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AN EXAMINATION OF THE CORRELATION BETWEEN NOTE-TAKING TECHNIQUES AND ACADEMIC PERFORMANCE IN HIGHER EDUCATION INSTITUTIONS IN UZBEKISTAN

ABSTRACT

This study rigorously investigates the potential influence of note-taking on the reading and listening comprehension skills of university students in Uzbekistan. The objective of the current work is to assess the impact of note-taking on students' comprehension levels. The research specifically examines understanding levels in relation to differing academic status and gender features among learners.

The research utilizes a causal-comparative methodology, involving 68 students from the "International School of Finance Technology and Science" Institute in Tashkent. The study participants underwent the placement test to assess their proficiency in reading and listening comprehension. The teaching material, entitled "Changing Climate, Changing Minds", consists of 560 words. This study investigates the effectiveness of note-taking as a method to improve comprehension abilities and analyzes its relationship with academic achievement and gender disparities. The results demonstrate that note-taking listeners displayed markedly superior comprehension scores compared to readers, note-taking readers, and listeners without notes. Significantly, listeners who took notes attained considerably higher marks than other groups. A favorable link was observed between learners' comprehension scores and their university grade

O'ZBEKISTON OLIY TA'LIM MUASSASALARIDA QAYD ETISH (KONSPEKTLASHTIRISH) USULLARI VA AKADEMIK O'ZLASHTIRISH O'RTASIDAGI O'ZARO BOG'LIQLIK TAHLILI

ANNOTATSIYA

Ushbu tadqiqotda O'zbekistondagi OTMlari talabalarining o'qib-tinglab tushunish ko'nikmalarida konspektlashtirish – qayd etishning ta'sir imkoniyatlari sinchkovlik bilan o'rganilgan. Aniqroq aytganda, mazkur tadqiqot qayd etishning talabalar tushunish darajasiga ta'sirini baholashga qaratilgan. Tadqiqot, xususan, talabalar o'rtasidagi farqli akademik maqom va gender xususiyatlari bilan bog'liq holda tushunish darajasini o'rganadi.

Tadqiqotda Toshkent shahridagi "International School of Finance Technology and Science" institutining 68 nafar talabasi ishtirok etgan sabab-qiyosiy metodidan foydalanilgan. Tadqiqot ishtirokchilari o'qish va tinglab tushunish bo'yicha malakalarini baholash uchun daraja aniqlash testidan o'tdilar. Tadqiqotda foydalanilgan "O'zgaruvchan iqlim, o'zgaruvchan fikr" deb nomlangan o'quv materiali 560 so'zdan iborat. Jumladan, ayni tadqiqot tushunish qobiliyatini yaxshilash usuli sifatida qayd etishning samaradorligini o'rganadi va uning akademik yutuqlar bilan bog'liqligini tahlil qiladi. Natijalar shuni ko'rsatadiki, qayd qiluvchi-tinglovchi talabalar, qaydlarni o'qiydiganlar va qaydlarsiz tinglovchilar bilan solishtirilganda tushunish darajasi sezilarli darajada yuqori bo'lgan. Shunisi e'tiborga loyiqki, qayd olgan (konspektl qilgan) tinglovchilar boshqa guruhlariga qaraganda ancha

point averages, indicating that individuals with superior academic performance derived greater benefits from note-taking.

The study additionally examined potential gender disparities, indicating that no significant variations in comprehension abilities existed between female and male pupils. These findings highlight the significance of note-taking as an effective instrument for enhancing comprehension abilities in reading and listening among university students. The research underscores the need of incorporating good note-taking skills into educational practices to improve academic outcomes and advocates for the deployment of specific pedagogical interventions designed to optimize student understanding and overall academic performance.

Key words: note taking, digital note taking, reading comprehension, listening comprehension, sentence method, mind mapping, outlining, clustering, Cornell method, tips.

yuqori ball olganligi aniqlandi. Talabalarning tushunish ballari va ularning universitetdagi o'rtacha baholari o'rtasida ijobiy bog'liqlik kuzatildi, bu esa yuqori akademik ko'rsatkichlarga ega bo'lgan shaxslar qayd etishdan amalda ko'proq foyda olishlarini ko'rsatdi.

Tadqiqot qo'shimcha ravishda potentsial gender nomutanosibliklarini o'rganib chiqdi. Bu ayol va erkak talabalarning tushunish qobiliyatida sezilarli farqlar mavjud emasligini ko'rsatdi. Mazkur topilmalar OTMlari talabalari o'rtasida o'qish va tinglashda tushunish qobiliyatini oshirish uchun samarali vosita sifatida qayd etishning ahamiyatini isbot etadi. Tadqiqot akademik natijalarni yaxshilash uchun samarali qayd etish ko'nikmalarini ta'lim amaliyotiga kiritish zarurligini ilgari suradi va talabalarning tushunishi hamda umumiy akademik faoliyatini optimallashtirish uchun mo'ljallangan maxsus pedagogik tadbirlarni qo'llash lozimligini ifoda etadi.

Kalit so'zlar: qayd etish, raqamli qayd etish, matnni tushunish, tinglab tushunish, gap metodi, tafakkurni xaritalash, rejalashtirish, guruhlash, Kornell metodi, tavsiyalar.

