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EXAMINING THE EFFECT OF NOTE -TAKING ON STUDENTS 'LISTENING COMPREHENSION SKILLS DEVELOPMENT: A CASE STUDY OF FOOD TECHNOLOGY DEPARTMENT IN BENIN REPUBLIC

PEDRO MARIUS EGOUNLETI
University of Abomey-Calavi (UAC), Benin & Research Group on Africa and The Diaspora Laboratory (Grad Lab), pedmareg@yahoo.fr

Abstract
This research aims at examining the effect of note-taking on listening comprehension skills development among 15 students at the Department of Food Technology, Polytechnical School of the University of Abomey Calavi. It tries to study how note-taking practices during listening comprehension activities influence students' comprehension abilities development. The study combines quantitative and qualitative data collection techniques. The quantitative analysis involved statistical measures to account for the evolution of the participants' performances before and after receiving instruction on how to take notes, while the qualitative analysis focused on learners' perceptions, experiences, and strategies about note-taking. The findings indicate effective note-taking is positively correlated with students" listening comprehension skills in terms of active engagement, deeper processing of the audio material, improved understanding and retention, and self-esteem and efficacy. The study recommends the integration of note-taking strategies in EFL curricula in order to help students develop active listening and communicative competences.

Keywords: Note-taking, Listening Comprehension, Skills, UAC, Performance, Audio Material.

1. INTRODUCTION

Listening comprehension is a fundamental language skill that plays a crucial role in students' academic success, particularly in higher education where learning largely depends on understanding lectures, discussions, and oral instructions. In content-based disciplines such as Food Technology, students are frequently exposed to complex technical information delivered orally, including scientific explanations, procedural descriptions, and specialized vocabulary. As a result, effective listening comprehension becomes essential for students to grasp course content, participate meaningfully in class, and perform well academically (Hayati, A. M., & Jalilifar, A., 2009, p.25).

Despite its importance, listening is often regarded as a passive skill and receives less instructional attention compared to reading and writing. Many students struggle to understand spoken input, especially when lectures are fast-paced, information-dense, or delivered in a second or foreign language. According to N. Z. Asenjo and A. C. Ferreira (2015: 27), "listening comprehension continues to be an understudied distress". This is mainly due to the fact that individuals interested in learning a new language must develop listening skills, which involve processing and interpreting a range of sounds, accents, and intonations. As L. Vandergrift and C. C. M. Goh posit, "learners may also struggle with recognizing changes in pitch, stress, and intonation that can change the meaning of a word or phrase" (2012, p. 11).

These challenges are particularly evident among students who must simultaneously process auditory input and record key information for later use. One pedagogical strategy that has been widely recognized as supporting listening comprehension is note-taking. Note-taking is not merely a mechanical activity but a cognitively demanding process that requires learners to listen attentively, identify key ideas, organize information, and transform spoken input into written form. (Asenjo Zapata, N., & Ferreira Cabrera, A., 2018; p.36). Through this process, learners actively engage with the content, which may enhance comprehension, retention, and recall. In academic settings, effective note-taking has been associated with improved understanding of lectures and better academic performance (Vandergrift Larry & Goh Christine C. M., 2012;85).

However, despite its pedagogical potential, note-taking is often assumed to be an innate skill rather than one that requires explicit instruction and practice. Many students, particularly in technical departments such as Food Technology, lack effective note-taking strategies and therefore fail to benefit fully from lectures (Cohen Louis, Manion Lawrence, and Morrison Keith, 2018; p.28). This situation raises important questions about the role of note-taking in developing students' listening comprehension skills.

Although existing literature acknowledges the positive role of note-taking in enhancing listening comprehension, several gaps remain. First, many studies focus on general education or language classrooms, with limited attention to technical and professional departments. Second, few studies adopt a case study approach that examines note-taking practices within a specific academic context such as Food Technology. Finally, there is insufficient empirical evidence from developing-country contexts, where students may face additional linguistic and instructional challenges (Di Vesta, F. J., & Gray, G. S., 2023, p.35).

