MethodsX 12 (2024) 102630

Contents lists available at ScienceDirect

MethodsX

journal homepage: www.elsevier.com/locate/methodsx

Optimising listening skills: Analysing the effectiveness of a blended model with a top-down approach through cognitive load theory

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ARTICLE INFO

Method name:
A mixed method of Cognitive Load Theory to enhance listening skills

Keywords:
Blended model
Cognitive load theory
Listening skills
Online platform
Top-down approach

ABSTRACT

The ability to listen is critical in the task of language learning. Although listening has the least pedagogical attention, the growing emphasis on communication and language proficiency makes listening skills prominent in the language classroom. This paper aims to analyse the effectiveness of the Blended model to improve teaching listening skills, by instigating a top-down approach through Cognitive Load Theory. The top-down approach aids the students with the background knowledge of the audio with information like context, situation, phrases, etc. The blended model enables the teacher to facilitate students through the technological platform to process their listening input. A questionnaire was adopted for data collection and a semi-structured interview was performed from 60 samples from prefinal year Engineering students selected through purposive sampling techniques and grouped as experimental $N = 30$ and control $N = 30$ groups. The experimental group was trained with a top-down approach with the support of LMS. The control group was provided with the same listening material but taught in the conventional method. The purpose of this study is to show the statistically significant impact of employing technology inside the language classroom to teach listening skills. Findings showed that samples in the experimental group could identify the relevant and non-relevant information from the audio, conceptualise the audio content and predict the information beforehand. The difficulties that the students and teachers faced and the remedial measures to overcome them are also discussed.

The following objectives were established for the study through mixed methods of enhancing listening skills through Cognitive Load Theory (CLT).

- To explore the effect of intervention through a top-down approach with the support of technology (LMS) on enhancing the listening skills of the students.
- How the blending of synchronous and asynchronous and a top-down approach develops the predicting skills of the students during the listening comprehension exercises.
- To adapt procedures involved in enhancing the self-paced learning efficacy and reducing listening anxiety in ESL learners.

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https://doi.org/10.1016/j.mex.2024.102630
Received 10 November 2023; Accepted 22 February 2024
Available online 24 February 2024

Specifications table

Subject area:	English Language Teaching
More specific subject area:	Listening Skills
Name of your method:	A mixed method of Cognitive Load Theory to enhance listening skills.
Name and reference of original method:	Garnett, S. Cognitive Load Theory: A Handbook for Teachers. United Kingdom: Crown House Publishing.
Resource Availability:	N. A.

Method details

According to educational psychology, cognitive load theory (CLT), requires learners' mental effort to process information by breaking the complex content into simpler ones to enhance their listening skills.

According to Granet. S., CLT helps teachers build a greater store of knowledge in the long-term memory of their students. To form this knowledge, the brain should store new information which can be accessed later through the process called "encoding". Educators can apply the cognitive load theory by teaching them to manage the intrinsic, germane, and extraneous cognitive load model and enhance their listening skills.

- An experimental research design was used in this study, using a mixed-method approach.
- It is a strategy-based technique to enhance the listening skills of the students and to increase the efficacy and autonomy of the students with the help of technology.

Method description

As the global influence of the English language continues to grow, the significance of English language instruction rises gradually [1,2]. Listening, the primary skill in language acquisition is considered to be implicit and passive in the language learning context. When compared to other skills like speaking, reading, and writing, where the teacher can observe and evaluate the performance of the students externally, listening cannot be observed, because the process of listening is done internally. [3] states that "once a firm understanding of processes and strategies has been achieved within the context of listening instruction, the use of media such as technology and its role is more easily understood. The use of various forms of multimedia resources such as videos, podcasts, CD-ROMS and others in conjunction with authentic language materials is an excellent way to aid in the implementation of listening approaches and strategies inside the language classroom."

