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ASR-AIDED BILINGUAL LANGUAGE LEARNING GAMES: A MIXED METHOD APPROACH TO IMPROVING EFL LEARNERS' FEEDBACK

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Abstract

This study aims to explore the impact of ASR based bilingual language learning games on EFL learners' feedback. The research adopts a mixed method approach nexus around the experimental research design. The Goal Setting Theory devised by Edwin Locke and Gary P. Lantham (2002) along with ICALL are the theoretical underpinnings of the study. A sample of one thousand participants is selected through random sampling, and divided equally (n=500) in experimental and controlled group for pre and post testing. The results obtained after hypothesis testing are statistically significant that may contribute towards the positive effect of using ASR towards language learning feedback. The Likert scale based posttest questionnaire consisted of fifteen closed ended questions and two open ended questions is administered for quantitative and qualitative data collection. The results reveal students' satisfaction of using ASR based bilingual language learning games for learning feedback, which can serve as one of the significant findings for the incorporation of ASR technology in language learning.

Keywords: *ASR, Bilingualism, EFL, Feedback, Gamification*

1. Introduction

The rapid digitalization is seen in every domain of life and similarly in learning and education. Khan, Raza, and Sibtain (2021) asserted that the advent of COVID-19 in Pakistan changed the mode of learning and education because of the rapid shift towards the usage of digitalized learning tools. It has also been observed that traditional classrooms of English language learning were not able to provide promising results and hence the digitalization in the course of language learning arose as a hope for EFL learners (Hussain, Iqbal & Akhtar, 2010; Ramzan et al., 2020, 2023, 2025). The other issue seemed to affect EFL learners' language learning abilities is the monolingual method of pedagogy (Chen & Ramzan, 2024). As Rahman (2005) has asserted that English language poses the notion of inherent prestige in Pakistani social strata and that colonial attitude posits discrimination towards Urdu and other regional and local languages of Pakistan (Haider & Fang, 2019). Similarly, this discrimination is observed in the digitalized language learning platforms as well. As asserted by Buendgens-Kosten (2020) that there is a dire need to incorporate native and regional languages in digital language learning tools and platforms to provide bilingual and multilingual learning atmosphere to EFL learners that will help to give an unbiased and inclusive space of learning. Likewise, stated by Davoodi (2024) that in the digitalized language learning platforms such as CALL, there have been observed partialness towards English language, leaving behind native and other regional languages. He added further that bilingual technology aided setups may serve to provide a balanced pedagogical approach and moderate learning environment. The need is to maintain a balanced pedagogical approach towards the use of English and native languages in bilingual technologically advanced language learning setups (Davoodi, 2024; Li & Akram, 2023, 2024; Ramzan et al., 2023; Nawaz et al., 2021). Vadivel, Ahmed, Shaban, and Jeevarathinam (2023) stated that the technological advancements met artificial intelligence such as machine learning.

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The AI aided virtual conversational agents have the ability to produce authentic spoken exchanges with EFL learners (Ma et al., 2024, 2025), hereby providing culturally and linguistically rich learning platform (Hassani, Nahvi & Ahmadi, 2016; Parveen & Akram, 2021). Son, Ružić and Philpott (2023) have claimed that AI aided Automatic Speech Recognition (ASR) technology is one of the groundbreaking inventions in the field of language learning and acquisition. The technology works on the recognition of speech and converts it into text.

The study aims to bridge the linguistic and technological gap by exploring the effectiveness of their integration in Pakistani EFL learning setup. It is designed to investigate the impact of bilingual ASR based language learning games (HELLO ENGLISH and LING) on EFL learners' perceptions and feedback they received by using these games. The existing body of literature on this subject in Pakistan is limited and there is a need of potential and extensive investigation and research.

1.1 Significance of the Study

The collaboration of ASR technology and bilingual language learning games is of utmost importance as the EFL learners will be able to get immediate explicit feedback that will improve their speaking and conversational skills. The learners will be able to learn in culturally and linguistically rich learning atmosphere embedded in situational and contextual lessons and drills. It is also significant to provide an autonomous, personalized and stress free learning environment for EFL learners. In Pakistani traditional classroom setup, it may serve a mode to boost confidence and motivation in EFL learners by adopting blended teaching methodology. The gamified language learning will provide an enjoyable learning experience to its users. The study implies to present a sketch for stakeholders and language policy makers to incorporate digitalized learning platforms for language learning. It may also serve to educate teachers by adopting and adapting different pedagogical practices and techniques to make their teaching effective.

1.2 Research Objectives

This study aims

1. To evaluate the effectiveness of ASR based games on learners' feedback.
2. To examine the learners' perceptions related the feedback received through ASR based bilingual language learning games

1.3 Research Questions

2. Do ASR based bilingual games are effective to generate feedback in language learning?
3. What are the perceptions of EFL learners about ASR aided feedback received through bilingual language learning games?

1.4 Hypothesis

1. H0: There is no statistically significant difference in the means of the pre and posttests of EFL Learners' feedback using ASR based bilingual games.
2. H1: There is statistically significant difference in the means of the pre and posttests of EFL learners' feedback using ASR based bilingual games.

2.Literature Review

This research is centered on the principle basis of Bilingual Gamification and Automatic Speech Recognition technology. This section deals to explore the theoretical basis and reviewed literature focused on this study.

