

**The Impact of Five Note-taking Techniques on
Academic Listening Comprehension of EFL
Student Teachers**

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Abstract

This study aims to investigate the impact of five note-taking techniques namely: Sentence, Outlining, Charting, Cornell, and Mapping on the academic listening comprehension of EFL student teachers. The participants included thirty four student teachers enrolled in first year, English department, at Port Said Faculty of Education. The study adopts a pre-posttest quasi experimental design. The researcher divided the participants randomly in to two groups: control group participants who did not apply note-taking techniques during the lectures and experimental group participants who applied note-taking techniques during the lectures, using each time one different type of note-taking. In each lecture, participants were pretested and post tested using an item gap filling listening comprehension test prepared by the researcher. In order to probe the differences between the two groups and examine

the effectiveness of the five note-taking techniques, t-test was carried out in addition to a questionnaire eliciting participants' views about each administered technique. T-test results of the scores of the control and experimental group in the pretest and posttest of listening comprehension revealed that there were higher levels of listening comprehension in favour of the participants who applied note-taking during the lectures. Moreover, results revealed that participants considered all techniques beneficial and applicable with a definite prioritizing. The study recommended all types of note-taking techniques to be applied in the TEFL context in general and in higher education context in particular to gain various educational benefits.

Keywords: note-taking techniques, listening comprehension, teacher education program.

1 Introduction

Listening refers to the process of forming meaning out of oral input for different purposes and motives. In the EFL context, learners aim to gain information through listening by storing and recalling data. Similarly, at college level student teachers are supposed to

comprehend and recall information through listening to lectures in a process called academic listening.

Academic listening is one type of listening which is defined as an activity practiced to understand course content (Gur, Dilci, Coskun, and Delican, 2013, p.93). In achieving high levels of academic listening comprehension, there are some challenges college students face such as the tendency to be passive listeners during the lecture and the inability to apply active listening strategies. In addition to the recent changes in the educational context which present an extra challenge.

Currently, in the Egyptian context, electronic books dominate education at the university level instead of the traditional books. This is after the decision of The Supreme Council of Governmental Universities of converting the university book in its traditional form into an electronic book at the beginning of the new academic year 2021–2022. This transition is due to various reasons, the most important of which is to achieve the goals of the sustainable development plan of Egypt's 2030 strategy including digital transformation as its major focus and this transformation presents a challenge for some students. Generally speaking, it is important to pinpoint, underline, record, and conclude presented data in order

not to forget the content of the listening material. The presence of the traditional book, according to some students, facilitated these processes. More specifically, students who are described as visual learners feel uncertain of their comprehension while there is no book to refer to.

As any other language skill, listening comprehension can be developed when applying effective techniques (Epçaçan, 2013; Erdem and Erdem, 2015; Kardaş and Harre, 2015). That is to say, the development of listening skill and the ability to overcome listening comprehension challenges are possible through effective listening education and the application of promising effective listening techniques.

A prominent technique that many researchers recommended to increase listening skill is note-taking (Carrell , Dunkel, and Mollaun, 2002, 2004; Kilicaya and Cokal-karadas, 2009; Gur, Dilci, Coskun, and Delican , 2013; and Kim, 2019). Note-taking, according to Piolat, Olive, and Kellogg (2005) and Zhang (2012), refers to a complex activity that requires one to understand and choose information.

Note-taking can achieve many benefits. According to Ozbay (2005, p. 85), it prevents forgetting 80% of content. Moreover, as Howe (2001) elaborates, when learners do not take notes, their attention span is 10 to 15 minutes. This period is extended with note-taking which increase the interest, motivation level, and comprehension of the listeners. Note-taking can be implemented in different ways as there are five major note-taking techniques: sentence, outlining, charting, cornell, and mapping. The systematic application of these techniques has expected educational value.

Reviewing previous literature, the investigation of the effectiveness of note-taking techniques in previous research is not well grounded. In another respect, although there have been several studies concerning listening skill as many researchers noted (Ghassemi, 2013; Kirbas, 2017; Heredia, 2018; Fathi and Hamidzadeh, 2019), research related to listening comprehension in the EFL higher education class has been limited In number. Accordingly, the researcher in the present study shed the light on the five note-taking techniques in relation to the EFL college class.

On the grounds of these reasons, the present study sought to examine the effect of five note-taking techniques namely: sentence,

outlining, charting, cornell, and mapping on EFL student teachers' academic listening comprehension.

1.1 Context of the Problem

The starting point for the researcher, who works as a staff member at faculty of education, was to contribute in achieving the benefit from the current lecturing system, wherein the student teachers listen without the traditional book as a reference support, and overcome any recorded difficulty that hinder comprehension. There were some problems behind achieving high levels of listening comprehension as the researcher noticed. The researcher observed that visual learners are not comfortable without the printed book. They needed to refer to the course material while listening due to their learning style preference. Simply, they are not used to listen without referring to their books and this caused a problem in achieving adequate level of listening comprehension. Also, the researcher encountered with the problem of passive listening and the inability to apply active listening techniques. This passivity results in forgetting content and weakness in comprehension, recall, and achievement. Moreover, the students who resort to note-taking during the lectures, to support their comprehension, applied incompetent note-taking techniques which reflect their lack of

cognitive background about how to systematically apply note-taking in various ways. They perform note-taking without following precise procedures and leave it to chance.

Thus, listening comprehension during the lectures was affected by these three observations: visual learners, passive listeners, and ineffective note-taking procedures. Consequently, they received the researcher's attention and were taken in to consideration in order to solve the students' problems and achieve high levels of academic listening comprehension.

