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# Impact on Gamification on Learning and Teaching Languages: A Study among Ug Students

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**Abstract**

**Purpose:** The study mainly focuses on conducting an analysis of the impact of gamification on the language learning process among UG students.

**Methodology:** The researcher has applied a mixed method of data analysis consisting of both primary and secondary quantitative data. With a sample of randomly selected 91 undergraduate students from 10 different universities in India, the researcher has focused on surveying with 16 close-ended questions. Their answers are gathered in an Excel sheet, and through the usage of IBM SPSS the researcher has conducted the primary study. On the other hand, depending on two themes regarding the aspects of different online gamifying platforms, the researcher has chosen two articles already published in 2021 and 2022, for analysing the necessary secondary data.

**Results:** The results show that almost 91.1% of participants are aware of Gamification in language learning. Most students have agreed that their grammar skills have developed based on gamification. Moreover, a high dependency is seen on the role of gamifying simulative platforms in enhancing the lingual problem-solving skills of the students, with a value of 0.843.

***Keywords:*** Gamification, Simulative language learning, language skill development, problem-solving, Lingual barriers

## Introduction

The development of the concept of globalisation is gradually enhancing the importance of knowledge enhancement in professional language learning. Language learning preferences refer to “individual inclinations toward specific learning styles, such as visual, auditory, or kinesthetic, in the process of acquiring a new language” (Riazi 2008). Globally accepted languages including English and Spanish are gradually gaining popularity among the students. India is renowned for the socio-cultural and educational proficiency present within the citizens of the subcontinental region. The concurrent positioning of these companies typically involves the Indian study curriculum to regenerate and rejuvenate the language study program to enable undergraduate and graduate students to be professionally proficient in representing their concerns. Despite being professionally educated and pursuing high technical skills, undergraduate students face a significant level of challenge regarding language knowledge development. The main reason behind the occurrence of the challenge is the insufficient interest in foreign languages and a partial discredit of the teachers in making language teaching interesting. This study aims to develop the integration of English language skills within the undergraduate course program me students, a set of English language learning methodologies is developed.

One such initiative is known as Gamification which involves a pedagogical approach for inducing the game designing elements, into different non-game contexts. Prominence in education is experienced through the development of engaging activities for the betterment of the students and their learning experience enhancement. Various types of unique conditions were imposed during the quarantine stages of COVID-19 in education (Ibrahim *et al*. 2021). Based on the educational settings, the participation of the students is enhanced in the initiatives of language learning through gamification. The main purpose of gamification of language learning methodology provide an increment to the intrinsic motivation of the students and involves fostering a collaborative mentality within the students to create a better learning process (Luo, 2022). The process of tapping the learners in enhancing their natural ability to create a better-achieving ability in response to the challenges.

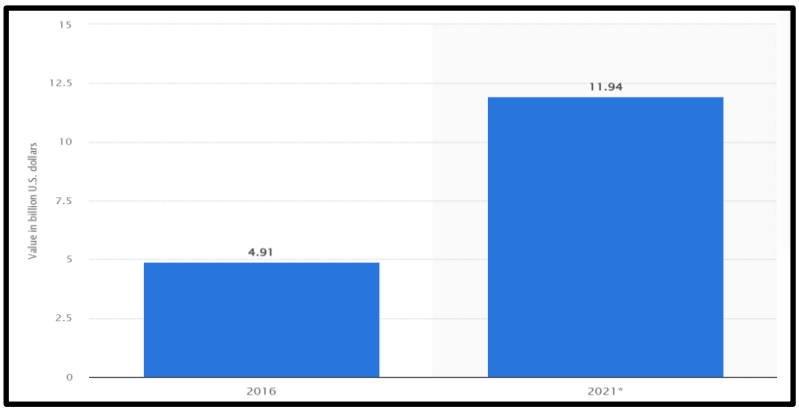


**Figure 1: The value of gamification in education**

(Source: Clement, 2021)