Unfortunately, the literature on listening in the Beninese context lacks data as to how note-taking helps achieve better comprehension and performance while many scholars have focused on this particular aspect elsewhere (McKeating, 1981; Hartley & Davies 1978, cited in Boon, 1989; Fajardo, 1996; Carrier,2003; and Slotte & Lonka, 2003). In their study, for example, Hartley and Davies (1978, cited in Boon, 1989) found that out of 35 studies on the effects of note-taking, 17 studies confirmed that the note-takers performed better than the non-note-takers, 16 studies revealed no difference, and 2 studies found that note-taking interfered with performance.

The present study seeks to address these gaps by examining the effect of note-taking on students' listening comprehension skills development within a Food Technology Department. By doing so, it aims to provide pedagogical insights that can inform teaching practices and improve students' academic listening outcomes.

2. LITERATURE REVIEW AND THEORETICAL PERSPECTIVES

2.1. Conceptualizing Note-Taking in Educational Contexts

Note-taking has long been recognized as a fundamental academic skill that supports learning across disciplines. Early research conceptualized note-taking not merely as a mechanical activity but as a cognitive process involving the selection, organization, and integration of information (Di Vesta & Gray, 1972). According to Kiewra (1985), note-taking serves two major functions: the

encoding function, which enhances learning during the act of writing notes, and the external storage function, which supports later review and recall.

From a cognitive perspective, Piolat, Olive, and Kellogg (2005) argue that note-taking requires learners to simultaneously listen, comprehend, summarize, and transcribe information, making it a cognitively demanding task. This complexity becomes even more pronounced in second or foreign language contexts, where learners must process unfamiliar linguistic input while recording essential information.

2.2. Theoretical Perspectives Underpinning Note-Taking and Listening

The relationship between note-taking and listening comprehension is strongly supported by information processing theory, which emphasizes the limited capacity of working memory (Baddeley, 2000). Effective note-taking strategies help reduce cognitive load by allowing learners to externalize information and focus on meaning rather than memory retention alone.

Additionally, depth of processing theory (Craik & Lockhart, 1972) suggests that learners who actively organize and summarize information through note-taking engage in deeper processing, which leads to better comprehension and retention. Kiewra (1987) reinforces this view by demonstrating that structured note-taking formats enhance learners' ability to encode and retrieve information effectively.

In EFL contexts, metacognitive theory also plays a critical role. Vandergrift (2007) emphasizes that successful listeners actively plan, monitor, and evaluate their comprehension. Structured note-taking methods, such as the Cornell system, support these metacognitive processes by encouraging reflection and self-questioning.

2.3. Types of Note-Taking and their Educational Benefits

2.3.1. Linear and Outline Note-Taking

Linear or outline note-taking is one of the most traditional forms of recording information during lectures. This method involves writing ideas sequentially using headings and subheadings to reflect the structure of spoken discourse. Kiewra (1985) found that students who use organized outline notes demonstrate higher levels of recall compared to those who take unstructured notes.

In listening contexts, Rost (2011) argues that outline note-taking helps learners recognize discourse markers and organizational cues, which are essential for understanding extended spoken texts. However, this method may encourage verbatim transcription if learners are not trained to summarize effectively.

2.3.2. Cornell Note-Taking Method

The Cornell note-taking system, developed by Pauk and Owens (2010), divides notes into sections for main ideas, cues, and summaries. Research indicates that this structured format promotes active learning and enhances comprehension through post-listening reflection.

Suzuki and Yamazaki (2020) found that students using the Cornell method demonstrated greater metacognitive awareness and improved comprehension compared to those using traditional note-taking methods. In EFL listening tasks, the Cornell method supports learners' ability to review, self-test, and consolidate understanding.

2.3.3. Mapping and Visual Note-Taking

Mapping and mind-mapping note-taking involve the visual representation of ideas and their relationships. Novak and Gowin (1984) introduced concept mapping as a tool for meaningful learning, emphasizing its role in knowledge construction.

Buzan (1993) argues that mind maps enhance memory by engaging both hemispheres of the brain through visual and verbal elements. In listening comprehension, mapping helps EFL learners organize ideas, identify relationships, and infer meaning, particularly when dealing with complex or content-based listening materials.

