to finish the practice, and before leaving the listening practice, you can listen again if you want.

1. Choose the ending time 请选择时间：___：___ *

2. This is the end of listening practice. See you next time!! 本次听力练习到此结束，谢谢你的配合， 下次再见哦！

APPENDIX V

PRACTICE PLANS FOR THE BG

Listening practice one			
Objectives	**To develop the listening comprehension ability and bottom-up skills**		
Topic	**Migrant Families**	**Duration**	**2'35''**
Procedures	a. Learners read the listening topic and some difficult words from the listening. b. Learners started to listen. (they were advised to listen for twice) c. After listening, they answered (2 or 3) listening comprehension questions and summarized the listening contents. d. They checked the answers e. They did the sentential dictation based on the listening transcripts. f. They checked the transcripts.		
Listening practice two			
Topic	**Mother's love**	**Duration**	**4'01''**
Procedures	a. Learners read the listening topic and some difficult words from the listening. b. Learners started to listen. (they were advised to listen for twice) c. After listening, they answered (2 or 3) listening comprehension questions and summarized the listening contents. d. They checked the answers. e. They read the transcript while listening again.		
Listening practice three: Test-based practice			
Topic	**Conversation on receptionist**	**Duration**	**2'39''**
	a. Learners listened to the audio and read the multiple-choice items. b. Learners started to listen. c. After they listened, Answer (3 or 4) listening comprehension questions. d. They checked the answers and transcripts.		

- Each week, the BG was required to complete the three sets of listening practice, following the steps in the above table.

APPENDIX W

THE INTERFACE OF LISTENING PRACTICE IN THE BG WEBSITE

Video listening – Week ten

Your name (您的姓名)： *

_____

Your student ID (你的学号) *

_____

Start time：___：___ *

Listening one

Now you are going to watch the first video as least two times and answer the following questions. The first video was about "Geography and health" and you could check the following words that will appear in the listening.

geographic, recuperate, Genetics, allergy, train wreck, atlases (地图册)

1. What did doctors often neglect, according to the speaker? （根据该演讲者，医生们经常会忽视什么？）*

_____

2.What are the two prescriptions the speaker gave in the video? （演讲者开了哪两个药方或给了哪两个建议？）*

_____

3. Briefly summarize the content. *

（例如：该听力首先提到什么，然后讲到什么，最后说明了什么）

_____

*Learners could choose to check the answers here.

In this section you are going to listen again and filling the blanks.

Write down on the paper first and then fill in the blanks. (请将答案写在原文后面的空格上，建议同学们先写在纸上，再输入这里)

Can geographic information make you healthy? In 2001 I got hit by a train. My train was a heart attack. I found myself in a hospital in an intensive-care ward, recuperating from emergency surgery. And I suddenly realized something: that I was completely in the dark. I started asking my questions, "Well, why me?" "Why now?" "Why here?" "Could my doctor have warned me?" So, what I want to do here in the few minutes I have with you is really talk about what is the formula for life and good health. Genetics, lifestyle and environment. That's going to sort of contain our risks,___1____. Well, I understand the genetics and lifestyle part. And you know why I understand that? ____2____. Have you ever had to fill out those long, legal-size forms in your doctor's office? I mean, if you're lucky enough you get to do it more than once, right? (Laughter) Do it over and over again. And they ask you questions about your lifestyle and your family history, your medication history, your surgical history, your allergy history ... did I forget any history? But this part of the equation I didn't really get, and I don't think my physicians really get this part of the equation. What does that mean, my environment? Well, it can mean a lot of things. This is my life. These are my life places. We all have these. While I'm talking I'd like you to also be thinking about: How many places have you lived? Just think about that, you know, wander through your life thinking about this. And you realize that you spend it in a variety of different places. You spend it at rest and you spend it at work. And if you're like me, you're in an airplane a good portion of your time, traveling some place. So, it's not really simple when somebody asks you, "Where do you live, where do you work, and where do you spend all your time? And where do you expose yourselves to risks that maybe perhaps you don't even see?" Well, when I have done this on myself, I always come to the conclusion that ____3___. And I don't wander far from that place for a majority of my time, even though I'm an extensive global trekker. Look at the kind of data that's available. This data's from all over the world -- countries spend billions of dollars investing in this kind of research. Now, I've circled the places where I've been. Well, by design, if I wanted to have a heart attack I'd been in the right places. Right? So, how many people are in the white? How many people in the room have spent the majority of their life in the white space? Anybody? Boy, you're lucky. How many have spent it in the red places? Oh, not so lucky. There are thousands of these kinds of maps that are displayed in atlases all over the world. They give us some sense of what's going to be our train wreck. But none of that's in my medical record. And it's not in yours either. What I'd like to leave you for are two prescriptions. Okay, number one is,___4____. It's called geomedicine. There are about a half a dozen programs in the world right now that are focused on this. And they're in the early stages of development. These programs need to be supported, and we need to teach our future doctors of the world the importance of some of the information, I've shared here with you today. The second thing we need to do is while we're spending billions

and billions of dollars all over the world building an electronic health record, we make sure we put a place history inside that medical record. It not only will be important for the physician; it will be important for the researchers that now will have huge samples to draw upon. But it will also be useful for us. I could have made the decision, if I had this information, not to move to the ozone capital of the United States, couldn't I? I could make that decision. Or I could negotiate with my employer to make that decision in the best interest of myself and my company. With that, I would like to just say that Jack Lord said this almost 10 years ago. Just look at that for a minute. That was what the conclusion of the Dartmouth Atlas of Healthcare was about, was saying that we can explain the geographic variations that occur in disease, in illness, in wellness, and how our healthcare system actually operates. That was what he was talking about on that quote. And I would say he got it right almost a decade ago. So, I'd very much like to see us begin to really seize this as an opportunity to get this into our medical records. So with that, I'll leave you that in my particular view of view of health: Geography always matters. And ___5____. Thank you. (Applause)

[矩阵文本题] *

1	_____
2	_____
3	_____
4	_____
5	_____

* learners could choose to read the transcript.

Listening two

Now you are going to watch the first video as least two times and answer the following questions. The first video was about “Aflac Duck eases children with cancer” and you could check the following words that will appear in the listening. diagnosed, daunting process, bathe, leverage (利用), iterate (反复运作，调试).

1. How can the Aflac duck ease children' pains in the cancer treatment? （Aflac duck 是如何减轻癌症中孩子的痛苦的？） *

_____

2. What do the workers do to the ducks before they are shipping? （工作人员在这些鸭子运输和寄送前会做些什么？）*

_____

4. Briefly summarize the content. *

（例如：该听力首先提到什么，然后讲到什么，最后说明了什么）

_____

*Learners could check the answers here.