Furthermore, the researcher conducted a pilot study, a survey for faculty of education staff members to reflect on the level of listening comprehension EFL students achieved during the lectures while instructing them in the first term of the academic year 2021-2022. The survey included two questions: "Have you recorded a problem in listening comprehension while lecturing without the traditional book? Mention if there is any.", "Do you recommend note-taking to be systematically applied by your students while listening to the lecture? Elaborate." Results revealed that there are some problems remarkably appeared in the classroom with the new electronic book system such as weak comprehension and recall. Also, participants strongly support the correct application of note-taking techniques in

order to raise comprehension, recall, and achievement. The survey was applied through a Google form on 10 EFL lecturers at the end of the first term of the academic year 2021/2022.

Thus, the present study was an attempt to probe the impact of five NT techniques on the academic listening comprehension of EFL student teachers.

1.2 Statement of the Problem

The problem thus can be identified as follows: low level of academic listening comprehension in the EFL class wherein student teachers at faculty of education faced challenges in the light of the new lecturing system. Also, their inability to apply note-taking techniques competently as they did not receive training in this area and apply it randomly. If student teachers apply systematic note-taking, they are expected to achieve high levels of listening comprehension during the lecture. Hence, this study sought to answer these questions:

- 1- What are the main features of a treatment based on note-taking techniques?

- 2- How far is a treatment based on note-taking techniques effective in developing the academic listening comprehension of student teachers?

1.3 Hypotheses of the Study

The present study tested the following:

- 1- There is no significant statistical difference between the experimental group's mean scores and the control group's mean scores in the pre-application of the listening comprehension test.
- 2- There is a significant statistical difference between the experimental group's mean scores and the control group's mean scores in the post-application of the listening comprehension test in favor of the experimental group students.
- 3- There is a significant statistical difference between the experimental group's mean scores in the pre-application and post-application of the listening comprehension test in favor of the post-application.
- 4- There is a significant statistical difference between the control group's mean scores in the pre-application and

post-application of the listening comprehension test in favor of the post-application.

1.4 Purpose of the Study

It was to probe the effect of NT techniques on developing the academic listening comprehension of student teachers.

1.5 Significance of the Study

Significance stemmed from the following considerations:

- Techniques and test presented in the study might be beneficial to EFL researchers, teachers, and course designers.
- The study might provide guidelines upon which further treatments may be administered to develop EFL listening comprehension.
- The study might provide guidelines upon other EFL skills that may be developed through the application of note-taking techniques.

- The study might provide EFL staff members with guidelines on how to train their students to systematically apply various note-taking techniques.
- The study might shed the light on other dimensions that affect academic listening comprehension in the context of high education with the contemporary lecturing system.

1.6 Delimitations of the Study

This study was restricted to:

- The application of five note-taking techniques: sentence, outlining, charting, Cornell, and mapping.
- Academic listening comprehension of EFL student teachers at faculty of education while attending "Curriculum Teaching 1" course.
- An item gap filling listening comprehension test designed by the researcher, in addition to a questionnaire to elicit participants' viewpoints about each administered technique.
- A sample of thirty four first year student teachers enrolled in the English department, faculty of education, Port Said University.
- A limited duration for implementing the study (eight weeks in the second term of the academic year 2021/2022).

1.7 Definition of Terms

Some terms were repeatedly used in the present study. The following are definitions of these terms:

Listening Comprehension

According to Rost (2002, p.7), listening comprehension is an invisible mental process that allows language learners to understand spoken language.

Similarly, Fang (2008, p.21) points out that listening comprehension is an active process of constructing meaning that listener focuses on the selected pieces of oral input, and relates what they heard to his/her existing knowledge.

In the present study, academic listening comprehension refers to the ability of EFL student teachers to understand, interpret, retain, and interact with the spoken utterances related to the course material.

Note-taking

Piolat, Olive, and Kellogg (2005) and Zhang (2012) define NT as a complex activity that requires one to understand and choose information as it involves writing main idea and important points regarding the information presented during listening.

In this study, note-taking techniques are defined as the activities performed by EFL student teachers during listening to the lectures through which they identify main idea and select important points to be systematically organized in their notes as the course reference support.

2 Review of Literature

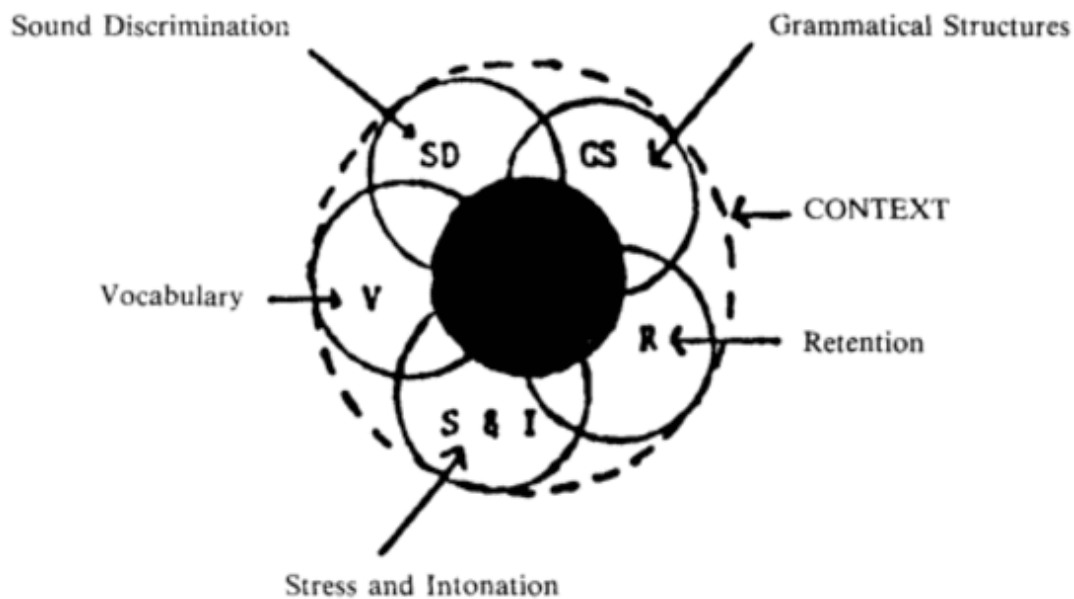
In the following section the researcher sheds more light on the concepts of listening comprehension and note-taking techniques.