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2.1 Bilingualism

Haugen (1953) drew attention to the inherent relativity of the criteria that are implicated in the subject matter of bilingualism. He asserted that any person who can speak more than one language is labeled as bilingual. A second language speaker is the person who acquires a second language (L2). The standard of proficiency in Native language, Second language or any language is impossible to formulate and maintain (Roeming, 1966). Similarly, Valdés and Figueroa (1994) asserted that the evaluation criteria for bilingual language proficiency have remained a matter of institutional biasness. They claimed that the effort to develop any tool or procedure that aims to evaluate the utterances of the native speakers is a doubtful struggle (Valdés & Figueroa, 1994, p. 67).

2.2 Bilingual Gamified Language Learning

In the era of digital learning and artificial intelligence, it has been a rigorous effort to develop the assessment tools for the evaluation of bilingual EFL and ESL speakers (Akram & Abdelrady, 2023, 2025). Xu and Wei (2024), Huang and Lin (2024), Mubarak and Zhang (2024), and Yildiz and Aydin (2024) in their researches have worked to evaluate the proficiency of EFL and ESL learners by using digital learning tools aided with artificial intelligence. Similarly, Buendgens-Kosten (2020) stressed on the need to establish and promote digitalized bilingual and multilingual language learning platforms that will disrupt monolingual learning monopoly by creating an inclusive and confident learning space for EFL and ESL learners. There have been different researches and extensive works that advocate the need of using bilingual language learning games for EFL and ESL learners' assessment of language proficiency. Likewise, Pattemore and Gilabert (2025), and Bouzaiane and Youzbashi (2024) have investigated the impact of using language learning games to evaluate language proficiency of EFL and ESL learners. The language learning through games makes the process easy and enjoyable due to different factors of gamification (Abdelrady et al., 2025). The games are aimed to achieve a goal that pushes the users to remain motivated and persistent.

2.3 Goal-Setting Theory of Gamification

The theoretical basis for gamification is discussed in this study by adopting Locke and Latham's (2002) framework of Goal-setting theory. Landers, Bauer, and Callan (2017) asserted that the central force in games is the goal; the motivational impetus to complete a task in game. Locke and Latham (1990, 2002) and Latham (2016) asserted that Goal-setting theory was certified based on the results of laboratory tests and studies for a time period of more than 25 years in the field of organizational and industrial psychology. The findings of these studies reveal that there is a positive and direct relationship between goal and performance, considering different factors like, level of commitment, skills and aptitude of the user (Akram & Sohail, 2024). To set a goal is to take first step of future commitment. There are four mediators to focus, while working on Goal-Performance relationship. The first is the *Choice* that enables an individual to carry out a specific goal, leaving others behind. *Effort* is the second mediator that motivates the person to carry out a particular goal by making more efforts. The specific goal with continuous efforts requires *Persistence*, the third mediator. The fourth mediator is relatively cognitive in nature, *Strategy*, which is required to attain a specific goal for which efforts are being made persistently. So, to conclude it is stated that the difficult, specified goals will engender more performance, as it will be carried out strategically and persistently.

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2.4 Automatic Speech Recognition System (ASR)

Focusing on the theoretical grounds of Automatic Speech Recognition system, Amrizal and Aini (2013) have defined that Speech Recognition is the process in which the voice is identified by converting the speech into signals, which are captured by the audio device. ASR technique is also helpful to recognize human commands that are available in machine-readable data to complete any task. The sound waves of human voice are intercepted with this AI aided software to carry out the instructions. The ASR system is growing rapidly to serve all languages that exist worldwide. This technology is serving educational and learning grounds as well.

2.5 Intelligent Computer Assisted Language Learning (ICALL)

The Intelligent Computer Assisted Language Learning (ICALL) is the integration of different principles; Artificial Intelligence, Second Language Learning, and Natural Language Processing. ICALL emerged in late 1970 as Weischedel and colleagues in 1978 proposed its first prototype for comprehension exercises. Later on, it became the area of extensive research and inquiry as the researchers Holland, Kaplan, and Sams (1995), and Levy and Stockwell (2006) were focusing to take a step ahead by enabling computers to understand learners' input, detect the errors, and provide them with personalized appropriate feedback.

2.5.1 ICALL Bridging Gap between Technology and Pedagogy

In ICALL, Artificial Intelligence (AI), the first principle, serves for speech recognition, natural language understanding, error diagnosis, and adaptive feedback (Weischedel, Voge, & James, 1978; Nagata, 1997). AI helps to analyze learners' output by recognizing the speech and by detecting the errors in the speech. It also gives appropriate and personalized feedback based on their errors. The second principle is Second Language Acquisition (SLA), the theory works on the Comprehensible input Hypothesis by Krashen (1985), and Task based learning along with Corrective feedback (Schmidt, 1990). Intelligent Tutoring System (ITS) being the third principle serves to provide three important modules to ICALL. Wenger (2014) asserted that these are Expert Model (dealing with linguistic knowledge such as grammatical rules, syntax and morphology along with speech patterns and vocabulary), Learner Model (it tracks users' performance and detects error). The third is Pedagogical Model, it works to provide teaching model of how to teach, what feedback should be given, and what supportive system needs to be introduced. Schulze (2008) and Meurers (2012) stated that ICALL works on the technologically intelligent system that has theoretical pedagogical groundings. Liakin, Cardoso, and Liakina (2017) reported the significance of the integration of ASR and ICALL in gamified language learning. The aforementioned collaboration serves to organize and design learning tasks by utilizing the principles of Second Language Acquisition Theory and works to recognize speech with the help of Automatic Speech Recognition technique. Moreover, it helps to score responses by using Natural Language Processing, and gives personalized feedback by taking aid from Intelligent Tutoring System; assist to provide motivation to its users by using gamification (Liakina et al., 2017).

