

# Anticipating Views on Negligence in Listening Skill at Bangladeshi Tertiary Level, Implementing Machine Learning Algorithms

Emran Khan<sup>1</sup>, Afroza Akter<sup>1</sup>, Sabrina Sultana Prity<sup>2</sup>, Fahim Ur Rahman<sup>3</sup>

<sup>1</sup>Lecturer, Department of English, Daffodil International University

<sup>2</sup>Teaching Assistant, Department of English, Daffodil International University

<sup>3</sup>Student, Department of Computer Science and Engineering, Daffodil International University

This research accentuates the negligence in listening skills among students at the tertiary level in Bangladesh using machine learning algorithms. This study aims to uncover the underlying causes of this negligence and provide guidelines for improvement. In Bangladesh, listening skills are often overlooked compared to other language skills, and this practice persists into higher education. Our survey reveals that low listening ability is prevalent among students, and they do not acknowledge its relevance for academic success. We suggest integrating listening skills development into the curriculum and assessments to encourage students to enhance their listening skills. The survey results underscore the need for institutions and educators to give precedence to listening skills to equip students with the necessary tools to succeed academically and professionally.

**Keywords:** Listening Skills, Practice, Negligence, Barriers, Tertiary level, Machine-learning Algorithms.

## 1. Introduction

The ability to listen is often considered the most fundamental communication skill, as it is the first skill we learn as children. Listening skills are not only essential for effective communication, but also play a crucial role in improving other language skills, such as speaking, reading, and writing. By listening attentively, we can improve our pronunciation and correct any mispronunciations we may have. While speaking, reading, and writing are considered outputs, listening is like an input that helps us develop our language skills.

However, there is a noticeable lack of proper development in listening skills among Bangladeshi students, particularly at the tertiary level. This is a matter of concern, as effective communication is essential for success in both academic and professional life. Many students aspire to secure good jobs or pursue higher studies abroad after completing their degrees, but often fail due to their inadequate English language skills. In most cases, they struggle to speak or write properly, while their listening skills remain neglected. This negligence often leads to a lack of success in achieving their goals.

To better understand this issue, our research aims to identify the reasons behind the neglect of listening skills among Bangladeshi students at the tertiary level. We will examine the level of listening skills of students from various universities, identify the barriers to developing listening skills, and suggest techniques to improve these skills. Additionally, we aim to encourage students to be more confident in their listening abilities, and raise awareness of the importance of listening skills at the tertiary level in Bangladesh. By analyzing and categorizing the factors responsible for poor listening skills, we hope to make progress towards overcoming this barrier and improving language proficiency among Bangladeshi students. In order to create our questionnaire, we conducted an analysis of relevant research papers and consulted various resources such as books, journals, and experts. The survey consisted of 15 questions and was distributed through both a Google Form and physical means over a period of three months. We received a total of 219 responses from participating students, with incomplete or unwilling responses being excluded from the analysis through machine learning algorithms.

The main focus of this research paper is on the listening skill of Bangladeshi students at the tertiary level. The objectives of this study are as follows:

- to investigate the reasons why Bangladeshi students neglect their listening skills at the tertiary level
- to evaluate the current level of listening skills of students in different universities at the tertiary level
- to identify the obstacles that prevent the development of listening skills among Bangladeshi students
- to recommend effective techniques to improve the listening skills of Bangladeshi students
- to motivate students to become more confident in their listening abilities
- to provide a comprehensive picture of the listening skills scenario at the tertiary level in Bangladesh

Through this research, we aim to provide a deeper understanding of the factors that contribute to poor listening skills among Bangladeshi students and suggest actionable solutions to help them improve their listening abilities.

## **2. Literature Review**

Learning a second language is a complex and challenging process that requires exposure to

*Nanotechnology Perceptions* Vol. 20 No.4 (2024)

various language inputs, including reading, writing, speaking, and listening. While all of these inputs are important, listening plays a particularly crucial role in effective second language learning, especially at the beginning stages. Through listening, learners can build language awareness and establish a foundation for developing productive skills in speaking and writing. Moreover, listening continues to be important at intermediate and advanced levels, as it can promote accuracy, extend vocabulary, and deepen cultural understanding. In this context, teachers can use a variety of listening tasks for all proficiency levels to enhance their students' language learning experience. CLT (Communicative Language Teaching) is taught at school and college levels, but mostly in theory, and the application of CLT is limited to writing and speaking skills, while listening and reading skills are neglected. The problem is more acute for students from a Bengali medium background, who find it difficult to cope with wholly controlled English speaking environments in classrooms, mentioned by Abedin (2009). [1] Alam (2009) suggest that incorporating listening skills at the university level can improve students' academic English proficiency. [2]