2.1 Listening Comprehension

Simply, this receptive skill refers to the ability to recognize sounds and realize meaning. However, there are certain conditions for listening comprehension to occur. According to Horton (2000), listening comprehension is done through perceiving language features and/or forming information. Listening comprehension can thus be described as an active process of building meaning wherein

listeners focus on oral input, and refer to their own knowledge (Fang, 2008, p.21). Actually, listening comprehension is a well-known process for its complexity. The following pioneering figure is a visual representation of the components of listening comprehension:

Figure1. Components of Listening Comprehension



(Source: Wipf, 1984, p.345)

According to Ghassemi (2013, p.45), listening comprehension gained importance in language learning. The main reason for the significant consideration of this skill is that listening is the main

channel of L2 acquisition (Rost, 2002, p.10). Specifically, in the university context, listening comprehension has an unquestionable importance as college students spend 53% of their time listening (Robertson, 2004, p.62). Moreover, as Engin and Birol (2000, p.114) stated, about 90% of the information obtained by university students is obtained through listening.

Consequently, researchers tried to improve learners' listening comprehension in the EFL class including the application of various listening strategies. Still, as Batur and Erkek (2019, p. 639) argue, most studies about listening are theoretical and very few studies offered applications. Reviewing previous research shows that there are many studies that sought the development of listening comprehension in the EFL class. Some of these studies are mentioned in the following lines:

Zhang (2015) proposed a model based on ARCS model with the purpose of improving English listening proficiency. The ARCS model was both motivational and instructional model and the researcher recommended utilizing this model in college setting to achieve high levels of listening comprehension and listening proficiency both in learning and teaching.

Moreover, Porchesku and Khuziakmetov (2016) aimed in their study to discuss the notion of the perception base of the language. They probed the application of bottom–up listening and its effect on a listening comprehension and the findings of the experiment were analysed.

In an experimental study, Kirbas (2017) studied the effect of the learning together technique on developing listening comprehension of the secondary school eighth grade students. The 'Listening Comprehension Achievement Test' revealed that the students achieved progress.

As for the quasi–experimental research conducted by Heredia (2018), some listening techniques were used to foster listening comprehension. The students had poor listening skills. They applied note–taking, dictogloss, and dictation. Questionnaires, interviews, the pretest and the posttest were utilized. Results confirmed listening skills improvement.

Concerning Fathi and Hamidizadeh (2019), the researchers probed the role of listening strategy instruction at Islamic Azad University. It was found that the listening strategy instruction was effective in promoting listening comprehension.

The aforementioned studies are similar to the present study as they sought to improve listening comprehension of EFL learners. These studies, as well as the present one, suggest new techniques to improve listening comprehension in the EFL context. However, the present study shed the light on five applicable techniques that college students can utilize to improve academic listening comprehension and their views about each technique were regarded. In the following section, the five note-taking techniques are discussed.

2.2 Note-taking Techniques

There are many listening techniques that can be applied to develop comprehension. These techniques can be classified in two types: techniques that are based on methodology and techniques that are based on assessment. Examples of the first type are: note-taking, dictogloss, and dictation. Examples of the second category are: matching, multiple matching, and sentence completion exercises (Heredia ,2018, p. 65). Being one of the listening techniques based on methodology, note-taking is described as a complex process that has to be implemented systematically.

Piolat, Olive, and Kellogg (2005) and Zhang (2012) define note taking as an activity that needs individual to understand and select data as It involves writing basic idea and specific details.

According to Bahrami and Nosratzadeh (2017) and Saravani (2019), note-taking has many benefits: It has a high effect on students' comprehension skills. It helps the students comprehend content. It helps the students recall the content of the course. It attracts the students' attention. It prevents students from missing important information. Moreover, it trains learners to become independent.