2.3.4. Charting Note-Taking

Charting note-taking organizes information into tables or columns based on predefined categories. Kiewra (1987) and Titsworth and Kiewra (2004) demonstrated that charting improves learners' ability to compare and contrast information presented in lectures.

This method is particularly effective in **ESP and technical contexts**, such as Food Technology education, where learners often process procedural information, classifications, and data. Charting reduces cognitive overload by allowing learners to focus on specific listening objectives.

2.3.5. Keyword and Abbreviated Note-Taking

Keyword note-taking emphasizes the recording of key words, symbols, and abbreviations rather than full sentences. Armbruster and Anderson (1980) found that selective note-taking improves comprehension by directing learners' attention to essential information.

Piolat et al. (2005) further argue that abbreviated notes encourage deeper cognitive processing, as learners must actively decide what information is worth recording. For EFL learners, this method supports vocabulary development and prevents overload caused by attempting to write complete sentences during listening.

2.4. Digital Note-Taking and Listening Comprehension

With the integration of technology in education, digital note-taking has gained prominence. Bui, Myerson, and Hale (2013) highlight the advantages of digital notes in terms of organization, editing, and retrieval. However, Mueller and Oppenheimer (2014) caution that excessive verbatim transcription during laptop note-taking may hinder deep comprehension.

In EFL listening contexts, digital note-taking can be effective when combined with guided strategies that promote summarization and reflection, particularly in online and blended learning environments.

2.5. Note-Taking and EFL Listening Comprehension

Listening comprehension is considered one of the most challenging skills for EFL learners due to factors such as speech rate, unfamiliar vocabulary, and limited background knowledge (Vandergrift, 2007). Research suggests that effective note-taking strategies help learners overcome these challenges by enhancing focus, organization, and retention (Rost, 2011).

Empirical studies consistently show that students trained in structured note-taking outperform those who use unstructured approaches (Kiewra, 1987; Suzuki & Yamazaki, 2020). Therefore,

integrating explicit note-taking instruction into EFL listening pedagogy is essential for improving learners' comprehension and academic performance.

2.6. Research Gap

Despite extensive research on note-taking in general education, limited empirical studies focus on the impact of specific note-taking strategies on EFL learners' listening comprehension in technical and vocational contexts, particularly in African settings. This gap highlights the need for context-specific studies examining how note-taking strategies influence listening performance among learners in departments such as Food Technology. Research suggests that selective and structured note-taking is generally more effective than verbatim note-taking because they encourage deeper cognitive processing.

Numerous studies have examined the effect of note-taking on listening comprehension and academic performance. Research by Carrier (2003) found that students who took notes while listening to lectures demonstrated better comprehension and recall than those who did not. Similarly, Boon (1989) reported that effective note-takers were more successful in identifying main ideas and supporting details during listening tasks.

In second and foreign language contexts, studies have shown that note-taking can significantly enhance listening comprehension. For example, Hayati and Jalilifar (2009) revealed that learners who were trained in note-taking strategies performed better on listening comprehension tests than those who received no such training. These findings suggest that note-taking is not only beneficial but also teachable.

In content-based disciplines, note-taking has been found to be particularly important due to the density of information presented in lectures. Studies in science and technology education indicate that structured note-taking helps learners organize complex information and improves understanding of technical content. However, research focusing specifically on Food Technology students remains limited, highlighting the need for context-specific studies.

3. MATERIALS AND METHODS

3.1. Site

The Polytechnical School of Abomey Calavi (EPAC) is a state-owned academic institution; it is located in the district of Abomey-Calavi in the Atlantic region It adopts the LMD system and delivers Bachelor's, Master's and Doctorate degree courses. The Polytechnic School of Abomey-Calavi (EPAC) offers engineering programs in two main sectors: the Biological Sector (Human Biological Engineering, Medical Imaging, Environment, Animal Production and Health, Food Technology) and the Industrial Sector (Civil Engineering, Electrical Engineering, Mechanical and Energy Engineering, Computer Engineering and Telecommunications, Biomedical Engineering, Biomedical Maintenance, Agricultural Mechanization). These programs lead to Bachelor's and Master's degrees in Engineering. In these programs, English is one of the major subjects and it is taught for specific purposes in line with the students present and future communicative and professional needs.

