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# Asynchronous Digital Approach for Advancing Learners' Foreign Language Proficiency

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## ABSTRACT

In today's technology-driven era, language education has increasingly integrated online learning as an essential component, utilizing either synchronous or asynchronous modalities. This study examined the effectiveness of asynchronous digital instruction in enhancing students' language proficiency (listening and speaking) proficiency, in addition to exploring their perceptions of this instructional approach. Through employing a mixed-methods design, the research combined quantitative and qualitative methods to provide a comprehensive understanding of the impact of asynchronous language learning activities compared with traditional face-to-face instruction. A quasi-experimental design was implemented with 120 A2-level English students at Birzeit University during the second semester of the 2024/2025 academic year. Participants were divided into two groups: an experimental group using interactive digital modules on Moodle, and a control group receiving conventional in-class instruction. Pre- and post-tests were implemented to measure students' language proficiency in listening and speaking, using a standardized Cambridge Press listening test and a CEFR-aligned speaking task assessed through structured rubrics. Additionally, an open-ended survey was administered to elicit qualitative insights from the experimental group about their asynchronous learning experience. Findings revealed that asynchronous instruction significantly improved students' listening skills, particularly inference-making, identifying details, understanding main ideas, and reasoning. In speaking, statistically significant gains were also observed in content relevance, vocabulary, spoken grammar and fluency. Besides, it was indicated from the qualitative results that asynchronous modules and activities

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offered students greater flexibility, autonomy, and accessibility. Students appreciated the reduced anxiety and personalized feedback that supported confident participation. However, students also highlighted challenges such as technological limitations, lack of real-time interaction, and the need for increased self-motivation.

***Keywords:*** Asynchronous; Digital Approach; Foreign Language Proficiency

# 1. Introduction

The integration of digital technologies into education has significantly renovated traditional teaching methods and strategies. Technology has facilitated a shift in education from conventional face-to-face instruction to distance or remote learning, enabling education to occur anytime and anywhere. Digital or online education can be viewed as an interactive system that incorporates various multimedia components, primarily computers and the internet, alongside other digital tools, such as software programs, animated graphics, videos, texts, and images[1]. This mode of teaching and learning can empower learners to independently engage with course content, empowering them to achieve progression at their own pace, choose suitable times and locations for study, and employ self-regulation strategies to enhance engagement and enjoyment[2]. Online learning can be categorized into two primary modes, which are known as synchronous and asynchronous. The fundamental differences between these modes lie in time, location and interaction dynamics.

Asynchronous learning environments can offer geographically independent and self-paced learning experiences that depend less on direct instructor involvement[3–5]. Besides, in an asynchronous setting, learners are not required to be online simultaneously, which grants them the flexibility to study independently from any location. Additionally, asynchronous learning encourages communication through digital discussion boards and forums, fostering collaborative and reflective learning[6]. Asynchronous classrooms exhibit distinct characteristics beyond the absence of physical presence and scheduled class hours. Learners have the autonomy to select tasks, activities, and the depth of engagement with topics based on their interests and needs. They utilize technological tools to access pre-recorded lectures, engage in self-directed learning, and participate in interactive activities[7]. This flexible learning model ensures that course materials remain readily accessible, enabling students to retrieve content at their convenience and tailor their learning experience accordingly[8].

In language education, asynchronous approaches have demonstrated effectiveness in developing foreign or second-language proficiency. However, these methods may also have limitations, which can be mitigated by incorporating synchronous elements[9]. A blended synchronous-asynchronous learning environment is particularly beneficial for foreign language instruction, offering a balance between structured guidance and flexible, independent learning opportunities[10]. Notably, asynchronous learning has been shown to improve specific language skills, such as listening comprehension, especially when top-down and bottom-up processing strategies are employed using authentic materials, such as news items and real-world conversations[11].

A critical theoretical framework underpinning asynchronous learning is the cognitive theory of multimedia learning (CTML), developed by Mayer[12]. The cognitive theory of multimedia learning suggested that optimal multimedia design enhances comprehension and retention by leveraging two cognitive channels: visual and auditory. This theory has been instrumental in shaping the design of asynchronous learning environments. Specifically, CTML has supported the development of digital language learning platforms that incorporate videos, practice tests and interactive quizzes. By integrating multimedia elements effectively, asynchronous language learning programs can align with cognitive processes essential for comprehension. The cognitive theory of multimedia learning also encouraged the modality principle, which emphasized the combination of spoken words with relevant images and diagrams to enhance learning. Such principles are particularly relevant for designing interactive exercises in asynchronous contexts, enabling learners to engage with rich multimedia content through Learning Management Systems (LMS), such as Moodle or other digital platforms.

The global shift to e-learning, particularly during the COVID-19 pandemic, was largely unanticipated and not systematically implemented. Most educators and students were unprepared for the infrastructure demands associated with

effective e-learning[13,14]. Birzeit University (BZU) in Palestine was among the institutions that rapidly transitioned to online learning during the pandemic. The shift was mainly related to the synchronous mode of online education utilizing platforms such as Zoom and Teams. The delivery mode of online education was neither systematic nor organized. Besides, the asynchronous mode of online teaching was almost ignored. Therefore, a team of English language educators and experts in language and digital pedagogy and technology developed asynchronous online materials that integrated interactive video and audio resources to enhance their remote instruction capabilities, providing learners with enriched content, flexible access to educational resources and opportunities for meaningful social and academic interactions[7].

In this context, this study examined the effectiveness of asynchronous digital learning in enhancing language proficiency, particularly in listening and speaking skills. It further compared asynchronous learning outcomes with those of conventional face-to-face instruction, offering insights into the potential of digital platforms to provide flexible and self-paced learning experiences. The findings can contribute to a deeper understanding of second-language acquisition in online settings and offer evidence-based recommendations for educators and institutions seeking to optimize language teaching strategies through digital means. By grounding the study in Mayer's[12] cognitive theory of multimedia Learning, the research underscores the importance of effectively managing multimedia tools to enhance comprehension, retention, and engagement in digital education

Additionally, while numerous studies[7,11,15–20] have examined broader aspects of digital learning, such as academic achievement, learner autonomy and motivation, research specifically investigating the impact of asynchronous learning on targeted language skills, such as listening and speaking, remain limited. Thus, this study sought to address this gap by examining the comparative effectiveness of asynchronous digital learning versus face-to-face instruction in fostering language proficiency.

### Research Questions

This study was guided by the following research questions:

RQ1: Are there statistically significant differences between the experimental and control groups in their language proficiency (listening and speaking) attributed to the teaching mode (asynchronous digital teaching versus face-to-face instruction)?

RQ2: What are the perceptions of BZU students regarding the effectiveness of asynchronous approaches in improving language skills?