INTRODUCTION

In ancient times the need for recording information and passing it down to the next generation resulted in the emergence of writing. As those people had very few materials on which they could write, they had to take only selective and crucial information that could give meaning to a whole story. Since then, writing methods did not go far away, rather, we still imply those methods in our daily lives. Moreover, J.Kim states that "the history of note-taking may be as old as the history of teaching because it is very likely that a learner jotted down the instructions and/or lessons of his or her teacher from the very beginning of human education, especially so after the writing system was invented" [Kim, 2019; 25]. Today, writing down the most necessary information and choosing words selectively to keep that knowledge is called note-taking. Probably, all students had to engage in note-taking in some parts of their study life. Lecturers, especially, encourage or even demand their students to take notes. "Note-taking has long been a stalwart competence in academic learning, particularly in tertiary education, where it has been described as the distinguishing characteristic of higher education" [Siegel, 2023]. Also, being easy to use and available anywhere and anytime, note-taking has spread beyond the spectrum of education. It is widely practiced even in non-academic fields such as business, marketing and government. This literature review will clarify what is note taking and its importance. It will bring up some research statistics made on this topic by prominent scholars of the field. As it is known, note-taking happens mostly when people listen to something or read.

Therefore, this work will analyze several approaches and methods of note-taking both in listening and reading as well. Furthermore, some techniques will be suggested based on the research to improve the note-taking skills and subskills of the learners.

The importance of note taking in the academic settings

One of the most crucial skills that a student at university is required to master is note-taking. Learners attend dozens of lectures throughout the semester. So, to grasp and keep that knowledge they should record them in a relatively concise and clear way. Therefore, they apply note-taking as a perfect method which has been proved by many scholars. Explaining the key terminology in note-taking, the definition might be quite simple as in the case of H.İpek, “note-taking is a method of documenting information for future reference and retention” [İpek, 2018; 206]. Similarly, H.Özçakmak explains notetaking as concise important information written in the form of symbols in order to apply it later and to create an external memory [Özçakmak, 2019]. Generally, people take notes in order to keep that information and not lose it. Note-taking is not used only in education as writing down a friend’s phone number, grocery list, names of clients and addresses of the residents is also some sort of note-taking which is used in daily life. However, when we specifically talk about the academic field, especially, listening to a lecture or reading an article the definition of notetaking becomes complex and challenging. For instance, according to A.Piolat, “notes are concise summaries of original content that originated by jotting them down while concurrently listening, studying, or observing; their primary goal is to collect and retain data presented in a lecture, a book, or any other circumstance requiring memorization” [Piolat et al., 2008]. So, it becomes clear that note-taking is not as simple as it might have seemed at first. It requires several actions happening at the same time, such as listening to a professor, writing notes, selecting words and organizing notes so that after weeks it still makes sense. Likewise, E.L. Zuckerman states that “taking notes is a very demanding and complicated process that results in students taking random and incomprehensible notes” [Zuckerman, 2019]. The definition of note-taking is basic which is keeping knowledge, but it can become complex when we look at it from an academic context.

Even though note-taking can be a challenging activity that requires a lot of simultaneous actions, the benefits of it are impressive. The importance of note-taking has risen significantly due to the information age that we live in now. When people are flooded with information, it is critical to sort out the most important ones. Also, it can be seen that in stationery shops the number of notepapers and notebooks is massive. So, why note-taking is important in the academic field? According to K.Kobayashi, “note-taking is among the most crucial tools that improve comprehension” [Kobayashi, 2006]. B.P. Evans and C.T. Shively supported this concept by noting that “good note-taking skills make students’ life much easier because it helps to understand the small details as well as to see the whole picture” [Evans & Shively, 2019]. Moreover, it keeps information in one’s mind organized and easy to recall. Studies made by W.Tsou and F.Chen have shown that “training on taking notes significantly increased the amount of information registered” [Tsou & Chen, 2014]. Consequently, effective

note-taking enabled students to comprehend their lectures much better and students have expressed their positive feelings about such training and note taking as a whole.

Various types of note-taking with their advantages and disadvantages

Since the time when writing came into existence, people have developed different ways of making it more effective and enjoyable. From primitive clusters of words in one tablet it evolved into a combination of words that come together in order to depict a lot of information. One of the most widespread types of note-taking is *traditional note-taking*. This is old and available to many as it requires only pencil and paper. Despite, simplicity it serves effectively in doing listening and reading activities. Notes are concise summaries of original content that originated by jotting them down while concurrently listening, studying. P.A. Mueller and D.M. Oppenheimer found that university students who took notes on paper, using any chosen format, outperformed their peers who used computers in terms of factual memory and conceptual understanding on examinations [Mueller & Oppenheimer, 2016]. In contrast, B.P. Evans and C.T. Shively emphasized that “when students use typical note-taking skills, studies have shown that they generally record less than 45% of the information from a lecture, even among high-achieving college students” [Evans & Shively, 2019]. In addition, K.Kiewra provided support for the use of handwritten notes, stating that “taking notes on paper offers significant benefits for secondary school and disabled students” [Kiewra, 1991].