Experts of Wonder share Quiz creator program validated new materials, which were then tested on an experimental group while a control group received conventional audio materials in teaching English listening skills. Pretests and posttests were conducted, and the statistical analysis revealed a significant difference between the posttest results of the two groups. It was concluded that the interactive multimedia learning materials were effective in teaching English listening skills- suggested by Ampa, (2015). [3] Similarly, Chand, R. K. (2007) focuses on the listening skills component, where course books and audio-taped materials are used to help students acquire basic skills for tertiary education. [4] According to Dunkel, P. (1991), listening skills in both native and second language acquisition affects comprehension, and proposed models and taxonomies of listening skills. The author argues for greater collaboration between researchers and practitioners to better prepare non native English speakers for a society that relies heavily on English and oral communication. [5]

Elmosnino, S. J. (2018) explores multimedia learning theories and identifies "sonic mental models" as an important aspect of cognition. The study consists of two phases: defining best practices in instructional design and creating an instructional text, and examining how the text helped students develop their critical listening skills. [6] Another study by Feyten, C. M., (1991) examines the relationship between listening ability and foreign language proficiency, listening comprehension, and oral proficiency skills, which results with the need to focus more on listening skills as they are essential for effective language acquisition. [7]

Goh, C. C. (2000) discloses the difficulties faced by ESL learners, based on their self-reports and their metacognitive knowledge of their learning processes. [8] Harmer, J. (2001) challenges to ease the process in ELT through a new format with nine parts. Part 1 discusses the role of English in the world and describes the language. Part 2 focuses on learners and teachers, while Part 3 covers theories, methods, and techniques. Part 4 deals with classroom management, including student grouping and equipment management. Parts 5-7 cover traditional ELT content such as grammar and vocabulary, receptive and productive skills, and lesson and course planning. Part 8 discusses testing, and Part 9 covers learner autonomy and teacher development, which is the only part with reservations due to its brevity on teacher development. [9]

According to Hawkins et al. (2004), Listening comprehension is now seen as a complex skill that involves retaining linguistic elements in short-term memory. [10] Concerning this, Huerta-Wong (2010) posits that virtual and face-to-face learning environments should be evaluated for the effectiveness of two teaching techniques (experiential and lecture plus discussion) on developing listening skills. Results showed that both virtual and face-to-face experiential learning can improve listening skills, but face-to-face learning was more effective when using experiential learning techniques. [11] However, Long, D. R. (1987), has shown effective ways in his research to incorporate listening practice into the language curriculum if it is made a priority.

- To develop listening comprehension skills, the first step is to make learners comfortable.

- Beginners often struggle with paying attention to all the components of the language, as they consider each word and structure equally important.

- It is important to remind learners that this is a normal stage of language acquisition and to stress that total comprehension is impossible, even in one's native language.

- Students should focus on figuring out the main idea rather than becoming overly concerned with individual parts of the language.

- Suggestions for helping students develop confidence in listening include creating a comfortable and supportive learning environment, providing opportunities for active listening, and using authentic materials. [12]

Nunan, D. (1991) classifies language-learning tasks for non-native teachers and textbook writers. [13] Furthermore, Nunan's (2003) study on "Practical English Language Teaching" is a concise and accessible book written by 15 experts in the field of ESL/EFL teaching, providing a framework with detailed writing guidelines, key teaching principles, and supporting research and classroom examples. [14] Peterson (2001) states language learning is dependent on listening and it can connect the learners directly to the target language. [15] Renukadevi's (2014) research employs that listening allows learners to understand the intricacies of a language such as sound, rhythm, intonation, and stress, and can also enhance other language skills and confidence, making it essential for communicative language teaching and overall language proficiency. [16] Listening skills have gained significance in language teaching as they are included in exams and are essential for language learning, involving cognitive processing, the active role of the listener, and the use of strategies to facilitate comprehension, while attention to language form can enhance the incorporation of new structures into communicative competence, states- Richards, J. C., (2008). [17]