Now you are required to a reading-while-listening task. Please listen to the video and at the same time read the following transcript. (You can try to do this many times)

What if we could make a change in the lives of children with cancer right now. I was told it I'm sorry your daughter has cancer, and I was just in total shock. Everything's really new in the beginning and I have no idea what to expect. Each year more than 15,000 kids are diagnosed with cancer in the US and the average length of treatment is a thousand days. And so we thought about the need for emotional comfort for these children, and now we have the opportunity to bring the latest in social robotics into the field of medicine, bringing comfort and joy through this daunting process. What we try to do here is to give children the tools to understand what's going on and to empower them. For our family and for Wyatt the best use would be to help them communicate and a friend to comfort him when he's having treatment. Play is natural to a child. Play is really how they learn and how they process, so we leverage play and some of the latest technology to create healthcare tools for kids with illness. Everybody knows the Aflac duck, we wanted to bring the Aflac duck to life into a caring companion for children with cancer. It responds and moves in a lifelike and natural way, they could feed their Docks, bathe their ducks and when you tap these different cards to the Ducks chest. It behaves with that feeling to help children communicate their feelings. By the time the duck is shipping, we will have spent 18 months designing testing and iterating with hundreds of family's doctors and experts. [Music] First and foremost, the duck is a constant companion for children throughout their treatment journey. [He's kind of cute. Can this one be just breathing; I am going to match the breathing. Just a tiny bit faster.] perhaps the most important of all, the Ducks can share in the patient's experience. I think it's so awesome. You just feel comfort, you know, with something like that. I really like the Aflec to be your friend to help you get through all your tough times here. I think the duck has a potential to have a huge impact on our patients, our families and our health care program as a whole. If she had something to sit with her, something that takes her through it, a friend that will always be there and it would help a lot of kids. [Music]

Have you read the above transcript? (你是否已经根据录音读完以上听力文字) [单选题] *

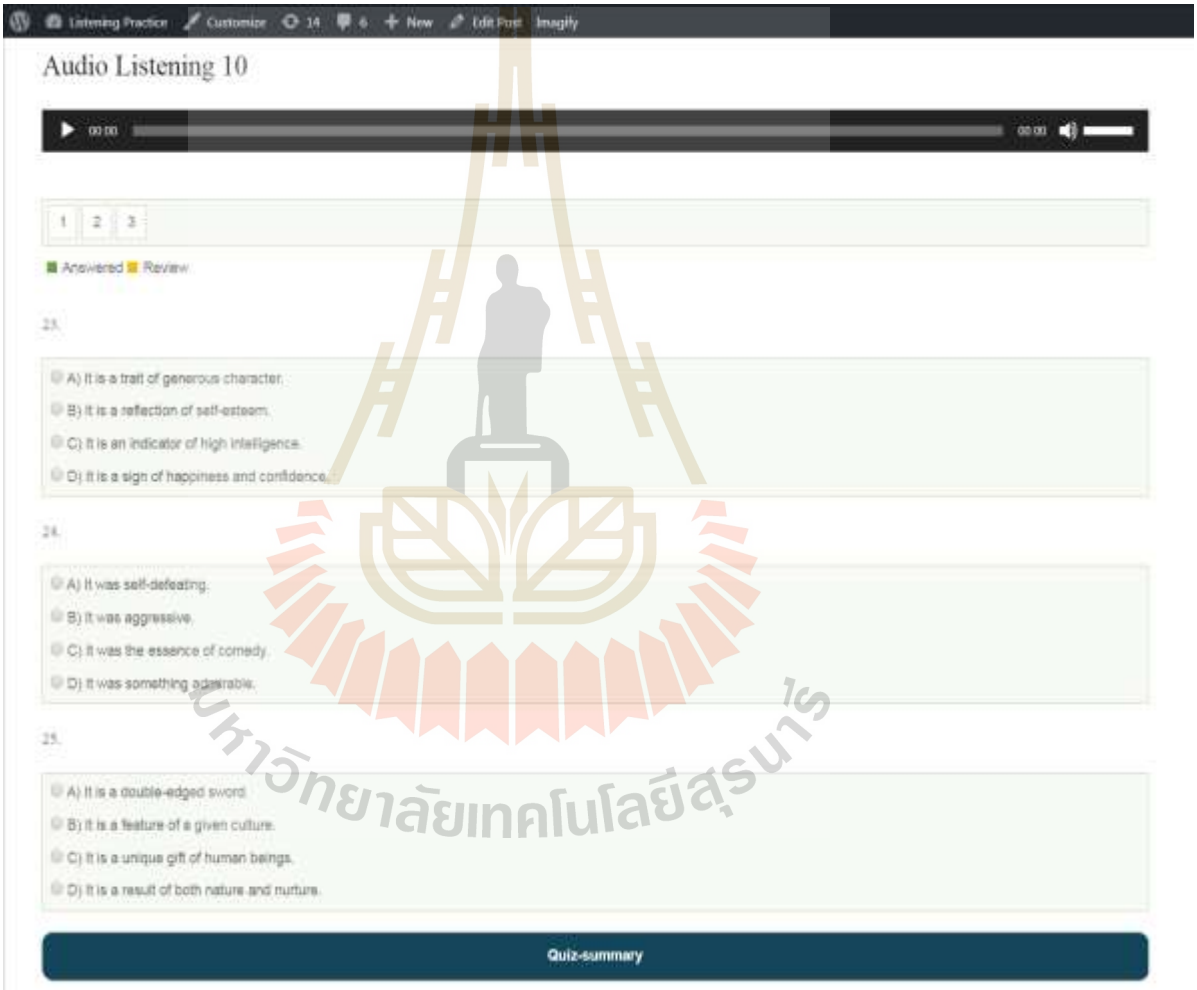
○Yes

○No

This is the end of the listening practice, please input the ending time and click “submit” button below. (练习到此结束，请填写结束时间并点击下面的 submit 键提交)

Ending time：___：___ *

Audio listening - Week ten



APPENDIX X

PRACTICE PLANS FOR THE TG

Listening practice one			
Objectives	**To develop the listening comprehension ability**		
Topic	**Migrant Families**	**Duration**	**2'35''**
Procedures	a. Learners read the listening topic and some difficult words from the listening. b. Learners started to listen. (they were advised to listen for three times) c. After listening, they answered (2 or 3) listening comprehension questions and summarized the listening contents. d. They checked the answers and transcripts.		
Listening practice two			
Topic	**Father and Daughter Reunion**	**Duration**	**4'01''**
Procedures	a. Learners read the listening topic and some difficult words from the listening. b. Learners started to listen. (they were advised to listen for three times) c. After listening, they answered (2 or 3) listening comprehension questions and summarized the listening contents. d. They checked the answers and transcripts.		
Listening practice three: Test-based practice			
Topic	**Conversation on receptionist**	**Duration**	**2'39''**
	a. Learners listened to the audio and read the multiple-choice items. b. Learners started to listen. c. After they listened, they answered (3 or 4) listening comprehension questions. d. They checked the answers and transcripts.		

- Each week, the TG was required to complete the three sets of listening practice, following the steps in the above table.

APPENDIX Y

THE INTERFACE OF LISTENING PRACTICE IN THE MG WEBSITE

Video listening - Week ten

Your name (您的姓名)： *

_____

Your student ID (你的学号) *

_____

Start time：___：___ *

Listening one

Now you are going to watch the first video as least three times and answer the following questions. The first video was about “Geography and health” and you could check the following words that will appear in the listening.

geographic, recuperate, Genetics, allergy, train wreck, atlases (地图册)

1. What did doctors often neglect, according to the speaker?（根据该演讲者，医生们经常会忽视什么？）

_____

2.What are the two prescriptions the speaker gave in the video?（演讲者开了哪两个药方或给了哪两个建议？）

_____

3. 总结一下第一篇听力的内容. [填空题] *

（例如：该听力首先提到什么，然后讲到什么，最后说明了什么）

_____

*Learners could choose to check their answers and the transcript here.

