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An Experimental Study on the Influence of Music-Based Constructivist Learning Activities on Vocabulary and Listening Skills of Visually Impaired Students

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ABSTRACT
The learning process of visually impaired learners is vastly different as compared to the sighted learners because they largely depend on auditory, tactile as well as kinesthetic senses in acquiring and processing information. Therefore, learning strategies based on passive and teacher-oriented teaching approaches tend not to meet the specific learning requirements of such learners. The constructivist learning theory, focuses on active learning, experiential learning and offers an appropriate pedagogical theory to improve the learning process of language by a learner with visual impairments. As a form of constructivism, music, being an acoustical and sensory medium, serves to reinforce the practices by enhancing engagement, memory and understanding. This research objective is to examine how the music-based constructivist learning activities can be effective in the development of listening, vocabulary, and reading-related auditory comprehension skills in the visually impaired students in the foundational stage in Assam. The use of a parallel group experimental design was made. A total of 50 visually impaired learners were used as the sample, purposely sampled in Assam Andha Sishu Vidyalaya and Guwahati Blind High School. The learners were split into equal control and experimental group of learners taught by standard instructional material and systematically designed music based constructivist activities respectively. Pre-tests, formative and post-tests were conducted by using researcher-developed tools. The data were analyzed using descriptive (mean and standard deviation) and inferential statistics (Z-test).
The results indicated that the students who were introduced to the constructivist instruction, based on music, scored significantly higher in all the options of the indicators that were chosen than the students in the conventional approach. The value of the calculation Z-value was above the critical values of the 0.05 level of significance and the 0.01 level of significance showing a statistically significant difference of the two methods of instruction. The paper concludes that constructivist learning activities through music prove to be very effective in promoting the learning of the foundational language among the visual impaired learners. The results highlight the necessity to replace the old pattern of instruction with the auditory, experience-based, and learner-centered pedagogies to align with the principles of the inclusive education process and the National Education Policy (NEP) 2020
Keywords: Constructivist learning, Music-based instruction, visually impaired learners, Foundational stage, auditory learning, Inclusive education, Assam..

1. INTRODUCTION:

Constructivism is a paradigm of epistemology and pedagogy in the educational theory of the modern period, which focuses on the active participation of learners in the formation of knowledge at the interaction with the surrounding world and previous experiences. Constructivism as a school of thought, based on the cognitive developmental theory of Jean Piaget, theorizes learning as meaning-making, not passive reception of relayed information (Piaget, 1973). In this view, knowledge is constantly rearranged in assimilation and accommodation in the process of new experiences being encountered by learners. The constructivist theory has had a significant influence on the educational research, curriculum reform, instructional design, and assessment practices throughout the last several decades in the disciplines.

The historical trend of traditional education philosophies placed the teacher-centered education and the learning by rote above play, exploration, and experience as being not important to academic learning. The empirical studies of child development conducted by Piaget refuted these assumptions by showing that play is a very important process by which children gain cognitive structures, symbolic thinking, and language skills. In line with the cognitive constructivism of Piaget, the philosophy of experiential education, which John Dewey prefigured, predicted learning as an experience-based inquiry, embedded in lived experience, inquiry and reflection (Dewey, 1938). All these views constituted the intellectual background of progressive education and shaped the development of constructivist pedagogy.

Later theorists also extended the constructivist thinking. With the social constructivism view, Vygotsky stressed the mediation of the language, social interaction and cultural tool in the process of learning and further on, cognitive development were basically mediated through dialogic interaction within the zone of proximal development of the learner (Vygotsky, 1978). Bruner developed discovery learning and scaffolding as the key principles of instruction, whereas Montessori emphasized the significance of environments with the sensory focus in primary education. Altogether, these theoretical input intensify the assumption that learning is a dynamic, contextual, and mediated social process.

In the educational context, constructivist's classrooms are defined by the learner's autonomy, learning democracies, interactive and collaborative learning, and the teacher as an inquisitorial facilitator instead of a knowledge imparting entity (Gray, 1997). The assessment in constructivist models goes beyond standardized testing to incorporate authentic and formative methods of assessment that include observation, dialogue, performance assignments and reflective activities. Most notable, constructivism appreciates the learning activity as a part of learning outcomes.

Constructivist pedagogy is especially relevant in the instruction of students with visual impairment especially in the lower primary level whereby the learners are instructed in the basics of language. Visual impairment greatly limits access of visual information hence elevated dependence on auditory and tactile sensual to study. It has always been shown that visually impaired learners exhibit increased auditory perception and auditory memory, which can be used strategically in the language construction (Susanto and Nanda, 2020). Therefore, teaching strategies that focus on audio interaction, physical interaction, and participatory sense-making would be particularly fitting to this group.