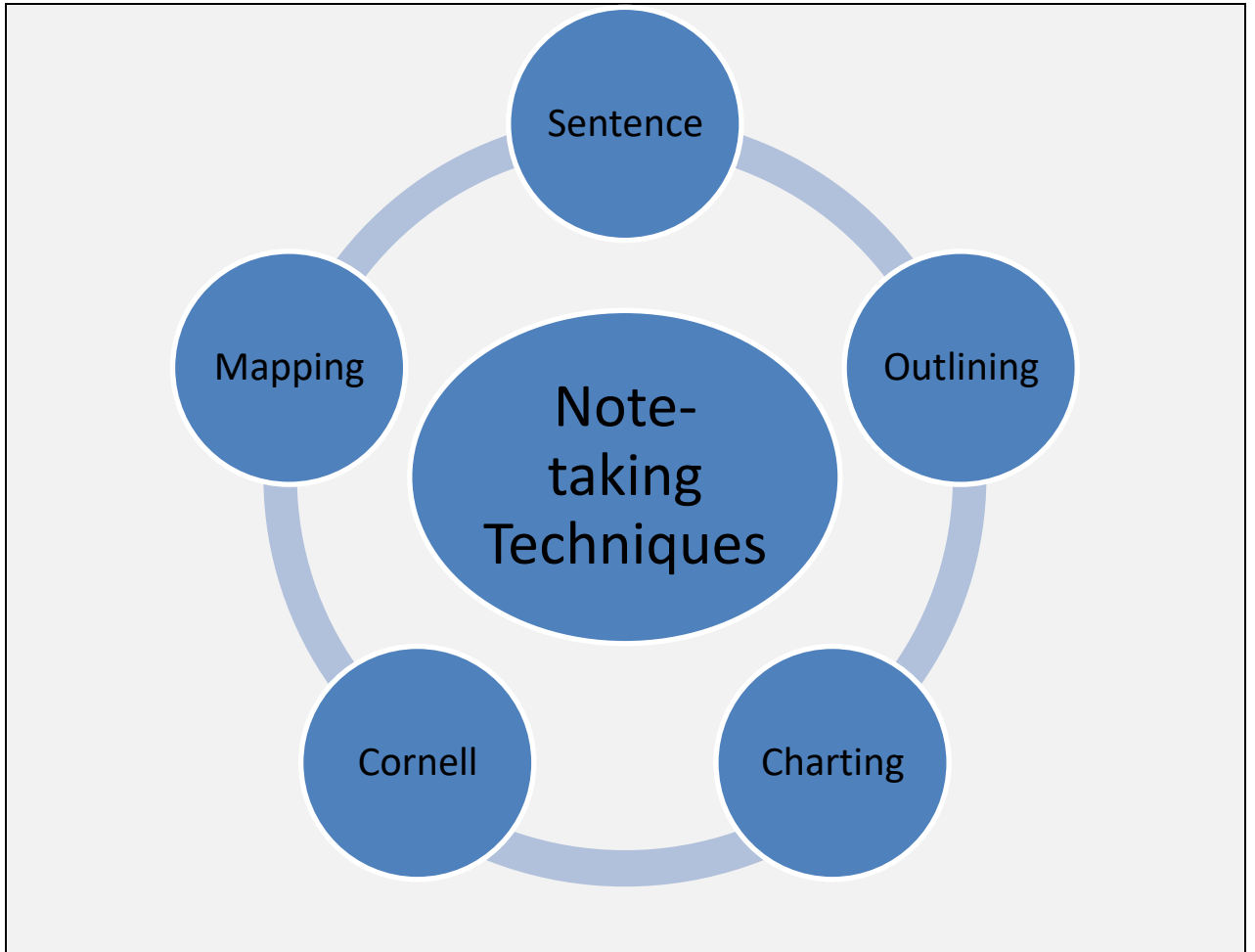
Regarding the history of note taking, Kim (2019, p.26) mentions that academic research on note-taking started only in the 20th century. After that it in the 1990s it was reactivated by high-stake exams that provided note-taking while testing. Recently, research is concerned with the learning situation (Carrell , Dunkel and Mollaun, 2002, 2004; Kilicaya and Cokal-karadas, 2009) or the testing situations (Dunkel and Mollaun, 2002, 2004 and Carrell, 2007).

According to Kim (2019, p.25), students should receive traing in note-taking strategy in order to excel in academic listening

comprehension and tests. Students should be aware that in note-taking, as confirmed by Castello and Moreno (2005, p.266), they should not write each piece of information they listen to and be selective according to the value of the information.

Concerning the technique students can apply during note-taking, there are five major ones as presented in the following figure:

Figure2. Note-taking Techniques



(Source: Original)

Each of the aforementioned techniques has a particular way of organization. In sentence note-taking, students write down topics in separate sentences. However, in outlining note-taking students use indented outlining listing major ideas at the left and specific data at the right. Furthermore, in the charting technique

students draw columns labeling appropriate headings in a table. As for the Cornell technique, it is a systematic format that includes key words, notes, and summary. Last but not least, it is the mapping technique that includes the graphic representation of the content with specific indication of the relations between ideas.

Reviewing previous research reveals that some studies were carried out to investigate the relation between note-taking techniques and EFL listening comprehension. Examples of these studies are as follows:

In the study of Gur, Dilci, Coskun, and Delican (2013), the researchers' purpose was to identify how listening to different lecture types (informative, narrative and philosophical) using note-taking affects listening comprehension. The results revealed that the participants who took notes comprehended better.

As for Ipek (2018), the researcher explored 61 students' perceptions on their improvement in both listening and Note-taking. Data were collected through a questionnaire. Findings

reveal that students expressed improvement in their note-taking skills in specific training areas.

Furthermore, Ozcakmak (2019) investigated the effect of note taking on prospective teachers' academic comprehension. 72 students participated in this study wherein they apply note-taking. Results confirm that students improved in their academic comprehension and achievement.

In a recent study, Salame and Thompson (2020) probed the effect of strategic-note taking on improving 160 students' performance. A survey questionnaire elicited the students' perceptions about the benefits of strategic note-taking. Data revealed the development of students' learning in general.

The previously mentioned studies are similar to the present one as they all confirm the importance of note-taking, the relation between note-taking and listening comprehension, and the applicability of note-taking in college setting including lectures, training sessions, or even tests. Still, the present study focused on training the students to use more than one technique of note-taking. It was the present study's main concern to introduce five note-taking techniques and probe their impact on

listening comprehension during the lectures as well as eliciting the student teachers' views about them. It is noteworthy that data related to this specific research point is limited as far as the researcher knows.

3 Method

3.1 Design of the Study

Adopting a quasi-experimental pretest posttest design, the researcher divided the participants in to two groups: control group participants (n=17) who did not apply note-taking techniques during the lectures and treatment group participants (n=17) who applied note-taking techniques during the lectures. In each lecture, participants applied one type of note-taking techniques and were tested using an item gap filling listening comprehension test. For the purpose of probing the differences between the two groups and examine the effectiveness of each of the five note-taking techniques, t-test was carried out. The following table illustrates the design of the study:

Table1. The Design of the Study

Group	Pretest	Treatment	Posttest
Control group N (17)	Listening comprehension test	No application of techniques.	Listening comprehension test
Experimental N (17)	Listening comprehension test	Applying note-taking techniques during the lectures.	Listening comprehension test

3.2 Participants

The participants in the present study included thirty four student teachers enrolled in first year, English department, at Port Said Faculty of Education. Participants were attending the lectures of the course "Curriculum Teaching1" in the second term of the academic year 2021/2022. They were divided randomly in to two groups: control group participants who did not apply note-taking techniques while listening to the lectures and experimental group participants who applied note-taking techniques while listening to the lectures. Participants were tested using the academic listening comprehension test. Moreover, they responded a questionnaire eliciting their views about each of the five administered note-taking techniques.