## 2. Pertinent Studies

In the context of examining the effectiveness of the asynchronous teaching mode in language education, particularly English as a foreign language, a group of previous studies relevant to the current investigation was reviewed, summarized and listed chronologically in this section.

In their study, Güneş and Alagözlü[15] examined learner autonomy, motivation and academic achievement by comparing asynchronous distance learning and blended learning in an English as a Foreign Language (EFL) context. The study included 145 freshmen from Civil Engineering, Agricultural Engineering and Veterinary faculties at a Turkish university, with 114 students in the asynchronous distance learning group and 31 in the blended learning group. The curriculum remained the same across both groups for 15 weeks. The BL group, which combined face-to-face instruction with asynchronous learning, exhibited higher learner autonomy, motivation, and academic success compared to the asynchronous distance learning group.

Likewise, Vidhiasi et al.[7] investigated how teachers and students in Indonesia coped with the transition to online learning and mapped out opportunities and threats of asynchronous learning during the COVID-19 outbreak. They employed digital tools in lecture activities followed by a mini-survey to explore the advantages and obstacles learners encountered in applying asynchronous learning. They used a mixed approach—quantitative methods to show the findings of the inquiry performed on 30 students, and qualitative descriptive methods to explain the survey results. Results revealed at least five advantages—material enrichment, access to learning materials, social interaction, personal interaction and ease in discussing student work—and one problem related to cost-effectiveness in asynchronous learning.

Similarly, Utomo and Sulisyowati[11] examined the ef-

fectiveness of asynchronous online learning for improving EFL students' listening skills through top-down and bottom-up strategies. The study focused on first-semester students' listening proficiency before and after implementing these strategies in an asynchronous environment. Using Google Forms and news items as listening resources, a one-group pretest-posttest design was employed. The Wilcoxon test analysis revealed significant improvements in listening comprehension, confirming that asynchronous learning is suitable for teaching listening skills. However, the study emphasized the need for effective learning management strategies to enhance student engagement and achievement.

Rido et al.[16] conducted a study on technological applications used in asynchronous online English language learning in Indonesia, examining teachers' and students' perceptions. Using a systematic literature review approach, they selected and analyzed 25 research articles. Results indicated that applications like Google Classroom, Facebook, Instagram, and Moodle facilitated English language learning during COVID-19 and improved students' skills. However, the study also identified challenges, such as the time required for lesson preparation, workload increases, lack of technological proficiency, difficulty in comprehension and delayed feedback.

Madzlan et al.[17], moreover, researched the effectiveness of asynchronous online role-play in improving ESL learners' willingness to communicate. Asynchronous role-play, classified under asynchronous computer-mediated communication, was proven effective in engaging learners in communicative activities through computer-based tasks. A mixed-methods approach was used, incorporating questionnaires, reflective journals, and semi-structured interviews. Results indicated a significant increase in students' willingness to communicate post-intervention. Factors influencing this improvement included self-confidence, teamwork, linguistic and non-linguistic skills, and technical proficiency.

In a meta-analysis study, Zeng and Luo[18] compared the effectiveness of synchronous and asynchronous online learning across different educational levels and disciplines, concentrating on student performance, engagement, satisfaction, and retention. The analysis revealed diverse results in academic performance. Synchronous learning was registered to frequently lead to better immediate results, while asynchronous learning seemed to foster better long-term retention due to its flexibility. As for engagement, synchronous learning mostly led to higher participation and collaboration because of real-time communication, while asynchronous learning offered greater flexibility but resulted in lower levels of engagement. Satisfaction differed depending on student preferences. Students who appreciate interaction and feedback prefer synchronous learning, whereas those who demand more flexibility opt for asynchronous learning.

In their research followed a quasi-experimental design, Kaptan and Cakir[19] studied the effectiveness of digital storytelling on students' digital literacy in a public school in Turkey. Pre-tests were applied in all groups, followed by an experimental period lasting for eight weeks. Lessons about individual digital storytelling activities were taught in the first experimental group, while cooperative digital storytelling activities were applied in the second experimental group. However, the control group followed lessons and activities conventionally. Data analysis showed that collaborative digital storytelling activities had a positive effect on increasing learners' academic achievement.

In one of the few studies, Alfares[20] explored TEFL teachers' perceptions of the advantages and disadvantages of synchronous and asynchronous online learning for students in various regions of Saudi Arabia. A questionnaire was distributed to 121 EFL teachers from public schools, and data were statistically analyzed. Findings revealed that synchronous learning was beneficial in reducing space barriers and saving time for learners. However, challenges included internet disruptions, slow speeds, miscommunication, and student disengagement. Regarding asynchronous learning, advantages included increased opportunities for learners to replay lessons, reflect, and develop autonomy. Nevertheless, the study highlighted that asynchronous learning required students to be more self-disciplined, self-motivated, and autonomous.

In an action research study, Alomari[21] evaluated the effectiveness of remedial cooperative techniques, pedagogical methods, and multimedia resources in enhancing oral proficiency among college-level English Language Learners (ELLs). Twenty-five non-native English-speaking undergraduates participated in a 12-week asynchronous structured speech course. The course included assignments, such as speech outlines, PowerPoint presentations, peer evaluations, and collaborative discussions aimed at developing public speaking skills. Results indicated improvements in interpersonal interaction, engagement, motivation, and self-management.

Overall, the reviewed studies highlight both the benefits and limitations of asynchronous and synchronous learning in EFL contexts. While asynchronous learning fosters autonomy, flexibility, and deeper engagement with materials, challenges include delayed feedback, self-discipline requirements, and technological barriers. Conversely, asynchronous learning helps overcome spatial barriers and enhances immediate interaction, but is often constrained by internet connectivity and engagement issues. Additionally, as shown in the reviewed studies, a lot of studies have examined broad outcomes of asynchronous mode, like digital mastery, academic accomplishment, learner self-sufficiency, or motivation. Nevertheless, scarce research efforts on how asynchronous learning influences precise language skills, particularly listening and speaking in specific circumstances or contexts, may justify the significance of conducting the present study.

# 3. Method

This section details the methodology used in the study, which adopted a mixed-methods approach to investigate the research questions[22]. The study combined quantitative and qualitative data collection and analysis methods to gain a comprehensive understanding of the research problem and answer research questions.

## 3.1. Research Design

A quasi-experimental design was employed to compare the outcomes of the experimental and control groups. The experimental group engaged in asynchronous digital teaching methods (through a Moodle page), while the control group followed the conventional face-to-face teaching approach.

## 3.2. Context and Participants

The study was conducted at Birzeit University during the second semester of the 2024/2025 academic year. The participants consisted of 120 students (divided between the experimental and control groups) enrolled in an A2-level English course, as defined by the Common European Framework of Reference for Languages (CEFR), using a standardized Cambridge Press listening test and a CEFR-aligned speaking task assessed through structured rubrics. The students were selected using convenience sampling and met the eligibility criteria of having A2 proficiency in English. The language educators involved in the study were also familiar with both asynchronous and conventional teaching methods.