2.6 ASR Aided Gamified Language Learning

The integration of ASR into language learning games and simulations is providing an inclusive learning space to language learners (Morton, Gunson, & Jack, 2012). There are different researches and studies that reveal the contributions and incorporation of ASR into gamification for language learning. Ayedoun, Hayashi and Seta (2019), Chen et al. (2023), and Tai & Chen (2023) claimed that students develop a sense of comfort and ease to use ASR system

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in gamified learning space. Furthermore, it bore good results in the form of reduced students' anxiety (Jalalzai et al., 2025), an increased level of willingness to engage in communication (Congman et al., 2019), and a boosted motivation level to learn a second or foreign language (L2/FL) (Aslam et al., 2020). Likewise, Evers and Chen (2022) investigated the efficacy of different ASR based systems. Automatic Speech Recognition system provides a platform to the non-native English speakers with different accents (Bashori et al., 2022; Chen et al., 2023). The collaboration of ASR with CALL system is investigated by Bodnar et al. (2011) revealed that it aimed to improve communicative and spoken skills of the users but it is unable to provide the learners with the opportunities to engage in spoken practice and to receive the immediate corrective feedback based on grammatical errors.

2.7 Language Learning and Feedback

Wang and Young (2014) by quoting Chiu, Liou, and Yeh (2007) and Chen (2016) asserted that in learning, it is important not only to provide learning platforms to EFL learners but also the language learning feedback. Hawkins (1991) suggested that it is important for the low achievers to have an awareness of the difference between the utterance of the learner and the target language; it can serve as a leading factor to improve their language and boost their confidence. Moreover, as asserted by Ohta (2000), and Chang, Sung and Chen (2002) the provided feedback for language learning acts as scaffolding, as the learners achieve their goals by taking smaller steps for efficient language learning. The provided corrective feedback is of two types; implicit and explicit, the studies of Bigelow, Delmas, Hansen and Tarone (2006), Lyster and Ranta (1997), and Pica, Young and Doughty (1987) suggested that explicit feedback, where students are directly aware of their language errors and faults is more efficient to improve language learning in comparison to indirect and implicit feedback.

2.8 ASR and language Learning Feedback

There have been different researches to assert the importance of feedback in language learning. The incorporation of Automatic Speech Recognition technology in language learning has been researched to evaluate the effectiveness of its feedback mechanism. The studies conducted by Ehsani and Knodt (1998), and Mich, Neri, and Giuliani (2008) investigated the feedback provided by ASR aided language learning system. The feedback generated in the form of waveform and animated characters showing emotions alone did not serve the purpose, as the students were unsure of the provided feedback that was labeled as mispronounced. Chiu, Liou and Yeh (2007) conducted a study where an online language learning programme, Candle Talk, provided the numerical feedback and students were not able to detect their language errors. In addition to that, Chen (2016) investigated the impact of the feedback generated through ASR based language learning website. The participants shared their reservations on the level of engagement with the content, as there were fewer audio, visual aids along with the clear and direct detection of error and mispronounced words. So, it can be said that the incorporation of ASR in language learning for EFL learners might be more effective when explicit feedback would be provided.

2.9 Research Gap

In the light of above discussion, it can be seen that in Pakistan, there is a little research done in the domain of feedback obtained through ASR based bilingual language learning games. The experimental design based on mixed method approach adopted to investigate the phenomenon is also unique to this study. The researchers aim to explore the

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effectiveness of the feedback received through ASR aided bilingual language learning games (HELLO ENGLISH and LING), along with the perceptions of EFL learners related the feedback obtained and the effectiveness of the feedback received using ASR based games.

3 Research Methodology

3.1 Research Design

Experimental design is selected for this study which is centered into sequential explanatory mixed method approach. The research is designed to give a holistic picture by incorporating both Qualitative and quantitative research methodologies, focusing on pragmatism. Creswell, Plano Clark, Gutmann, and Hanson (2003) stated that to explain quantitative data, additional qualitative data is required and that approach is sequential explanatory mixed method.

3.2 Data Collection Tools

As stated by Bryman and Nilsson (2011) the vast data collection helps to understand a concept or phenomena, so considering that both quantitative (hypothesis testing, Likert scale based questionnaire) and qualitative data (open ended questions in questionnaire) are collected and the numerical data will be explained and elaborated in accordance to the non-numerical data. This triangulation of the data helps to cover the lapses of both research designs and is suitable according to the nature of the study.

3.3 Sampling

A sample of one thousand EFL students is randomly selected across different public and private sector colleges of Multan for experimental study.