With the advancement of technology, new types of note-taking have emerged such as digital notetaking. According to H.Özçakmak, “these facilities have provided students some conveniences and have lessened the amount of time they spent for writing” [Özçakmak, 2019; 582]. Digital note-taking is a type of notational resource, defined by M.A. Horney and L.Anderson-Inman as one that “offers tools for annotating or recording notes inside a text, allowing for easy retrieval for studying or completing tasks later on” [Horney & Anderson-Inman, 1999]. Despite the fact that it is one of the most convenient and common ways of note-taking, there are several disadvantages of this method too. For instance, M.Horney shed light on the benefits of handwritten notes and clarified why they are more effective than digital ones [Horney et al., 2009]. It is reported that the benefits of handwritten notes include deeper comprehension, better recall and less distraction which is more resistant than the advantages of digital notes which are easiness in editing and fixing, improved search, secure storage, reliability and improved sharing [Best et al., 2004]. All in all, computers enabled students to make a lot of notes in a short period of time by typing rather than writing and technology provided them with a keyboard instead of pencil and paper which is a crucial strategy nowadays [Evans & Shively, 2019]. It is common to observe students taking notes or taking photos of the wording on the board [Özçakmak & Sarigöz, 2019], which demonstrates that taking notes has remained popular despite technological advancements.

Methods of notetaking while listening

As it has mentioned above, one of the main fields where note-taking is widely used is listening to a lecture or listening to some sort of audio. Whenever a lecture

is given, most students forget about what was said a few weeks later unless they take notes of essential ideas. Therefore, lecturers for the sake of the course require students to take notes, sometimes making it compulsory. The research done by H.Özçakmak acknowledged that 61% of the students hold an opinion that note-taking is actually “note-taking from listening” whereas only 31% “note-taking from reading” [Özçakmak, 2019; 582]. There are various types of this skill while listening such as the sentence method, mind mapping method, the formal outline procedure, clustering, and the Cornell method (CM) [Hayati & Jalilifar, 2009]. These methods are commonly used by students to take notes while listening to a lecture or audio.

Among them, the Cornell method is the most popular one where a note-taker divides the paper into three sections: one is a vertical line on the left side, the second is a vertical line at the bottom and the last one is a big section in the middle. W.Pauk and R.J.Q. Owens assert that this note-taking technique is a “natural learning cycle” as it involves the note-taker documenting, reviewing, and evaluating their comprehension of new material, all inside a single document [Pauk & Owens, 2010]. Apart from this, E.Chambers and A.Northedge maintain the Cornell method as “an effective strategy during a lecture which requires note-taker to attend and make sense of the argument without evaluating one’s comprehension” [Chambers & Northedge, 2008]. Several concepts can be drawn from this contradiction as the research is done with limited number of participants and needs to be continued. Actually, this is a useful strategy for those who have good listening skills and can easily comprehend long and complex sentences. But what about those who have poor listening skills? As J.Siegel asserts, “attention may only be directed to the subsequent stage of the note-taking process once successful listening has been achieved” [Siegel, 2019]. Thus, it is fair to think that without effective listening in the first place there would not be an effective notetaking [Al-Musalli, 2015]. To use the available methods mentioned above one needs to enhance listening skills and should be able to easily comprehend the topic. While listening to a lecture students need to write only keywords and pay attention to the content and to the main point, therefore, they do not have to write down everything they hear [Kiliçkaya & Çokal-Karadaş, 2009].

Methods of note-taking while reading

We have discussed above that note-taking in reading is less common compared to note-taking in listening. One of the main reasons might be the fact that students already have a text where they can highlight underline or circle important information. Therefore, they do not have to take notes in another document. Obviously, it makes note-taking in reading much easier than in listening. According to C.G. Thomas, “there are two different terms which are note-taking and note-making” [Thomas, 2021]. As they explain, note-taking is done while listening whereas note-making is related to reading. Furthermore, they have mentioned that “note-making” is much more entertaining and enjoyable in contrast to “note-taking” because learners take notes in a relaxed way without a rush. On the other hand, H.İpek considers it one of the easiest subskills for students in language learning despite the fact that students are required to keep the pace of the speaker in “note-taking” [İpek, 2018]. There are

methods that are frequently used when taking notes while reading and one of them is the Patterning method.

This method involves visualizing and drawing to identify and keep the main information. B.Clarke describes it “...more appropriate for visual learners” [Clarke et al., 2018] whereas H.Özçakmak emphasizes that “patterning can be effectively used by kinesthetic learners as well, as it requires producing multi-sensory learning” [Özçakmak, 2019]. Additionally, J.Kesselman-Turkel asserts that “people’s minds remember best when they make patterns out of what they hear or read” [Kesselman-Turkel & Peterson, 2003; 24]. So, drawing a star, circle, square or any different pattern may help to take notes more effectively. Another widespread method is the Outline method. This method helps to take a big number of notes and arrange them in a logical and clear way. J.Siegal declares that “while taking notes students have to select from a different option of organizing notes (outlines, patterns, mind maps, etc.) and writing individual items of information (writing verbatim, paraphrasing, abbreviations)” [Siegal, 2022]. It is important to make according to the skills and ability of a student as not all of them can effectively work with these methods. Besides, individual preferences play an important role in choosing the method or strategy when taking notes while reading. In general, as P.Dunkel believes, “proficient note takers in both their first language (L1) and second language (L2) possess the ability to condense information into propositional-type structure and employ symbols or abbreviations to represent content terms” [Dunkel, 2019; 207].