3.3 Instrument of the Study

The Listening Comprehension Test

The instrument of the study included an academic listening comprehension test prepared by the researcher. It includes five quizzes, each including 10 item gap filling questions that were prepared to be applied each lecture. Thus, in each lecture participants in the experimental group applied one type of note-taking techniques and were pre-post tested using an item gap filling test.

The participants' answers were examined to probe the differences between the two groups and investigate the effectiveness of each of the five note-taking techniques by using T-test.

The researcher confirmed the validity and reliability of the listening comprehension test by submitting it to a jury of four. Jurors were professors of curriculum and instructions in the Egyptian faculties of education. This is to ensure that the questions included were proper to evaluate academic listening comprehension in relation to the course content. Moreover, the test questions (n=50) measuring academic listening comprehension were conducted on 5 student teachers before the implementation. Considering responses, the

questions were accurate and clear. This assured that no meaning is lost. Furthermore, a colleague evaluated the students' responses to the test confirming reliability.

The Student Teachers' Questionnaire

A questionnaire eliciting experimental group participants' views about each administered technique was applied. The questionnaire, designed by the researcher, included seven questions related to the application of each type of note-taking as well as the whole experience. The questionnaire included yes/no questions to quantitatively identify whether participants support the applied techniques or not.

The researcher confirmed the questionnaire validity by submitting it to a jury of four. Jurors were professors of curriculum and instructions in the Egyptian faculties of education. This is to ensure that the questions included elicit the required views about note-taking techniques. As for the reliability, the questionnaire elicited straightforward personal opinion. The yes/no responses are descriptive which construct a basis to confirm stability of results.

3.4 Treatment: Five Note-taking Techniques

In order to improve academic listening comprehension, note-taking techniques were applied by student teachers during the lectures of the course "Curriculum Teaching 1" in the second term of the academic year 2021/2022. The participants applying the techniques were taught to identify main idea and elicit important information while listening to the course lectures. Moreover, they had the opportunity to apply, after adequate modeling and training, systematic note-taking in various ways as they applied a different note-taking technique each lecture.

It was convenient for student teachers to take notes while listening. They were comfortable having a written reference support and confident missing no important information. The nature of note-taking was remarkably helpful for those students with a visual learning style preference. It is also noteworthy that students revealed that they follow the same note-taking procedures while attending other lectures as it was helpful in their understanding and recalling.

The following table illustrates the administered note-taking techniques:

Table 2. Five Note-taking Techniques

Definition	Procedures	Advantages	Disadvantages
It includes writing each topic as a jot note sentence.	<ul style="list-style-type: none"> * Writing every new topic on a separate line. * Using numbering . 	<ul style="list-style-type: none"> * Better than prolonged writing. * No lost data. * prioritizing importance of ideas. * simplified notes for study and review. 	<ul style="list-style-type: none"> * Not easy to review.
Example of the Sentence Method			

World War I

The term "First World War" was first used by German biologist and philosopher Ernst Haeckel

"There is no doubt that the course and character of the feared 'European War' ... will become the first world war in the full sense of the word"

Cited wire service report in The Indianapolis Star on 20 Sept. 1914. Before World War II, generally known as the Great War or simply the World War

Definition	Procedures	Advantages	Disadvantages
<p>The outlining method Includes using indented outlining, space relationships will indicate the major/minor points.</p>	<ul style="list-style-type: none"> * paying attention to script. * Placing main points at the left. * Indenting more details at the right. 	<ul style="list-style-type: none"> * can be easily reviewed. * can be used if the information is presented in outline organization. 	<ul style="list-style-type: none"> * Requires more thought in class for accurate organization . * speaker speed affects it.
<p>Example of the Outlining Method</p>			

- Language and Oral Presentations **Traditional Format**
- BODY LANGUAGE (conveys your state of mind)**
- A. Movement**
1. Strive for natural movement.
 2. Control distracting mannerisms. (pacing, post-clicking).
 3. Develop natural style
 - (a) Move forward to stress points.
 - (b) Step back and focus attention on screen.
 4. Hold objects so audience can see them. (Never pass them around.)
 5. Avoid excessive and uncontrolled movement.
- B. Facial Expressions**
1. Smile.
 2. Appear relaxed and friendly.
- C. Gestures**
1. Use natural gestures to emphasize what you're saying.
 2. Integrate and coordinate gestures with text.
 3. Examples
 - (a) number of fingers = number discussed.
 - (b) sizes, shapes - tall, short
 4. Use gestures to help pace yourself.
 5. Use gestures based on audience size.
- D. Posture**
1. Practice good posture.
 2. Don't prop up against wall or desk.
 3. Don't sit unless it's part of presentation.