## 3.3. Instruments and Data Collection

To answer the research questions, the following instruments and methods were used:

**Pre- and Post-Listening Examination:** Before and after the intervention, a standardized listening test prepared by Cambridge Press was administered to measure differences in listening proficiency between the groups.

**Pre- and Post-Speaking Task:** At the beginning and end of the intervention, a speaking task aligned with CEFR descriptors was used to assess speaking proficiency. The tasks were evaluated using a rubric to ensure consistency.

**Open-ended Survey:** After the experimental period, open-ended surveys were distributed to a sample of students in the experimental group, exploring their perceptions of the effectiveness of asynchronous digital teaching in improving language skills.

## 3.4. Procedures

The study was implemented over the second semester of the 2024/2025 academic year and consisted of two interventions for the experimental and control groups. These interventions were carefully designed to ensure consistency in content while differing in the mode of delivery.

## 3.5. Intervention Design

### 3.5.1. Experimental Group

The experimental group participated in asynchronous digital learning and experienced two interactive and digital modules designed by the researchers (Module 1:Places and Module 2: Sports and Competition). The modules were hosted on a Moodle page (ITC), providing students with an engaging and flexible learning environment. The features of the modules are presented in **Table 1** below.

As shown in **Table 1**, interactive videos, audio, and tutorials were embedded in the Moodle page of experimental group students, along with activities, quizzes, and assignments for formative and summative assessment.

**Figures 1–3** display some samples of the asynchronous listening and speaking interactive activities designed for the experimental group.

**Table 1.** The Features of the Asynchronous Modules Taught to the Experimental Group.

| Features of Asynchronous Modules | Description |
|---|---|
| **Videos and Tutorials** | Recorded video lessons explaining key concepts and skills, accompanied by slides and visual aids. |
| **Interactive Exercises** | Self-paced formative quizzes, listening activities and speaking prompts were integrated using H5P as a learning tool. These exercises included instant feedback mechanisms to help students assess their performance. |
| **Assignments** | Assignments, such as recording speaking tasks, and completing listening activities, were uploaded to the platform for evaluation. |
| **Progress Tracking** | Students could monitor their learning progress through built-in analytics on Moodle. |