Transcript

Can geographic information make you healthy? In 2001 I got hit by a train. My train was a heart attack. I found myself in a hospital in an intensive-care ward, recuperating from emergency surgery. And I suddenly realized something: that I was completely in the dark. I started asking my questions, "Well, why me?" "Why now?" "Why here?" "Could my doctor have warned me?" So, what I want to do here in the few minutes I have with you is really talk about what is the formula for life and good health. Genetics, lifestyle and environment. That's going to sort of contain our risks, and if we manage those risks, we're going to live a good life and a good healthy life. Well, I understand the genetics and lifestyle part. And you know why I understand that? Because my physicians constantly ask me questions about this. Have you ever had to fill out those long, legal-size forms in your doctor's office? I mean, if you're lucky enough you get to do it more than once, right? (Laughter) Do it over and over again. And they ask you questions about your lifestyle and your family history, your medication history, your surgical history, your allergy history ... did I forget any history? But this part of the equation I didn't really get, and I don't think my physicians really get this part of the equation. What does that mean, my environment? Well, it can mean a lot of things. This is my life. These are my life places. We all have these. While I'm talking I'd like you to also be thinking about: How many places have you lived? Just think about that, you know, wander through your life thinking about this. And you realize that you spend it in a variety of different places. You spend it at rest and you spend it at work. And if you're like me, you're in an airplane a good portion of your time, traveling some place. So, it's not really simple when somebody asks you, "Where do you live, where do you work, and where do you spend all your time? And where do you expose yourselves to risks that maybe perhaps you don't even see?" Well, when I have done this on myself, I always come to the conclusion that I spend about 75 percent of my time relatively in a small number of places. And I don't wander far from that place for a majority of my time, even though I'm an extensive global trekker. Look at the kind of data that's available. This data's from all over the world -- countries spend billions of dollars investing in this kind of research. Now, I've circled the places where I've been. Well, by design, if I wanted to have a heart attack I'd been in the right places. Right? So, how many people are in the white? How many people in the room have spent the majority of their life in the white space? Anybody? Boy, you're lucky. How many have spent it in the red places? Oh, not so lucky. There are thousands of these kinds of maps that are displayed in atlases all over the world. They give us some sense of what's going to be our train wreck. But none of that's in my medical record. And it's not in yours either. What I'd like to leave you for are two prescriptions. Okay, number one is, we must teach physicians about the value of geographical information. It's called geomedicine. There are about a half a dozen programs in the world right now that are focused on this. And they're in the early stages of development. These programs need to be supported, and we need to teach our future doctors of the world the importance of some of the information, I've shared here with you today. The second thing we need to do is while we're spending billions and billions of dollars all over the world building an electronic health record, we make sure we put a place history inside that medical record. It not only will be important for the physician; it will be important for the researchers that now will have huge samples to draw upon. But it will also be useful for us. I could have made the decision, if I had this information, not to move to the ozone capital of the United States, couldn't I? I could make that decision. Or I could negotiate with my employer to make that decision in the best interest of myself and my company. With that, I would like to just say that Jack Lord said this almost 10 years ago. Just look at that for a minute. That was what the conclusion of the Dartmouth Atlas of Healthcare was about, was saying that we can

explain the geographic variations that occur in disease, in illness, in wellness, and how our healthcare system actually operates. That was what he was talking about on that quote. And I would say he got it right almost a decade ago. So, I'd very much like to see us begin to really seize this as an opportunity to get this into our medical records. So with that, I'll leave you that in my particular view of view of health: Geography always matters. And I believe that geographic information can make both you and me very healthy. Thank you. (Applause)

Listening two

Now you are going to watch the first video as least three times and answer the following questions. The first video was about "Aflac Duck eases children with cancer" and you could check the following words that will appear in the listening.

diagnosed, daunting process, bathe, leverage (利用), iterate (反复运作，调试).

1. How can the Aflac duck ease children' pains in the cancer treatment? （Aflac duck 是如何减轻癌症中孩子的痛苦的？） [填空题] *

_____

2. What do the workers do to the ducks before they are shipping? （工作人员在这些鸭子运输和寄送前会做些什么？）
[填空题] *

_____

4. 总结一下第二篇听力的内容 . [填空题] *

（例如：该听力首先提到什么，然后讲到什么，最后说明了什么）

_____

*Learners could check the answers and transcript here.

Transcript

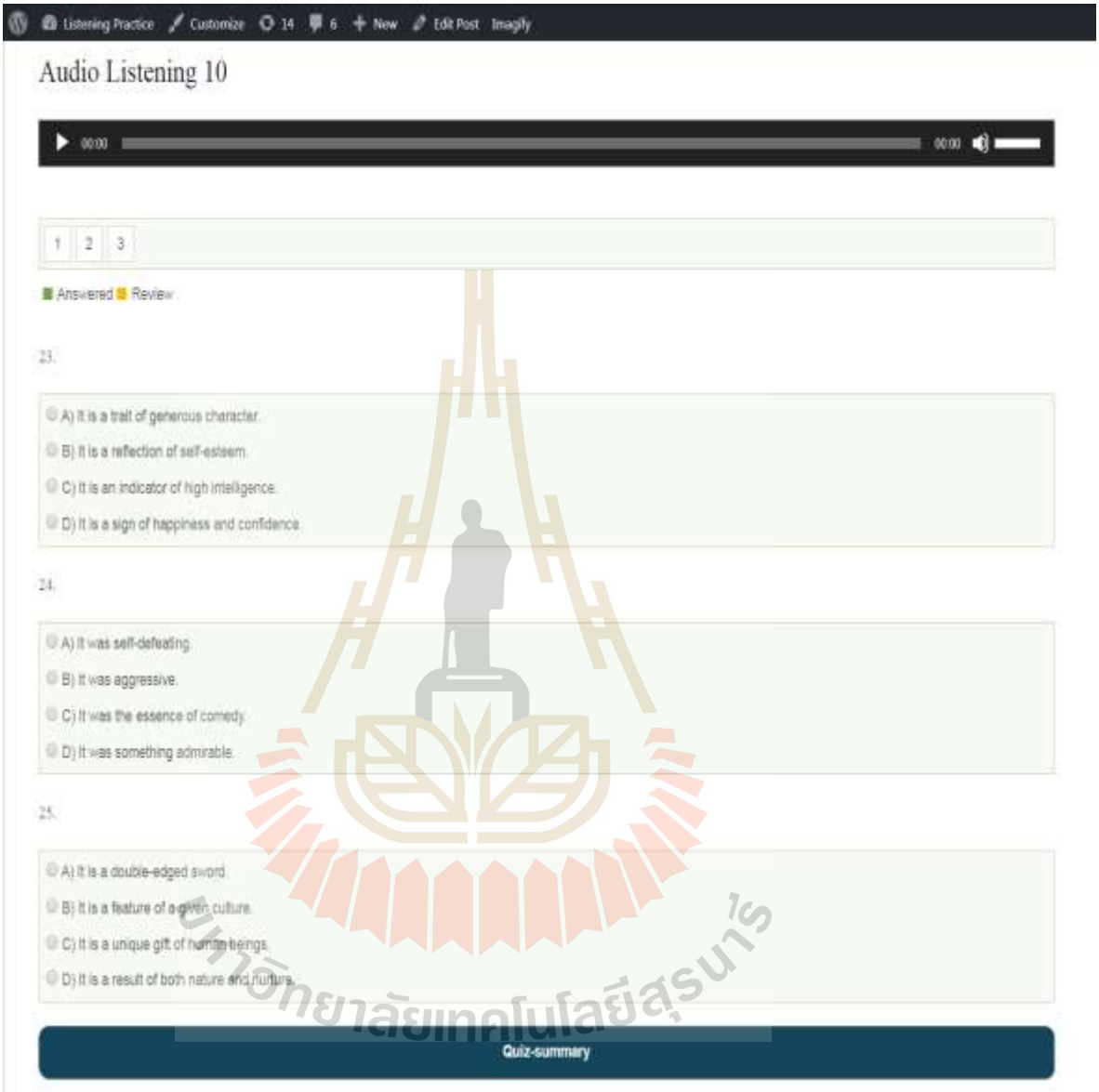
What if we could make a change in the lives of children with cancer right now. I was told it I'm sorry your daughter has cancer, and I was just in total shock. Everything's really new in the beginning and I have no idea what to expect. Each year more than 15,000 kids are diagnosed with cancer in the US and the average length of treatment is a thousand days. And so we thought