This study is conducted with 15 students majoring in second semester of Food Technology during the academic year 2024- 2025. The 15 students are the overall size of the population. So, we did

not proceed to any sampling. In fact, according to L. Cohen et al. (2018), for validity purposes, all individuals in the target population are considered when the target population is less than or equal to 30.

Based on this fact, the target population of 15 students constituted the sampled population. 25% of the participants were female and 75% were male, ranging from 20 to 24 years old. To ensure anonymity, students' names were replaced with an alphanumerical code. More specifically, each student received an S+1 code which s/he kept all along the whole study. Hence, the codes ranged from S1 up to S15.

3.2. Data Analysis Instruments and Methods

In order to collect data for the study, two (2) types of questionnaire were used. They were made of open questions. The first was related to the student participants' listening strategies prior to the instruction on note-taking and the second was about their opinions about their performance in listening after they were instructed on note-taking. The first questionnaire administered prior to instruction, comprised four (04) questions.

Question 1: how do you organize yourself during the Listening? aimed at collecting information about the students' past experiences concerning their actual involvement in listening comprehension activities. Question 2 dealt with students' self- evaluation of the efficiency of their various personal approaches to listening comprehension. Question 3: does this way of approaching listening allow you to grasp the main ideas and details of long oral inputs (conversations)?, Question 4: what length of audio (long or short) do you manage to understand better with this approach? tries to understand the types of oral inputs students usually interact with and listen with more interest.

In addition, the student participants were also administered three tests as a follow-up process for their performances before and after their instruction on note-taking. Data collected from the questionnaires were analyzed qualitatively while the data from the three tests were analyzed quantitatively.

3.3. Procedures of Data Collection

Three (03) tests were administered in the survey. The first one consisted of listening activities students were asked to complete. So, the student participants had to listen to a lecture of 5 minutes on food names by a professor of English for Specific Purposes (ESP) to complete two different activities. Activity 1 involved them in listening for main ideas while activity 2 dealt with listening for details.

In both activities, students listened carefully first before receiving the questions to answer. This step aimed to check on their preexisting listening strategies and right after the test, a first questionnaire was administered to them to account for those listening strategies employed. The performance in that first test was graded over 20 but no feedback was given.

After completing these activities, student participants were now instructed on note-taking following E. Kisslinger (2009)'s model as discussed earlier. Following her model, students were instructed on note-taking through eight steps all designed around engaging topics, but we finally

worked with seven (07) steps given that the eighth served for evaluation purposes. The steps are presented as follows:

Step 1: Connect to the topic: This step meant to activate what students' prior knowledge about the unit topic by connecting the topic to their personal experiences and beliefs. Practically, students filled out a short survey and compared their answers with a partner. Then, they shared some of their initial ideas about the topic before they explored it further.

Step 2: Build your vocabulary, familiarized student with some of the key content words and phrases used in the lecture. Each lecture contains 10-15 keywords from the Academic Word List to ensure that students are exposed to the vocabulary needed for academic success. Students read and listened to target words and phrases in context so that they could better prepare for the upcoming lecture. Students then worked individually or with a partner to complete exercises to ensure an initial understanding of the target lexis of the unit. A supplementary Interact with Vocabulary activity followed to enable students to focus on form as they are learning new words and collocations.

With **Step 3:** Focus your attention, was meant to identify strategies students learned for listening actively and taking clear notes. Here, they were provided with specific tips to help them direct their attention and gain more control over how they listen. Tips included using signal words as organization cues, making lists, noting definitions, linking examples to main ideas, identifying causes and effects, and separating points of view. To make sure they assimilated this step, A Try It Out section, based on a short audio extract, allowed them to work on listening and note-taking strategies before they got to the main lecture.

At **Step 4:** Listen to the lecture, as the central part of the instruction process, it allowed for two full listening cycles, one to focus on "top-down listening" strategies, which mainly has to do with listening for main ideas, and one to focus on "bottom-up listening" strategies, mainly to listen for details. Note- taking, which is our focus in this paper intervened at this specific level and involved students in noting key information that helped them answer comprehension questions about the lecture they listened to in audio mode.