Technological upgradation with the involvement of gamification within the educational function is gradually gaining popularity around the world. The above graph, generated by Clement, (2021), shows the global trend of gamification of educational initiatives, starting from the year 2016 to the year 2021. In the year 2016, the global trend of investment in educational gamification is found to be almost $ 4.91 billion. However, after 5 years, in 2021, the global trend has enhanced and witnessed a sudden surge. The global investment in educational gamification in the year 2021 is found to be almost $11.94 Billion. The main reason that can be considered as the motivating factors for most language learning institutes in developing Language development sessions for the betterment of language knowledge within the students is the sudden emergence of the COVID-19 pandemic and the global shutdown that occurred following the same (Swacha, 2021). This study is focused on developing an idea about the positive implications Gamification holds upon the Indian University-oriented Language knowledge development courses.

**Aim:** The study aims at finding out the implications of Gamification of language knowledge development initiatives among the Undergraduate students in India.

**Objectives:**

- To evaluate the role of interactive language development sessions in enhancing the language knowledge of UG students pursuing language courses
- To analyse the implications of involving UG students in solving language-oriented puzzles and quiz sessions
- To investigate the benefits of simulative technical tools that help in language knowledge development among UG students
- To generate an idea about the overcoming strategies in resolving the challenges of language learning gamification

**Hypotheses:**

H0: Gamification is not essential in enhancing the language learning capability of Indian undergraduate students.

H1: Interactive language development sessions, using language puzzles, quizzes and simulative technical tools enhance the capability of language skill development for undergraduate students.

**Literature Review**

In general, gamification applications should aim to be engaging and enjoyable while incorporating elements of competition and challenge. A diverse array of gamification features exists, such as storytelling, competition, feedback, points, levels, leaderboards, time constraints, and avatars, all of which can be applied in various forms to enhance the gamified experience (Dicheva et al., 2015). Gamification has garnered substantial attention from

the academic community, including experts such as designers, developers, psychologists, and specialists in human-computer interaction, to explore its dynamics. Gamified design components play a crucial role in shaping customer expectations and fulfilling their needs (Jun et al., 2020).

Key factors include scientific and technological advancements, economic and linguistic motivations, and the status of English as the de facto global lingua franca (Warschauer, 2006). Additionally, the rise in vocational training and education driven by globalization (Basturkmen, 2010) can also be emphasized. Virtual reality (VR) and augmented reality (AR) technologies have also contributed to the gamification of language learning. Recently, a growing number of studies have focused on the application of gamification as a tool for supporting vocabulary acquisition and promoting learner autonomy. As (Stahl 2005) asserts one key motivation behind this approach is the necessity for learners to acquire a specific number of words to effectively communicate in English. Sailer et al. (2013) provide an extensive review of gamification features.

Through the use of game-based elements, teaching and learning become more collaborative and enjoyable . Implementing the gamification concept in education maximizes learners' motivation and engagement. Gamification is not a game application. According to Shahri et al. (2019), it uses game-based application components and game principles in a non-game context to engage users more and increase retention with the system implemented.

**Methodology**

Using a mixed methodological approach based on the feature discourse analysis method, the researcher has focused on conducting a proper evaluation of the collected data. The pragmatism and philosophical views have helped the researcher in providing a positive view towards the development of the idea that the process of language learning through gamification can be divided into numerous factors. Depending on these factors, the researcher has focused on designing the study into two different types of data analysis techniques, including Primary Quantitative and secondary quantitative styles of analysing sets of information (Royo-Vela and Varga, 2022). With an aim to collect the primary data, the researcher has selected three different independent variables that are included within the features of gamification. These independent variables include “Interactive Language learning sessions”, “Language-based puzzles and quizzes” and “Simulative Technical language development tools” (Shanmugam *et al.* 2023). On the other hand, the dependent variable is selected as “Language knowledge skill development”.