3.4 Research Procedure

The pretest is conducted after delivering twenty lectures of forty minutes each, thrice a week. The lesson plans are designed focusing on English Grammar, Vocabulary and speech that are taught through traditional method in the classroom. The pretest is conducted and the results are tabulated. After that, the participants (n=1000) are randomly assigned to the experimental and controlled group equally, five hundred participants in each group. The experimental group (n=500) is introduced to ASR based bilingual language learning games, HELLO ENGLISH and LING. The daily progress and the scores of each participant of the experimental group are monitored and documented for twenty lessons of Hello English and Ling. The controlled group is taught in the traditional classroom setting for the duration of forty minutes thrice a week, for seven weeks. After that, the posttest is conducted and the results are calculated. A t-test is administered using SPSS software for the testing of the hypothesis to access the significance of using ASR based bilingual language games on EFL learners' feedback. A posttest questionnaire is also used to get an understanding of learners' perception of the feedback obtained through ASR aided bilingual language learning games and its effectiveness in English language learning. The questionnaire is shared with the participants of the experimental group (n=500) and the results have been calculated. The questionnaire is adopted from the study of Wang and Young (2014) and is adapted according to the nature and problem of the research. It is a Likert scale based questionnaire consisting of fifteen close-ended questions and two open ended questions. The Cronbach Alpha is 0.91. The result obtained through close-ended questions is quantitative and open-ended question have provided qualitative data. These results obtained though hypothesis testing along with the questionnaire are analyzed and explained to reflect the effectiveness of the feedback obtained through ASR based bilingual language learning games.

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4 Data Analysis

This section at first deals with the hypothesis testing of the effectiveness of the feedback received through ASR based bilingual language learning games, and the next section works to explore the perceptions of EFL learners related the feedback and effectiveness of using ASR aided bilingual language learning games through questionnaire.

4.1 Hypothesis Testing

The hypothesis testing for feedback using t-test is done to examine the difference in the mean scores of pre and posts tests of experimental group. The significance level retained in the experiment is 0.05. The null hypothesis and alternative hypothesis are as

Null Hypothesis H_0: $\mu 1 = \mu 2$

Alternative Hypothesis H_1: $\mu_1 \neq \mu_2$

Where $\alpha = 0.05$

t-Test: Two-Sample Assuming Equal Variances		
	Variable 1	*Variable 2*
Mean	2243.218	3879.987077
Variance	99560.27879	159474.4451
Observations	500	500
Pooled Variance	129517.3619	
Hypothesized Mean Difference	0	
Df	998	
t Stat	-71.91068418	
P(T<=t) one-tail	0	
t Critical one-tail	1.646381877	
P(T<=t) two-tail	0	
t Critical two-tail	1.962343846	

Table 4.1 T-test result

The absolute t value, as can be seen in the Table 4.1, is significantly higher than the t-critical value manifesting that there is a strong difference between both samples, to say that the pre and posttest results vary significantly. The minus sign with t stats or t absolute is omitted.

t= -71.91068418 will be treated as 71.91068418. Hence it can be said that,

t > t critical

71.91068418> 1.962343846

Whereas, the p value is smaller than α

$p < \alpha$

$0 < 0.05$

As the p value smaller or equal to the significance level will lead to the rejection of Null Hypothesis. These all evidence, the larger t value and smaller p value, support the rejection of Null hypothesis. The t-test results have revealed that there is a significant difference in the mean values of pre and posttests scores of the experimental group.

Null Hypothesis H_0: $\mu 1 = \mu 2$ (Rejected)

Alternative Hypothesis H_1: $\mu_1 \neq \mu_2$

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It can be safely said that the ASR based gamified language learning is effective for its learners and users as compared to those who do not use it. As the feedback obtained from the experimental group has significant results. The next section works to explore the feedback of the learners' using ASR aided games long with the effectiveness of the ASR aided gamified language learning.

4.2 Analysis of the Post-experimental Questionnaire

To explore the perceptions of EFL learners related the feedback received through ASR based bilingual language learning games, a questionnaire consisting of 15 Likert scale-based questions has been adapted and adopted for the study. The examination of EFL learners' perceptions consist of two sections mainly:

1. The feedback received using ASR aided bilingual language learning games
2. The effectiveness of ASR aided bilingual Language Learning games

The students have shared varied feedback of using ASR based bilingual games HELLO ENGLISH and LING as can be seen in Graph 4.1. The learners (55%) feel embarrassed using English in traditional classroom setting with classmates and teacher. Whereas, they have strongly disagreed (62%) to experience or share their embarrassment using English through ASR aided bilingual games. Next, the learners (44%) are of the view that they have enjoyed learning experience using HELLO ENGLISH and LING as can be seen in the graph below. As quoted by McCrocklin, Humaidan and Edalatishams (2018), "Automatic speech recognition (ASR) is an independent, machine-based process of decoding and transcribing oral speech. A typical ASR system receives acoustic input from the speaker through a microphone, analyzes it using some pattern, model or algorithm, and produces an output, usually in the form of a text" (Levis & Suvorov, 2012, p. 1). The fear of making mistakes while using English in traditional classroom among peers and teacher is obvious as 62% of the learners agreed to this. This fear is remarkably lesser in the learners when they used ASR based bilingual language learning games as 77% of the users have negated the experience of fear for making mistakes. 66% users have shared that these games are easy to operate as the flexible learning schedule according to learners' need and time, have motivated them to practice English. The games are user friendly as the learners (56%) can easily and clearly understand the provided information of the games. The games are well managed as the learning lessons are timely scheduled every week, 82% learners agreed to this feature of these games. Next, talking about the continuity of the usage of these games, 95% of the game users have shown a positive response.