Step 5: Talk about the topic, exposed students to valuable discussion skills as they talked about the content of the lectures. In this activity, they first listened to a short "model discussion" involving native and non-native speakers, and identified the speaking strategies that were used. They then practiced the use of some of those strategies in their own discussion groups. The discussion strategies modeled and explained across the different topics covered included asking for and sharing opinions and ideas, agreeing and disagreeing, offering facts and examples, asking clarification questions, seeking confirmation, and paraphrasing.

Step 6: Review your notes was used to guide students in reviewing the content of the unit, with a view to clarifying concepts. In addition to fostering memorization from them, this step consisted mainly in completing activities related to what they have already seen before. At this level, the teacher provided specific guidance to some students who misunderstood some aspects regarding the previous steps.

The last **Step 7:** Extend the topic, created a natural extension of the unit topics to areas that were relevant to the students. Hence, students first listened to a supplementary media clip drawn from a variety of interesting genres. They then chose an optional extension activity and prepared a class presentation in pairs.

After implementing E. Kisslinger's model of note-taking, students were administered the same test 1 with extra instruction inviting them this time to make use of the notes-taking strategies and techniques studied. Again, each student received a grade over 20.

The model was applied to three (03) other lectures dealing, respectively, with Food production, Food transformation, and Food conservation: how we each learn best. Finally, students were tested on a lecture not studied in class but following the same principles. The purpose here was to check their ability to replicate the steps covered and apply the instructed model to other listening contexts. Grades over 20 were also sorted-out for the performances on this last test.

4. RESULTS

The results in this study are presented in two (02) forms, namely, qualitative and quantitative.

4.1. Quantitative results

The quantitative results of this study were obtained from the recording of the students' grades after the three tests administered over the study period. It is presented on a single table presenting the evolution of the students' performances over the study as follows:

Table I. Evolution of Students' Performance over the three (03) tests

Grades over 20			
Students	Test 1	Test 2	Test 3
S1	06	12	16.5
S2	04	09	14.5
S3	05	11	15
S4	04	08	15
S5	06	10	14.5
S6	03	09	16
S7	07	13	17
S8	06	11	15
S9	02	08	15.5
S10	06	13	16.5
S11	07	15	18
S12	05	09	15
S13	04	10	14.5
S14	06	12	16
S15	08	13	17

According to the table, the results of Test 1, which occurred before students were instructed on note-taking tips, reveal that the students had poor performances. 100 % of them, (15 out of 15 students) failed to obtain the passing grade, which is 10. Instead, they obtained grades comprised

between 02/20 and 08/20. This corresponds to low and below-average grades in the Beninese grading system.

Students' performances at Test 2 reveal that there has been some improvement. Indeed, the column displaying Test 2 grades shows that 10 students out of 15, that is 66.67 % of the participants obtained a grade over 10. At this level, the students performed better, demonstrating that the instruction they received helped them do better in listening activities compared to their previous experiences.

The column dedicated to Test 3 about the final evaluation administered during the survey reveals that once they had a good mastery of the seven (7) steps, the students become better listeners with grades ranging from 14.5 to 18. From this observation, it appeared that the participants have achieved even better with a total of 100 % of the students who received a grade beyond 14, which is a good performance, according to the Beninese grading system. The column displaying Test 3 performances further reveals that 79.92 % of the students obtained a grade that can be assimilated to very good. Compared to Test 1 and Test 2, it can be concluded that students demonstrated a good mastery of the note-taking skill which helped them be even more productive.

4.2. Qualitative Results

The qualitative results of this study were obtained from the analysis of two (02) questionnaires. The first questionnaire comprising four (04) questions was administered at the beginning of the study, before instruction. It attempted to grasp students' perceptions and practices about listening comprehension.

Question 1: How do you organize yourself during the Listening? revealed that most students recognize that they did not use note-taking while listening to an audio track. Many of them even considered the listening comprehension activity as an activity that required no specific methodology. As S1 emphasized, he would simply "rely on the audio and the memory to understand the content […] then try to remember what was said to answer the questions." Similarly, S3 declared that he has no particular approach when listening to an audio track. In his terms, "I don't have any particular organization regarding listening".