A set of 16 questions is made with 3 demographics and 13 close-ended questions are made based on all four variables with a Likert scale of disagreement bearing a lower limit of 0 denoting “strongly disagree” and 4 denoting “strongly agree”. Likert scale is considered to be the most reliable "scaling technique” in quantitative study (Tanujaya *et al*. 2022). Based on these questionnaires, a Google form is created for surveying the students of different undergraduate courses occurring within India. Using the simple random sampling method, the researcher has chosen 101 participants from 10 leading institutions in India that allow students to undergo undergraduate courses. Moreover, based on the articles published about gamification in different internationally famous journals, the researcher has divided the existing information about the benefits of language training gamification into two themes, and secondary quantitative data analysis is conducted.

**Results**

**Primary Quantitative study**

***Frequency Analysis***

The primal demographic question was the gender detection question about the respondents that showed that almost 53.5% of the participants are male, and 46.5% of the participants are female.

| Gender | Mother Tongue | Knowledge about gamification |
|---|---|---|
| Male (53.47%) | Hindi (27.7%) | Yes (91.1%) |
| Female (46.53%) | Bengali (6.9%) | No (6.9%) |
| | Tamil (61.4%) | Preferred Not to say (2.0%) |

| | | |
|---|---|---|
| | Others (4.0%) | |

**Table 1: Frequency table based on demographic information**

The second demographic question targeted to evaluate the mother tongue of the participants, showing 27.7% of participants found bearing Hindi as their mother language, followed by 6.9% bearing Bengali as the same. However, 61.4% of the participants were Tamil, and 4% of students bore a lingual background saying "Others". The third and final demographic question indicates the knowledge of the students about gamification. Among the participants, 91.1% responded yes, 6.9% of them provided the answer no about the knowledge of gamification and 2.0% preferred not to say the answer related to the question about the knowledge about gamification.

***Descriptive Statistics***

Descriptive statistical analysis is the expression of the trends of answering by the different participants against a specific question within primary data analysis. Here, the highest mean value is found against the question "Interactive Mobile applications used for Language learning help in enhancing grammatical skills of the students" with a value of 3.48.

| | Mean | Std. Deviation |
|---|---|---|
| Interactive Language development-based digital platforms help students improve their vocabulary. | 2.80 | .617 |
| Interactive Mobile applications used for Language learning help enhance the grammatical skills of the students | 3.48 | 1.110 |
| Designing of these Interactive Language learning platforms are constructed in a comprehensive skill developmental way | 2.94 | .947 |
| The platforms used for developing interactive language learning skills are mostly focused on English-speaking training | 3.26 | 1.230 |
| Using the Language-based Puzzle development method, Crosswords and scrabbles are generated to involve students in a self-competition to develop vocabulary skills | 2.87 | .976 |
| Word searching game from a jumbled group of letters is an effective way to involve undergraduate students in enhancing their technical vocabulary | 3.33 | 1.176 |
| Effective development of Grammar quizzes helps students in generating their speed in a faster language learning involvement | 2.93 | .982 |
| Vocabulary development is the most prominent goal of Puzzles and Quiz-based language learning. | 3.22 | 1.171 |
| Simulative technical scenarios involve students in interacting with each other. | 3.01 | 1.063 |
| Simulation scenarios help language students in resolving problems in the foreign language they are learning. | 3.12 | 1.151 |
| Simulative Language learning platform scenarios imitate real-life professional problems to give students an experience of significant language barriers. | 3.09 | 1.141 |
| The main purpose of the Simulative language platform remains to enhance the foreign language speaking skills of the students. | 3.05 | 1.135 |
| Interactive Gamifying Software application induction helps the students evaluate their gradual language skill development through real-time progress tracking. | 2.98 | 1.166 |

**Table 2: Descriptive Statistics**

The value indicates that the students have agreed and strongly agreed mostly against the opinion, with a higher tendency to agree moderately. The standard deviation value against the same is 1.110, indicating the closed-clusteredness of the answers of different respondents. Similarly, the lowest mean value is found against the question "Interactive Language development-based digital platforms help students in improving their vocabulary" with a value of 2.80, indicating most students either staying neutral or agreeing moderately with the same. The standard deviation value is 0.617 showing the closed-clustered answering of the participants against the same.