Richards' (2001) study denotes, "language is a system for the expression of meaning" and it is not only the combination of grammatical rules but also has functions and communicative meaning.[18] On another study (1985), Communication requires sender, message and also receiver. [19] Authentic listening materials can help fill the gaps in exposure and attention to this skill. This study aimed to investigate the impact of using authentic listening materials on the listening skills of university-level elementary students. The study by Sabet (2012), included a control group that used simplified materials. Pre- and post-tests were conducted, and the experimental group showed better results in the post-test. Additionally, students in the experimental group had positive attitudes towards the authentic materials. [20] However,

many language students face significant problems with listening comprehension due to the lack of emphasis on listening in schools. Compared to other language skills, listening is considered the most challenging. Researchers have identified the first-year English-major students' problems with listening comprehension and provided suggestions to help them overcome these issues, mentioned in Thai's (2018) study. [21]

### 3. Methodology:

In this section, we outline the vision of our research, detailing the key steps from dataset collection and preprocessing to visualization. We specifically address the identification of critical issues requiring attention for accurate forecasting. The dataset collected informs the parameter settings for our model. Figure 1 shows the sequential steps involved in training and testing the models, aiming to determine the most high-performing one.

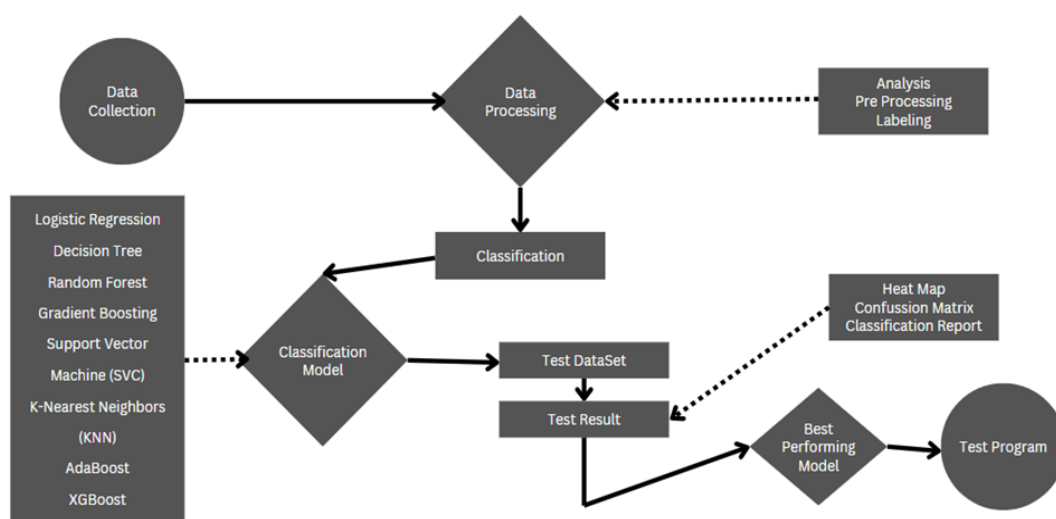


Figure 1: Methodology Workflow

We conducted a quantitative strategy to conduct this study at various tertiary level universities, gathering data via a questionnaire measuring attitudes. The purpose of the questionnaire was to determine the causes and degrees of listening skill neglect. We got expert input to make sure the questionnaire was authentic, and we added new questions, changed some old ones, and removed others as needed. Upon our consultation with the experts, we developed our questionnaire.

#### Data Collection

In the methodology, data collection began with the distribution of a Google Form containing the aforementioned questions to gather insights into individuals' English listening skills. Participants were asked to share their experiences and challenges in understanding spoken English. The survey aimed to identify specific issues faced during English listening, such as difficulties arising from interference with their native language. Additionally, participants

were queried about their regular engagement with English news, songs, or other audio content. The survey, consisted with 219 responses, explored the perceived relationship between speaking practice and the improvement of listening skills, and participants were encouraged to share their preferences for specific listening activities.

**Analyzing Dataset:** The data analysis revolves around a question-based dataset focused on English listening skills. Our primary objective is to pinpoint negligence in English proficiency through the utilization of a machine learning classification dataset. This approach enables us to predict and categorize instances of neglect or challenges in participants' English listening abilities. By extracting meaningful features from survey responses, the classification model can discern patterns indicative of varying degrees of negligence in English. This method offers a systematic and data-driven means to identify specific areas requiring improvement in English listening skills within the surveyed population.