The rise of blended learning helps to provide interactive and adaptable listening comprehension practice, particularly in the realm of second-language acquisition (SLA). The enhancement of oral skills like listening and speaking stands as one of the most demanding but often overlooked aspects in the language learning milieu [4,5]. Integrating technology inside the classroom creates an ease for the teachers and students where teaching and training can be done simultaneously. A combination of face-to-face and online teaching facilitates the students to do the listening activities not only during class hours but also outside the class and at home, so that the students may develop their personalized and self-paced learning experience. Explicit strategies should be adopted to deal with new and authentic listening materials.

Bartlett introduced the term "schema" by defining it as "The role of background knowledge in language comprehension". The term was redefined by Rumelhart as "building blocks of cognition" and "skeleton around which the situation is interpreted". Schema is a structural framework that organizes an individual's knowledge and past experience and aids in the retrieval of stored information and the integration of knowledge [6–8]. In the 1970s, cognitive psychology focused on emphasizing the individual as an active participant in the processing of linguistic input. It was revealed that learners create meanings by breaking down and organising the input into meaning components and actively matching its outcome, known as "intake" with their pre-existing linguistic and universal knowledge. They rely on the logical inference to fill the gaps of the missing information. Subsequently this "intake" is documented and stored in the long-term memory as a basic meaning form [9,10].

In the context of schema theory, the top-down approach is the mechanism by which it stimulates our minds to deploy the existing mental structures to comprehend and analyse new data and relate it to the pre-existing schema that helps to understand and integrate the new information into the metal framework [10,11]. According to Cognitive Load Theory (CLT), the objective of learning should not be solely focused on acquiring numerous independent factors or fragments. Rather, it should be a collection of facts and pieces of knowledge in a way that they are interconnected and can be related to each other thereby developing a deeper and more coherent understanding [12,13]. The top-down approach intensely helps in activating the schema to make sense of what the students listen to. After analysing the background knowledge level of the students, teaching materials were revised so that all the students could comprehend the information before taking the listening test [14]. Remedial lessons over difficult topics can be provided to the students, who have difficulties increasing their schema level.

Research questions

1. How to enhance students' predicting skills pertaining to the context they listen and score better in the listening tests by utilizing the top-down approach?
2. How does technology integrated into the language classroom assist students in enhancing their listening skills at their own pace using a blended learning approach?

Significance of the study

It is an indisputable fact that listening is the key component in language learning. Though English as a second language students (ESL) were exposed to the English language from early stages, acquiring listening skills requires them to master different accents of spoken language. Language learners have to recognize the different pronunciation patterns, indulge in real-time comprehension and make instant interpretations of the context. When listening to audio and videos, students should be able to infer and predict the content promptly, as learners may not have a chance to recheck, the meaning. In addition to it, learners have other challenges like limited vocabulary, speed of the speaker, cultural barriers, distraction, etc. Strategy-based listening, helps the learners to overcome these barriers, reduce anxiety and improve their listening skills [15,16]. The strategy should enable the listeners to get the big picture and not the minute details as it can be ineffective when trying to understand every single word of the listening material. Students frequently lose points in academic listening assignments and tests as a result of the aforementioned challenges. This has a detrimental effect on the student's academic achievement.

Method of the study

During the intervention, the researcher explained a concise overview of the study's aim and objectives to the participants and simultaneously had a brief discussion and clarification sought by the participants. The researchers explained the theory, approach and methodology to the participants and how the big picture created by the top-down approach helps them to enhance their listening skills by implementing the Cognitive Load Theory (CLT). As the aim of the study is to investigate the effectiveness of the blended model with a top-down approach to enhance listening skills, the researchers designed a lesson plan with the Flex blended modal [17]. As per the design, the researchers had face-to-face classes for two hours per week, where the topic of the audio material was discussed deeply. Simultaneously peer interaction and in-depth analysis of the topic were motivated among the experimental group participants. The topics were purposely chosen to instigate the interest of the students so that the participants came out with different perspectives and excess information about the topic. The researchers facilitated the students with different vocabulary words, pronunciation patterns and other related obstacles students have during listening comprehension. Later, the students were made to undertake different listening comprehension exercises, based on the topics discussed through online mode in the absence of the researchers through the Learning Management System (LMS) platform. A few exercises were given options for multiple attempts and a limited number of exercises had restricted attempts to answer the comprehension questions.