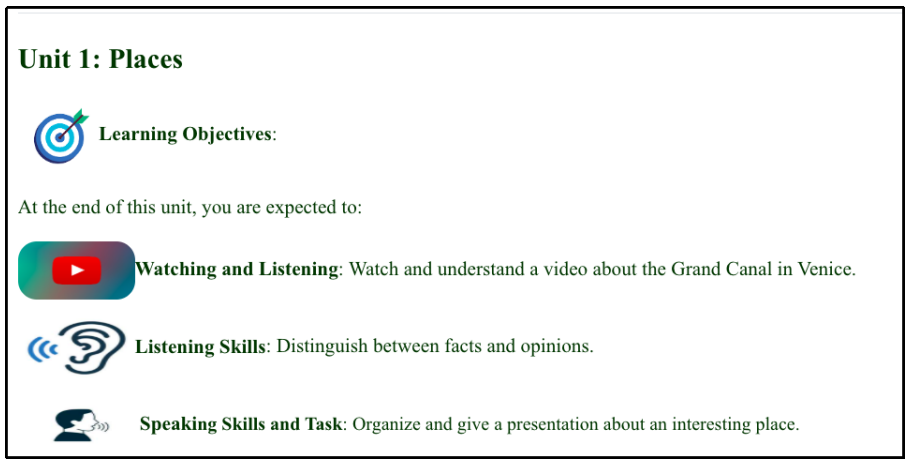


**Figure 1.** Conceptual Model of the Study.

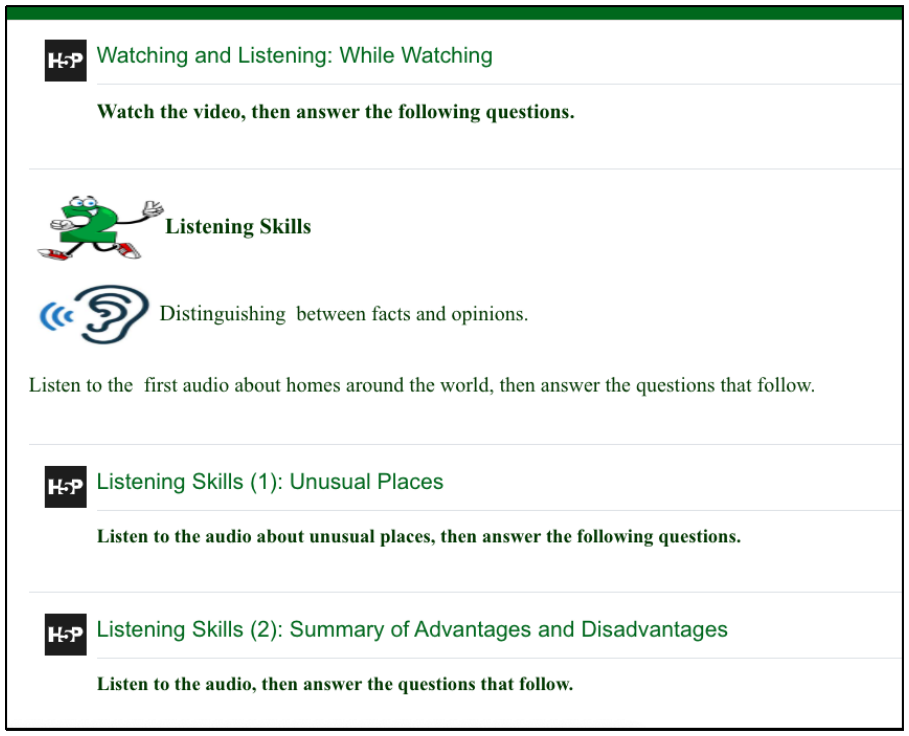


**Figure 2.** A sample of the designed asynchronous activities for the experimental group (Listening Activities).

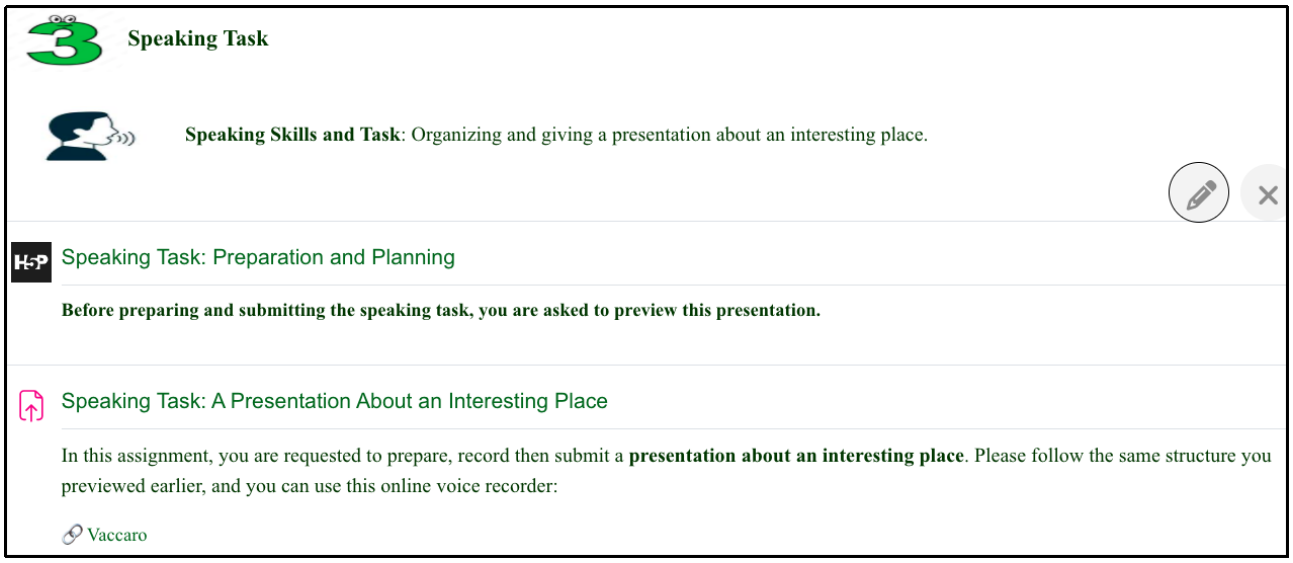


**Figure 3.** A sample of the designed asynchronous activities for the experimental group (Listening Activities).

### 3.5.2. Control Group

The control group utilized a traditional face-to-face teaching approach in the classroom. The same content from the digital modules (Module 1: Places and Module 2: Sports and Competition) was presented by the instructors through direct instruction. The teaching strategies employed with the control group are detailed in **Table 2** below.

**Table 2** displays the conventional teaching strategies employed with the control group, which consisted of in-class activities designed to promote listening and speaking. Students were also asked to watch videos and listen to audio recordings in class.

To maintain consistency, measures were taken to control the key difference between the two groups to be merely in the mode of delivery (asynchronous digital versus face-to-face). Language teachers for both groups were trained to ensure they adhered to the instructional design without introducing external biases.

**Table 2.** The Features of the Face-to-face Modules Taught to the Control Group.

| Features of Face-to-Face Modules | Description |
|---|---|
| **In-Class Activities** | Teachers provided explanations and facilitated discussions on listening and speaking skills. |
| **Listening and Speaking Practice** | Students engaged in real-time role-playing, dialogues, and listening comprehension exercises in the classroom setting. |
| **Homework Assignments** | Paper-based or verbal tasks similar to those in the experimental group were assigned to reinforce learning outside the classroom. |

## 3.6. Data Analysis

The obtained data underwent both quantitative and qualitative analysis. Listening and speaking test scores were analyzed using SPSS, employing descriptive statistics (Means, standard deviations), the analysis of covariance (ANCOVA), and a multivariate analysis of covariance (MANCOVA) to determine whether significant differences existed between the groups. Thematic analysis was conducted on open-ended survey answers, identifying recurring patterns and key insights into student perceptions of asynchronous learning.

## 3.7. Validity and Reliability

To ensure the validity and reliability of the study, the following measures were implemented:

Quantitative Instruments: The listening and speaking assessments were piloted before the study to confirm their reliability and alignment with CEFR standards. Inter-rater reliability was established for the speaking tasks by training raters and calculating a reliability coefficient.

Qualitative Data: open-ended survey questions were developed based on a literature review and expert input to

ensure they addressed the research questions. Transcriptions were double-checked for accuracy, and coding was reviewed by multiple researchers to ensure consistency.

Control of Variables: Efforts were made to standardize teaching materials and instructional time across all groups to minimize confounding variables.

### 3.8. Ethical Considerations

Conducting this study has been approved by Birzeit University's research ethics committee. Consent was secured from all participants, who were assured of the confidentiality of their data.

## 4. Findings

### 4.1. Results Related to the First Question: Are There Statistically Significant Differences between Experimental and Control Groups in Their Language Proficiency (Listening and Speaking) Attributed to the Teaching Mode (Asynchronous Digital Teaching Versus Face-to-Face Instruction)?

In respect of the listening skill and subskills between groups, this was answered by extracting the means and standard deviations for the individuals of the experimental and control groups on the listening test and its sub-dimensions. **Table 3** displays the results.

As shown in **Table 3**, there are noticeable differences between the average scores of the study sample members on the listening test dimensions in the experimental and control groups. The mean score for the experimental group in the pre-test was 11.89, and it increased to 30.02 in the post-test. For the control group, the pre-test mean was 13.58, and the post-test mean was 25.12.

To measure the significance of the differences between these averages, the analysis of covariance (ANCOVA) method was used on the post-means of the scores of the study sample members on the listening test as a whole, considering the pre-scores as a common variable. **Table 4** shows the results.

As presented in **Table 4**, the value of (F) related to the listening test as a whole reached (29.694), which is statistically significant at the significance level ($\alpha = 0.05$); indicating the presence of statistically significant differences between the post-scores of the two groups. Upon reviewing the means, it became clear that the differences were in favor of the experimental group; as the post-means of the experimental group were higher than those of the control group, the adjusted mean of the experimental group reached 30.02, while the adjusted mean of the control group reached 25.12. To find the size of the effect of asynchronous digital teaching on listening as a whole, Eta square was calculated, and it reached 0.21, meaning that about 21.0% of the variance in the performance of the study sample individuals on post-listening is due to asynchronous digital teaching.

A multivariate analysis of covariance (MANCOVA) was also conducted on the post-means of the study sample members' scores on the dimensions of the post-listening test, considering the pre-scores as a covariate. **Table 5** shows the results of this analysis.