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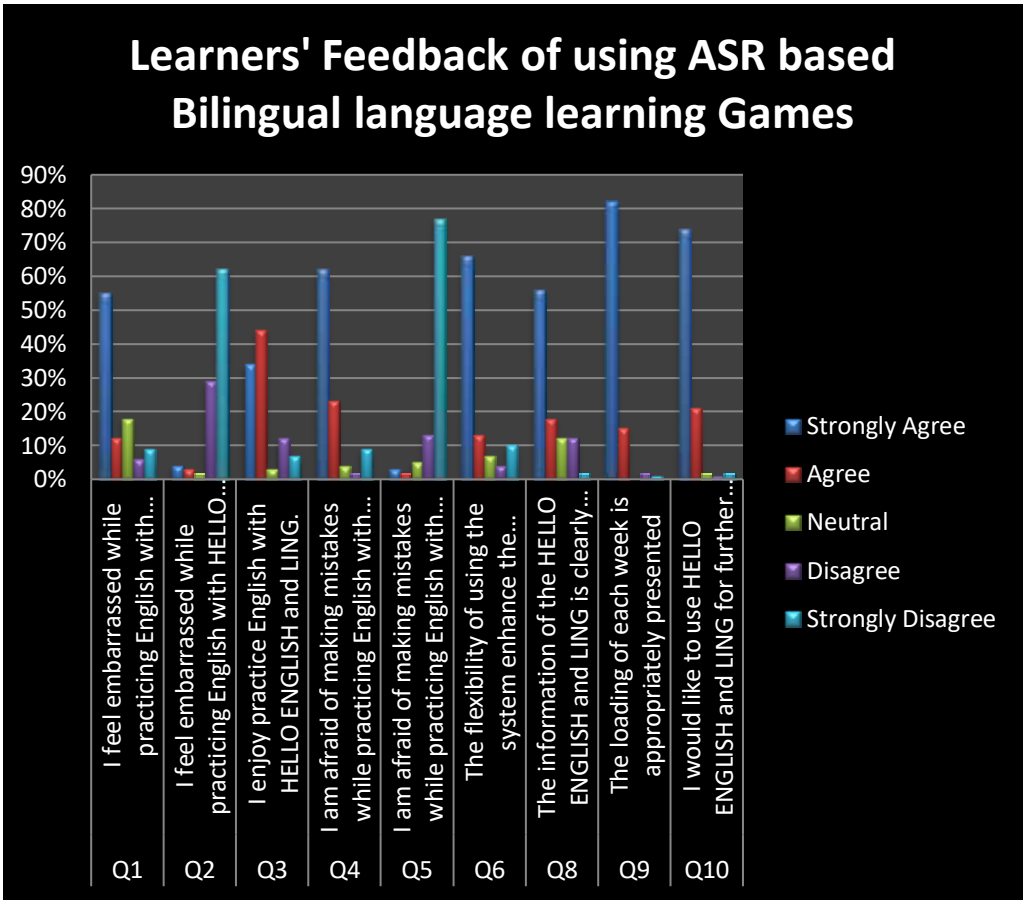

Graph 4.1. Learners' Feedback of using ASR based Bilingual language learning games.

The next section of the questionnaire deals to explore the effectiveness of ASR based bilingual language learning games.

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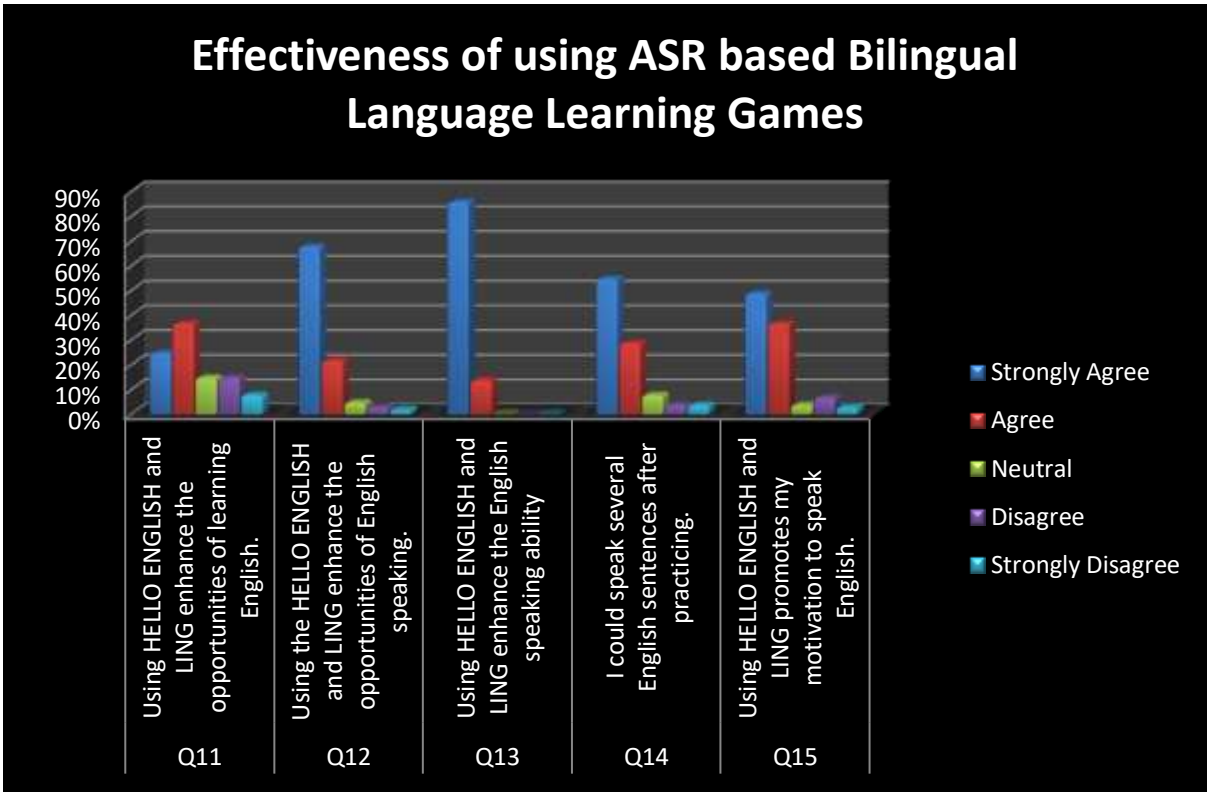