The researchers made use of an experimental research design and a mixed-method approach. Data were collected using a questionnaire before and after the intervention from both the control and experimental groups. The researchers employed a self-prepared questionnaire for the purpose of data acquisition, which covers different challenges of listening problems. The data collected was subjected to analysis and a substantiated conclusion was derived for the study. The participants are presented with a questionnaire comprising 25 negative statements, each eliciting four potential responses: strongly agree, agree, neutral, disagree and strongly disagree.

After the quantitative result, a qualitative section was directed to explicate the quantitative result. This study employed Creswell's (2015) mixed-method research design. The objective of using the quantitative study was to get the students' observations on critical difficulties they face when they do their listening skill activities. A semi-structured interview was conducted to collect qualitative data from the selected samples. It serves the researchers with the definite and necessary information required for the analysis. The mixed method research design helps the researchers by providing a profound understanding through a clear picture of the phenomena.

Task procedure (120 min)

The researchers constructed the framework of the study method into three parts: pre-listening while listening and post-listening. This method aims to enhance listening skills by focusing on stress, accent and intonation in the second language using a top-down approach which combines synchronous and asynchronous activities. The blended model incorporates both face-to-face sessions and self-paced online learning in the task of teaching the learning process [18].

Pre-listening (synchronous)

The researchers were involved in direct engagement with the students for 60 min and encouraged peer discussion and skill-building exercises, particularly in understanding the nuances of stress, accent, and intonation, with the experimental group during the face-to-face session. During this, the researchers outlined the goal of the upcoming activity and brainstormed the students to share what they know about accent, stress patterns and intonation in English [19]. This activates the prior knowledge of the students and helps them become more aware of the diversity in English pronunciation. Before listening to the actual content, the researchers provided the students with short videos and a few sentences related to the topic of the listening task. The students were asked to predict the pronunciation of certain words and phrases based on the context and encouraged them to anticipate variations in stress, accent and intonation. The in-depth discussion over the topic reinforces a deep understanding and assists each other in gaining a different perspective on the topic. Peer discussion reinforces active listening as the students listen attentively to their peer's explanations and responses. This process helps the students to identify and correct their misinterpretations in terms of stress, accent and intonation

The researchers made use of the AI tool "invideos.ai" to create short videos that demonstrate the target accent, stress, and intonation patterns. (Example: https://ai.invideo.io/watch/J5S9Ig-7n3N) and "twee.com" to prepare a worksheet which was shared among the control group with exercises and activities to practice stress, accent, and intonation.

While listening (asynchronous)

Following the pre-listening task, experimental activities were presented to the students through online mode for the next 45 min. The activities focussed on improving the learners' ability to understand the stress, accent, intonation and vocabulary [20]. In this asynchronous session, students are provided with audio materials and worksheet exercises which the students have to undertake at their own pace through LMS. Since implementing the top-down approach relies on the student's pre-existing knowledge in their schema, the researchers motivated the students to have focused listening. Students have to listen for specific elements such as stress, accent and intonation, which helps them to understand how these elements contribute to the meaning of the spoken language. Parallelly the learners have to note down the stress, accent and intonation of words while listening, which helps them pay closer attention to these elements. For example, after listening to the audio the student has to identify which word should be stressed in a sentence to match the meaning of the speaker. They can answer the other exercises based on their baseline knowledge. They need to answer all the exercises provided to them and at the end, they receive personalised feedback.

Post listening (synchronous)

Later for 15 last minutes, in the post-listening task discussions like how the meaning of the sentence changes when the stress shifts to other words and other obstacles students had during their listening are made. During this synchronous session, the researchers discussed what the students heard and asked them to share the stress, accent, and intonation of different words they noted down during the previous session. Further, they were asked to reflect on the difficulties they encountered while listening, what went wrong, the reasons for the mistakes and identify the areas where they could improve. Follow-up activities that build upon the salient features of the listening passage which include speaking, reading, writing or grammar/vocabulary activities related to stress, accent, and intonation.