METHODS

Identifying cause-and-effect connections between independent and dependent variables of this study is done through the use of the causal-comparative research approach. In retrospect, cause and effect is deeply studied. This can assist in identifying the effects or reasons behind distinctions that currently exist within or between various groups. The goal of this approach is to compare scenarios in their unaltered natural surroundings [Karasar, 2016]. The researcher’s goal is to determine whether the independent variable had any impact on the dependent variable.

Study group

The participants in this study comprised sixty-eight students who were pursuing a major in English at the “International School of Finance Technology and Science” Institute in Tashkent. 43% of the students were female, while the remaining were male, ranging from 17 to 20 years old. The groupings that included the A and B groups were randomly imposed to the students. Table 1 displays the distribution of students by gender and academic achievement level (See Table 1).

Table 1. Arrangement of the study group’s demographic data

Dimension		Number	Percentage
Groups	Readers	17	25.0
	Readers-note takers	17	25.0
	Listeners	17	25.0
	Listeners-note takers	17	25.0
	Total	68	100.0

Grade point average	Minimum	23	32.2
	Average	18	25.3
	Maximum	28	39.2
	Total	68	100.0
Sex	Female	43	63.2
	Male	25	36.8
	Total	68	100.0

Data collection

Placement test

In order to obtain information about the level of reading and listening comprehension proficiency that potential learners possess, it is chosen to conduct a placement test. T.Hutchinson and A.Waters claimed that placement tests offer data that can be utilized to classify students according to their academic standing [Hutchinson & Waters, 1987]. Moreover, A.Davies also emphasizes the primary goal of proficiency tests as a gauge of the true degree of knowledge that students possess [Davies, 2008]. The major purpose of this test was to determine multilevel students in each group to boost the reliability of the study. So, eighteen questions made up the test in which eight of the questions were true-false, and ten were open-ended. Test preparation was assisted by a person with assessment and evaluation experience. The maximum score that could be obtained from the placement test's open-ended questions was 80, with 10 points awarded for each answer. The maximum score possible for the next eight true-false questions was 20, and each of the other eight had a point value of 2.5. Consequently, a score of 100 was the highest possible result for the whole placement test.

Reliability and validity

A test's validity and reliability are determined by its accuracy and precision [Alderson et al., 1995]. According to G.Henning, a test is deemed valid when it evaluates the desired results [Henning, 1987]. This presumption served as the guide for creating the study's two different kinds of questions. Still, if a test lacks reliability, it cannot be considered valid. Hence, to boost its reliability, the assessments are made as accurate as possible. For instance, a medium-difficulty informative text with 6 paragraphs and 560 words was generated by the AI-powered online platform *www.twee.com* and included in the test to guarantee its reliability. In this regard, the title of "Changing Climate, Changing Minds" was used as the basis of the aforementioned true/false and open-ended questions to foster the test's validity as well. It was assumed that a text the students had never read before would have a favorable impact on their notetaking and comprehension skills, so the current text was generated.

Process

Selection of the students

Among the cohort of 92 university students that enrolled at the "International School of Finance Technology and Science" Institute in Tashkent, a total of 68 students volunteered to participate in the study. The allocation of students to groups

was influenced by the classroom factor. Consequently, students in each classroom were given careful consideration, as opposed to the students in each group, as predetermined. Through a random selection process, Group 1, including 34 learners, was selected to concentrate on reading abilities, while Group 2, consisting of an equal number of students, was chosen to focus on listening skills. Following the second round of drawing, 17 students were allocated to the Readers group in Group 1, while another 17 students were assigned to the Readers-note takers group. Within Group 2, a total of 17 students were assigned to the Listeners group, while the remaining 17 students were placed to the Listeners-note takers group.

Implementation

Prior to implementation, the study ensured the trustworthiness and validity of the data by carefully considering specific facts. Initially, an investigation was conducted to see if the groups were of similar size. Once equality was confirmed, the implementation process commenced. Academic averages indicated students' overall averages across all previously taken courses at the university. Table 2 displays the means for the academic accomplishments of the groups (See Table 2).

Table 2. *Distributions of academic achievement among groups*

Groups	N	Mean	Standard deviation
Readers	17	4.22	0.60776
Readers-note takers	17	4.40	0.36875
Listeners	17	4.52	0.40545
Listeners-note takers	17	4.40	0.67476
Total	68	4.38	0.53052

Upon analyzing Table 2, it is evident that the mean score for the Readers was 4.22, for the Readers-note takers was 4.40, for the Listeners was 4.52, and for the Listeners-note takers was 4.40. The cumulative grade point average was 4.38. The AI-powered online application ensured that all 68 students (100%) had not previously encountered the current generated text which guaranteed its reliability as it is mentioned above. Moreover, it must be stated that prior to the intervention, the students were notified about the implementation, and the student groups, which were selected randomly, were assembled.