**Labeling Columns:** For the purpose of machine learning analysis, the labeled columns in the dataset were organized as follows: 'listening\_skill,' 'problem\_while\_listening\_English,' 'Interference\_Mother\_Tongue,' 'Regular\_English\_Media\_Consumption,' 'Speaking\_Practice\_Link\_Listening\_Skill,' 'Preferred\_Listening\_Activities,' 'Scope\_Listening\_Practice\_At\_Home,' 'Classes\_Effectiveness\_Listening\_Improvement,' 'Importance\_Listening\_Skill\_Other\_Skills,' 'Dealing\_Difficult\_Words\_Listening,' and 'Internet\_Usage\_Listening\_Practice.' These labels encapsulate diverse aspects of participants' English listening experiences, enabling a comprehensive exploration of factors influencing their proficiency. The machine learning classification model will leverage these labeled columns to predict and categorize instances of negligence in English listening skills based on the provided responses.

**Preprocessing Dataset:** To facilitate prediction in the machine learning model, string values in the dataset were converted into numerical representations. Additionally, a thorough examination revealed that the dataset does not contain any null values, ensuring the completeness and reliability of the data for machine learning.

**Matrix Correlation Analysis:** Correlation is a statistical measure that quantifies the degree of association between two variables. In Figure 2, it ranges from -1 to 1, where a positive correlation indicates a direct relationship, a negative correlation implies an inverse relationship, and a correlation close to zero suggests little to no linear relationship. In the context of the presented heatmap, correlation values are visualized, providing insights into the strength and direction of associations between different features in the dataset.