Sample and size

The study includes a diverse sample of 60 prefinal year Engineering students with a gender distribution of 45 Males and 15 females from different vernacular backgrounds (Tamil, Telugu and Hindi) but the similarity is everybody had English as their second language at their school level. The age of the participants ranges from 19 to 21 years. At the time of the study, each participant had English as their medium of instruction for 14, 15 years. The study participants were chosen based on their scores in the English Proficiency Test (EPT) conducted as a diagnostic test by Vellore Institute of Technology, Chennai. Students who had below-average scores in the listening proficiency test were involved in the study with a purposive sampling technique and were split into two groups: experimental $n = 30$ (23 males and 7 females) and control $n = 30$ (22 males and 8 females). To fulfil the research objective, a questionnaire was devised, using Google Forms as a platform for data collection. This approach enabled the researchers to study various challenges and obstacles the students encounter in enhancing their listening skills.

The objective of selecting samples from the pre-final year students is to extract the right data with increased precision and accuracy. As the chosen approach provides a big picture of the listening material and the blended model requires self-motivation of the participants, to infer the study seamlessly, mentally matured samples were taken for the study to determine the quality of the research.

Pre-test and post-test

A common pre-test was conducted among the students in the experiment and control group. The researchers observed anxiety among the students and they had some difficulty in answering the questions. The analysis of the pre-test results revealed various difficulties among the participants, like vocabulary, stress, accent, intonation and following the speed of the speaker. A questionnaire was distributed among the samples and data was gathered to analyse the challenges the students had when taking the listening task. The researchers instigated teaching and training the samples with the top-down approach with the help of LMS on these variables. The topic knowledge of the audio was discussed widely in the face-to-face session and simultaneous training was given followed by formative assessment through the virtual platform. The researcher encouraged peer interaction during class hours. It was observed that the students actively participated in the peer discussion and came out with additional information, different vocabulary and phrases related to the topic. After training them with more practice exercises and necessary interventions to process the information from the audio, a post-test was conducted. The post-test focussed on evaluating whether the intervention has positively influenced the comprehension, stress, accent, and intonation of the students. Simultaneously the post-test focuses on measuring the students' predicting skills based on the context they listen. whereas for the students in the control group traditional teaching method was followed with the same practice exercises used for the experimental group. Later the same questionnaire was used with both the groups and data was collected after the post-test.

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Standard deviation	2.36	1.18	1.38	0.57	1.48
Mean	17.08	6.36	1.44	3	2.12

Fig. 1. Representation of students' pre-test response to the influence of the top-down strategy with blended approach on listening skills.

	Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
Standard deviation	4.9	1.28	0.78	2.84	4.18
Mean	5.84	3.08	1.04	8.56	11.48

Fig. 2. Representation of students' post-test response to the influence of the top-down strategy with blended approach on listening skills.

Method validation

For ESL learners listening appears to be more complicated because the listeners must be very attentive when listening to an unknown speaker speaking about an unfamiliar context in a new accent with new terminology and phrases. The inability to answer difficult comprehension questions creates anxiety and stress among the learners which reflects on the other language skills like writing, reading and speaking. The top-down process was implemented on purpose to provide the background knowledge of the topic to eliminate anxiety among the students. The participants were asked to respond to the questionnaire to identify the differences the learners had in their learning experience.

The participants in the experimental group expressed some positive data on the impact of the top-down approach with the blended model. According to cognitive load theory, there was a statistically significant outcome in favour of extraneous, intrinsic and germane cognitive load in the task of enhancing listening skills with the top-down approach. The results of the study revealed that the participants felt blended model and self-paced training were more effective and comfortable than the traditional classroom practice.