about the need for emotional comfort for these children, and now we have the opportunity to bring the latest in social robotics into the field of medicine, bringing comfort and joy through this daunting process. What we try to do here is to give children the tools to understand what's going on and to empower them. For our family and for Wyatt the best use would be to help them communicate and a friend to comfort him when he's having treatment. Play is natural to a child. Play is really how they learn and how they process, so we leverage play and some of the latest technology to create healthcare tools for kids with illness. Everybody knows the Aflac duck, we wanted to bring the Aflac duck to life into a caring companion for children with cancer. It responds and moves in a lifelike and natural way, they could feed their Docks, bathe their ducks and when you tap these different cards to the Ducks chest. It behaves with that feeling to help children communicate their feelings. By the time the duck is shipping, we will have spent 18 months designing testing and iterating with hundreds of families doctors and experts. [Music] First and foremost, the duck is a constant companion for children throughout their treatment journey. [He's kind of cute. Can this one be just breathing, I am going to match the breathing. Just a tiny bit faster.] perhaps the most important of all, the Ducks can share in the patient's experience. I think it's so awesome. You just feel comfort, you know, with something like that. I really like the Aflec to be your friend to help you get through all your tough times here. I think the duck has a potential to have a huge impact on our patients, our families and our health care program as a whole. If she had something to sit with her, something take her through it, a friend that will always be there and it would help a lot of kids. [Music]

This is the end of the listening practice, please input the ending time and click “submit” button below. (练习到此结束，请填写结束时间并点击下面的 submit 键提交)

Ending time：___：___ *

Audio listening - Week ten



APPENDIX Z

CONSENT FORMS FOR THE RESEARCH, THE INTERVIEW, AND QUESTIONNAIRES

(Approved by Institutional Review Board of SUT)

同意参与研究证书 (Consent form for the research)

我已被邀请参与由裴涛先生所进行的研究。该研究的题目为“基于网络的元认知听力练习对中国大学英语学习者听力理解能力的影响”。我确认已经阅读或听到以上关于本研究的信息。我可以有机会问一些关于该研究的问题并根据我的意愿来回答所被问及的问题。我知道我能够在任何时候退出该研究，也不会被迫使继续参与。我确认自愿成为该研究的一名参与者。

参与者的姓名（打印）_____

参与者签名 _____

日期（日/月/年）_____

Suranaree University of Technology （苏兰拉里理工大学） 机构审查委员会	知情同意书 (Informed Consent Form)

研究中的访谈部分 (Consent form for interview)

我的姓名： (女士/先生) ..... 年龄.....

家庭住址：

请听取来自研究者裴涛先生的对于该研究项目 “基于网络的元认知听力练习对中国大学英语学习者听力理解能力的影响”的描述。该研究主要是为了探究元认知听力练习能否提升中国大学英语学习者的听力能力，元认知发展，以及自我效能感。参与该研究的学习者有望在听力能力，听力自信，以及听力策略上得到显著提升。研究结束后，参与者有可能会接受 10-15 分钟的访谈。为了更好地收集和了解该访谈的内容，该访谈将被电子录音。该录音材料仅为研究而使用。研究者不会透露被录音者的姓名和个人信息。该研究结果将仅以学术目的而呈现。

我自愿成为该研究的参与者。若由于自身意愿或出现不期望的事件，我可以随时退出该研究。

我已经阅读并理解以上关于该研究的描述。我同意参与该研究。

自愿参与者签名.....

(.....)

日期：

Suranaree University of Technology 机构审查委员会	知情同意书 (Informed Consent Form)

研究中的问卷部分 (Consent for questionnaires)

我的姓名： (女士/先生) ..... 年龄.....

家庭住址：

请阅读有关同意参与该研究项目“基于网络的元认知听力练习对中国大学英语学习者听力理解能力的影响”的说明。该研究主要是为了探究元认知听力练习能否提升中国大学英语学习者的听力能力，元认知发展，以及自我效能感。参与该研究的学习者有望在听力能力，听力自信，以及听力策略上得到显著提升。在该研究中，参与者需要填写背景问卷（大约 5-10 分钟），听力元认知问卷（大约 10-15 分钟），以及自我效能感问卷（大约 10-15 分钟）。参与者在问卷中的私人敏感信息将被保密或以匿名的方式透露给公众。该研究结果将仅以学术目的而呈现。

我自愿成为该研究的参与者。若由于自身意愿或出现不期望的事件，我可以随时退出该研究。

我已经阅读并理解以上关于该研究的描述。我同意参与该研究。

自愿参与者签名.....

(.....)

日期：

APPENDIX AA

PRE-TREATMENT TRAINING FOR THE MG

Trainer: the researcher

Teaching Duration: 90 minutes

Teaching Goals:

1. To train learners to be familiar with the interface and other functions in the websites.
2. To train learners to use the website to conduct the weekly listening practice.

Teaching procedures:

1. Introduce learners to the overall interface of the website and instruct learners to register and log in. (10 min)

2. Instruct learners how to carry out the weekly listening practice on the website. (10 min)

3. Introduce learners to other functionalities in the websites: (25 min)

a. Teach how to use the auto-saving functions and speed control functions
b. Introduce the discussion page
c. Introduce the pages of listening strategies
d. Introduce the pages of knowledge on listening
e. Introduce the pages of connected speech and weak form of common words

4. Learners did the sample listening practice, and the teacher walked around the classroom to give guidance (45 min).

APPENDIX BB

PRE-TREATMENT TRAINING FOR THE BG

Trainer: the researcher

Teaching Duration: 90 minutes

Teaching Goals:

1. To train learners to be familiar with the interface and other functions in the websites.
2. To train learners to use the website to conduct the weekly listening practice.

Teaching procedures:

1. Introduce learners to the overall interface of the website and instruct learners to register and log in. (10 min)

2. Instruct learners how to carry out the weekly listening practice on the website. (10 min)

3. Introduce learners to other functions in the websites: (20 min)

a. Instruct how to use the auto-saving functions and speed control functions
b. Introduce the pages of connected speech and weak form of common words

4. Learners did the sample listening practice, and the teacher walked around the classroom to give guidance (50 min).

APPENDIX CC

PRE-TREATMENT TRAINING FOR THE TG

Trainer: the researcher

Teaching Duration: 90 minutes

Teaching Goals:

1. To train learners to be familiar with the interface and other functions in the websites.
2. To train learners to use the website to conduct the weekly listening practice.

Teaching procedures:

1. Introduce learners to the overall interface of the website and instruct learners how to register and log in. (15 min)

2. Instruct learners how to carry out the weekly listening practice on the website. (15 min)

3. Learners did the sample listening practice, and the teacher walked around the classroom to give guidance (60 min).

APPENDIX DD

THE PILOT STUDY

1. Research design

A mixed-method design was employed in the pilot study with quantitative and qualitative data collection. For the quantitative part, it used a quasi-experiment method with a pretest-posttest control group design. For 16 weeks, the experimental group did the web-based metacognitive listening practice, while the control group took the traditional web-based listening practice. There were three independent variables (i.e., gender, the listening proficiency level, and the types of treatment) and three dependent variables (i.e., listening comprehension achievements, metacognitive awareness, and listening self-efficacy). The listening comprehension achievements were measured with TOEFL and CET-4 tests; the metacognitive awareness was detected with MALQ; the listening self-efficacy was examined with self-efficacy questionnaires. The qualitative part was a post-semi-structured interview conducted with the experimental group. The purpose of the qualitative data was to elaborate on the results from the quantitative data.