***Correlations***

Correlation testing helps a researcher in finding the interconnection and dependency levels of the dependent variable upon different independent variables. Pearson Correlation test is conducted in the study that shows that the highest dependency of the dependent variable "Language knowledge skill development' upon the factor "The platforms used for developing interactive language learning skill are mostly focused in English speaking training", against the primal independent variable.

| | | Interactive Gamifying Software application induction helps the students evaluate their gradual language skill development through real-time progress tracking. | Interactive Language development-based digital platforms help students improve their vocabulary. | Interactive Mobile applications used for Language learning help enhance the grammatical skills of the students | Designing of these Interactive Language learning platforms are constructed in a comprehensive skill developmental way | The platforms used for developing interactive language learning skills are mostly focused in English-speaking training |
|---|---|---|---|---|---|---|
| Interactive Gamifying Software application induction helps the students evaluate their gradual language skill development through real-time progress tracking. | Pearson Correlation | 1 | .606** | .695** | .724** | .757** |
| Interactive Language development-based digital platforms help students improve their vocabulary. | Pearson Correlation | .606** | 1 | .840** | .630** | .780** |
| Interactive Mobile applications used for Language learning help enhance the grammatical skills of the students | Pearson Correlation | .695** | .840** | 1 | .655** | .781** |
| Designing of these Interactive Language learning platforms are constructed in a comprehensive skill developmental way | Pearson Correlation | .724** | .630** | .655** | 1 | .649** |

| | | | | | | |
|---|---|---|---|---|---|---|
| The platforms used for developing interactive language learning skills are mostly focused in English-speaking training | Pearson Correlation | .757** | .780** | .781** | .649** | 1 |

**. Correlation is significant at the 0.01 level (1-tailed).

**Table 3: Correlation between DV and IV1**

The value of the Pearson correlation index against this is 0.757 that indicates a positive, and strong correlation between these two.

| | | Interactive Gamifying Software application induction helps the students evaluate their gradual language skill development through real-time progress tracking. | Using the Language-based Puzzle development method, Crosswords and scrabbles are generated to involve students in a self-competition to develop vocabulary skills | Word searching game from a jumbled group of letters is an effective way to involve undergraduate students in enhancing their technical vocabulary | Effective development of Grammar quizzes helps students in generating their speed in a faster language learning involvement | Vocabulary development is the most prominent goal of Puzzles and Quiz-based language learning. |
|---|---|---|---|---|---|---|
| Interactive Gamifying Software application induction helps the students evaluate their gradual language skill development through real-time progress tracking. | Pearson Correlation | 1 | .762** | .778** | .828** | .743** |
| Using the Language-based Puzzle development method, Crosswords and scrabbles are generated with the aim to involving students in a self-competition to develop vocabulary skills | Pearson Correlation | .762** | 1 | .708** | .804** | .724** |
| Word searching game from a jumbled group of letters is an effective way to involve undergraduate students in enhancing their technical vocabulary | Pearson Correlation | .778** | .708** | 1 | .704** | .863** |

| | | | | | | |
|---|---|---|---|---|---|---|
| Effective development of Grammar quizzes helps students in generating their speed in a faster language learning involvement | Pearson Correlation | .828** | .804** | .704** | 1 | .665** |
| Vocabulary development is the most prominent goal of Puzzles and Quiz-based language learning. | Pearson Correlation | .743** | .724** | .863** | .665** | 1 |

**. Correlation is significant at the 0.01 level (1-tailed).

**Table 4: Correlation between DV and IV 2**

The outcomes of the correlation testing of the dependent variable against the different factors of the second independent variable, include the factor "Effective development of Grammar quizzes helps students in generating their speed in a faster language learning involvement". This factor has the highest impact on the Dependent Variable with a Pearson Correlation value of 0.828, the value indicates that a strong positive impact Grammar quizzes bear upon the language skill development tendencies of the students.