Graph 4.2. Effectiveness of using ASR based bilingual language learning games.

The learners (37%) have expressed their satisfaction by agreeing to the notion that these games are providing more opportunities to learn English language as can be seen in Graph 4.2. The usage of ASR technology in these games seems effective, as 68% of the learners have voted for the better and greater opportunities to speak English language by using these games. Similarly, 86% of the users have shared improved English speaking abilities by using ASR based games. Fifty-five percent (55%) users have shown agreement to the notion that after practicing English by using ASR based games they can speak English sentences. The response of the learners to the last question shows higher motivation levels of English speaking by using ASR based games, as 48% of them have shared their agreement to it.

4.3 Themes Abstracted from Open Ended Questions

The next section deals with the responses of the ASR based bilingual language learning games users. The open-ended question is based on the responses of the participants using ASR based bilingual language learning games. The qualitative data obtained have mixed themes and responses as can be seen in Graph 4.3. The recurring themes are discussed below.

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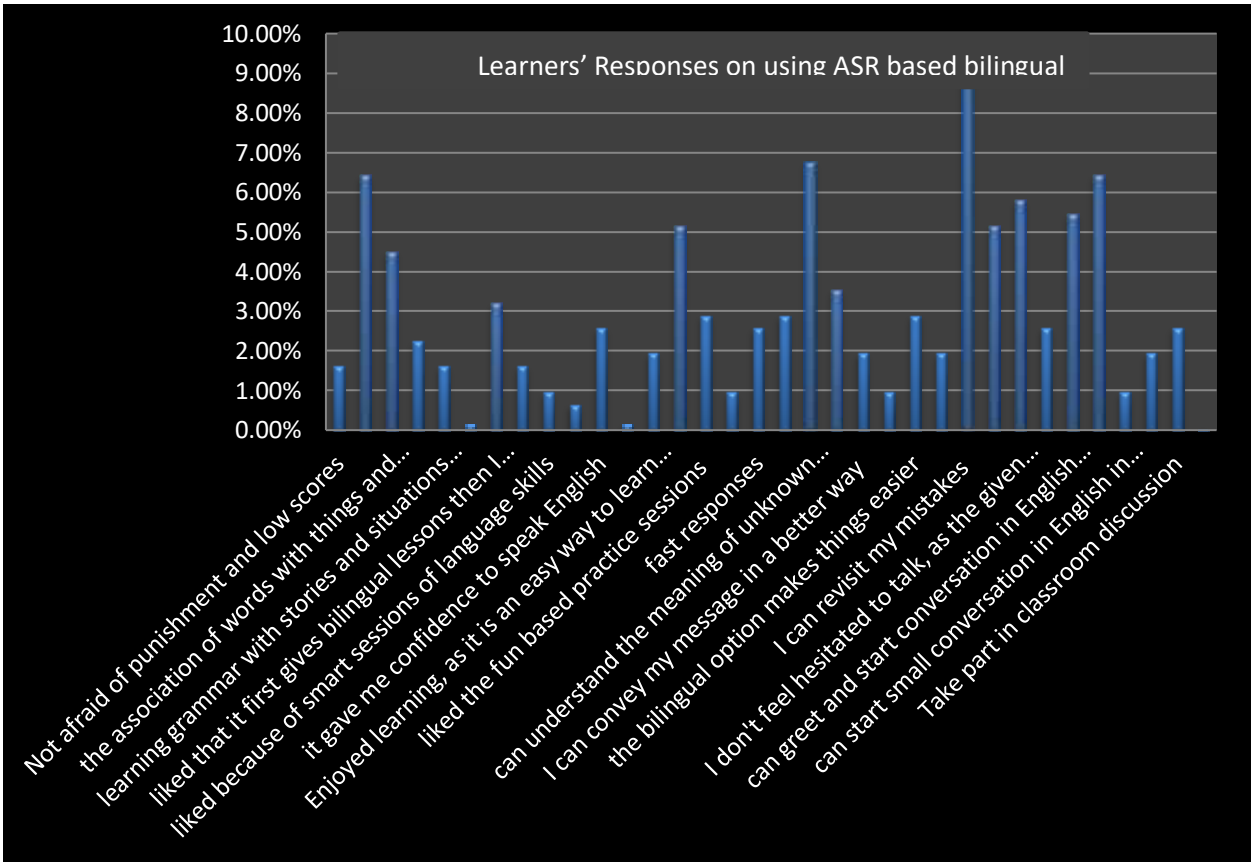