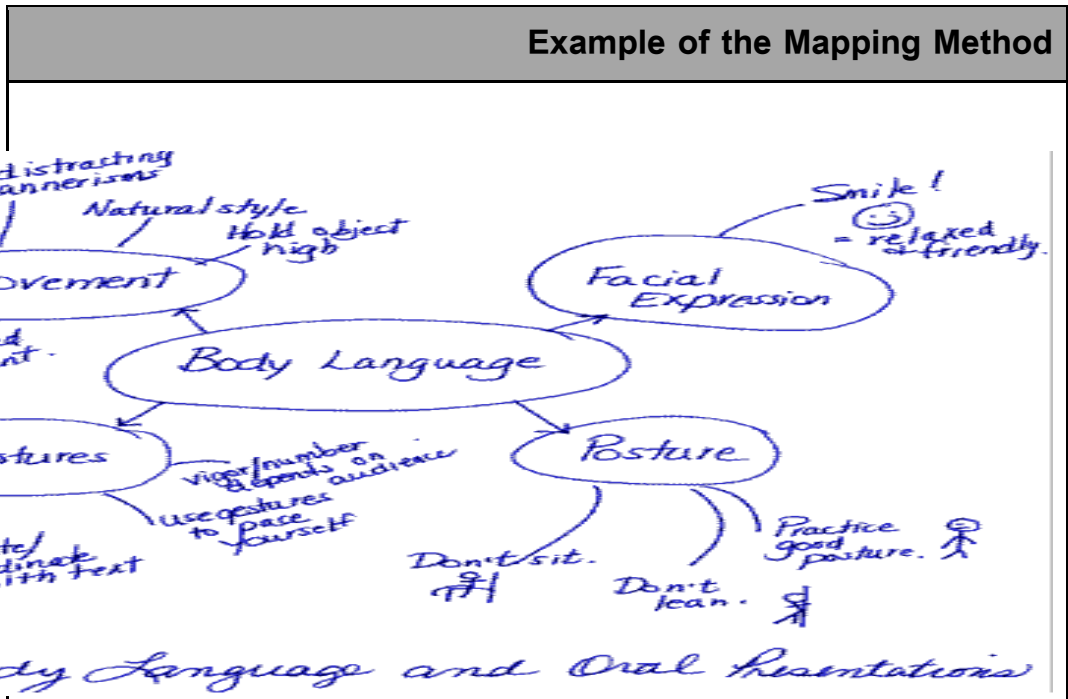
Definition	Procedures	Advantages	Disadvantages
<p>The Charting Method includes using a table containing rows and columns.</p>	<ul style="list-style-type: none"> *Determining the categories to be discussed. *Setting up paper in advance by columns headed by these categories. * Recording information (words, phrases, main ideas, etc.) into the appropriate category. 	<ul style="list-style-type: none"> * Track conversation and dialogues where relevant content could be lost. *Reduces amount of writing necessary. *Used when the content is heavy and presented fast. 	<ul style="list-style-type: none"> * locating the appropriate dimensions could be challenging.
<p>Example of the Charting Method</p>			

DATES	WAR	COUNTRIES	LEADERS	SIGNIFIANCE
1914 - 1945	WORLD WAR II	GERMANY JAPAN GREAT BRITAIN RUSSIA USA FRANCE POLAND and more	ADOLF HITLER JOSEPH STALIN FRANKLIN ROOSEVELT WINSTON CHURCHILL	BLAME BLAME BLAME
1950 - 1953	KOREAN WAR	KOREA USA CHINA	HARRY TRUMAN KIM IL-SUNG	

Definition	Procedures	Advantages	Dis- advantages
<p>The Cornell method An organized format for taking notes wherein spaces and cues are used.</p>	<ul style="list-style-type: none"> * Organizing margins. * During listening, notes are placed appropriately. * Skipping a few lines when the instructor moves to a new point. * Completing phrases and sentences as much as possible after listening. * Writing a cue in the left margin for every significant information. 	<ul style="list-style-type: none"> * Easy. * Simple and efficient. 	<p>None</p>
<p>Example of the Cornell Method</p>			

Keywords :	Notes :
Solids	<p>Types of Matter</p> <p>I. Solids A. Have a definite shape B. Have a definite volume</p>
Liquids	<p>II. Liquids A. Do not have a definite shape B. Have a definite volume</p>
Gases	<p>III. Gases A. Do not have a definite shape B. Do not have a definite volume</p>
<p>Summary : (Insert summary of lecture after class.)</p>	

Definition	Procedures	Advantages	Disadvantages
<p>Mapping is a graphic representation of the content in which ideas are related.</p>	<ul style="list-style-type: none"> * Starting with main topic. * Writing subtopics' titles * Writing necessary details. 	<ul style="list-style-type: none"> * Relationships can easily be seen through the visual organization. * beneficial for visual learners. * Helpful in remembering information. 	<p>changes in content from major points to facts are missing.</p>



As for the application procedures applied, the following table is a visual summary:

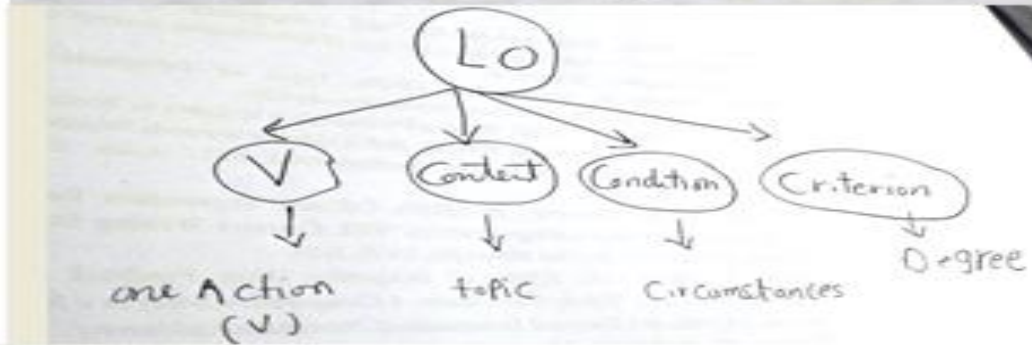
Table3. Application Procedures

Phase one Preparation	<p style="text-align: center;">-Instructing, modeling, and training the experimental group on how to apply the five note-taking techniques.</p> <p style="text-align: center;">-Preparing the tests to be applied each lecture.</p>	
Phase two Application	Sessions 1-5	Procedures <p style="text-align: center;">-pretesting the two groups.</p> <p style="text-align: center;">-introducing the content of the lecture.</p> <p style="text-align: center;">-Control group listen to the lecture without taking notes.</p> <p style="text-align: center;">-Experimental group take notes (using one different technique each lecture) while listening to the lecture.</p> <p style="text-align: center;">-Post testing the two groups.</p>
Phase three Analysis	<p style="text-align: center;">-Comparing scores of pre-posttest of academic listening comprehension to identify significant differences.</p>	