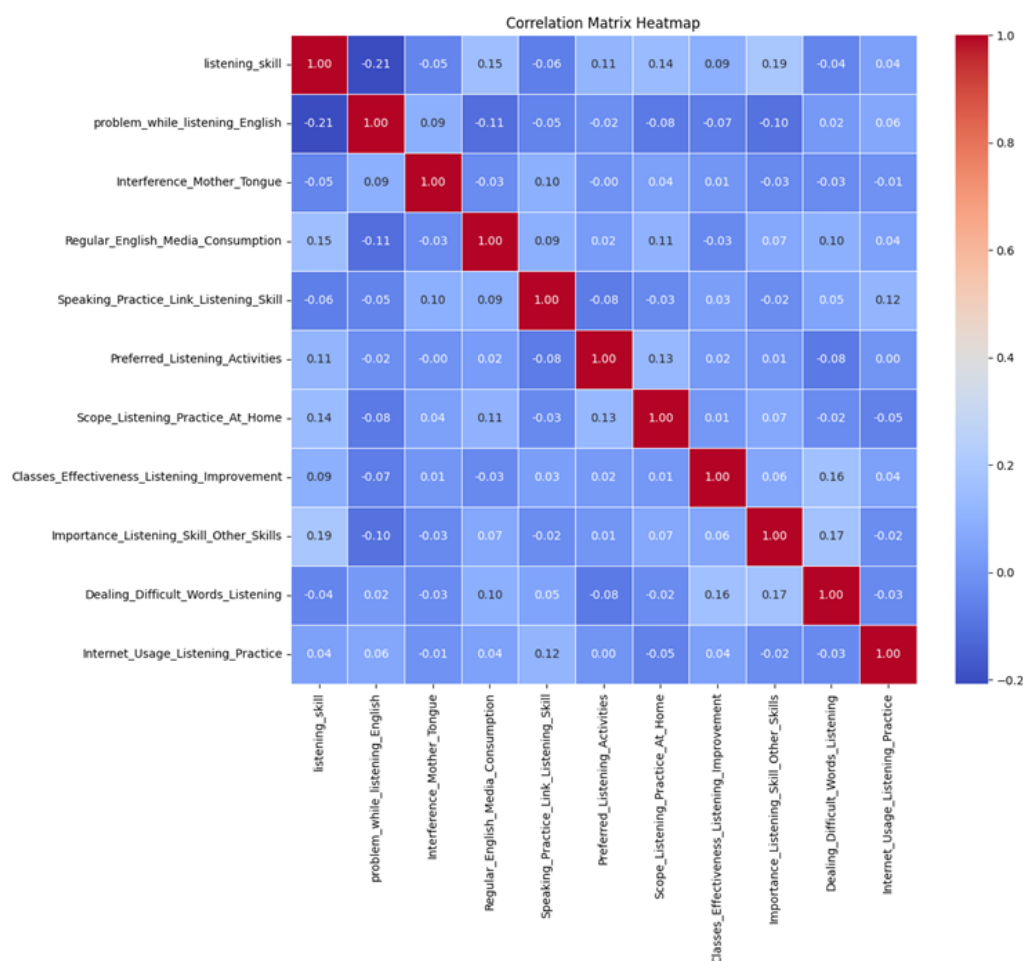


Figure 2: Correlation Matrix Heatmap

## Model Training

**Logistic Regression:** Logistic Regression achieved a commendable accuracy, demonstrating its effectiveness in binary classification tasks. Its simplicity and interpretability make it a suitable choice for scenarios where a transparent model is desired.

**Decision Tree Classifier:** The Decision Tree Classifier exhibited competitive accuracy, leveraging a tree-like structure to make decisions based on feature splits. Its interpretability and ability to capture non-linear relationships make it suitable for diverse datasets.

**Random Forest Classifier:** Random Forest Classifier, an ensemble of decision trees, demonstrated high accuracy. By aggregating predictions from multiple trees, it enhances robustness and generalization, proving effective for complex classification tasks.

**Gradient Boosting Classifier:** Gradient Boosting Classifier showcased strong accuracy, utilizing an ensemble of weak learners in a sequential manner. Its ability to correct errors from preceding models makes it particularly effective for boosting overall predictive



performance.

**Support Vector Classifier (SVC):** SVC exhibited solid accuracy, particularly useful in scenarios with clear margins of separation between classes. Its effectiveness in high-dimensional spaces makes it suitable for various classification challenges.

**K-Neighbors Classifier:** K-Neighbors Classifier demonstrated accuracy by classifying data points based on the majority class among their k-nearest neighbors. It is effective for scenarios where local patterns play a crucial role.

**AdaBoost Classifier:** AdaBoost Classifier, employing a series of weak learners, achieved competitive accuracy by assigning higher weights to misclassified instances. Its adaptability to various base classifiers makes it versatile in different contexts.

**XGB Classifier:** XGB Classifier, an implementation of gradient boosting, demonstrated high accuracy. Its regularization techniques and parallel computation contribute to efficient and accurate predictions, especially in complex datasets.

**4. Result and Decision**

The accuracy results for various classification algorithms are as follows: Logistic Regression (98.48%), Decision Tree Classifier (98.48%), Random Forest Classifier (96.97%), Gradient Boosting Classifier (98.48%), SVC (98.48%), K-Neighbors Classifier (95.45%), Ada Boost Classifier (98.48%), and XGB Classifier (98.48%).

The high accuracy scores across multiple models indicate the robustness of the dataset for predicting negligence in English listening skills. Decision Tree Classifier, Gradient Boosting Classifier, SVC, Ada Boost Classifier, and XGB Classifier all achieved particularly high accuracies, showcasing their effectiveness in capturing patterns within the data.

While the Decision Tree Classifier and SVC both demonstrated excellent accuracy, further considerations such as model interpretability, computational efficiency, and generalization capabilities should be taken into account. The Decision Tree Classifier may provide insights into specific decision rules, but it is prone to overfitting. On the other hand, SVC and Gradient Boosting Classifier offer a good balance between accuracy and generalization.

In this context, considering the overall performance, Gradient Boosting Classifier emerges as the preferred model. Its high accuracy, coupled with the ability to handle complex relationships in the data, makes it a robust choice for predicting negligence in English listening skills based on the provided dataset. The test result of model shown in table 1 below-

Table 1: Test results of applied models

ML Models	Accuracy
Logistic Regression	98.49%
Decision Tree Classifier	98.49%
Random Forest Classifier	96.97%
Gradient Boosting Classifier	98.49%
SVC	98.49%
K-Neighbors Classifier	95.45%



Ada Boost Classifier	98.49%
XGB Classifier	98.49%

### Generating Heatmap of Confusion Matrix

In Figure 3, the confusion matrix for the Gradient Boosting Classifier on the clustered data illustrates the model's performance across three distinct clusters. In Cluster 0, all 16 instances were accurately predicted, indicating precision without any false positives or negatives. Cluster 1 exhibited flawless prediction with the classifier correctly identifying all 13 instances. For Cluster 2, the model achieved high accuracy, correctly classifying 36 instances and only misclassifying one, showcasing robustness in assigning data points to this cluster. The detailed breakdown provided by the confusion matrix underscores the model's effectiveness in capturing the nuances within each cluster and highlights its strong predictive capabilities in the context of unsupervised clustering.