Question 2 asked students: Do you think that this approach to Listening allows you to understand the content of the audio so that you can give correct answers to the questions asked on the audio? As a consequence of the students' answers at Q1, students recognized that their approaches to listening comprehension did not help them at all while listening to an audio track. For example, S9 responded that "I find it very difficult to listen ad understand some parts of the audios and was skipping questions that I couldn't retain the information", which is the main pattern of answers provided by almost all the students at Q2.

Question 3, Does this way of approaching listening allow you to grasp the main ideas and details of long conversations? sought to understand the performances of the students while using their own practices in terms of listening comprehension. Most students here also replied that they are unable to perform or reply to questions after listening to audio tracks. This position is well illustrated by S8 and S13 who stated, respectively, "Even with short conversations it generally doesn't work" and "This way can't help with long conversations at all."

Question 4 of the first questionnaire was: What length of audio (long or short) do you manage to understand better with this approach? It showed interest in the types of audio tracks the respondents were able to better understand while using their own approaches. The responses clearly indicated that students mostly found their way when dealing with short conversations, while it was harder for them to understand longer audio portions. As an example, S4 replied "short ones", which indicates that he can only deal with shorter audio files. The same idea is repeated by S7 who stated the following: "I can only understand short conversations; I find longer ones really difficult to go about.

The first questionnaire administered to the students revealed that they use their own approaches to listening comprehension, which are mostly memorization strategies that have no efficiency as such. Indeed, almost all of them recognized that they fail to obtain good results or understand the main or specific points in an audio file when using their own strategies.

The second questionnaire was administered after instruction. After teaching students using E. Kisslinger's (2009) model, we evaluated their performances and submitted a post-instruction questionnaire comprising three (03) questions that aimed to collect their impressions regarding the process they have been through.

The first question (What does the lecture on listening and note-taking allow you to do now?) was aimed at measuring the impacts of the lecture on listening and note-taking on the students' understanding of the audio and the accuracy of their answers to the questions asked on the audio. It sought to know if the students' representations had changed after the instruction they received. The respondents unanimously recognized that their perceptions have changed as regards listening comprehension. S6 for instance stated, "with this course, I have an insight on note-taking techniques and that helps me get the maximum of information I make use of after the listening." Similarly, S14 stated that "I am no longer stressed nor anxious for long conversations or audio as it used to be. I now know how to identify examples, details and main ideas in a short and long conversations. I am also able to use signal phrases or expressions to grasp the message in a conversation.

The second question asked: Do you think this course allows you to remember the content of the conversation long after you have listened? This question checked the respondents' ability to remember the content of the conversations or lectures they listened to while using effective note-taking. It emerged that students could base on their notes to remember the key information in the audio tracks they listened to. For example, S12 replied that "Indeed, the notes that I took help me remember the content of the conversation long after I listened". All the answers provided by the respondents at this level indicate that they all noted considerable change in their capacity to remember key information with the help of note-taking.

The last item, Q3, formulated as list some of the benefits you gained from the listening and note-taking course dealt with the benefits of note-taking from the perspective of the respondents. They were asked to enumerate some of the benefits they think they drew from the course they attended. The students' answers ranged from easier understanding or comprehension of longer audio tracks to more elaborated abilities such as readiness to attend conferences, enjoy listening to audio tracks,

and developing organizational skills. The answers of S6, S7 and S10 are as follows: "Ability to take notes while listening, readiness to attend conferences, and capacity to focus on the input" (S10); "understand any type of audios by being able to identify their main ideas" (S6), and "improves of the ability to understand long conversation, allows the identification and analysis of main ideas, in an audio" (S7).

As a result, effective listening comprehension becomes essential for students to grasp course content, participate meaningfully in class, and perform well academically.

5. DISCUSSION

Listening comprehension is a difficult task for many EFL learners. This skill is all the more challenging to acquire because most teaching contexts neglect the development of students' skills in preparatory activities that can facilitate learning. In the course of this research, it became clear that insufficient practice of listening comprehension is at the root of several problems for students, including a lack of self-confidence and poor performance. This observation aligns with the findings of Vandergrift and C. C. M. Goh (2012), who also identified the conditions under which students cannot develop their listening comprehension skills. It is necessary to address these problems with effective approaches to help students improve their performance and feel more confident.