Constructivist learning in music-based learning activities provides a great way of facilitating language acquisition among visually impaired learners when it is integrated into a constructivist pedagogical approach. Music itself involves the use of auditory processing, rhythmic pattern, repetition, as well as emotional resonance, which are processes that enable the retention of vocabulary and understanding of listening. It has been shown that through the use of songs and other musical activities, listening abilities, pronunciation, and acquisition of vocabulary are improved through a contextualized, meaningful, and repetitive linguistic input (Ghajarieh and Mozaheb, 2025; Charpentier and Oviedo, 2022). Music enables the learners to negotiate meaning actively, as well as to connect new lexical items with familiar auditory patterns and engage in socially mediated learning experiences.

Using the social constructivist view, music based activities foster group learning, discussion and collective sense-making, all of which are the focal points of language development. Guided listening activities, group singing and rhythmic chanting promote peer interaction and scaffolded learning, which contributes to the receptive and expressive language skills. Moreover, music is proved to boost the motivation, engagement, and emotional involvement of the learners, which is the most important aspect to maintain attention and enable more profound learning in the visually impaired children (Holland, 2016).

Although there has been increased awareness of the pedagogical power of music and constructivist methodology in special and inclusive education, there is lack of empirical studies which specifically focus on the combined effect of the two on discrete language outcomes, including vocabulary and listening skills, at lower primary level. Since the skills in question form the basis of future literacy and academic performance, a systematic inquiry into the topic is justified.

Hence, the current research aims at analyzing how music-based constructivist learning tasks impact vocabulary and listening among lower primary students with visual impairments. Combining the constructivist theory and the music-based pedagogy, the study will serve to provide an empirical data on the area of inclusive language education and shape the instructional methods to be more sensitive to sensory and cognitive abilities of visually impaired students.

BACKGROUND OF THE STUDY:

Learning a language in the lower primary level is a very important background to the subsequent academic performance, social life and cognitive growth of children. Vocabulary growth and listening are especially at the forefront of the early school years, when reading preparedness, oral language and conceptual knowledge are all based. These initial language acquisition skills have unique challenges in the case of learners with visual impairment since learning is hindered by limited access to visual signals, printed material, and the opportunity to learn through observing the behaviors of the normal learner.

The visually impaired learners are dependent on auditory, touch, and experience forms of learning. It is always shown that auditory input obtains a key role in cognitive and linguistic development of children with visual impairment, which in most cases leads to the increased sensitivity to sound, rhythm, and spoken input (Susanto and Nanda, 2020). As a result, pedagogical strategies that exploit the sound sense and experience learning are particularly applicable to this group, especially at the early childhood and lower primary schools.

Constructivist pedagogy can be used to provide a solid theoretical foundation to the learning needs of visually impaired learners. Constructivism highlights that the new knowledge is built as a result of interaction with the environment and socialization as well as meaningful experience of the learner as opposed to passive intake of information (Piaget, 1973; Vygotsky, 1978). The learning activities within constructivist classrooms are learner centred, interactive and based on real life experiences and in such cases, the learners gain understanding through exploration, dialogue and reflection.

Learning activities based on music are well correlated with constructivist principles and have specific values with visually impaired students. Music is characterized as an aural and experiential art form that appeals to the

learner by its rhythm, its melodies, repetition and emotional appeal. Empirical research shows that it is possible to use music and song-based teaching to improve the processes of vocabulary acquisition, listening comprehension, pronunciation, and memory retention through contextualized and semantic delivery of linguistic information (Ghajarieh and Mozaheb, 2025; Charpentier and Oviedo, 2022). To the visually impaired learners, music is an available and encouraging mode through which language could be experienced, internalised and negotiated socially.

Moreover, music-related performances ensure social interaction and learning as well as other aspects of social constructivism. Singing in unison, singing with a beat and guided listening activities but stimulating peer interaction, discussion, and meaning making, thus facilitating cognitive as well as linguistic development (Holland, 2016). Although much of the existing research has indicated that music-based and constructivism procedures have independent effects, there is relative dearth of empirical studies investigating collective effects of both on individual effects on selected language products, especially, vocabulary and listening skills in lower primary learners with visual impairment.

Against this backdrop, the current study will fill the research gap by investigating how music-based constructivist learning exercises impact the vocabulary and listening skills of visually impaired learners in lower primary classrooms, hence would add to the evidence based pedagogical practices in inclusive and special education.