According to the findings of the study, the participants learnt new strategies like guessing the appropriate words and using their schema knowledge to answer the questions in the listening comprehension. The majority of the students responded that they did not depend only on the audio content to answer the comprehension questions instead they used their pre-existing knowledge gained during the face-to-face session to answer the vague or unclear content in the audio. Many students registered that unknown vocabulary, differences in stress, accents, intonation and the speed of the speaker did not obstruct them from answering the comprehension questions. They were able to predict answers as they read the comprehension questions. As per the responses of the participants, learners acknowledged that self-faced learning and self-evaluation in the absence of teachers helped them to overcome anxiety and encouraged them to take more listening comprehension exercises with confidence. Simultaneously, during peer discussions when they google, the topic of the audio during the face-to-face session, helped them to register new vocabulary words and indirectly improved their language abilities. However, a few students reported that they were not able to utilise the new vocabulary words for a long period after learning them [21].

The blended model offers the learners the autonomy to learn, practise, track their progress and correct themselves. As a result, when the top-down approach is implemented with a blended model it reduces the intimidating effect when undertaking tests on listening comprehension and improving the listening skills than in the conventional classroom. The overall results demonstrate that the blended model and top-down approach have a positive impact on developing listening skills. The learners feel confident and self-motivated when they train themselves to improve their language ability. In accordance with cognitive load theory (CLT) helps individuals organise and store information in their schemas and helps them to process and identify new information by relating it to their existing knowledge.

As the questionnaire contained negative statements, the pre-test mean value of strongly agree in the experimental group was 17.08 and the standard deviation was 2.36. After the intervention, the post-test mean value of strongly agree decreased to 5.84 with a standard deviation of 4.9. Whereas the pre-test mean value of strongly disagree was 2.12 and the standard deviation was 1.48. In the post-test, (after the intervention), the mean value changed to 11.48 and the standard deviation was 4.18.

The researchers identified that the students in the experimental group had a positive response towards the approach and that the study had significantly changed their listening skills. In the case of the control group, the researchers could not identify any significant variation from the mean and standard deviation of the pre-test and post-test results.

Semi-structured interview

A semi-structured interview was conducted to analyse the students' perceptions and views during the strategy intervention. Fifteen students from the experimental group were interviewed and additional details were collected like how the strategy helped them to enhance their listening skills. How does it help them to overcome their barriers in listening? etc. A few questions on the listening tasks were also posed. A few remedial sessions were conducted for eight hours with a proportion of two hours per day to cover other

barriers specified by the students. The observation revealed that the experimental group's students had a favourable influence on listening that is based on top-down strategies as well as on convenient learning and training with the help of LMS.

The semi-structured interview consisted of five key questions, designed to investigate various aspects of the participants' experience on the method used in the study. The interview schedule was organised logically, with questions addressing different dimensions of listening comprehension and the influence of the new method. The interview session lasted for 90 min to ensure a comprehensive exploration of the method. The qualitative analysis involved coding themes related to the participants' challenges, and experiences in adopting new methods in enhancing listening comprehension The researchers randomly chose fifteen students in the experimental group and asked five common questions to each of them. To the first question (What are the factors that obstruct you from understanding the listening materials or audio track?) Eight students said that the speed of the speaker was the main obstacle they had and others added that cultural use of idioms and phrases stands as a big barrier to understand the audio material. To the second question (*Do you find it difficult to understand different inputs from radio, lectures, storytelling and English songs?*) most of the students responded that they can follow the words in the audio, but they find it difficult to arrive at the overall meaning of the content. When they are not able to understand the pronunciation of keywords, they tend to lose interest in listening to it. To the third question (*Can you focus on the lengthy audio without any difficulty?*) many students gave negative responses and stated that they get easily distracted when listening to extensive listening materials with too much information. They were not able to remember all the data they received when answering the comprehension questions. To the fourth interview question (*Does external disturbance distract you from listening?)* many students answered yes and stated that they were not satisfied with the learning environment, as they couldn't get enough time to practise listening activities during their lab hours. To the final question (*Does continuous feedback emotionally affect your improvement listening skills?*) maximum of the students responded that negative feedback creates depression and anxiety towards listening so that they lose confidence which affects other language skills.

With further discussion, the students conferred that self-phased learning, created a convenient environment for them to undertake the test and correct the mistakes themselves. Enabling them to reattempt the test till they get full marks, indirectly stimulated their self-motivation to take the upcoming listening activities. The researchers identified that technological platforms created autonomy and developed self-efficacy of the learners.