2. Setting and Participants

The current pilot study was conducted for 16 weeks from March to June 2018 at Tongling University. It recruited 100 students from the two first-year English majors' classes as the participants. The two classes were randomly assigned into one experimental and one control group. Four students in the experimental group and seven students in the control group dropped out of the experiment. The researcher further removed the participants who skipped more than three sets of listening practice in each group. The remaining 32 participants in the experimental group and 35 participants in the control group were involved in the final data analysis. To observe the impacts of the proficiency level, these learners were classified into the more skilled listeners and less-skilled listeners according to their scaled scores in the pre- TOEFL sample test. Following Vandergrift and Tafaghodtari (2010), those scoring above the mean (M = 9.9) were grouped as the skilled listeners while those scoring below the mean as the less-skilled listeners. The mean TOEFL score of 9.9 showed that these learners were at a B1 level or intermediate level of listening proficiency (Papageorgiou, Tannenbaum, Bridgeman, & Cho, 2015).

3. Data Collection Instruments

The data collection tools used in the current pilot study are questionnaires (including background information questionnaires, the MALQ, Self-efficacy questionnaires), listening proficiency tests (including TOEFL sample tests and CET-4 sample tests), and post-semi-interviews. The following section showed the specific procedures of interventions in each group.

4. Procedures of Interventions in Each Group

To gain access to the participants, the researcher worked as a reading course teacher during the pilot study. The researcher did not reveal the details of the experiment to the listening teacher in case the teacher might draw on the part of the research content in her lessons. Pre and post-tests were conducted in the multimedia center with every participant offered an earphone. Pre and Post-questionnaires were constructed and administered online with the Chinese online survey website (www.wenjuan.com) and written in Chinese to avoid possible misunderstandings. Learners were also informed that their listening practice was quite different from that did by the students in the other class, but both sets of exercise could improve listening proficiency.

3.1 Intervention for the Experimental Group

In the first week, the researcher met the participants in two 90-minute sessions. In the first session, the participants were told to finish a series of the online listening practice and attend the weekly discussion in this term, and their attendance will be marked in their final score for this course. After that, the researcher showed how to complete a listening practice online and attended the online discussion which was conducted in an online chat group (QQ group). Learners were allowed to use mobile phones or computers to complete the tasks; they were also suggested to use some speech-to-words (e.g., Baidu Input or IFlyTek Input) applications to complete the tasks and keep contact with the researcher through an online chat application (QQ), if they had problems in conducting the tasks. Then, the research stated the purpose and potential risks of the research and participants were told to sign the consent form and allowed to drop at any time. After that, the researcher administered the background information questionnaires, the MALQ and self-efficacy questionnaires. All the previous activities were conducted in the first 90-minute session. During the second 90-minute session which happened two days later, the researcher administered the TOEFL and CET-4 sample tests to the participants.

From week 2 to week 15, these learners were asked to complete the online listening practice, keep weekly journals and attended weekly online discussions. Learners' online listening practice were tracked, and for monitoring learners' journal-keeping every week, they were required to submit the photo of their journal to the QQ group. During the online discussion, the researcher asked some listening comprehension questions and explained some difficult words in the listening materials, and then learners shared their listening skills and problems each week. In this period, the researcher reiterated the importance of attending these activities in their final assessment of the reading course.

In week 16, the researcher administered the post-tests (the TOEFL and CET-4 sample tests) and post-treatment questionnaires (the MALQ and self-efficacy questionnaires). After that, the researcher selected around 50% of participants (N=16) from the experimental group (N=32) for the post-semi-interview. The participants were randomly selected from the skilled group (N = 7) and less-skilled group (N = 9). Also in this week, these participants were required to submit their paper-based listening

journals for the 14-week listening practice and were told that their submission was connected to their final reading course assessment.

3.2 Intervention for the Control Group

Similar to the experimental group, in the first week of two 90 minutes' sessions, the control group was also told to finish a set of online listening practice, and their attendance will be marked in their final score for this course. Then the researcher showed how to complete a listening practice online. Similarly, learners were allowed to use mobile phones or computers to complete the tasks; they were also suggested to use some speech-to-text (e.g., Baidu Input or IFlyTek Input) applications to complete the tasks. Then, the research stated the purpose and potential risks of the research and participants were told to sign the consent form and allowed to drop at any time. After that the researcher administered the background information questionnaires, the MALQ and self-efficacy questionnaires. All the previous activities were conducted in the first 90-minute session. During the second 90-minute session which happened two days later, the researcher administered the TOEFL and CET-4 sample tests to the participants.

The participants in the control group were asked to start working on their practice slightly later than the experimental group, since the researcher aimed to detect the average length of time the experimental group spent on one listening practice so that the researcher could roughly equalize the duration of the practice in both groups. Accordingly, the researcher found the average duration of around one hour and a half for the experimental group in the first week. Therefore, before the control group starting their practice, the researcher gave the notice to them that they were suggested to complete their weekly practice in one hour and a half.

In week 2, the control group started their practice after they received the notice. From week 2 to week 15, the participants were required to watch and listen to the same videos as many times as they want, and after that, they should write a summary of what they have heard**.** Since the listening activities for the control group were less demanding than those given to the experimental group, the control group was also asked to complete an online test-based listening task each week, which derived from CET-6 tests**.** These learners in the control group were also suggested to ask the researcher for help when they met any problems in practice.

In week 16, the researcher also administered the pre and post-listening proficiency tests (the TOEFL and CET-4 sample tests) as well as the questionnaires (the MALQ and self-efficacy questionnaires) to the control group.

5. Results and Discussion

This section presented the results of the pilot study in reference to the research questions. Then the researcher gave a brief discussion on these results. To analyze the quantitative data from the pre and post-tests and questionnaires, the researcher used a set of T-tests and Wilcoxon signed-rank tests rather than more complex ANCOVA due to the somewhat limited number of participants (Burt, Barber, & Rigby, 2009; Gay,

Mills, & Airasian, 2011). To analyze the qualitative interview data, the researcher used content analysis to detect the possible themes.

Q1:What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' listening proficiency across genders and proficiency levels?

In order to answer the question, the researcher firstly ran the independent sample t-test to observe the differences in the pre-test scores of the TOEFL and CET-4 sample tests between the experimental group and control group. To control for the difficult levels between pre- and post-TOEFL sample tests, the raw TOEFL Scores were converted into the scale scores. The results in Table 1 showed that there were no significant differences between the groups on TOEFL (p= .24) and CET-4 (p= .90) before the treatment. It is noted that the Levene's test indicated unequal variances (F = 6.21, p = .02) for the TOEFL scores and to overcome this violation, SPSS automatically used the Welch-Satterthwaite method to adjust degrees of freedom from 65 to 63.

Table 1 Independent sample T-test of pre-test TOEFL and CET-4 scores

Variables		**T-test**				
	Group	N	Mean	SD	t-value	P
TOEFL	**C-group**	35	9.71	3.90	1.20	.24
	E-group	32	8.70	3.00		
CET-4	**C-group**	35	18.14	2.55	-.12	.90
	E-group	32	18.22	2.52		

Then another independent sample t-test was run to check the differences in post-tests scores of TOEFL and CET-4 between the two groups. The results were shown in the table 2.

Table 2 Independent sample T-test of post-test TOEFL and CET-4 scores

Variables		**T-test**				
	Group	N	Mean	SD	t-value	P
TOEFL	**C-group**	35	8.77	4.08	-2.72	.01
	E-group	32	11.19	3.16		
CET-4	**C-group**	35	19.71	1.92	-.74	.46
	E-group	32	20.03	1.53		

According to the table 4. 2, the experimental group (M= 11. 19, SD= 3. 16) significantly overrode the control group (M= 8. 77, SD= 4. 08) in post- test scores of TOEFL tests, t (63) = 2.72, p =.01. The Levene's test indicated unequal variances (F =

5.60, p = .021) for the TOEFL scores, so degrees of freedom were adjusted from 65 to 63. The result indicated that the metacognitive listening practice brought about the significant differences in L2 listening proficiency between the two groups. Since it is necessary to report effect size to measure the power of effects in empirical research findings (Wilkinson, 1999; Kelley & Preacher, 2012), the resulting Cohen's d (= .66) was used and suggested a medium effect (Cohen, 1988).