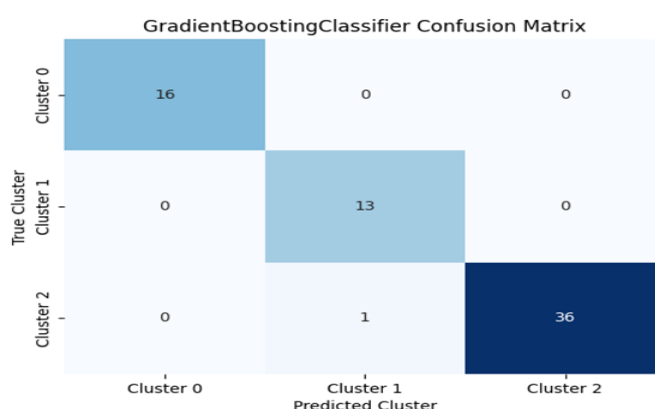


Figure 3: Confusion matrix of chosen model

## 5. Findings

1. **Vocabulary Limitations as a Barrier:** The constrained vocabulary of students poses a substantial impediment to the development of their listening skills. Insufficient lexical proficiency can result in gaps in comprehension of spoken English, thereby posing difficulties in fully grasping the contextual nuances of communicated information.
2. **Avoidance Due to Comprehension Difficulties:** When students encounter unfamiliar vocabulary while engaging in listening activities, it is common for them to disengage from the task. The act of avoiding certain tasks or situations, which arises from a difficulty in understanding, has the potential to impede one's overall level of exposure and hinder their learning experience.
3. **Accent Familiarity and Comprehension Challenges:** Students often face challenges as a result of their lack of familiarity with British or American accents. Insufficient exposure and comprehension can hinder individuals' capacity to comprehend and assimilate information, consequently impeding their advancement in language acquisition.
4. **Mother Tongue Interference in Listening:** The impact of students' mother tongue

presents a considerable obstacle in their proficiency in listening to English. The presence of interference can result in misunderstandings and challenges in comprehending English speech patterns, thereby affecting individuals' overall proficiency in listening.

5. **Underestimating the Importance of Listening Skills:** Students exhibit a deficiency in their overall comprehension of the fundamental importance of listening skills in the process of acquiring a language. The lack of recognition for these skills may result in a diminished emphasis on their cultivation, despite their crucial role in facilitating proficient English communication and comprehension.

6. **Demotivation in Listening Practice:** At times, students may experience a lack of motivation while striving to enhance their listening skills. This phenomenon may arise from a multitude of obstacles encountered by language learners, including the intricacy of the language, disparities in accents, and even the perceived sluggishness of progress, all of which can impact their motivation and dedication to honing their listening skills.

## **6. Recommendations**

After considering the survey results of the listening classes at tertiary level in different universities,

the points may follow to improve listening competence in ESL classes:

1. Teachers may provide some equipment related to lectures to make the classes more comprehensible.
2. Teachers should set up a range of practice listening exercises and show examples of their audio and video lessons.
3. In addition to demonstrating audio and video lectures, teachers should set up a range of listening exercises for students to practice.
4. Teachers might teach learners specific words in pre-listening and post-listening time to help them with their vocabulary for listening tasks. It will be simpler for the students to remember the terms if they are able to apply them appropriately in context.
5. Students should be motivated by teachers so that they can understand the importance of listening skills as well as practice it at home and in classrooms.
7. More practice should be introduced among the students. If possible, teachers may go through different tasks like easier to harder so that students won't be demotivated.
8. Above all, in order to get the most out of teaching listening, teachers need to be kind, understanding, and cooperative. She/he should be personable and have a cheerful demeanor to allow pupils to openly share their thoughts regarding listening lessons.

## **7. Conclusion**

The act of listening typically occurs in a live and immediate manner. This refers that the individuals must actively engage in the process of listening and promptly comprehend the

auditory information they receive. This study, based on its quantitative data, acclaims that the instructors have the option and the necessity to provide listening-related equipment skills that facilitate students' comprehension. In order to improve the precision of data collection and reliability, machine language algorithms were utilized. Gradient Boosting was emerged to be the most efficient and convenient, straining authentic data with 98.49% accuracy.