The analysis of data collected showed that note-taking, when used effectively, can play a crucial role in listening comprehension courses, enabling students to efficiently grasp and retain important information from lectures and conversations. In our context, the use of E. Kisslinger's model contributed to improved student comprehension.

Although they used a different model, Thompson and J. Rubin (1996) also found that prior knowledge, or any information students can draw upon before or during listening, is essential for facilitating understanding of key points in the content.

Indeed, most students acknowledged that before participating in our courses as part of this project, they used strategies learned from previous school experiences that did not allow them to achieve good results. The main benefit of note-taking they identified in our listening comprehension course was therefore improved comprehension. By taking notes according to E. Kisslinger's model, Kisslinger (2009), students engaged with the material, focusing on key ideas and supporting details. This active involvement helped them process the information more deeply and make connections between different concepts, leading to a better understanding of the subject matter, which set the floor for self-efficacy.

Another benefit of the approach used is the improvement of learners ability to retain and remember information. In fact, the students' answers presented above show that note-taking helped them retain information better because they could revise those notes at any time after the listening session is done and still clearly remember the content. As stated in the conclusions of the studies by C. C. M. Goh (2002) and L. Vandergrift and M. H. Tafaghodtari (2010), the use of post-instruction strategies is likely to help the listener use his/her own tips and techniques to better interact with and understand the listening material (Piolat, A., Olive, T., & Kellogg, R. T., 2005, p.75). This was possible in our study because of the students' ability to apply the principles of

selective listening, which enabled them to focus on information that is important, based on keywords and speech indicators.

Finally, the courses provided allowed students to gain confidence in their ability to prepare for upcoming listening comprehension exams. As evidenced by the improvement in their scores between tests 1 and 3, their ability to take clear and concise notes proved to be a valuable asset in preparing for exams which are their ultimate goals. The students reported being able to take notes effectively, review them to refresh their knowledge, and solidify their understanding. It is clear from the instruction they received that this process helped them consolidate their learning, identify their weaknesses, and prepare effectively for exams and assessments.

6. CONCLUSION

This study set out to examine the effect of note-taking on students' listening comprehension skills development, using a cohort of Food Technology students as a case study. The findings demonstrate that systematic instruction in note-taking significantly improves learners' ability to understand, retain, and respond to spoken input in English. Quantitative data obtained from the three successive tests reveal a steady and substantial improvement in student performance. Whereas none of the participants reached the passing score in the first test administered before instruction, two-thirds of the class obtained satisfactory scores in the second test, and all students achieved good to very good performances in the final assessment. This progression clearly indicates that note-taking provided students with structured strategies that enhanced their listening processing and output accuracy.

The qualitative data further reinforce these results. Before instruction, students largely relied on passive listening and short-term memorization, which proved ineffective for grasping main ideas, specific details, and longer speech segments. After receiving instruction based on Kisslinger's (2009) model, students reported improved comprehension, reduced anxiety, and the ability to identify key information through signal words, structure and organization. They also noted benefits extending beyond the classroom, such as readiness to attend conferences, improved focus, and increased confidence when listening to longer audio recordings. These outcomes suggest that note-taking not only supports comprehension but also promotes learner autonomy and academic preparedness.

Taken together, the results show that note-taking is a valuable pedagogical tool that facilitates deeper processing of auditory information, longer retention, and more accurate task performance. For EFL learners in technical fields such as Food Technology—where lectures, technical explanations, and professional oral communication are frequent—integrating explicit note-taking instruction into listening courses appears crucial. It is therefore recommended that teachers adopt structured note-taking models and allow students regular practice with authentic audio input. Future research may expand the sample size, explore digital note-taking tools, or compare different pedagogical approaches in order to strengthen and generalize these findings.

REFERENCES

[1] Asenjo Z. N., & Ferreira C. A. (2018), "Mejoramiento de la comprensión auditiva en portugués como LE en contextos comunicativos mediados por la tecnología." Estudios Pedagógicos, 27–44.