Graph 4.3. Learners' responses of using ASR based Bilingual language learning games.

4.3.1 Personalized and Scheduled Error-Based Feedback.

A significant number of participants (9%) have shared that the received feedback is very effective as it is immediate (3%) and the users can revisit the errors made by them on weekly basis. This not only helps them to revise the errors but also strengthen the grammatical basis.

4.3.2 Improved Grammatical Structures

The users (2%) have shared that the context and situation based learning lessons have made it easier to learn grammar.

4.3.3 Enhanced Vocabulary

The users (4.5%) have shown their satisfaction that the context based association of words with images and concepts along with the provided Urdu equivalents have helped the learners to foster their vocabulary. Similarly, they (6.75%) can guess the meaning of unknown words by using the cues given in sentences as they have practiced it in these games. Their (3.54%) vocabulary is continuously improving as they get to know some simple rules of word formation. 1.93% are of the view that they learn a new word of English every day.

4.3.4 Honed Conversational and Speaking Skills

The EFL users have asserted that by using ASR based bilingual language games, their conversational skills have improved, and they know how to start a conversation and greet the people (5.46%), and in classroom with their peers (0.96%), as they enjoyed learning language through role-play feature of the games (1.61%) as can be seen in the Figure 4.1. They can safely pronounce words (6.43%). They can convey their message in a better way (1.93%) as the

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bilingual feature has helped them to understand and respond the lessons better (5.78%).Consequently; they (1.93%) want to speak in English more often.

Figure 4.1

Hello English and Ling Game Screen

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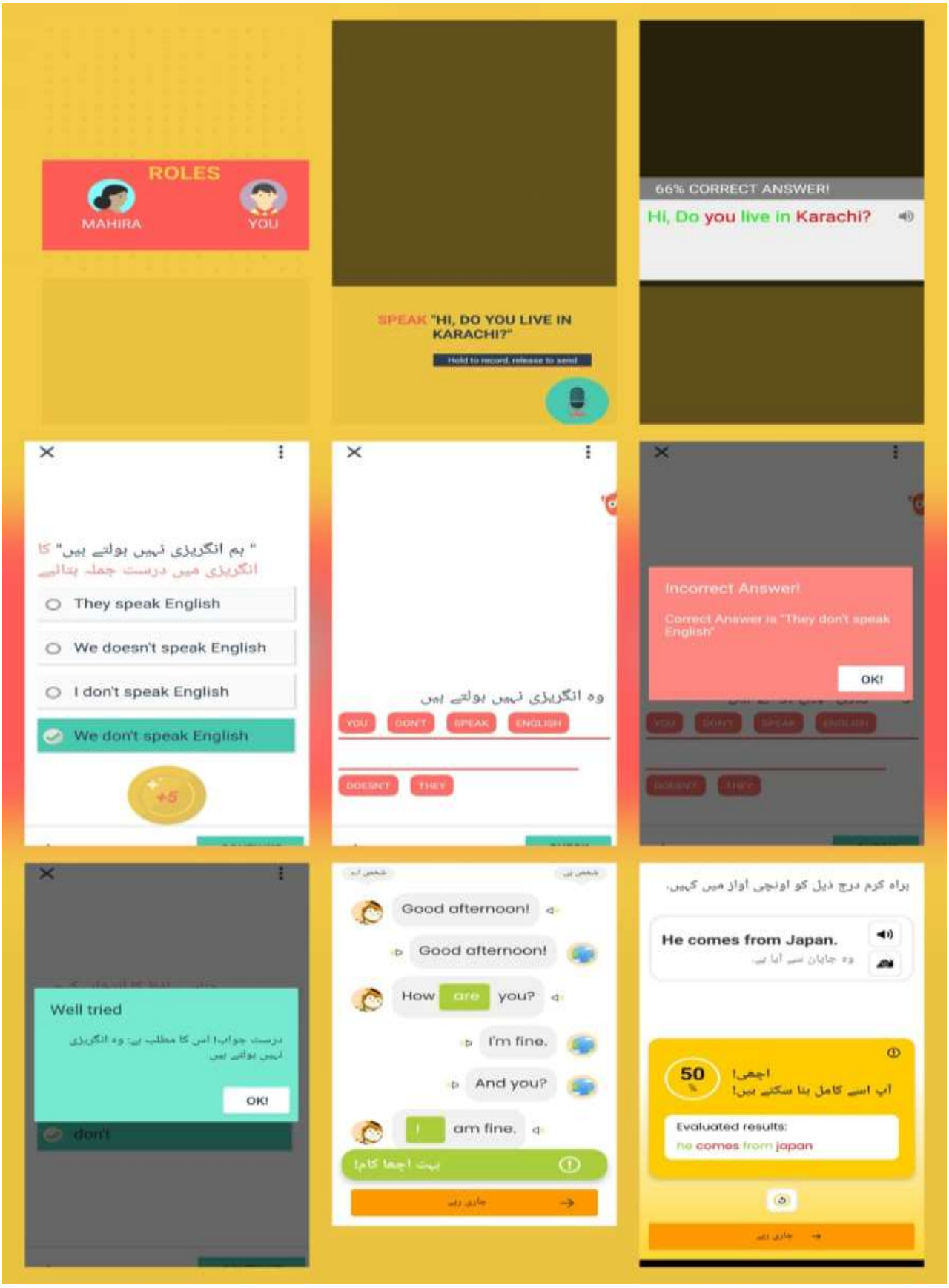