**Table 3.** Means, standard deviations, and adjusted mean scores for the performance of the experimental and control groups before and after applying the asynchronous digital teaching in the listening test and its sub-dimensions.

| Group | Dimensions | Pre | | Post | | Adjusted Mean | Std. Error |
|---|---|---|---|---|---|---|---|
| | | Mean | S. D | Mean | S. D | | |
| **Experimental Group** | Making inferences | 2.89 | 1.49 | 8.27 | 1.46 | 8.27 | 0.20 |
| | Listening for detail | 2.93 | 1.57 | 8.30 | 1.49 | 8.30 | 0.21 |
| | Listening for main ideas | 2.93 | 1.46 | 6.68 | 0.79 | 6.68 | 0.12 |
| | Listening for Reasoning | 3.14 | 1.60 | 6.77 | 0.87 | 6.77 | 0.13 |
| | Total | 11.89 | 4.37 | 30.02 | 4.54 | 30.02 | 0.65 |
| **Control Group** | Making inferences | 3.34 | 2.06 | 6.61 | 1.59 | 6.61 | 0.20 |
| | Listening for detail | 3.49 | 2.15 | 6.68 | 1.58 | 6.68 | 0.20 |
| | Listening for main ideas | 3.32 | 1.97 | 5.90 | 1.05 | 5.90 | 0.12 |
| | Listening for Reasoning | 3.42 | 2.01 | 5.93 | 1.10 | 5.93 | 0.13 |
| | Total | 13.58 | 7.06 | 25.12 | 5.18 | 25.12 | 0.64 |

**Table 4.** ANCOVA results for the study sample members' scores on the post-test of listening as a whole.

| Source | Type I Sum of Squares | DF | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| **Teaching Method** | 689.596 | 1 | 689.596 | 29.694* | 0.000 | 0.210 |
| **Pre** | 90.138 | 1 | 90.138 | 3.881 | 0.051 | 0.033 |
| **Error** | 2601.013 | 112 | 23.223 | | | |
| **Total** | 90377.000 | 115 | | | | |
| **Corrected Total** | 3380.748 | 114 | | | | |

*Statistically significant at the significance level (α = 0.05).

**Table 5.** Results of the MANCOVA analysis on the dimensional averages of the study sample members' scores on the dimensions of the listening test.

| Source | Dependent Variable | Type I Sum of Squares | DF | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|---|
| **Teaching Method** | Making inferences | 78.949 | 1 | 78.949 | 35.692 | 0.000 | 0.247 |
| | Listening for detail | 75.923 | 1 | 75.923 | 34.224 | 0.000 | 0.239 |
| | Listening for main ideas | 17.492 | 1 | 17.492 | 21.680 | 0.000 | 0.166 |
| | Listening for Reasoning | 20.063 | 1 | 20.063 | 21.546 | 0.000 | 0.165 |
| **Pre** | Making inferences | 1.625 | 1 | 1.625 | 0.734 | 0.393 | 0.007 |
| | Listening for detail | 2.807 | 1 | 2.807 | 3.479 | 0.065 | 0.031 |
| | Listening for main ideas | 0.287 | 1 | 0.287 | 0.355 | 0.552 | 0.003 |
| | Listening for Reasoning | 0.090 | 1 | 0.090 | 0.096 | 0.757 | 0.001 |
| **Error** | Making inferences | 241.100 | 109 | 2.212 | | | |
| | Listening for detail | 241.808 | 109 | 2.218 | | | |
| | Listening for main ideas | 87.944 | 109 | 0.807 | | | |
| | Listening for Reasoning | 101.499 | 109 | 0.931 | | | |
| **Total** | Making inferences | 6669.000 | 115 | | | | |
| | Listening for detail | 6759.000 | 115 | | | | |
| | Listening for main ideas | 4648.000 | 115 | | | | |
| | Listening for Reasoning | 4753.000 | 115 | | | | |
| **Corrected Total** | Making inferences | 341.965 | 114 | | | | |
| | Listening for detail | 342.643 | 114 | | | | |
| | Listening for main ideas | 115.096 | 114 | | | | |
| | Listening for Reasoning | 131.774 | 114 | | | | |

*Statistically significant at the significance level (α = 0.05).

**Table 5** shows statistically significant differences in the sub-dimensions of the listening test, namely:

Making Inferences (predicting): The value of (F) (35.692) was statistically significant at the significance level (α = 0.05), indicating an increase in making inferences (predicting) for the experimental group. The adjusted mean for the experimental group was 8.27, compared to 6.61 for the control group. The partial eta squared value was 0.247, suggesting that asynchronous digital teaching accounted for 24.7% of the variance in scores on the Making inferences (predicting) dimension between the experimental and control groups.

Listening for Detail (Facts-Opinions): The value of (F) (34.224) was statistically significant at the significance level (α = 0.05), meaning that there was an increase in the level of Listening for Detail (Facts-Opinions) in favor of the experimental group. The adjusted mean for the experimental group was 8.30, while the adjusted mean for the control group was 6.68. The partial eta squared value was 0.239, meaning that the use of asynchronous digital teaching explained 23.9% of the variance between the experimental and control groups in the scores on dimension Listening for detail (Facts-Opinions).

Listening for Main Ideas: The value of (F)(21.680) was statistically significant at the significance level (α = 0.05), indicating an increase in listening for main ideas in favor of the experimental group. The adjusted mean for the experimental group was (6.68), while the control group's adjusted mean was (5.90). The partial eta squared value was 0.166, meaning the use of asynchronous digital teaching explained 16.6% of

the variance in scores between the experimental and control groups on the listening for main ideas dimension.

Listening for Reasoning: The value of (F) (21.465) was statistically significant at the significance level (α = 0.05), meaning that there was an increase in the level of listening for main ideas in favor of the experimental group. The adjusted mean for the experimental group was 6.77, while the adjusted mean for the control group was 5.93. The partial eta squared value was 0.165, meaning that the use of asynchronous digital teaching explained 16.5% of the variance between the experimental and control groups in the scores on the dimension Listening for main ideas.

**As for the speaking skill and sub-skills between groups**, this was tested by extracting the means and standard deviations for the individuals of the experimental and control groups on the Speaking test and its sub-dimensions, as shown in **Table 6** below.

Based on **Table 6**, that there are apparent differences between the average scores of the study sample members on the dimensions of the Speaking test in the experimental and control groups, as the mean of the scores of the experimental group members on the test as a whole in the pre-test (11.18), and the mean of the experimental group in the post-test (16.55), and the mean of the scores of the control group members on the test as a whole in the pre-test (10.58), and the mean of the control group in the post-test (11.97).

To reveal the significance of the differences between these averages, the analysis of covariance (ANCOVA) method was used on the post-means of the scores of the study sample members on the Speaking test as a whole, considering the pre-scores as a common variable. **Table 7** shows the results.