The implementation commenced with the inclusion of class-A, which encompassed both Readers and Readers-note takers. Readers were instructed to refrain from using a pencil and paper, while Readers-note takers were taught that they were allowed to take notes while reading. Subsequently, the educational text titled "Changing Climate, Changing Minds", comprising 560 words, was distributed to the readers and Readers-note takers. The execution lasted for 50 minutes. While the Readers returned the books, they read them without making any written annotations. In contrast, the Readers-note takers returned the texts on which they had made some notes.

On a different occasion, the implementation took place in class-B, incorporating both the groups of Listeners and Listeners-note takers. Prior to the intervention, the

students were provided with information regarding the implementation and were informed about the specific group they would be assigned to. They congregated according to their respective factions. Next, learners were instructed to listen to the same instructional text titled “Changing Climate, Changing Minds”, which included a total of 560 words. The Listeners were instructed to refrain from using writing utensils and paper, but the Listeners-note takers were advised that they were allowed to take notes while listening. The execution spanned a duration of 50 minutes. The notes compiled by the students in the Listeners-note takers group were gathered.

RESULTS

The findings included informative tables with statistical data about the groups. Additionally, the tables displayed analysis that determined if there were major distinctions between the groups and if the groups were distinguished by gender. Furthermore, a study was conducted to examine the potential association between placement test scores and academic point averages among the groups. Consequently, students are selected according to the results of the placement test allocating multilevel students to each group. The average scores that the groups obtained on the placement test is illustrated in Table 3. It clearly indicates that Listeners-note takers achieved the greatest score (105.37), whereas the Readers obtained the lowest points (77.24). Across all categories, the average comprehension accomplishment score was 89.01 (See Table 3).

Table 3. Groups’ means from the placement test distribution

Groups	N	Mean	Standard deviation
Readers	17	77.24	20.01883
Readers-note takers	17	87.02	12.63919
Listeners	17	84.86	14.00715
Listeners-note takers	17	105.37	12.55526
Total	68	89.01	18.04631

Table displays a statistically significant distinction in the mean scores obtained by the groups on the placement test (0.01). We can observe that the Listeners-note takers had the maximum score (84.86), whereas the Readers got the minimum one (77.24). Across all categories, the mean placement test result was 89.01. To clarify, the students who engaged in notetaking while listening had greater scores on the placement test compared to the students who solely took the exam, as well as those who took notes while reading and those who simply listened and took the test.

Prior to performing an analysis to determine the correlation between learners’ academic performance and their placement test outcomes, the cumulative GPA and placement test scores are depicted in Table 4 (See Table 4).

Table 4. Statistical analysis of academic grade point averages and scores on placement tests

Variable	Mean	Standard deviation	N
Placement test score	89.01	18.04631	68
Academic grade point average	3.38	0.53052	68

Table 4 displays the Placement Test scores of the learners alongside their GPA averages. It also indicates that the students' average score on the Placement Test was 89.01, and their academic grade point averages were 3.38 out of 4.00.

Due to the gender-diverse student distributions within the groups, one more analysis was conducted by taking into account the results of the placement test for each group. Table 5 illustrates the distributions of the participants' placement test scores categorized by gender. Based on the analysis of the scores obtained by students from the placement test, Table 5 reveals that the female students achieved a higher average score of 69.29 compared to the male students' average score of 58.70. Statistical analysis using an Independent Sample T-Test revealed no significant differences between the gender of the pupils ($p>0.05$).

Table 5. Gender-based analysis of the students' placement test scores

Variable	Gender	N	Mean
Placement test score	Female	43	69.29
	Male	25	58.70

DISCUSSION

The study focused on the two components of note-taking skill: note-taking while listening and note-taking while reading. A multitude of studies examining note-taking during reading [Gourley, 2021; Leonard et al., 2021; Ślęzak-Świat, 2022; Roy et al., 2014; 2021] and note-taking during listening [Hayati & Jalilifar, 2009; Siegel, 2022; İpek, 2018] have been conducted. Nonetheless, the absence of any studies elucidating the comparative effectiveness of note-taking skills during reading versus note-taking skills during listening rendered this study significant. Furthermore, this study examined the impact of reading and listening skills, which are constituent elements of note-taking, on students' comprehension. The results revealed no significant variations in the placement test scores between the group of students who focused on reading and the group who focused on listening. The discovery suggests that reading and listening skills are not inherently better than one another, and that students' comprehension levels are similarly impacted by their engagement with relevant content through reading or listening. Certain learners may exhibit a greater aptitude for auditory learning (listening), while others may excel in visual learning (reading), however neither skill can be deemed more valuable to the other. This is intricately connected to the learning styles of the students.