However, Table 2 also indicated there were no significant differences between post-test CET-4 scores, t (65) = .74, p = .46. This conclusion seemed contradictory to the previous one, but later could be explained by the finding in the background questionnaires. The background questionnaires indicated that 78% of these participants had attended the CET-4 and some of them have already passed it. Therefore, it could be inferred that these participants have already made some preparations for this test and obtained some knowledge of how to deal with the test items, which may influence their performance in the post-test CET-4 scores. It could be more robust to refer to the TOEFL test scores to detect their listening performance in the pilot study. In the formal study, the CET-4 tests may not be feasible to serve as the pre and post-tests for the present participants and could be removed.

The Wilcoxon signed rank test was run to check the differences of skilled and less-skilled listeners on the TOEFL and CET-4 scores between the two groups, given the small number of participants after grouping. The analysis indicated that the less-skilled listeners made the significant improvement on the TOEFL test, Z = 1.99, p <.05 but not on CET-4 tests, Z = 1.63, p =.11. However, the skilled listeners did not made statistically significant improvement on both the TOEFL, Z= 1.98, p = .052 and CET-4 tests, Z = .42, p = .70. Despite this, it is noted that the p-value of TOEFL scores for skilled listeners was very close to .05, and the mean scores of these listeners in the experimental group (M=12.72) were higher than those in the control group (M=9.68). In light of this, it could be concluded that the present metacognitive listening practice contributed to both skilled and less-skilled listeners' listening performance.

The present results from TOEFL scores did confirm the previous assumption by some researchers that adding a bottom-up section in metacognitive instruction would produce more robust results and even benefited the skilled listeners. The less-skilled listeners made significant improvement through the listening practice and the skilled listeners also made improvement close to a significant level, suggesting the present metacognitive listening practice could benefit language learners across different listening levels. Therefore, adding bottom-up practice could compensate for the top-down oriented metacognitive instruction and benefit a wider range of learners.

Another Wilcoxon signed rank test was run to examine the differences in test scores in male and female learners between the two groups. The analysis indicated that the female learners in experimental group made significant improvement on the TOEFL, Z = 2.08, p = .04 but not in the CET-4 tests, Z = .06, p = .95. However, the male learners failed to make significant improvement on both the TOEFL, Z = 1.23, p = .33and the CET-4 tests, Z = 1.63, p = .33. In other words, the metacognitive listening practice could only improve the female learners' listening proficiency rather than the

male learners. That said, this conclusion remained cautious for generalization since there were rare male learners in the experimental (N = 2) and control groups (N = 2).

Q2: What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' metacognitive awareness in listening across genders and proficiency levels?

The reliability test was firstly conducted in SPSS with the pre-test scores of the MALQ, indicating that the questionnaire had high reliability with Cronbach's α = .85.

The researcher conducts the independent T-test to detect the differences in pre-test scores of the MALQ between the two groups. Here, the five dimensions of metacognitive awareness (namely, planning and evaluation, directed attention, person knowledge, mental translation and problem-solving) in the MALQ were considered in the analysis. The results are shown in Table 3.

Table 3 Independent sample T-test of pre- MALQ scores

Variables	T-test					
	Group	**N**	**Mean**	**SD**	**t-value**	**P**
Planning-Evaluation	C-group	35	14.31	3.81	.07	.95
	E-group	32	14.25	4.30		
Directed Attention	C-group	35	13.09	3.10	-2.12	.04
	E-group	32	14.66	2.96		
Person Knowledge	C-group	35	7.89	2.83	.06	.95
	E-group	32	7.84	2.77		
(no) mental Translation	C-group	35	9.31	2.50	1.08	.28
	E-group	32	8.63	2.44		
Problem Solving	C-group	35	18.23	5.03	-.50	.62
	E-group	32	18.84	4.59		
Total Scores	C-group	35	62.83	10.49	-.55	.58
	E-group	32	64.22	10.02		

No significant differences were detected on the overall scores of metacognitive awareness (p = .58), the scores of planning and evaluation (p = .95), person knowledge (p = .95), mental translation (p = .28) and problem-solving (p= .62) but not in directed

attention (p = .04). For the directed attention, the experimental group was significantly higher than the control group in pre-test scores of the MALQ.

Another independent sample t-test was run to examine the differences in post-test scores of the MALQ between the two groups, shown in Table 4.

Table 4 Independent sample T-test of post- MALQ scores

Variables	**T-test**					
	Group	**N**	**Mean**	**SD**	**t-value**	**p**
Planning- Evaluation	C-group	35	15.69	4.01	-1.71	.26
	E-group	32	16.81	3.83		
Directed Attention	C-group	35	13.34	3.24	-.75	.46
	E-group	32	13.93	3.27		
Person Knowledge	C-group	35	8.17	2.83	1.57	.12
	E-group	32	7.09	2.77		
(No) mental Translation	C-group	35	8.97	2.50	2.53	.01
	E-group	32	7.44	2.44		
Problem Solving	C-group	35	19.34	5.03	-.66	.51
	E-group	32	20.12	4.59		
Total Scores	C-group	35	65.51	11.24	.04	.97
	E-group	32	65.40	11.00		

The table 4 indicated that there were no overall significant differences on the post-scores of the MALQ between the two groups. Meanwhile, both groups showed no significant changes at the dimensions of planning and evaluation, p = .26, directed attention, p = .46, person knowledge p = .12, problem-solving p = 51. The interesting finding was that the control group overweighed the experimental group in the dimension of mental translation, t = 2.53, p= .01. Since the pre-test differences in the dimension of directed attention, the researcher conducted ANCOVA, with the pre-test scores of directed attention as the covariate. The results still indicated no significant change in the post-test scores of directed attention (F= .39, p= .53) between the two groups.

The results indicated that the treatment only significantly impacted the dimension of mental translation but in a reverse way. This finding, although counterintuitive, is consistent to the result in Vandergrift and Tafaghodtari (2010) in which the authors explained that the increased use of mental translation could reflect the increase of the ability of reflects an increased "ability to identify the meaning of words" (p. 489). For example, when learners choose the item in the MALQ "I translate key words as I listen," they may mean to infer the key words. Therefore, the increased scores of mental translation may suggest the improved metacognitive awareness on strategy use such as inference, prediction and selective attention (to key words). This finding will be further discussed in the later qualitative results. In this case, it could be concluded that metacognitive listening practice could partially improve learners' metacognitive awareness.

As shown in Table 5, the Wilcoxon signed rank test was used to examine the differences in overall MALQ scores in skilled and less-skilled listeners between the two groups. The results indicated that there were no significant differences between skilled ($p = .80$) and less-skilled ($p = .80$) listeners' overall MALQ scores across and the present metacognitive listening practice did not make a difference in skilled and less-skilled listeners' overall MALQ scores. Another Wilcoxon signed rank test (See Table 7) was used to detect the differences of overall MALQ scores in male and female listeners between the two groups, indicating no significant differences in male ($p = .18$) and female listeners ($p = .89$) between the two groups were detected. Likewise, caution should still be reserved due to the limited number of male participants.