**Table 6.** Means, standard deviations, and adjusted mean scores for the performance of the experimental and control groups before and after applying the asynchronous digital teaching in the Speaking test and its sub-dimensions.

| Group | Dimensions | Pre | | Post | | Adjusted Mean | Std. Error |
|---|---|---|---|---|---|---|---|
| | | Mean | S. D | Mean | S. D | | |
| Experimental Group | Content and Relevance | 2.82 | 0.77 | 4.11 | 1.07 | 4.11 | 0.13 |
| | Vocabulary and word choice | 2.84 | 0.76 | 4.09 | 1.07 | 4.09 | 0.13 |
| | Spoken Grammar | 2.75 | 0.86 | 4.14 | 1.07 | 4.14 | 0.14 |
| | Fluency | 2.77 | 0.83 | 4.20 | 1.03 | 4.20 | 0.14 |
| | Total | 11.18 | 3.14 | 16.55 | 4.16 | 16.55 | 0.52 |
| Control Group | Content and Relevance | 2.76 | 0.77 | 2.88 | 0.91 | 2.88 | 0.13 |
| | Vocabulary and word choice | 2.61 | 0.98 | 2.85 | 0.87 | 2.85 | 0.13 |
| | Spoken Grammar | 2.61 | 0.98 | 3.02 | 1.04 | 3.02 | 0.14 |
| | Fluency | 2.59 | 0.98 | 3.22 | 1.10 | 3.22 | 0.14 |
| | Total | 10.58 | 3.55 | 11.97 | 3.58 | 11.97 | 0.50 |

**Table 7.** ANCOVA results for the study sample members' scores on the post-test of Speaking as a whole.

| Source | Type I Sum of Squares | DF | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|
| Teaching Method | 604.629 | 1 | 604.629 | 39.981 | 0.000 | 0.263 |
| Pre | 0.005 | 1 | 0.005 | 0.000 | 0.985 | 0.000 |
| Error | 1693.766 | 112 | 15.123 | | | |
| Total | 25487.000 | 115 | | | | |
| Corrected Total | 2298.400 | 114 | | | | |

*Statistically significant at the significance level (α=0.05).

As displayed in **Table 7**, the value of (F) related to the Speaking test as a whole reached (39.981), which is statistically significant at the significance level (α=0.05), indicating the presence of statistically significant differences between the post-scores of the two groups. Upon reviewing the means, it became clear that the differences were in favor of the experimental group, as the post-means of the experimental group were higher than those of the control group, with the adjusted mean of the experimental group reaching 16.55, while the adjusted mean of the control group reached 11.97. To find the size of the effect of asynchronous digital teaching on listening as a whole, Eta square was calculated, and it reached

0.263, meaning that about 26.3% of the variance in the performance of the study sample individuals on post-speaking is due to asynchronous digital teaching.

A multivariate analysis of covariance (MANCOVA) was also conducted on the post-means of the study sample members' scores on the dimensions of the post-Speaking test, considering the pre-scores as a covariate. **Table 8** shows the results.

**Table 8.** Results of the MANCOVA analysis on the dimensional averages of the study sample members' scores on the dimensions of the Speaking test.

| Source | Dependent Variable | Type I Sum of Squares | DF | Mean Square | F | Sig. | Partial Eta Squared |
|---|---|---|---|---|---|---|---|
| Teaching Method | Content and Relevance | 43.169 | 1 | 43.169 | 43.612 | 0.000 | 0.286 |
| | Vocabulary and word choice | 44.306 | 1 | 44.306 | 47.066 | 0.000 | 0.302 |
| | Spoken Grammar | 36.421 | 1 | 36.421 | 32.415 | 0.000 | 0.229 |
| | Fluency | 27.373 | 1 | 27.373 | 23.912 | 0.000 | 0.180 |
| Pre | Content and Relevance | 0.467 | 1 | 0.467 | 0.472 | 0.494 | 0.004 |
| | Vocabulary and word choice | 0.233 | 1 | 0.233 | 0.247 | 0.620 | 0.002 |
| | Spoken Grammar | 2.547 | 1 | 2.547 | 2.267 | 0.135 | 0.020 |
| | Fluency | 0.099 | 1 | 0.099 | 0.087 | 0.769 | 0.001 |
| Error | Content and Relevance | 107.893 | 109 | 0.990 | | | |
| | Vocabulary and word choice | 102.608 | 109 | 0.941 | | | |
| | Spoken Grammar | 122.471 | 109 | 1.124 | | | |
| | Fluency | 124.774 | 109 | 1.145 | | | |
| Total | Content and Relevance | 1546.000 | 115 | | | | |
| | Vocabulary and word choice | 1521.000 | 115 | | | | |
| | Spoken Grammar | 1624.000 | 115 | | | | |
| | Fluency | 1727.000 | 115 | | | | |
| Corrected Total | Content and Relevance | 154.696 | 114 | | | | |
| | Vocabulary and word choice | 150.487 | 114 | | | | |
| | Spoken Grammar | 162.261 | 114 | | | | |
| | Fluency | 156.348 | 114 | | | | |

*Statistically significant at the significance level (α = 0.05).

**Table 8** shows statistically significant differences in the sub-dimensions of the Speaking test, namely:

Content and Relevance: The value of (F) (43.612) was statistically significant at the significance level (α = 0.05), meaning that there was an increase in the level of Content and Relevance in favor of the experimental group. The adjusted mean for the experimental group was (4.11), while the adjusted mean for the control group was (2.88). The partial eta squared value was (0.286), meaning that the use of asynchronous digital teaching explained 28.6% of the variance between the experimental and control groups in the scores on dimension Content and Relevance.

Vocabulary and word choice: The value of (F) (47.006) was statistically significant at the significance level (α = 0.05), meaning that there was an increase in the level of Vocabulary and word choice in favor of the experimental group. The adjusted mean for the experimental group was (4.09), while the adjusted mean for the control group was (2.85). The partial eta squared value was (0.302), meaning that the use of asynchronous digital teaching explained 30.2% of the variance between the experimental and control groups in the scores on the dimension vocabulary and word choice.

Spoken Grammar: The value of (F) (32.415) was statistically significant at the significance level (α = 0.05), meaning that there was an increase in the level of Spoken Grammar in favor of the experimental group. The adjusted mean for the experimental group was 4.14, while the adjusted mean for the control group was 3.02. The partial eta squared value was 0.229, meaning that the use of asynchronous digital teaching explained 22.9% of the variance between the experimental and control groups in the scores on dimension Spoken Grammar.

Fluency: The value of (F) (23.912) was statistically significant at the significance level (α = 0.05), meaning that there was an increase in the level of Fluency in favor of the experimental group. The adjusted mean for the experimen-

tal group was 4.20, while the adjusted mean for the control group was 3.22. The partial eta squared value was 0.180, meaning that the use of asynchronous digital teaching explained 18.0% of the variance between the experimental and control groups in the scores on dimension Fluency.

## 4.2. Results Pertaining to the Second Research Question, "RQ2: What Are the Perceptions of BZU Students Regarding the Effectiveness of Asynchronous Approaches in Improving Language Skills?"

To explore the perceived impact of asynchronous listening and speaking activities on students' language proficiency, a qualitative analysis was conducted based on responses from 30 students at Birzeit University (BZU) from the experimental group. The analysis focused on four main areas: benefits, challenges, and suggestions for improvement. The responses were coded thematically, and approximate percentages indicate the proportion of students who mentioned each theme.