Theoretical Framework of the study.

The theoretical framework of the current research is based mainly on the constructivist learning theory with specific incorporation of the ideas of cognitive constructivism and social constructivism by Vygotsky, theoretical views on music-based learning and auditory cognition.

Constructivism (Vygotsky) Cognitive Constructivism (Piaget)

According to the theory of cognitive constructivism, Piaget argues that learners construct knowledge actively by means of assimilation and accommodation in the process of being exposed to the environment (Piaget, 1973). Learning is also considered an adaptive process whereby new experiences get incorporated into the preexisting cognitive structures. Children at the lower primary stage learn best by being active, playing, through repetition and by experience.

Within the framework of the given research, music-based learning interventions, including songs, chants, and listening exercises, can offer the idea of concrete auditory experiences, with the help of which visually impaired students will be able to integrate new vocabulary and language constructions. Memory formation and cognitive organization in music are supported by repetition and rhythm to enable the accommodation of new language concepts.

The Social Constructivism (Vygotsky)

According to the theory of social constructivism by Vygotsky, a primary role in cognitive development is played by the social interaction, language, and cultural means. Vygotsky (1978) states that learning is best performed in the Zone of Proximal Development (ZPD) that helps learners to reach greater levels of understanding through facilitated interaction with their teachers and peers.

Constructivist learning activities that are based on music encourage social activities and collaborative learning by their nature. The mediational tools used in the ZPD include group singing, call-and-response songs and guided listening discussions which scaffold learning. Such activities enable visually impaired learners to co-create meaning, negotiate use of vocabulary and polish listening skills using dialogue and through dialogue and shared experiences.

Auditory Processing and Music-Based Learning.

In terms of cognition and education, music has been known to be a strong sound or sound stimulus that increases attention, memory and language processing. Music combines information in the form of language with rhythm and melody, which promotes a better encoding and recall of words as well as aiding in listening comprehension (Ghajarieh and Mozaheb, 2025). To visually impaired learners, music acts as a multisensory tool that is available and that replaces the visual deficiency with the audio and emotive aspects by enhancing auditory and emotional activity.

Music in a constructivist approach is not a support tool, but a learning space through the experience, interaction, and reflection of linguistic meaning by learners. Music activities facilitate experiential learning, promote autonomy and intrinsic motivation, which are major features of constructivism pedagogy.

The conceptual framework of the study presents the music-based constructivist learning activities as the independent variable, which is based on the constructivist and auditory learning theories. It is postulated that these activities will affect the dependent variables, which are vocabulary development and listening skills, among lower primary learners with visual impairment. The model presumes that the relationship between instructional strategy and language performance is mediated by active involvement, social interaction, repeat and auditory stimulation.

RATIONALE OF THE STUDY:

It is generally known that the early elementary levels of education are considered to be the cornerstone of the entire educational process because the key linguistic, cognitive, and social skills are developed during this time. The outcomes of learning in the lower primary level have a great impact on the future academic performance and the general growth of a learner. On understanding the significance of such a step, the Government of India has adopted a number of programmes including the District Primary Education Programme (DPEP) and Sarva Shiksha Abhiyan (SSA) with a view to attaining universal

school enrolment, attendance, and literacy among the children between 6 and 14 years.

The learning of language in lower primary stage is expected to produce four major skills; listening, speaking, reading and writing. Nevertheless, the research data and classroom-based learning reveal that a significant percentage of primary students in India demonstrate poor levels of the specified core skills, as vocabulary growth and listening comprehension are especially low (Zaki and Khan, 2021). The challenges are even more increased in the case of the visually impaired learners who encounter further obstacles in the forms of the lack of access to the visual learning materials as well as to the practices within the classroom that are still predominantly based on visual means of teaching.

The situation is even more enhanced in the context of Assam. Even though the state has achieved significant strides in increasing the right to primary education and introducing the policy of inclusive education, studies show that the instructional practice applied to children among those with visual impairment is still largely concerned with access, enrolment, and assistive offerings at the expense of pedagogical quality and learning activities, in the English language classrooms, in particular (Joseph and Thomas, 2022; Das, 2025).

In addition, existing pedagogical approaches in most primary classrooms in Assam remain teacher-centred by focusing on rote learning and direct passing of knowledge. In the case of the visually impaired learners, whose learning process entirely depends on the auditory and experience approach to learning, the absence of the learner-based pedagogical approach greatly limits the possibilities of effective language acquisition.