The qualitative analysis involved coding themes related to the participants' challenges, and experiences in adopting new methods in enhancing listening comprehension. The participants' responses were systematically categorised into various themes related to the challenges in understanding listening materials. The positive outcomes of the thematic analysis are evident in a comprehensive understanding of participants' experiences. For the first question on factors hindering comprehension, three themes "speaker-related challenges" like the speed of the speaker; "Vocabulary" complexities in language and "cultural idioms" influence of cultural nuances are analysed. In the second question, under the theme "understanding different inputs" subthemes like following words but struggling to arrive at the overall meaning and impact of pronunciation are extracted. In the third question focussing on the theme of "focus on lengthy audio" subthemes like exploring challenges in maintaining focus and the impact of information overload on memory retention are explored. For the fourth question on the theme of "External disturbance and Learning Environment" subthemes of distraction due to external factors and participant dissatisfaction with the learning environment are analysed. For the final question based on the theme of "emotional impact of continuous feedback" subthemes like negative feedback leading to emotional distress and broader impact on confidence and language skills are analysed. This structured approach allows for a nuanced understanding of challenges and provides valuable insights for targeted interventions and support strategies in language education

After the conversation with the experimental group, it was deduced that the following remedial variables may be used to overcome some of the listening skill development challenges:

1. Native vocabulary: Idioms and Phrasal verbs.
2. Collocations
3. Native pronunciation: Connected speech
4. Cultural vocabulary.
5. Extensive listening with general questions and Intensive listening with detailed questions.
6. Discourse markers and connectors
7. Fixed and Semi-fixed expressions

Addressing the research questions

RQ1. How to enhance students' predicting skills pertaining to the context they listen to and score better in the listening tests by utilizing the top-down approach?
According to the findings, the top-down approach combined with a blended modal successfully helps the students to predict the context and answer the comprehension question. The pre-existing knowledge gained through peer discussion in face-to-face classrooms helps them to guess the vocabulary pertaining to the context and score good marks in their listening comprehension exercise. Additionally, they are able to predict all possible words related to the context, which they are not able to listen clearly in the audio, due to the native accent or speed of the speaker.

RQ2. Does technology integrated into the language classroom assist students in enhancing their listening skills at their own pace with a blended learning approach?
Integrating technology inside the classroom was considered an effective choice for the students. When ESL learners attended the listening comprehension exercises in the absence of teachers at their own pace during the online session, they felt very

comfortable working on their mistakes and correcting themselves. This motivated the students to do more listening exercises without anxiety.

At the end of this experimental research, it was determined that a top-down process with the support of a blended model significantly enhanced the listening skills of the ESL students. This research primarily focussed on enhancing listening skills with the support of the learning management system (LMS) as listening comprehension includes identifying different sounds, rhythms, and intonation and assimilating them with emotions and then processing the content to understand the information. To achieve these components ESL learners should have the knowledge of both linguistic and non-linguistic elements [22] states that "the process of listening comprehension tasks is always accompanied with anxiety. Listening anxiety not only affects the results of listening comprehension, but also listening ability. Some research shows that in the low-anxiety classroom environment, listeners participate actively and effectively." The findings of this research demonstrated that the top-down processing with LMS acts as an effective strategy for motivating students to control their anxiety and focus more on the comprehension exercise. Both the teachers and students benefit from the strategy. The strategy provides a flexible environment to the students where they can listen to exercises from any place and at any time.

Further, the findings of the research specify that students need some external motivation and encouragement in the language classroom to enhance active listening and technology-integrated classroomsa remains more effective than traditional classrooms. From analysing the responses to the questionnaire, the findings showed that students are more favourable towards self-paced learning with technology than getting feedback from their language teachers [23]. In the same way, the top-down approach helps the students to activate their schema in understanding the information and answering the comprehension questions. Based on the findings, the researchers concluded that the suggested technique has a beneficial effect on the students' listening abilities. The study results and the semi-structured interview indicated that most students have a wide acceptance to adopt a new strategy to improve their listening. Additionally, the researchers came out with some difficulties the students have in understanding the content of the audio track and suggested some measures by recommending certain topics to enhance listening skills. The study results may also be useful to ESL teachers and curriculum developers to include the course requirements and technological support that helps the students enhance their language skills and abilities.