[2] Barati H. & Hashemi S. H., (2018). "Dynamic assessment in EFL classrooms: Assessing listening comprehension

[3] in three proficiency levels", International Journal of Research Studies in Education, 4(3), 17-31.

[4] Boon O. (1989). "Note-taking for Hearing and Hearing impaired students", Journal of Reading, 32: 523-536. Brown Gillian & Yule George, 1983, Teaching the Spoken Language, Cambridge, Cambridge University Press, 162 p.

[5] Bui, D. C., Myerson, J., & Hale, S. (2013). Note-taking with computers: Exploring alternative strategies for improved recall. *Journal of Educational Psychology, 105*(2), 299–309. https://doi.org/10.1037/a0030367

[6] Buzan, T. (1993). *The mind map book*. BBC Books.

[7] Carrier Karen A. (2003). "Improving high school English language learners' second language listening through strategy instruction", Bilingual Research Journal,27(3): 383-408.

[8] Cohen L. Manion L. and Morrison K. (2018). Research Methods in Education, London, Routledge, p.945.

[9] Di Vesta, F. J., & Gray, G. S. (2023). Listening and note-taking. *Journal of Educational Psychology*, 63(1), 8–14.

[10] Fajardo C. P. (1996) "Note-taking: A useful device", English Teaching Forum 34(2): 22-26.

[11] Goh C. C. M., (2002), "Exploring Listening Comprehension Tactics and Their Interaction Patterns." System, 30: 185–206.

[12] Hartley J. & Ivor K., (1978), "Note-taking: A critical review", Programmed Learning and Educational Technology 15: 207-224.

[13] Hayati, A. M., & Jalilifar, A. (2009). The impact of note-taking strategies on listening comprehension of EFL learners. *English Language Teaching*, 2(1), 101–111.

[14] Herron C. A. & Seay I., (1991), "The Effect of Authentic Oral Texts on Student Listening Comprehension in the Foreign Language Classroom." Foreign Language Annals, 24: 487-495.

[15] Kiewra, K. A. (1985). Investigating note-taking and review: A depth of processing alternative. *Educational Psychologist, 20*(1), 23–32. https://doi.org/10.1207/s15326985ep2001_4

[16] Kiewra, K. A. (1987). Note-taking and review: The research and its implications. *Instructional Science, 16*(3), 233–249. https://doi.org/10.1007/BF00120252

[17] Kisslinger E. (2004). Contemporary Topics 2. Pearson Education.

[18] Mckeating D. (1981). "Comprehension and listening", *In Abbott & Wingard (eds.) The teaching of English as an international language*. London: Collins, 57-58.

[19] Mueller, P. A., & Oppenheimer, D. M. (2014). The pen is mightier than the keyboard: Advantages of longhand over laptop note-taking. *Psychological Science, 25*(6), 1159–1168. https://doi.org/10.1177/0956797614524581

[20] Novak, J. D., & Gowin, D. B. (1984). *Learning how to learn*. Cambridge University Press.

[21] Pauk, W., & Owens, R. J. Q. (2010). *How to study in college* (10th ed.). Cengage Learning. Piolat, A., O, T., & Kellogg, R. T. (2005). Cognitive effort during note-taking. *Applied Cognitive Psychology*, 19(3), 291–312.

[22] Rost M, 20011, Teaching and Researching Listening (2nd ed.)., Edinburgh, Pearson.

[23] Slotte V. & Lonka K. (2003). "Note-taking review-practical value for Learners", Arobase, 1-2: 79-86.

[24] Thompson I. & Rubin J. (1996) "*Can Strategy Instruction Improve Listening Comprehension?" Foreign Language Annals*, 29: 331-342.

[25] Sweller, J. (1998). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, 12(2), 257–285.

[26] Vandergrift L. & Goh C. C. M., 2012, "Teaching and Learning Second Language Listening: Metacognition in Action" (1st ed.). Routledge, pp. 224–226.

[27] Vandergrift L., & Tafaghodtari M. H. (2010). "Teaching L2 Learners How to Listen Does Make a Difference: An Empirical Study." *Language Learning,* 60: 470-497.