The similarity in placement test scores between the Readers and Readers-note takers indicates that reading a text and taking notes afterwards did not have an impact on their understanding. Nevertheless, this finding has sparked controversy in several other investigations [Rusdiansyah, 2019; Gourley, 2021; Bahrami & Nosratzadeh, 2017]. Several factors, including the informative nature of the text, its moderate length of 560 words and fascinating and relevant issue of climate change, may have contributed to the close placement test scores of the Readers and Readers-note takers. While examining the impact of note-taking on the comprehension performance levels of Listeners and Listeners-note takers, it was observed that note-taking during listening

had a favorable effect. A lot of studies, for instance, conducted by A.M. Hayati and A.Jalilifar [Hayati & Jalilifar, 2009], H.İpek [İpek, 2018] and T.Gur [Gur et al., 2013] support this assumption very well. The validity of the findings of this research should be assessed in light of the informative text utilized. Engaging in note-taking while listening may not consistently confer more benefits compared to listening without note-taking. For example, in a study where an argumentative text is employed, the comparison is made between students' success in note-taking while listening and their success in listening without note-taking. In this case, the results may be completely contrary.

It became clear from examining the results of this study that taking notes while listening significantly improved understanding more than taking notes while reading, especially for those who take notes while both reading and listening. One possible explanation is that taking notes at a lecture has obvious benefits over reading a text for notes. Taking notes while reading requires students to switch between the two activities, says K.A. Kiewra [Kiewra, 1991]. While taking notes during the listening, on the other hand, they do it all at once with the text. To simplify, there is just one stage to take notes while listening, yet there are two processes required while reading. J.D. Riley and J.Dyer [Riley & Dyer, 1979] conducted a study where one set of volunteers listened to a 2,000-word manuscript while another group read it aloud. There were two subgroups within each group: those who took notes and those who did not. Study participants reported some benefits to listeners but no changes to readers when instructed to take notes.

Current research indicated a direct correlation in the middle of the students' GPA and their test scores. In straightforward terms, it was deduced that students with high academic grade point averages had a greater likelihood of achieving a high score on the placement test, in contrast to those with poor academic grade point averages. K.L. Daly proposed that there was a strong positive correlation between GPA and achievement in note taking [Daly, 1983]. Moreover, a similar correlation between note-taking frequency and test scores was discovered in research conducted by L.Luo [Luo et al., 2018] and K.A. Kiewra and S.L. Benton [Kiewra & Benton, 1988] as well. While these results did demonstrate a strong correlation between note-taking ability and GPA, they nevertheless showed that children with average or below-average grades could benefit from systematic note-taking education too. The significance is in the caliber of the notes, rather than the quantity, regardless of whether they were acquired through auditory perception or visual perception. In simple terms, the importance lies in the quality of the fundamental components of the captured text, rather than the quantity of notes collected.

Having analyzed the scores from the placement test, it was discovered that the average score for female students (69.29) was higher than that of male students (58.70). However, the results of the independent sample T-test did not show any significant differences between the genders of the students.

Implications

The findings of our study, which utilized an instructive text, cannot be extrapolated

to other types of texts. Consequently, several scholarly investigations can be carried out to examine the influence of note-taking on narrative and argumentative texts, specifically focusing on note-taking while reading and note-taking while listening. The present study utilized an informative text consisting of 560 words divided into 6 paragraphs. Additional research can explore the potential impact of text length on note-taking and comprehension achievement. Below, some guidelines are provided to enhance the note-taking skills which can be implemented in further studies.

Tips to improve note-taking skills

It is crucial to be able to take notes effectively as it may enhance learning abilities and cater to academic success. H.İpek even highlights that note-taking should be integrated into the curriculum as it can be challenging and futile process, especially for students who are new to the academic realm [İpek, 2018]. On that account, there are several ways that can serve as worthwhile guidelines for achieving effective note-taking skills. First and foremost, a student needs to be able to comprehend the information he/she receives, otherwise, it will not be possible to take meaningful notes. A.M. Al-Musalli emphasizes that “language comprehension is the first and the most critical component of idea generation” [Al-Musalli, 2015; 140]. J.Kesselman-Turkel also points out that “it is important to pay attention to the quality of taken notes rather than the quantity of written words” [Kesselman-Turkel & Peterson, 2003]. To support this concept, H.Özçakmak also proposes the concept that “the amount of the basic units of the text caught is more important than the amount of the note taken” [Özçakmak, 2019; 587]. Consequently, one should be careful to improve the quality first. Last but not least, it is not wise to use a note-taking strategy that does not coincide with personal preferences. For example, some students use a particular strategy just because they are told so by teachers. “Being cognitively different may result in students’ adopting different note-taking strategies and they’re getting different efficiency” [Bui et al., 2013].

The sample for this study consisted of university students. For additional research, various samples, such as those from primary school, middle school, and high school, can be selected. Furthermore, the influence of different note-taking methods (such as reading and listening) on the level of understanding achieved can be explored in the realm of teaching foreign languages.

CONCLUSION

In conclusion, the findings of this study provide compelling evidence for the significant role that note-taking plays in enhancing comprehension skills among university students in Uzbekistan. The research highlights that students who engage in note-taking while listening exhibit markedly higher levels of understanding compared to their peers who either take notes while reading or do not take notes at all. This underscores the effectiveness of auditory learning paired with active engagement through note-taking, suggesting that educational strategies should prioritize this method to foster better comprehension outcomes. The results indicate that the act of note-taking not only aids in information retention but also correlates positively with

students' overall academic performance, as evidenced by the relationship between comprehension scores and grade point averages.