### 4.2.1. First: Benefits of Asynchronous Listening and Speaking Activities Perceived by Students

#### Flexibility and Autonomy

Most students confirmed the flexibility provided by asynchronous activities. They highlighted their ability to access materials at any time and from any location, which helped them manage their time more effectively. This was particularly beneficial for those with irregular schedules or who face transportation challenges, a common concern in the Palestinian context. Students also emphasized their ability to replay materials multiple times, allowing them to pause, reflect, and engage with content at their own pace. This level of autonomy facilitated deeper learning and made the experience more personalized and less stressful. It was confirmed, *"I could listen to the recordings over and over, which helped me focus on the parts I didn't understand at first."*

#### Language Proficiency and Cognitive Gains

Listening Comprehension Development

Most students believed that the listening activities contributed significantly to their comprehension skills, attributing this to the opportunity to process information without pressure and the freedom to review difficult sections. It was clarified, *"I understood more because I wasn't afraid of missing something. I could just go back and listen again."*

Improved Vocabulary and Pronunciation Awareness

Based on their responses, students observed significant gains in vocabulary, particularly through repeated exposure to authentic content. Some noted that asynchronous videos and audio activities enhanced their understanding of intonation, stress, and pronunciation patterns. One of the students elaborated by stating, *"I learned many new words from the videos, especially when the same words appeared different times."*

Deeper Thinking and Retention

Several students reflected on how asynchronous listening encourages more focused and analytical listening. The slower pace allowed them to process content more deeply and led to improved information retention. It was declared, *"I had time to think about what I heard, look up meanings, and reflect—something we can't always do in class."*

#### Psychological Comfort and Reduced Anxiety

A significant number of students described asynchronous activities as less intimidating than speaking or listening in real-time classroom settings. Many felt more confident and comfortable recording their speech or responding to prompts without the fear of judgment or peer pressure. For instance, it was made obvious when one of the participating students mentioned, *"I feel more confident to speak when I'm alone, not in front of classmates."*

#### Formative and Non-Judgmental Feedback

Students appreciated receiving non-threatening formative feedback, especially through tools such as H5P. This allowed them to view their performance and correct their mistakes without the fear of public criticism or grading pressure. It was stated, *"It was helpful to get comments and scores privately; it felt like support, not judgment."*

### 4.2.2. Second: Challenges Perceived by Students Regarding the Asynchronous Listening and Speaking Activities

#### Technological Constraints

Half of the students reported experiencing interrupted internet access, platform issues, or a lack of suitable devices. These issues hindered their ability to complete or benefit

fully from asynchronous tasks. A student mentioned, *"Sometimes I missed parts of the video because my internet cut out."*

### Need for Self-Regulation and Motivation

Some students acknowledged that asynchronous learning necessitates a high level of self-discipline. In the absence of immediate accountability, it was easy for some to procrastinate or lose interest. It was stated by one of the participating students, *"It's hard to stay motivated when no one is watching or expecting immediate answers."*

### Lack of Immediate Interaction

A portion of students expressed a need for real-time clarification, peer discussion, or instructor interaction, which they missed in the asynchronous format. As it was clarified, *"If I didn't understand something, I had to wait or figure it out myself, as there is no instant help like in class."*

### 4.2.3. Third: Suggestions for Improvement by Students

### Enhanced Accessibility

Students recommended creating a dedicated app for easier access and engagement through smartphones, especially for those with limited access to laptops or desktops. It was stated, *"If we had an app, we could do our work even on the bus or during electricity cuts."*

### Integration with In-Class Activities

A popular suggestion was to revisit and discuss asynchronous content in class, making it a part of group activities or discussions to reinforce understanding. It was clarified by stating, *"It would help if we watched the video again in class and talked about it together."*

### More Engaging and Varied Content

Students requested more videos instead of audio tasks, as they found visual input more enjoyable and easier to understand. They also asked for more frequent and diverse activities to keep them engaged. As it was declared, *"I liked videos more than just audio. They made it easier to understand and remember."*

### Supplementary Resources

Many students recommended including written scripts or transcripts to help them follow the content, especially for more challenging listening passages, as a student mentioned, *"If I had the script, I could check the words I didn't catch while listening."*

Overall, the findings indicated that asynchronous listening and speaking activities are largely perceived as beneficial for enhancing students' English language proficiency. Their strengths lie in flexibility, reduced anxiety, and support for independent learning. Students reported gains in vocabulary, comprehension, and speaking confidence. However, challenges related to technology, motivation, and a lack of real-time interaction remain. Students' suggestions highlight the value of blended integration, diverse content, improved feedback, and better accessibility, which can help educators optimize the asynchronous learning experience in language classrooms.

## 5. Discussion

Based on the findings of the first question presented earlier, it was revealed that the asynchronous digital teaching mode significantly improved students' listening skills, including inference-making, identifying details, main ideas, and reasoning, whereas no significant improvement was observed in the control group (conventional method). This improvement can be attributed to the accessibility of listening to audio and recordings on students' Moodle pages, allowing them to replay and listen to the materials multiple times to complete the asynchronous activities and tasks, rather than listening to the material in class only once or twice to perform certain activities.

This improvement in listening comprehension, which can be linked to the cognitive advantages of asynchronous activities, has been noted in several studies. According to Vandergrift et al.[23], for example, successful listening involves metacognitive processes like planning, monitoring, and evaluating understanding. These processes can be supported by asynchronous tools and activities, enabling learners to pause, replay, annotate, and reflect on input at their own pace. It is worth noting that students in the current study were given this autonomy through asynchronous tools and activities, which may explain the progress in their listening skills and sub-skills, such as making inferences and listening for details.

Moreover, Kozhevnikova[24] demonstrated that repeated exposure to authentic listening materials in online settings im-

proved learners' ability to understand main ideas and details. This aligns with the Cognitive Theory of Multimedia Learning [12], which suggests that learners absorb information more effectively when they can control the presentation flow as a key feature of asynchronous delivery. Additionally, asynchronous platforms typically offer multimodal input (e.g., audio, transcripts, visuals), which helps mitigate processing overload and supports comprehension, especially in listening for reasoning, which requires the integration of logic and language [25]. This can explain the improvement in students' listening comprehension skills identified in the current study. Therefore, the current study's results are consistent with existing evidence that asynchronous environments enhance both lower-order and higher-order listening comprehension skills, mainly through self-paced and cognitively supportive experiences.

Regarding speaking skills and sub-skills, the findings have also shown statistically significant improvements in areas, such as content relevance, vocabulary, spoken grammar, and fluency. These results support the benefits of emerging technology in language learning. Digital platforms like Moodle often include asynchronous tools and activities that enable repeated practice and self-monitoring, which are less available in traditional face-to-face classrooms [5].