Table 5 Wilcoxon Signed Rank Tests of Pre and Post Overall MALQ Scores for Skilled and Less-skilled Listeners

Pre-test			**Z-score**	**P**
	Skilled	C-group E-group	1.03	0.31
	Less-skilled	C-group E-group	0.34	0.75
Post-test			**Z-score**	**P**
	Skilled	C-group E-group	0.28	0.80
	Less-skilled	C-group E-group	0.26	0.80

Table 6 Wilcoxon signed rank test of pre and post overall MALQ scores for male and female listeners

Pre-test			**Z-score**	**P**
	Male	C-group	1.63	0.33
		E-group		
	Female	C-group	0.41	0.68
		E-group		
Post-test			**Z-score**	**P**
	Male	C-group	1.55	0.33
		E-group		
	Female	C-group	1.12	0.23
		E-group		

All things considered, the present metacognitive listening practice has just partially enhanced learners' metacognitive awareness, on the dimension of mental translation but not on other dimensions and overall scores. No differences on proficiency levels and genders were detected in relation to the impact of metacognitive listening. However, according to the overall mean scores, both groups showed somewhat improvement on metacognitive awareness. This finding indicated that metacognitive listening practice might not be the only way to improve learners' metacognitive awareness, since Vandergrift and Tafaghodtari (2010) suggested the control group participants could also made reflections on their metacognitive and cognitive processes of listening by the exposure to the MALQ items in pre-test. Even if the findings on MALQ were not robust, these learners could still improve their listening comprehension, suggesting that present bottom-up activities may contribute to the listening development. Furthermore, it could be inferred that the bottom-up activities in the present metacognitive listening practice might switch learners' attention to develop their bottom-up skills, leaving little room for them to develop metacognitive awareness.

Q3: What are the effects of the web-based metacognitive listening practice on the Chinese university EFL learners' self-efficacy across genders and proficiency levels?

The reliability test was firstly conducted in SPSS with the pre-test scores of the present self-efficacy questionnaire, indicating that the questionnaire had a high reliability with Cronbach's $\alpha = .85$.

To answer the question, the researcher conducted an independent samples T-test to observe the differences in pre-test scores of self-efficacy questionnaires between two groups. As shown in Table 7, there were no significant differences between pre-test self-efficacy scores, t (65) = .11, p = .91. Then another independent sample t-test was run to observe the post-test efficacy scores.

Table 7 Independent sample T-test of pre and post-test self-efficacy scores

Variables	**T-test**					
	Group	**N**	**Mean**	**SD**	**t-value**	**p**
Self-efficacy	C-group	35	91.23	19.56	.11	.91
(**Pre-test**)	E-group	32	91.75	19.66		
Self-efficacy	C-group	35	96.69	19.60	.43	.67
(**Post-test**)	E-group	32	94.59	20.50		

Table 7 indicates that there were no significant differences in the post-test self-efficacy scores between the two groups, indicating that the present metacognitive listening practice was not the key factor impacting the participants' self-efficacy. However, it should be noted from the mean scores that both groups improved self-efficacy after 14 week's online listening practice.

The following Wilcoxon signed rank test suggested there were no significant differences in less-skilled (p = .18) and skilled listeners (p = .89) between the two groups, indicating that the present listening practice did not significantly impact both the less-skilled and skilled listeners' self-efficacy scores, nor did the practice make a difference in skilled and less-skilled listeners' self-efficacy scores. Another Wilcoxon signed rank test was run to check the differences in self-efficacy scores in male and female learners between the two groups. The results showed no significant differences in male (p = .33) and female (p = .07) learners between the two groups, suggesting that the present listening practice did not significantly impact both the male and female learners' self-efficacy scores, nor did the practice make a difference in male and female learners' self-efficacy scores

Previous literature has shown that whether metacognitive instruction could improve listening self-efficacy remains uncertain. There are positive findings in Vafaeeseresht (2015) and negative findings in Taguchi (2017). However, the above two studies employed different questionnaires to measure the self-efficacy of listening. The present study used the self-efficacy questionnaires similar to Taguchi (2017), and led to the similar results in Taguchi (2017), in which both experimental and control groups made the significant improvement on self-efficacy. Taguchi argued that the sheer amount of listening practice, be it metacognitive or not, could all improve learners' listening self-efficacy. This assertion could also explain the present findings on self-efficacy.

Besides, the present study drew on Kassem's (2015) self-efficacy questionnaire which was different from that used in Graham and Macaro (2008) and Vafaeeseresht (2015). Both of the latter two studies produced the positive results on self-efficacy with strategy or metacognitive instruction. It is noted that Kassem's (2015) questionnaire which, despite its comprehensiveness, focused more on the general ability of listening was different from that used in Graham and Macaro (2008) and Vafaeeseresht (2015) which focused on learners' judgment on the specific tasks (such as listening for main ideas, details, recognizing opinions and so on). Therefore, it seems the latter two questionnaires are more appropriate to assess learners' self-efficacy since self-efficacy reflects "individuals' judgments about how capable they are in performing specific activities, rather than their judgments about general feelings about themselves" (Vafaeeseresht, 2015, p. 81).

Also, the latter qualitative data analysis indicates that the participants' views on listening confidence are quite mixed after the practice, which will be discussed later.

Graham and Macaro (2008) suggested the use of scaffolding to "retrain the learners' attribution" in order to improve self-efficacy. Scaffolding means giving learners feedback so that they could link the strategy use with their learning outcomes and attribute success to factors within their control. Their study has proven the effectiveness of this scaffolding on the self-efficacy of listening. Also, scaffolding could arouse learners' awareness on the successful experience of listening which are crucial to the improvement of self-efficacy (Bandura, 1994, 1995). Thus, this method could be employed in the present research. For example, the researcher could give the scaffolding or feedback on learners' self-reflection journals for them to realize the benefits of strategy use as well as mastery and vicarious experiences (Bandura, 1994), resulting in the improvement of self-efficacy.

Q4: what are the learners' perceptions and attitudes towards the web-based metacognitive listening practice?

To answer this question, the data from the interview protocols were analyzed. The analysis of the transcribed data indicated learners' perceptions of their development of listening proficiency, metacognitive knowledge, and strategy use and of their experience with the website. To ensure anonymity, the researcher used the pseudo-codes in reporting the findings. For example, H2 meant the skilled listener number two and L1 means the less-skilled listener number one.

a. All interviewees showed the improvement of their listening ability and comprehension, especially on quicker and lengthier listening materials.

Listening ability, yes, at the very beginning, it was really fast… Now I could understand some of them. (H2)

Now I can understand a sentence...Listening ability. It was improved, Of course, as I have practiced for one semester. (H7)

In the past, I felt very anxious about lengthy listening materials and gave them up. But now after one semester I could finish the tasks and understand almost half of the content. (H4)

Now I become more patient and understand more (than before). Sometimes, I don't need to watch the video but just listen (and get the understanding). (L3)

It was noted that both high and less-skilled listeners (H2, H4, and L3) mentioned the metacognitive listening practice could help them understand more than before. Meanwhile, H4 mentioned that she could feel more relaxed and handle lengthy listening materials better than before.

b. Some interviewees showed the improved awareness on the metacognitive listening processes of planning, monitoring and evaluation.

> I think in the past, we practiced listening in an unsystematic way. Through the practice, we learn to predict and do something before listening, write something while listening. It is a complete process. Because in the past we just practice listening and answer questions directly. (L3)

This participant mentioned she has become more systematic in listening practice and could regulate the complete listening process.

> Now, I feel I am more strategic in listening because in the past, I felt anxious when I could not understand. Now the website leads me step by step in listening practice and I could read some strategies on the website. I am not anxious even when I could not understand something. I could assign attention to other parts. (L9)

This participant acknowledged that the metacognitive listening practice led her through the metacognitive listening process and made her a strategic listener and brought about more confidence. The above excerpts indicated that the present metacognitive listening practice has improved learners' metacognitive awareness of listening and helped them regulate the listening processes.

c. Most participants acknowledged the importance of strategy use and increased strategy use in listening.