Moreover, the study's exploration of gender disparities reveals that both male and female students benefit equally from note-taking practices, thereby emphasizing the universal applicability of this learning strategy across different demographics. This finding is particularly significant for educators and curriculum developers, as it suggests that implementing structured note-taking techniques can serve as an inclusive approach to enhancing learning for all students, regardless of gender. By recognizing that both groups derive similar advantages from effective note-taking, institutions can foster a more equitable learning environment that supports diverse student needs.

The implications of this research extend beyond mere academic performance; they advocate for a paradigm shift in pedagogical practices within higher education. Educators are encouraged to incorporate explicit instruction on effective note-taking strategies into their curricula, thereby equipping students with essential skills that can be applied across various disciplines. Such interventions could include workshops, guided practice sessions, and the integration of technology that facilitates interactive note-taking. By prioritizing these practices, educational institutions can enhance students' engagement and comprehension, ultimately leading to improved academic outcomes.

All in all, this study reinforces the notion that note-taking is not merely a passive activity but an active learning strategy that significantly enhances comprehension abilities among university students. As educational landscapes continue to evolve, it is crucial for educators to recognize and harness the power of note-taking as a fundamental tool for fostering deeper understanding and academic success. Future research could further explore innovative note-taking methods and their impact on diverse learning styles, thus continuing to build on the foundational knowledge established in this study.

REFERENCES

1. Al-Musalli, A.M. (2015). Taxonomy of lecture note-taking skills and subskills. *International Journal of Listening*, 29(3), 134–147. <https://doi.org/10.1080/10904018.2015.1011643>.
2. Alderson, J.C., Clapham, C., & Wall, D. (1995). *Language test construction and evaluation*. Cambridge: Cambridge University Press.
3. Bahrami, F., & Nosratzadeh, H. (2017). The effectiveness of note-taking on reading comprehension of Iranian EFL learners. *International Journal of Applied Linguistics and English Literature*, 6(7), 308–317. <https://doi.org/10.7575/aiac.ijalel.v.6n.7p.308>.
4. Best, R., Ozuru, Y., & McNamara, D.S. (2004). Self-explaining science texts: Strategies, knowledge and reading skill. In Y.B. Kafai, W.A. Sandoval, N.Enyedy, A.S. Nixon & F.Herrera (Eds.), *International Conference of the Learning Sciences 2004: Embracing Diversity in the Learning Sciences* (pp. 89–96). Santa Monica, CA: Lawrence Erlbaum Associates.
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. Chambers, E., & Northedge, A. (2008). *The arts good study guide*. UK: Open University.
7. Clarke, B., Shanley, L., Kosty, D. (2018). Investigating the incremental validity of cognitive

- variables in early mathematics screening. *School Psychology Quarterly*, 33(2), 264–271. <https://doi.org/10.1037/spq0000214>.
8. Daly, K.L. (1983). The effect of training college students in listening and not taking skills on learning from a lecture. *Unpub. doct. thes.* USA: University Microfilms.
 9. Davies, A. (2008). Textbook trends in teaching language testing. *Language Testing*, 25(3), 327–347. <https://doi.org/10.1177/0265532208090156>.
 10. Dunkel, P. (2019). *Listening & notetaking skills*. USA: Heinle & Heinle Publishers.
 11. Evans, B.P., & Shively, C.T. (2019). Using the Cornell note-taking system can help eighth grade students alleviate the impact of interruptions while reading at home. *Journal of Inquiry & Action in Education*, 10(1), 1–35.
 12. Gourley, P. (2021). Back to basics: How reading the text and taking notes improves learning. *International Review of Economics Education*, 37, 100217. <https://doi.org/10.1016/j.iree.2021.100217>.
 13. Gur, T., Dilci, T., Coskun, İ., & Delican, B. (2013). The impact of note-taking while listening on listening comprehension in a higher education context. *International Journal of Academic Research*, 5(1), 93–97.
 14. 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. <https://doi.org/10.5539/elt.v2n1p101>.
 15. Henning, G. (1987). *A guide to language testing: development, evaluation, research*. Cambridge: Newberry House Publishers.
 16. Horney, M.A., & Anderson-Inman, L. (1999). Supported text in electronic reading environments. *Reading & Writing Quarterly: Overcoming Learning Difficulties*, 15(2), 127–168. <https://doi.org/10.1080/105735699278242>.
 17. Horney, M.A., Anderson-Inman, L., Terrazas-Arellanes, F. (2009). Exploring the effects of digital note taking on student comprehension of science texts. *Journal of Special Education Technology*, 24(3), 45–61. <https://doi.org/10.1177/016264340902400305>.
 18. Hutchinson, T., & Waters, A. (1987). *English for specific purposes*. Cambridge: Cambridge University Press.
 19. İpek, H. (2018). Perceptions of ELT students on their listening and note taking skills. *International Online Journal of Education and Teaching*, 5(1), 206–217.
 20. Karasar, N. (2016). *Scientific research method: Concepts, principles, techniques*. Ankara: Nobel Academic Publishing.
 21. Kesselman-Turkel, J., & Peterson, F. (2003). *Note-taking made easy*. Wisconsin: University of Wisconsin Press.
 22. Kiewra, K.A. (1991). Aids to lecture learning. *Educational Psychologist*, 26(1), 37–53. https://doi.org/10.1207/s15326985ep2601_3.
 23. Kiewra, K.A., & Benton, S.L. (1988). The relationship between information-processing ability and notetaking. *Contemporary Educational Psychology*, 13(1), 33–44. [https://doi.org/10.1016/0361-476X\(88\)90004-5](https://doi.org/10.1016/0361-476X(88)90004-5).
 24. Kiliçkaya, F., & Çokal-Karadaş, D. (2009). The effect of note-taking on university students' listening comprehension of lectures. *Kastamonu Education Journal*, 17(1), 47–56.
 25. Kim, J. (2019). The effects of note-taking strategy training on students' notes during academic English listening tests. *English Teaching*, 74(1). <https://doi.org/10.15858/engtea.74.1.201903.25>.
 26. Kobayashi, K. (2006). Combined effects of note-taking/-reviewing on learning and the enhancement through interventions: A meta-analytic review. *Educational Psychology*, 26(3), 459–477. <https://doi.org/10.1080/01443410500342070>.
 27. Leonard, S., Stroud, M.J. & Shaw, R.J. (2021). Highlighting and taking notes are equally ineffective when Reading paper or eText. *Education and Information Technologies*, 26, 3811–3823. <https://doi.org/10.1007/s10639-021-10448-9>.
 28. Luo, L., Kiewra, K.A., Flanigan, A.E., & Peteranetz, M.S. (2018). Laptop versus longhand