| | | Interactive Gamifying Software application induction helps the students evaluate their gradual language skill development through real-time progress tracking. | Simulative technical scenarios involve students in interacting with each other. | Simulation scenarios help language students in resolving problems in the foreign language they are learning. | Simulative Language learning platform scenarios imitate real-life professional problems to give students an experience of significant language barriers. | The main purpose of the Simulative language platform remains on enhancing the foreign language speaking skills of the students. |
|---|---|---|---|---|---|---|
| Interactive Gamifying Software application induction helps the students evaluate their gradual language skill development through real-time progress tracking. | Pearson Correlation | 1 | .815** | .724** | .843** | .696** |
| Simulative technical scenarios involve students in interacting with each other. | Pearson Correlation | .815** | 1 | .661** | .832** | .713** |

| | | | | | | |
|---|---|---|---|---|---|---|
| Simulation scenarios help language students in resolving problems in the foreign language they are learning. | Pearson Correlation | .724** | .661** | 1 | .677** | .814** |
| Simulative Language learning platform scenarios imitate real-life professional problems to give students an experience of significant language barriers. | Pearson Correlation | .843** | .832** | .677** | 1 | .692** |
| The main purpose of the Simulative language platform remains to enhance the foreign language speaking skills of the students. | Pearson Correlation | .696** | .713** | .814** | .692** | 1 |

**. Correlation is significant at the 0.01 level (1-tailed).

**Table 5: Correlation between DV and IV3**

Similarly, the results generated from the Correlation testing between the third Independent Variable and the Dependent Variable, show the highest dependency level against the factor "Simulative Language learning platform scenarios imitate real-life professional problems to give students an experience of significant language barriers". The value of the Pearson correlation index is found to be 0.843 that shows a high positive impact of the simulative language learning platforms in making the undergraduate students critically qualified in real-life professional problem-solving.

***Model Summary***

The Model Summary in statistical regression analysis shows the R-value, indicating the coefficient of correlation between the predicted value of the researcher and the observed value. Here, the value is 0.903, being greater than 0.5 that shows the accuracy in the prediction of the researcher, indicating statistical significance. On the other hand, the R-Square value is 0.815 that shows that in almost 81.5% of cases, the participants have answered similarly with the predicted value.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .903[a] | .815 | .790 | .534 |

**Table 6: Model Summary**

***ANOVA***

Analysis of Variance known as "ANOVA", provides the chance to develop an idea about the tendency-based differences present among the participants in answering specific questions. The regression result of the sum of squares value, indicating the predicted value significance is 110.865, showing the high tendency of variations among the responses.

| | Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 110.865 | 12 | 9.239 | 32.397 | .000[b] |
| | Residual | 25.095 | 88 | .285 | | |
| | Total | 135.960 | 100 | | | |

**Table 7: ANOVA**

However, the residual value, indicating the original opinion-based values found from the respondents is 25.095 that is typically different from the predicted value. These two values indicate the high difference between the observed and predicted opinions, indicating the statistical significance of the responses.

***One sample t-test***

Here, the highest t value is found against the question "Interactive Language development-based digital platforms help students to improve their vocabulary" with a value of 45.657.