> Listening skills, I think, certainly they are helpful. For instance, you could take brief notes while listening. It is very important…in the past, I do not know the prediction... (L1)
>
> Listening skills are very helpful for listening… For me, from high school until now, I think to grasp the key words is very important…I repeat listening and make notes… and focusing is very important. I often find a quiet place, and nobody can interrupt me. (L5)
>
> In the past, I often translated in my mind when listening. Also, now I am gradually changing this habit. (H4)
>
> I think I know more listening skills such as prediction…In the past, I like translating (all information) in my mind and now I think It is not good. I think understanding key information is more important than the total. (H5)
>
> I think the prediction is the most helpful listening skill. Sometimes, you could listen for details when you failed to listen to the whole content and predict some information. (H7)

From the above excerpts, some participants from both skilled and less-skilled groups like L2, H5 and H7 stated they were aware of the importance of prediction, which indicated that these participants were willing to make planning before listening. Besides, H4 said that she learned the strategy of "avoiding mental translation". Some participants like H5 and L5 mentioned the importance of grasping the key words but it seemed that H5 misinterpreted "I like translating" into "I like understanding". Therefore, the item of "I translate in my mind as I listen" in the MALQ might be interpreted as "I understand in my mind as I listen" by some participants. Meanwhile, another item "I translate key word as I listen" was also misleading, since learners might interpret it as "I focus on key words as I listen" which was embraced by many participants. Some participants saw translation as a way of promoting their understanding and reducing anxiety as in the following excerpt.

> Now the problem is that I always want to translate English into Chinese while listening, but I also found I cannot because the listening is too quick… I don't know why, every time I listen, I try to translate. If I don't translate, I am anxious… because I feel if I don't translate, I cannot understand. (L6)

Therefore, several reasons could account for these learners' increased use of mental translation from quantitative analysis. What is more, mental translation strategies sometimes may produce beneficial results for learning as Cohen (2001) indicated that it may be a good strategy for learners "to perform mental translation of key words and phrases [in listening] in order to help store the concepts in the memory buffer" (p. 104) and using of mental translation strategies vary with tasks. So in the

formal study, it is necessary to modify some confusing items of mental translation in the MALQ.

d. The participants' views on the self-efficacy of listening are mixed.

I always have confidence. When I start doing listening, I always tell myself I can do it [so it does not change so much]. (L2)

Now I have more confidence, that is, I will not be afraid of it or feel nervous. (H5)

I'd say I have some confidence in the listening practice but when it comes to tests … [I still feel nervous]. (H7)

I don't have any improvement in listening confidence. (L6)

Confidence, sometimes I have it but sometimes I don't have it. Today I took a listening class and I didn't have confidence because I made a lot of mistakes in listening practice. (H2)

It is noted from the above answers that some participants witnessed the improvement of listening confidence (H5). Some participants (like L2 and L6) showed no improvement in listening confidence because of being confident all the time or other reasons. Still others (like H7 and H2) thought that listening confidence relied on different tasks. These statements evidenced the quantitative finding that the metacognitive listening practice did not significantly enhance the listening self-efficacy. The non-significant improvement may be partly because some learners were already confident before listening and also because some learners argued the confidence fluctuated among tasks. This fluctuation of self-efficacy also implied the limitation of the current self-efficacy questionnaires which may fail to measure perceived self-efficacy beliefs on specific tasks. The future study is advised to use more specific self-efficacy questionnaires such as those in Graham and Macaro (2008) and Vafaeeseresht (2015) and to detect learners' development of self-efficacy in specific tasks.

e. Most participants showed their positive feelings on the listening practice and indicated the problems in the practice design.

I think this kind of practice is good, since I could note down what I heard step by step (L2)

I think this listening practice is creative and takes on many different forms and the listening practice in the test is dull. (L9)

The listening materials are different from those we did in the test and are more flexible. In the test, we often heard the wars and disasters in Syria, but here we heard something about Syrian culture... [they are more close to our life]. (H2)

I like this kind of listening practice. It has more fun. (L5)

Most of the participants in the interview indicated they preferred metacognitive listening practice to listening test since this kind of practice could help them self-regulate listening process and was flexible, interesting and close to life. Among the interviewed participants, only one expressed his preference for the listening test.

> I am always confident. After all, I am number one in the final listening exam last term… I prefer the test listening. (H3)

H3 expressed his preference for listening test possibly because he got number one in the final listening exam the last term which gave him consistent confidence in listening.

Many participants indicated that too many questions were asked about planning and evaluation in practice and needed to be reduced.

> The other problem is that the questions are always the same, I feel I always fill in the same answers. (L2)
>
> Every time there are many multiple choices. Actually every time I will choose the same answers. I think one person's [listening] problems don't change day by day and they are usually the same. (H6)
>
> It always asks some repetitive questions. I think the questions could be asked every month to detect the improvement [of strategy use]. (L5)
>
> Some questions' setting makes me in a flutter. There are too many repetitions…at last I am impatient and choose them randomly. (H5)

These suggestions and comments were valuable since their concerns on the questions' setting might make some participants fretful and impatient in their practice, which could influence their task performance in the metacognitive listening practice and further the metacognition development. Therefore, these questions needed to be adjusted in the formal study.

f. Participants expressed their experience of the website and suggested some problems in the user interface.

Some participants expressed that the interface was nice and attractive. Still, many participants alluded to some problems in the website experience.

> When I finish the practice, the page just collapsed, and I have to redo the practice, I feel angry. (H2)

I cannot press the back button on my smartphone. When I pressed it, the practice page would collapse and I have to redo the practice. It is very irritating. (H4)

I think the website is slow. And sometimes when I finish more than half, the website just collapsed for no reasons. Then I have to redo the practice. (H1)

I think the website is ok, but I dare not close the page since when I close, all I did are wasted. (L7)

These participants indicated that their answers would disappear if the web page was collapsed or closed. It is noted that this unpleasant user experience may induce negative behavioral and emotional consequence, such as decreased usage frequency, time, quality of work, enjoyment, and interest (Hassenzahl, 2001). Meanwhile, According to Bandura (1994; 1995), the mastery and vicarious experiences were crucial sources of perceived self-efficacy. Therefore, the unpleasant experience may also impact learners' perceived self-efficacy in the web-based listening, which could partly explain no improvement of self-efficacy in the quantitative findings.

To sum up, the results of the pilot study suggest that the present metacognitive listening practice could significantly improve Chinese university EFL learners' listening proficiency. Meanwhile, the metacognitive listening practice could only partially improve these learners' metacognitive awareness, particularly on the dimension of mental translation. However, the metacognitive listening practice failed to improve learners' listening self-efficacy. No differences were detected on listening proficiency and genders in relation to metacognitive awareness and self-efficacy. Learners' slight improvement on metacognitive awareness might be due to their attention distracted to the bottom-up activities. The unpromising findings on self-efficacy may be due to the consistent confidence in some learners and fluctuated confidence on specific tasks in other learners. Therefore, it is advisable that further studies could use more specific listening self-efficacy questionnaires such as those in Graham and Macaro (2008) and Vafaeeseresht (2015) to observe the development of listening self-efficacy. Meanwhile, learners may need more scaffolding or support to highlight the role of metacognitive awareness and link the strategy use with their learning outcomes and attribute success to factors within their control (Graham & Macaro, 2008). Metacognition and self-efficacy development may also be impacted by some learners' unpleasant experience in the content and website design as indicated in the interview data. Thus, the metacognitive listening website needs further improvement concerning the content design and user experience.

CURRICULUM VITAE

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