Limitations of the study

The scope of the present investigation was limited to the difficulties endured by pre-final year Engineering graduates in undertaking listening tasks. The researchers suggest that the approach and methodology can be implemented with ESL learners at the beginner level to teach listening skills.

Scope for further study

Further studies should use a variety of online teaching platforms, as well as different age groups and strategies and also on other language skills.

Ethics statements

Consent was obtained from participants through Google Forms along with the questionnaire used for the study and the data was fully anonymized.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

U. Sujatha: Conceptualization, Methodology, Writing – original draft. **V. Rajasekaran:** Validation, Supervision, Writing – review & editing.

Data availability

The data that has been used is confidential.

Acknowledgement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Appendix

Questionnaire

A five-point scale questionnaire containing the following statements was distributed to the samples in order to assess the learners' challenges in developing their listening abilities.

Table 1
Classification of questionnaire items to determine the difficulties in developing listening skills.

S.No	Statements
1	It is tough for me to predict the content of the listening material before listening.
2	It is difficult for me to relate to the earlier and later parts of the listening content.
3	I have problems verifying whether I get the gist of the entire content of the audio material while listening.
4	When listening to comprehension materials, I experience difficulty to recognize the main idea of the text.
5	While listening, I find it challenging to infer the meaning of new vocabulary by connecting it to existing ones.
6	After listening to the content, I cannot arrive at the overall summary of the whole content.
7	I cannot follow the necessary information in the audio when the speaker speaks too fast.
8	I lose my focus on listening when I do not understand the pronunciation or accent of the audio.
9	I may find it helpful if I have a clear knowledge of the content beforehand to predict which portions of the listening text, I can't hear clearly
10	I find it challenging to recall the meanings of unfamiliar terms.
11	The anxiety towards listening to new or unfamiliar information obstructs me from understandingz what I hear.
12	Sometimes it is difficult to track the answers to the given questions from the audio.
13	I lose track of the audio when I concentrate on each and every single word and phrase.
14	While listening although I don't understand some data, prior knowledge about the content helps me to understand the content and answer the comprehension questions.
15	I feel difficult to answer the comprehension questions when doing the listening task.
16	I can follow the individual words of the audio but not the overall content.
17	I cannot understand the new phrases that have different intonations.
18	Self-paced learning does not boost my confidence or minimize my stress level.
19	Integrating technology in listening activities did not help me to increase autonomy and self-paced learning.
20	I could not evaluate my knowledge and listening skills when practising listening tasks.
21	Listening to the same audio repeatedly does not help me to understand different grammatical structures and unfamiliar phrases.
22	Virtual learning helps me to process and retain information by myself.
23	I get distracted when I focus on unfamiliar stress and intonation.
24	Cultural difference hinders me from understanding the context and different accents of the listening material.
25	Learning and training in different settings increased monotony.

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Update

MethodsX
Volume 12, Issue , June 2024, Page

DOI: https://doi.org/10.1016/j.mex.2024.102681

MethodsX 12 (2024) 102681

Contents lists available at ScienceDirect

MethodsX

journal homepage: www.elsevier.com/locate/methodsx

Corrigendum

Corrigendum to "Optimising listening skills: Analysing the effectiveness of a blended model with a top-down approach through cognitive load theory" [MethodsX 12 (2024) 1–9/102630]

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The authors regret "As per the policies of our institution, the research guide must assume the role of the corresponding author for any research conducted under their guidance. Unfortunately, by mistake, my research scholar Ms Sujatha U had listed herself as the corresponding author.
I kindly request your cooperation in adopting the changes to make V. Rajasekaran: rajasekaran.v@vit.ac.in as the corresponding author"
The authors would like to apologise for any inconvenience caused.

DOI of original article: 10.1016/j.mex.2024.102630
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https://doi.org/10.1016/j.mex.2024.102681

Available online 27 March 2024