| | t | Mean Difference |
|---|---|---|
| Interactive Gamifying Software application induction helps the students evaluate their gradual language skill development through real-time progress tracking. | 25.686 | 2.980 |
| Interactive Language development-based digital platforms help students improve their vocabulary. | 45.657 | 2.802 |
| Interactive Mobile applications used for Language learning help enhance the grammatical skills of the students | 31.467 | 3.475 |
| Designing of these Interactive Language learning platforms are constructed in a comprehensive skill developmental way | 31.213 | 2.941 |
| The platforms used for developing interactive language learning skills are mostly focused in English-speaking training | 26.614 | 3.257 |
| Using the Language-based Puzzle development method, Crosswords and scrabbles are generated to involve students in a self-competition to develop vocabulary skills | 29.555 | 2.871 |
| Word searching game from a jumbled group of letters is an effective way to involve undergraduate students in enhancing their technical vocabulary | 28.438 | 3.327 |
| Effective development of Grammar quizzes helps students in generating their speed in a faster language learning involvement | 29.980 | 2.931 |
| Vocabulary development is the most prominent goal of Puzzles and Quiz-based language learning. | 27.608 | 3.218 |
| Simulative technical scenarios involve students in interacting with each other. | 28.457 | 3.010 |
| Simulation scenarios help language students in resolving problems in the foreign language they are learning. | 27.222 | 3.119 |
| Simulative Language learning platform scenarios imitate real-life professional problems to give students an experience of significant language barriers. | 27.208 | 3.089 |
| The main purpose of the Simulative language platform remains to enhance the foreign language speaking skills of the students. | 27.009 | 3.050 |

**Table 8: T-test**

Similarly, the lowest t value is found against the question "Interactive Gamifying Software application induction helps the students evaluate their gradual language skill development through real-time progress tracking" that is designed against the Dependent Variable itself. The value found is the same as 25.686. All the other t values are present between these two values, indicating a high mean difference from the predicted value of 0. These high mean differences show the statistical significance of the alternative hypothesis, over the null hypothesis.

**Secondary Quantitative Study**

***Theme 1: Essentiality of gamification in distance education***

Gamification was always in action in educational programs all over the world since the beginning of systematic academics during the last century. Language knowledge development is essential for undergraduate students, especially the ones attached to professional courses like Engineering and other technical initiatives. The study conducted by Barua and Bharali, (2023), shows the trends of gamification that are found among the students studying Computer Engineering and learning active language communication skills as a part of their curriculum.

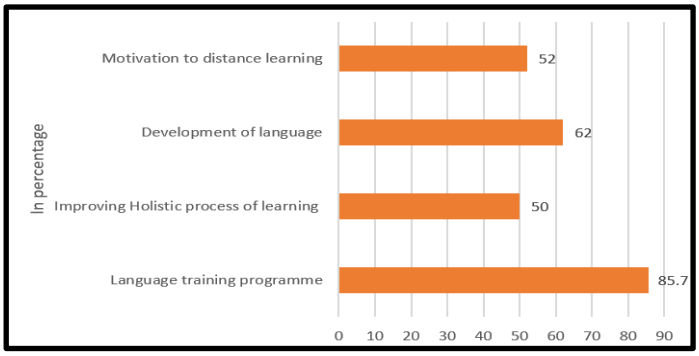


**Figure 2: Role of Gamification in different learning process**

(Source: MS-Excel)

The study shows that almost 85.7% of the participants provided their agreement and strong agreement that the gamification helps them in engaging more inclusively with the language training programs. Almost 50% of the students showed their agreement and strong agreement against the role of gamification in improving the holistic process of learning. Moreover, almost 62% of the participants agreed with the active participation increment as a result of language learning through the initiatives of gamification, especially in distance educational programs. Moreover, 52% of the students showed their agreement against the motivation increment towards distance learning as an impact of gamification.

***Theme 2: Implication of gamification upon the academic performances of the students***

An advanced style of Gamification is known as the "Game-based learning" process. This process is completely oriented to the initiatives of higher education, and the most usage is found in the English lingual knowledge development initiatives within the Indian schools bearing English as a second language. One such application that is used in the English language development programme is "Baamboozie" that is applied in different universities for the betterment of the English language skills of different undergraduate learners. As per the views of Rajendran *et al*. (2024), the students were surveyed regarding their experience after attending sessions through the Baamboozie method of Game-based learning, and they showed a mixed set of opinions.