Following are some exhibits of student teachers' note-taking during the lecture of "curriculum teaching 1" course:

Figure 3. Exhibits of Student Teachers' Note-takings

Curriculum Teaching
I - Curriculum
 A - Definition
 B - Types
 C - Components
II - Language skills
 A - Speaking
 B - Writing
 C - Listening
 D - Reading
III - Teaching skills
 A - Definition
 B - Examples



Teaching method	lecture	Discussion	Role-play
When?	new content	Cognitive Background	dialogues Stories
how?	Presenting direct exposure of content	ss discuss topics	Acting Roles in the L

(Source: Original)

4 Results and Discussion

4.1 Results

Results will be presented along with a discussion based on collected data as well as the posed questions.

In response to research question one: "What are the main features of a treatment based on note-taking techniques?", the researcher reviewed the following resources: literature about note-taking techniques and previous studies related to applying note-taking in the college context. Considering previous applications helped the researcher identify the phases and procedures of the treatment in the present study.

In response to the second research question: "How far is a treatment based on note-taking techniques effective in developing the academic listening comprehension of student teachers?", the researcher followed these procedures: divided participants in to two groups: control and experimental, applied pre-test of academic listening comprehension, introduced content with experimental group participants' administration of note-taking, applied post-test, and analyzed results. The pre-posttest was applied each lecture and its score is the sum of five applied quizzes. The researcher

used t-test to report significant differences between pre-post results as shown in the following tables:

Table4. Results of Comparing the Means of Participants in (G1) and (G2) in the Pretest of Listening Comprehension

Test		M	SD	DF	t-value
Pre-test total scores (sum in five applications)	G1Pretest	8.24	1.39	32	1.0248
	G2 Pretest	7.71	1.61		

As indicated in table (4) above, the unpaired t-test results revealed that there the obtained t value was 1.0248 , an insignificant value, verifying the first hypothesis in the present study.

Table5. Results of Comparing the Means of Participants in the two groups in the Posttest of Listening Comprehension

Test		M	SD	DF	t-value
posttest total scores (sum in five applications)	G1Posttest	27.00	1.62	32	31.2480
	G2 Posttest	44.35	1.62		

As indicated in table (5) above, the unpaired t–test results showed that there is a significant statistical difference between the experimental group's mean scores and the control group's mean scores in the post–application of the listening comprehension test in favor of the experimental group students. The obtained t value was 31.2480, a significant value, verifying the second hypothesis in the present study.

Table 6. Results of Comparing the Means of Participants in (G2) in the Pre–posttests of Listening Comprehension

Test		M	SD	DF	t–value
Pre–test total scores (sum in five applications)	Pre	7.71	1.61	16	85.5756
	posttest total scores (sum in five applications)	44.35	1.62		

As indicated in table (6) above, the paired t–test results revealed that the obtained t value was 85.5756, a significant value, verifying the third hypothesis in the present study.

Table7. Results of Comparing the Means of Participants in (G1) in the Pre–posttests of Listening Comprehension

Test		M	SD	DF	t–value
Pre–test total scores (sum in five applications)	Pre	8.24	1.39	16	35.2545
	posttest total scores (sum in five applications)	27.00	1.62		

As indicated in table (7) above, the paired t–test results showed that the obtained t value was 35.2545, a significant value, verifying the fourth hypothesis in the present study.

In additions, the researcher in order to identify the participants' views about each utilized technique, applied student teachers' questionnaire about note–taking techniques. Student teachers' responses to the questions included in the questionnaire were as follows:

Table 8. Results of the NTT Questionnaire

Part	Question	Agree Average
One	Note-taking helps in comprehending the lecture content.	94%
	Note-taking techniques are applicable in class setting.	94%
	Writing each topic in a note sentence while listening to the lecture is useful.	59%
	Using indented out-lining to take notes is practical.	53%
	Utilizing a table with appropriate headings to summarize the content is beneficial.	59%
	Adopting Cornell systematic format for class note-taking is helpful.	71%
	The graphic representation of the audio content is convenient.	88%
Part Two	What is your favorite note-taking technique? Mention the reason.	Reviewing responses of the student teachers who applied the techniques revealed, according to applicability reasons, the following prioritizing in order: mapping, Cornell, charting, sentence,

		and outlining.
	What were the challenges of applying note-taking during the lectures?	Speed writing, required full-time attention, and need to reorganize/rephrase were common challenges.
	Would you use techniques during other courses lectures? Elaborate for what purposes.	The majority of the students agree for better comprehension and memorizing of lectures' content.

Apparently, the use of note-taking techniques helped in increasing academic listening comprehension of EFL student teachers who considered all techniques beneficial with a definite prioritizing according to applicability reasons. However, it should be noted that no generalization could be mentioned as the obtained findings were influenced by the study sample and delimitations.