These findings align with different studies and theories. In Krashen's [26] hypotheses, for example, it was stated that effective second language learning requires natural and meaningful interaction. Through asynchronous speaking activities, learners acquire and learn the language through practice and less anxiety, which activates their affective filter, responsible for blocking second language acquisition. Moreover, in the study of Jaramillo [27], it was revealed that asynchronous speaking tasks encouraged students to plan, revise and produce more content-rich and syntactically complex speech.

Additionally, these results align with what Abuhussein et al. [28] confirmed and concluded that asynchronous speaking helps learners reduce anxiety, develop automaticity through practice, and build confidence, all of which contribute to fluency in later synchronous or real-world speaking situations. The notable progress in vocabulary and content development indicates that asynchronous learning environments may expose students to richer, more diverse lexical input and provide more cognitive space to organize ideas coherently [17]. The findings also support constructivist learning theories, especially social constructivism [29], where learners actively build knowledge through interaction, even asynchronously; therefore, learners in digital settings can co-construct meaning through tasks, peer feedback and scaffolded materials.

Overall, the evidence from this study aligns with a growing body of literature emphasizing that asynchronous digital instruction, when well-designed, offers cognitive, affective, and linguistic advantages that directly impact language proficiency, especially in productive (speaking) and receptive (listening) domains.

Regarding the findings of the second question related to the students' perception of their experience with the asynchronous listening and speaking activities, the qualitative analysis of BZU students' responses revealed generally positive perceptions of the asynchronous learning experience. This came in harmony with quantitative findings discussed previously regarding the improvement that occurred in students' language proficiency.

Based on the qualitative results from students' responses, some benefits were extracted. For instance, students emphasized the flexibility and autonomy offered by asynchronous learning, highlighting its convenience and accessibility. A majority reported improvements in listening comprehension, while others highlighted vocabulary and pronunciation gains. Students also appreciated the reduced anxiety and personalized feedback that allowed for confident participation. However, challenges were also indicated, particularly technological barriers, a lack of real-time interaction, and the need for self-motivation. Suggestions for improvement included the development of mobile-friendly platforms, integration of asynchronous materials into classroom discussions, and greater content variety. Overall, the students viewed asynchronous instruction as an effective tool for enhancing language proficiency, especially when combined with interactive and accessible design elements.

The students' perception in this study revealed how asynchronous digital instruction can shape their experiences of language learning. A recurring theme was the sense of freedom and control afforded by this approach. For many, especially within the constraints of the Palestinian context, asynchronous tools served not only as learning resources but as enablers of equity, allowing them to learn around electricity cuts, commute times and rigid schedules, which came in line with Morrar et al. [30] Additionally, asynchronous activities appeared

to reduce the anxiety often associated with speaking in front of peers. Students described feeling safer, more confident, and more inclined to participate when the pressure of immediate performance was removed, as aligned with Abuhussein et al. [28]. Cognitively, students noted benefits in comprehension, vocabulary, and pronunciation. They attributed this not just to repeated exposure but to the deeper reflection they could engage in when learning asynchronously. Several students described taking time to look up unfamiliar words, process meanings, and make sense of pronunciation patterns, activities often constrained by the limited time in-class interaction, so this can be achieved asynchronously. Thus, these findings harmonized with the Cognitive Theory of Multimedia Learning discussed previously [24].

Nevertheless, students' feedback also revealed the limits of asynchronous learning. Technological disruptions, uneven access to devices, and poor internet infrastructure remain persistent challenges. Beyond that, the absence of immediate support, whether from instructors or peers, left some students feeling isolated. While they appreciated the autonomy, some admitted that it came at the cost of motivation and clarity. These concerns are well-documented in digital learning literature [20], which consistently emphasizes the importance of scaffolding self-regulated learning and building social presence in online environments.

In summary, students offered concrete suggestions for improvement that blend practicality with pedagogical insight. Their desire for a mobile app reflects an awareness of their own learning ecosystems, such as smartphones, inconsistent power, and the need to learn on the move. Their request to revisit digital content in class speaks to the power of blended learning, where asynchronous materials serve as the foundation for deeper engagement in synchronous sessions. They longed for more varied and visually engaging content and for additional support tools. In essence, these reflections suggest that students do not see asynchronous instruction as a complete replacement for traditional methods, but rather as a powerful complement.

# 6. Conclusions and Implications

Upon close analysis of the findings, the following conclusions can be drawn:

First, asynchronous digital instruction can enhance listening comprehension skills, particularly inference-making, identifying details, and understanding main ideas. This improvement stems from students' ability to access audio-visual materials multiple times, fostering deeper cognitive processing, which emphasizes the role of metacognitive strategies and multimedia-supported learning in listening development.

Second, asynchronous digital instruction can improve speaking sub-skills, especially vocabulary, content relevance, grammar, and fluency. This can be attributed to the affective and cognitive advantages of asynchronous speaking activities, which allow for thoughtful planning, practice, and reduced anxiety. This supports the affective filter hypothesis and resonates with the link between asynchronous practice and fluency development.

Third, asynchronous digital instruction can be perceived positively in student attitudes due to different benefits, including flexibility, autonomy, personalized feedback, and reduced performance anxiety. Students appreciated the chance to learn at their own pace, particularly in difficult contexts.

Fourth, the asynchronous teaching mode can support Cognitive Theory of Multimedia Learning and aligns with constructivist theories, wherein learners actively co-construct knowledge even in asynchronous formats.

Fifth, despite the advantages, limitations such as technological barriers, lack of real-time interaction, and low self-motivation were evident. Some practical suggestions can be effective, such as utilizing mobile-friendly platforms, integrating asynchronous content into classroom discussions, and using varied instructional formats.

In conclusion, the study emphasizes that asynchronous instruction, while effective, should not wholly replace face-to-face methods. Rather, it serves best as a complementary modality, enhancing inclusivity, accessibility, and learner autonomy while maintaining space for social interaction and scaffolding in synchronous settings.

# Author Contributions

- S.S: conceptualization, methodology, data collection, implementation, findings, and conducted the experiment and interviews.
- R.Q.: conceptualization, methodology, data collection, implementation, discussion, conclusions, and conducted

the experiment and interviews.

– T.A.: conceptualization, literature review, and discussion.
– A.A.Z.: conceptualization, literature review, and introduction,
– F.Q.: literature review.

All authors contributed equally to the conception, design, analysis and writing of this study. All authors have read and agreed to the published version of the manuscript.

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The study was reviewed and approved by the Research Committee at Birzeit University.

## Informed Consent Statement

Informed consent was obtained from all participants involved in the study.

## Data Availability Statement

The data used in this study are available from the corresponding author upon reasonable request.

## Conflicts of Interest

The authors declare no conflict of interest.

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