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Note. Screenshot from ***Hello English*** (CultureAlley/Intap Labs Pvt. Ltd., 2014/2024)
Note. Screenshot from ***Ling – Language Lessons*** (Simya Solutions Ltd., 2016/2024)

4.3.5 Confident and Motivated

The participants (6.43%) have shared that they feel confident to speak English language because of the real life , situational based speaking drill , along with that the autonomy to speak without interruption have motivated them (2.57%) to speak in English. As can be seen in Figure 4.1 above the correct responses are highlighted green and positive feedback is given in both languages.

4.3.6 No Fear and Peer Pressure

They are no longer fearful of making mistakes (2.98%), of low scores and punishment (1.61%) as they were in traditional classrooms. They feel home-like learning experience (0.96%) along with that; they speak English without being judged by their friends (5.14%). They (2.53%) can take part in classroom discussion sessions.

4.3.7 User Friendly Learning Experience

These games provide user-friendly experience as the participants (3.21%) suggest that bilingual lessons allow them to learn and perform better in the practice sessions. It is the easy way to learn English language as 1.93% participants stated that. The smart practice sessions catering with all four language skills help them (0.96%) to learn language efficiently. Consequently, it is a fun based learning platform (2.89%) and the users enjoyed learning through these games.

4.3.8 Attractive Gamified Language Learning

The graphics, activities, and animations of the games have made it easier (0.64%) and fun (5.14%) to learn English language.

4.3.9 ASR Feature of Games

The users have varied opinion over the use of ASR technology. 0.03% is of the view that talking in mic is different as compared to a person as it feels more mechanic and monotonous. Some (0.16%) are of the view that they took time to get use to speaking in microphone.

In the light of above analysis, it can be seen that there is significant difference in the results obtained of the experimental study as the experimental group has given better results in comparison to the controlled group. To say that the feedback received after using ASR aided bilingual language learning games is statically significant in comparison to the feedback received in traditional classroom setting. These results are also strengthening the results obtained through questionnaire, as the learners have shown positive responses towards the usage of ASR aided language learning games in terms of improved English language learning, better opportunities to speak English, confidence building and motivation to learn English language. They are less embarrass to speak English, less fearful to make mistakes in ASR aided language-learning games. The results obtained are in alignment to the studies of Bashori et al. (2022) and (Golonka et al., 2014) stating that the collaboration of ASR technology in language learning has a positive impact on students' motivation and confidence level as the provided feedback is personalized and immediate that contributes in improving English speaking skills.

5 Findings and Discussion

In the light of data analysis, it can be concluded that ASR aided bilingual language learning games have significant impact on EFL learners' learning feedback as can be observed in Table 4.1. These users have shared (Graph 4.1) that they enjoyed learning English language by

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using these games. They are less embarrassed to use and speak English language, less fearful to make mistakes as compared to traditional classroom. The flexible and easy operational system of these games has made it easier for their users to learn English language. Along with that, these games have provided them the enhanced opportunities to learn and speak English language (Graph 4.2). The confidence and motivation levels of the participants that used these games have improved. The participants of experimental group have shared their views (Graph 4.3) that using ASR based bilingual language games their English speaking and conversational skills have improved. The vocabulary has developed and grammatical basis are stronger than before. The personalized feedback have made them vigilant and motivated to learn. They are no longer afraid of making mistakes and being judged. The gamified language leaning is fun and user friendly as they are confident to start any conversation because of the situational and context based bilingual lessons and practice sessions.

5.1 Implications and Recommendation

The results imply that ASR based games may be incorporated in pedagogical practices of the traditional classrooms as the learners have shared a sense of joy, confidence and safety in using English language through ASR based bilingual language learning games as compared to the traditional classrooms with peers and teachers. The bilingual pedagogical practices need to be encouraged in classrooms, as the EFL learners have shared a sense of familiarity and ease to learn new vocabulary. The error detection and corrective feedback provided in grammatical structures along with weekly-personalized feedback based on error detection has helped them to learn in a safer environment. Such feedback practices may be adopted in classrooms to help the students learn English by providing them a comfortable space. The research may be expanded further to examine the impact of ASR technology for speaking English by focusing on the pronunciation of the speakers by using HELLO ENGLISH and LING.

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