- note taking: effects on lecture notes and achievement. *Instructional Science*, 46(6), 947–971.
29. Mueller, P.A., & Oppenheimer, D. M. (2016). Technology and note-taking in the classroom, boardroom, hospital room, and courtroom. *Trends in Neuroscience and Education*, 5(3), 139–145. <https://doi.org/10.1016/j.tine.2016.06.002>.
 30. Özçakmak, H. (2019). Impact of note taking during reading and during listening on comprehension. *Educational Research and Reviews*, 14(16), 580–589. <https://doi.org/10.5897/err2019.3812>.
 31. Özçakmak, H., & Sarigöz, O. (2019). Evaluation of Turkish teacher candidates' perception of note taking concept. *Educational Research and Reviews*, 14(3), 78–86. <https://doi.org/10.5897/err2018.3623>.
 32. Pauk, W., & Owens, R.J.Q. (2010). *How to study in college* (10th ed.). Boston, MA: Wadsworth.
 33. Piolat, A., Barbier, M.-L., & Roussey, J.-Y. (2008). Fluency and cognitive effort during first- and second-language notetaking and writing by undergraduate students. *European Psychologist*, 13(2), 114–125. <https://doi.org/10.1027/1016-9040.13.2.114>.
 34. Riley, J.D., & Dyer, J. (1979). The effects of notetaking while reading or listening. *Reading World*, 19(1), 51–56. <https://doi.org/10.1080/19388077909557514>.
 35. Roy, D., Brine, J., & Murasawa, F. (2014). Usability of English note-taking applications in a foreign language learning context. *Computer Assisted Language Learning*, 29(1), 61–87. <https://doi.org/10.1080/09588221.2014.889715>.
 36. Roy, N., Torre, M.V., Gadiraju, U. (2021). Note the highlight: Incorporating active reading tools in a search as learning environment. In *CHIIR '21: Proceedings of the 2021 Conference on Human Information Interaction and Retrieval* (pp. 229–238). New York: Association for Computing Machinery. <https://doi.org/10.1145/3406522.3446025>.
 37. Rusdiansyah, R. (2019). Note-taking as a technique in teaching reading comprehension. *Journal on English Language Teaching and Learning, Linguistics and Literature*, 7(2), 173–184. <https://doi.org/10.24256/ideas.v7i2.1033>.
 38. Siegel, J. (2019). Notetaking in English language teaching: Highlighting contrasts. *TESOL Journal*, 10, e00406. <https://doi.org/10.1002/tesj.406>.
 39. Siegel, J. (2022). Research into practice: Teaching notetaking to L2 students. *Language Teaching*, 55(2), 245–259. doi:10.1017/S0261444820000476.
 40. Siegel, J. (2023). Translanguaging options for note-taking in EAP and EMI. *ELT Journal*, 77(1), 42–51. <https://doi.org/10.1093/elt/ccac027>.
 41. Ślęzak-Świat, A. (2022). Development of digital literacy – translanguaging and transmedia note taking formats for academic reading. *Theory and Practice of Second Language Acquisition*, 8(1), 85–104. <https://doi.org/10.31261/TAPSLA.9629>.
 42. Thomas, C.G. (2021). Note taking, note making, and assignments. In *Research Methodology and Scientific Writing* (pp. 543–568). New York: Springer.
 43. Tsou, W., & Chen, F. (2014). ESP program evaluation framework: Description and application to a Taiwanese university ESP program. *English for Specific Purposes*, 33, 39–53. <https://doi.org/10.1016/j.esp.2013.07.008>.
 44. Zuckerman, E.L. (2019). *Clinician's thesaurus: The guide to conducting interviews and writing psychological reports* (8th ed.). New York City: The Guilford Press.