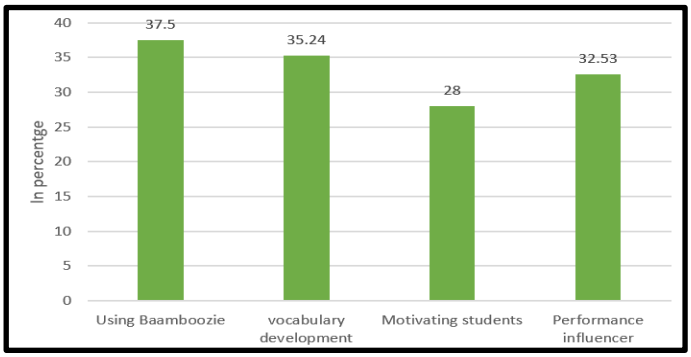


**Figure 3: Using Gamification in different ways**

(Source: MS-Excel)

Almost 37.50% of students have agreed strongly that they have witnessed the ease of using Baamboozie. Proficiency development through Baamboozie in vocabulary development has been beneficial for almost 35.24% of students. Moreover, almost 28% of the participants provided their opinion that they own an effective motivation in studying through Baamboozie than conducting the conventional study through grammar class attendance development. On the other hand, a significant number of students, almost 32.53%, provided their opinion in support of the typical regular performance review system engaged within Baamboozie.

**Discussion**

Development of the new normal in the post-pandemic period after COVID-19, the natures and the characteristics of the learning programs of the students are gradually changing. E-learning and the remote learning processes enhance the chances of gamification of the online language learning initiatives that are adopted in different educational institutions (Saleem *et al*. 2022). Skills of using language in effective communication is considered as one most significant qualification from the parts of both learners and educators (Bordoloi *et al.* 2021). However, the entire shift to gamification can reduce the importance of language learning and other processes from the psyche of the students, especially the ones enrolled in undergraduate courses all over India.

Moreover, the results critically show the limitations of using the long-explored processes of gamification that are being used monotonously in the development of language skill improvement initiatives (Cascella *et al*. 2023). A method of gamification can be generated using a specific chatbot that shows more improvements noticeably. These chatbots can be used in virtual classroom scenarios, allowing the students to explore assistance automatically that can help them instantly with supplying the proper solutions to their requirements, including assisting them in rectifying pronunciations, and others.

**Conclusion**

Gamification is the most potent and significant language that provides an implication for the betterment of engagement and motivation. Moreover, interactive gamified language learning develops the offering of a modern approach. The challenge of overcoming language anxiety development, resource lack and traditional learning limitations creates a proper learning ability for the students. On the other hand, the process involves the students in making them able to retain the language skills. The future of the studies related to this study topic can remain focused on developing an idea about the localised gamification strategies that is tailored to the functions of Indian cultural elements and different languages. The secondary analysis of the literary data can be drawn based on the learning experiences generated based on the diverse number of students present in the Indian subcontinent. Integration of the gamification elements can help generate traditional classroom instruction for enhancing the balancing approach.

Gamification of studies is generally gaining popularity across the globe as a powerful tool for enhancing the learning experience. Especially in the case of developing learning experiences development in lingual studies around the subcontinent, this gamification method has significant implications. The primary involvement development of students occurs due to the existence of elements like reward generators, leaderboards, and level-based multidimensional difficulties. The Undergraduate students find the study process more interactive and enjoyable that helps them in developing a higher encouragement that helps in enhancing their engagement in a sustaining way. A set of significant UG students have found monotony in the traditional teaching methods the teacher applies in language training. Gamification provides a competing collaborative environment, with a special focus on enhancing participation rate. Retention rate of the Gamifying learning and vocabulary, including the thoughts about grammar and vocabulary.

Moreover, the pronunciation complexities removal is a unique feature of gamification that is developed through repetition and feedback loops creation. Long-term memory promotional techniques help in communication fostering and interpersonal skill development. Collaboration and movement of tasks that involve role-playing for word building challenge solving that help the students enhance their grammar skills. A large number of students practice their language skills at their own pace that helps them overcome the barriers. The fear of making mistakes and getting punished, a common issue in learning, is getting eradicated slowly as an impact of gamification.

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