Following the convenient methods for improvement, educators should strive to offer simplified instructional materials and, engage in auditory exercises prior to proceeding with subsequent tasks. At the tertiary level, the instruction of listening skills is expected to be more advanced and comprehensive. The effectiveness of interactive teaching methods is contingent upon teachers' comprehension of students' challenges and concerns. Teachers should carefully plan and develop their lessons, taking into account the specific challenges and difficulties faced by their students. It should be noted that the university and the administration should engage in collaborative efforts with teachers, providing sufficient logistical support to ensure the students' needs are met to optimize the advantages derived from attending listening classes. Educators ought to exercise caution in assigning an excessive workload to their students. It is important to prioritize focused listening and the preservation of memories. Educational institutions should provide assistance to students in developing their skills and abilities. The individual's level of trust in their ability to comprehend auditory information. Consequently, the students will develop the practice of active listening. To enable a fulfilling experience in second language acquisition, it is imperative to possess the ability to actively listen and demonstrate an unwavering dedication to learning.

## **References**

1. Abedin, M. M., Majlish, S. H. K., & Akter, S. (2009). Listening skill at tertiary level: A reflection. *Dhaka University Journal of Linguistics*, 2(3), 69-90.
2. Alam, Z. and Sinha, B. S. (2009). Developing Listening Skills for Tertiary Level Learners. *The Dhaka University Journal of Linguistics*, 2(3), 19-52.
3. Ampa, A. T. (2015). The Implementation of Interactive Multimedia Learning Materials in Teaching Listening Skills. *English Language Teaching*, 8(12), 56-62.
4. Chand, R. K. (2007). Same Size Doesn't Fit All: Insights from research on listening skills at the University of the South Pacific (USP). *International Review of Research in Open and Distributed Learning*, 8(3), 1-22.
5. Dunkel, P. (1991). Listening in the native and second/foreign language: Toward an integration of research and practice. *TESOL quarterly*, 25(3), 431-457.
6. Elmosnino, S. J. (2018). Instructional design considerations for the development of critical listening skills in audio engineers (Doctoral dissertation, Queensland University of Technology).
7. Feyten, C. M. (1991). The power of listening ability: An overlooked dimension in language acquisition. *The modern language journal*, 75(2), 173-180.
8. Goh, C. C. (2000). A cognitive perspective on language learners' listening comprehension problems. *System*, 28(1), 55-75.
9. Harmer, J. (1998). *How to Teach English: An Introduction to Practice of English teaching*. London: Longman press.
10. Hawkins, M. R., & Legler, L. L. (2004). Teachers of English to Speakers of Other Languages, Inc.(TESOL). *TESOL Quarterly*, 38(2), 339-343.

11. Huerta-Wong, J. E., & Schoech, R. (2010). Experiential learning and learning environments: The case of active listening skills. *Journal of Social Work Education*, 46(1), 85-101.
12. Long, R. D. (1987). Listening Comprehension: Need and Neglect. *Hispania*, 70 (4), 1921-1928.
13. Nunan, D. (1989). *Designing Tasks for the Communicative Classroom*. Cambridge: Cambridge University Press.
14. Nunan, D. (2003). *Practical English Language Teaching*, New York: McGraw Hill Print.
15. Peterson, P. W. (2001). Skills and strategies for proficient listening. *Teaching English as a second or foreign language*. Boston: Heinle & Heinle.
16. Renukadevi, D. (2014). The role of listening in language acquisition; the challenges & strategies in teaching listening. *International journal of education and information studies*, 4(1), 59-63.
17. Richards, J. C. (2008). *Teaching, Listening and Speaking: from Theory to Practice*. Cambridge: Cambridge University Press.
18. Richards, J. C. and Rodgers, T. S. (2001). *Approaches and Methods in Language Teaching*. Cambridge: Cambridge University Press.
19. Richards, J., Platt, J. and Weber, H. (1985). *Longman Dictionary of Applied Linguistics*. London: Longman.
20. Sabet, M. K., & Mahsefat, H. (2012). The impact of authentic listening materials on elementary EFL learners' listening skills. *International Journal of Applied Linguistics and English Literature*, 1(4), 216-229.
21. Thai, C. D., & Nguyen, N. Q. (2018). Listening comprehension: First year English-major students' perceptions and problems. *Can Tho University Journal of Science*, 54(2), 75-83.