4.2 Discussion

The academic listening comprehension test results reveal that there is a significant effect of the applied note-taking techniques on the listening comprehension of EFL student teachers during the lectures of "Curriculum Teaching 1" course. Comparing test results of both the experimental and control group show that in the pre-application

there is no significant difference between their mean score. They both are not exposed to the content and have limited cognitive background about it. However, the experimental group mean is 44.35 and the control group mean is 27.00. Thus, applying the techniques helps experimental group participants and increased their comprehension, memorizing, and achievement.

From another perspective, in the pre-application, the experimental group's mean is 7.71 but in the post-application it is 44.35. Their score is tremendously increased. This is due to being exposed to the content which they are not introduced before with the support of the applied note-taking techniques. The techniques help them select, organize, refer to content items. Of course in the pre-application the control group's mean is 8.24 but in the post-application it is 27.00. The control group as well as the experimental group listen to the content and receive the assigned cognitive background. Still, the remarkable difference is to be considered between the two groups.

There is a justification for the obtained promising results. Through the administration of note-taking during listening many benefits are achieved. The current lecturing system without the traditional book becomes more convenient. There are no more passive listeners in

the lecture. Instead, active listeners who pay full attention and systematically take notes. All learning styles are considered and the students are successfully engaged in the learning process.

Thus, the results of the study, confirming the positive impact of note-taking, coincide with the findings of Carrell , Dunkel, and Mollaun (2002), Ozbay (2005), Kilicaya and Cokal-karadas (2009), Gur, Dilci, Coskun, and Delican (2013), and Kim (2019).

Basically, there are individual preferences among experimental group participants. They all support the application of note-taking during listening to help them comprehend and memorize course content. Still, they vary in prioritizing the techniques to be applied. Reviewing their responses to the questionnaire reveal the following prioritizing in order: mapping, Cornell, charting, sentence, and outlining. Their preference is due to applicability, learning style, timing, and comfort.

5 Conclusions, Recommendations, and Suggestions for Further Research

5.1 Conclusions

In the present study, seventeen first year student teachers were taught to apply five note-taking techniques properly while listening to the lectures of the course "Curriculum Teaching 1". These participants formed the experimental group and their scores in the listening comprehension tests were compared with those of the control group (n= 17) who did not take notes during the lectures. Results of the pre-posttests applied before and after each lecture revealed that the experimental group members were able to understand and recall the content they listened to which prove the effectiveness of note-taking. Moreover, the high comprehension level they achieved and their views about the different types they administered in each lecture confirm the positive impact of all the techniques on listening comprehension. Based on the study results, there is a considerable basis that note-taking is beneficial in

developing EFL Academic listening comprehension especially in the higher education context.

5.2 Recommendations

In the light of the study findings, the researcher recommends the following:

- The needs of student teachers should be considered in teachers' education program.
- There should be a comprehensive assessment of receptive as well as productive language skills in the preparation of EFL student teachers.
- Utilizing systematic note-taking should be taught to students in higher education context in order to apply it properly and gain its benefits.
- EFL faculty staff and teachers should apply new instructional techniques in their classrooms.

5.3 Suggestions

- More studies examining the effect of note-taking techniques are required in the field of TEFL.
- More studies assessing listening comprehension and critical listening are needed to be implemented.
- Experimental studies measuring the effectiveness of various active listening strategies are necessary.
- More studies exploring the needs of student teachers are required.

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أثر خمس تقنيات لتدوين الملاحظات على الفهم الاستماعي الأكاديمي للطلاب معلمي اللغة الإنجليزية

ملخص

تهدف هذه الدراسة إلى التحقق من أثر خمس تقنيات لتدوين الملاحظات وهي: تقنية الجمل ، التخطيط ، الرسم البياني ، كورنيل ، ورسم الخرائط على الفهم الاستماعي الأكاديمي للطلاب معلمي اللغة الإنجليزية بكلية التربية. تكونت عينة الدراسة من طالب معلم ملتحق بالسنة الأولى بقسم اللغة الإنجليزية بكلية التربية بورسعيد. و لتحقيق الهدف من الدراسة اتبعت الباحثة المنهج التجريبي بتصميمه شبه التجريبي القائم على الاختبار القبلي والبعدي ، حيث تم تقسيم المشاركين عشوائيا إلى مجموعتين: مجموعة ضابطة لم تطبق تقنيات تدوين الملاحظات أثناء المحاضرات و مجموعة تجريبية من المشتركين الذين قاموا بتطبيق تقنيات تدوين الملاحظات أثناء المحاضرات مستخدمين تقنية مختلفة في كل محاضرة. شملت إجراءات التطبيق في كل محاضرة اختبار طلاب المجموعتين قبليا وبعديا باستخدام اختبار الفهم الاستماعي والذي اشتمل على أسئلة من نمط الإكمال. و من أجل التحقيق في الاختلافات بين المجموعتين وفحص فعالية كل من تقنيات تدوين الملاحظات الخمس ، تم إجراء اختبارات إلى جانب استبانة لتحديد رأى طلاب المجموعة التجريبية عن كل تقنية تم استخدامها. أظهرت نتائج الاختبار لكل من المجموعتين الضابطة والتجريبية في الاختبارين القبلي والبعدي لمهارات الفهم الاستماعي أن هناك مستويات أعلى من الفهم الاستماعي الأكاديمي لصالح المجموعة التجريبية. و يرجع ذلك إلى الأثر الإيجابي لتطبيق تدوين الملاحظات أثناء المحاضرات مما زاد من المعلومات المكتسبة والفهم والاسترجاع والتحصيل. كما أظهرت النتائج أيضا آراء الطلاب الإيجابية نحو كل تقنية من الخمس مع وجود تفضيلات لبعضها. وقد أوصت الدراسة بتطبيق جميع تقنيات تدوين الملاحظات عند تعلم اللغة الإنجليزية كلغة أجنبية بشكل عام وفي سياق التعليم العالي على وجه الخصوص لتحقيق مزايا تعليمية مختلفة.