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Enhancing L2 Listening Through TED-Ed: GAI Mind Mapping Versus Captions

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ABSTRACT

This study explores the effectiveness of video captions versus generative artificial intelligence (GAI) mind mapping for enhancing English as a second language (L2) listening skills among 79 EFL undergraduates in Macau. Using TED-Ed videos, the study employed pre-/post-tests and thematic analysis of reflective journals. Results indicated that the GAI mind mapping group significantly outperformed the captions group, demonstrating greater improvements in listening skills, efficacy, and strategy development. In contrast, the captions group experienced cognitive overload and limited engagement. This research offers valuable insights for educators seeking to optimise L2 listening instruction in EMI settings.

KEYWORDS

L2 listening, EMI, TED, Generative Artificial Intelligence, Captions, Mind Mapping

INTRODUCTION

Second language (L2) listening is vital in second language acquisition (SLA) (Flowerdew & Miller, 2005). As universities worldwide continue to offer English as a Medium of Instruction (EMI) courses, the importance of English listening skills has soared among English learners (Macaro et al., 2018). However, many English as a Foreign Language (EFL) learners are accustomed to learning English in native (L1) environments which are deficient in L2 learning opportunities. The sudden transition to a full L2 environment can be challenging since L2 listening involves complex cognitive activities, including both bottom-up and top-down processing (Vandergrift, 2007a). According to Kissling (2018), L2 learners generally struggle with bottom-up processing, finding it challenging to divide the listening material into meaningful segments. They have difficulty maintaining sufficient information in their working memory to link related units, recognize familiar words and distinguish homophones based on the immediate context among other tasks. Meanwhile, top-down processing, which encompasses background knowledge and contextual awareness, plays a crucial role in

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comprehending the listening situation, topic and related vocabulary. This is essential for activating the schemata in the human brain (Richards, 2008). Moreover, a multitude of factors also mediate the process of L2 listening, such as unfamiliar accents, unknown linguistic expressions, subject-specific knowledge, distracting environmental noise and a fast speed of speech. They could cause learning difficulties in lecture comprehension and classroom participation (Macaro et al., 2018; Rintaningrum, 2018).

To become fluent L2 listeners, learners and teachers need to take particular listening strategies into account. Vandergrift (1997b) discussed three major strategies for L2 listening, including cognitive (e.g., recall and summarize key information), metacognitive (e.g., plan, monitor, and evaluate the listening material) and socio-affective strategies (e.g., seek assistance, manage negative emotions). Cognitive strategies are more often used by learners with limited linguistic fluency as they "involve lower processing practices such as translation, repetition and summary" (Bao & Guan, 2019, p. 2). On the other hand, fluent listeners are generally more inclined to use metacognitive strategies to monitor and evaluate their learning. This distinction shows the tendency for listeners with lower proficiency levels to predominantly rely on bottom-up processing, whereas fluent listeners more frequently employ top-down processing. Socio-affective strategies are often overlooked in L2 listening practice. However, they are equally essential with the recognition of the role of interactions and positive psychology for EFL learners (Bao & Guan, 2019).

In Macau higher education, the classic grammar-translation method for teaching remains popular and is widely promoted within English courses. Lecturers dedicate most of class time to helping learners memorize grammatical rules through repetitive and decontextualized drills. This focus on grammar often results in the neglect of developing listening skills because most local textbook exercises do not require the use of such skills. Yet, in EMI, understanding learning content and lecturers' instructions is a prerequisite for learners to become more engaged and willing to participate in learning.

Recently, studies have explored the use of technology in enhancing L2 listening comprehension. According to Zhang et al. (2023), most current listening studies make use of e-learning tools, systems, e-books and CDs to develop listening and language knowledge. For example, Cross (2014) documented the application of podcasts in improving L2 listening with an adult EFL learner from Japan. Alm (2021) reported an exploratory study on learners' German listening practice with Netflix from New Zealand. With advanced technology, Tai and Chen (2021) compared the use of immersive virtual reality (VR) and videos in practicing L2 listening. Their study suggested the authentic, interactive and immersive nature of VR in supporting the development of listening skills. However, it should be acknowledged that most language lecturers have limited access to such high-level technology, given the cost of both hardware and software for VR. Thus, videos remain a feasible and widespread tool for lecturers in classrooms.

Among various free online video resources, Technology, Entertainment, Design (TED) talks are commonly used in current language classrooms. In particular, the TED company offers TED-Ed videos for educational purposes. However, the effective use of these resources remains underexplored (Liu, 2023). Simply providing learners with access to TED videos is insufficient for constructing meaningful learning experiences. Instead, a well-structured pedagogical approach and support are essential in maximizing the potential of video watching in listening comprehension. Previous research efforts have been made to understand the use of captions and mind maps in watching videos in language learning. However, mixed findings have been reported. In addition, with the emergence of generative artificial intelligence (GAI), lecturers have started to explore the use of it in improving writing. However, little understanding has been gained associated with L2 listening. The present study thus aims to explore two different ways, namely captions and GAI mind maps to enhance English learners' academic listening skills using TED-Ed videos. We focus on two groups of EFL learners from a Macau university and make use of captions generated by TED-Ed and mind maps generated by Mapify.