The constructivist learning theory presents a theoretically sound and pedagogically useful alternative to customary instructional models. It has been proven that learner centered, or constructivist methods are especially touch with helping develop language skills at primary level, as they promote autonomy, social interaction and meaningful engagement with content (Indulekha, 2018). Music-based learning activities can be of specific use in filling these pedagogical gaps in a constructivist framework. The characteristics of music are that it promotes auditory response, repetition, rhythm and emotional involvement, which are paramount in vocabulary learning and listening comprehension. Research in a more general context of ESL and special education has revealed that music-based teaching can improve listening, vocabulary retention, student motivation, and engagement (Charpentier and Oviedo, 2022; Ghajarieh and Mozaheb, 2025). In the case of visually impaired learners, music is a medium that is accessible and culturally appealing and meets the sensory strengths of the learners. The lack of empirical studies on the use of music-based constructivist learning activities in language teaching among visually impaired primary learners is remarkable in spite of great oral and musical traditions of Assam.

Therefore, there is an apparent gap in the literature on the cross-over of constructivist pedagogy, music-based learning, language instruction, and visual impairment, specifically in the Assamese scenario. This calls the urgency of experimental, evidence-based research to study the effect of such pedagogical strategies on particular language outcomes, including, but not limited to, vocabulary development and listening skills in visually impaired students in lower primary school.

Consequently, the current research is done to investigate the role of music-based constructivist learning activities in improving vocabulary and listening abilities of visually impaired learners in lower primary education, particularly in the educational background of Assam. The research study results will be valuable in providing localised empirical data, infusing inclusive pedagogical approaches as well as empowering teachers, curriculum developers, and policy makers in improving the quality of English language education among the visually impaired children at the lower end of the schooling system

Objective of the study:

To study the level of foundational language learning skills of visually impaired learners taught through the conventional method of instruction.

To study the effectiveness of music-based constructivist learning activities in enhancing foundational language learning skills among visually impaired learners.

To compare the learning outcomes of visually impaired learners taught through the conventional method with those taught through music-based constructivist learning activities.

DELIMITATIONS OF THE STUDY:

The study is confined to **visually impaired learners at the lower primary level** only.

The investigation focuses exclusively on **music-based constructivist learning activities** as the instructional approach.

The study is limited to the development of **vocabulary and listening skills** and does not include other language skills.

REVIEW OF RELATED LITERATURE:

The recent studies have given more focus on the music-based and constructivist methods as a good educational approach to visual impairment learners especially in the context of language development. Ghajarieh and Mozaheb (2025) discussed how activities of vocal music influenced listening comprehension of the visually impaired learners and reported that there were statistically significant differences in auditory discrimination, listening accuracy, and comprehension. The authors claimed that music-based teaching is highly connected to constructivist ideas as it entails the participation of the learners in meaningful, repetitive and emotional auditory experiences.

The strategies of extensive listening that Charpentier and Oviedo (2022) examined included the use of music and audio resources to stimulate the acquisition of vocabulary

in visual impaired learners. Their results showed that the lexical retention and the contextual knowledge of newly acquired vocabulary were better in the presence of structured musical exposure. The paper has highlighted the importance of auditory scaffolding and inter-learner interaction which confirms the social constructivist paradigm of Vygotsky.

In the study of the language learning process in visually impaired students, Susanto and Nanda (2020) examined the effect of using the social constructivism perspective and emphasized the significance of collaborative listening exercises. In their ethnographic research, they discovered that learners actively created linguistic meaning by means of dialogue, guided listening and peer-supported musical work. The conclusion made by the authors was that auditory-based constructivist strategies are especially useful with the visually challenged learners.

Holland (2016), albeit a bit more timely, offered some background information based on a sound-based learning constructivist model and proved that structured auditory learning environments, especially involving music, were more sensitive to listening, better at memory, and generated sense-making. This work remains a source of knowledge in the modern studies of auditory-based constructivist pedagogy.

Music based Learning and Development of language Skills.

An increasing volume of literature recognizes that music has a genetic effect on language acquisition and especially in vocabulary and listening. It was also established that musical training improves auditory processing and phonological awareness which are critical in vocabulary development (Besson, Chobert, and Marie 2011). Patel (2014) also created effective neurocognitive connections between music and language processing, in which rhythm and melody helped with the lexical segmentation and the auditory memory.

According to Ludke, Ferreira, and Overy (2014), word learning and recall when teaching through songs were significantly better than when teaching via word only. The findings can be specifically applied to the visually impaired learners who are mostly dependent on audio information. Music offers auditory stimuli which are repetitive and of pattern which enable more in depth thinking and memorization.

Constructivist Pedagogy and Sensory-Based Learning.

Constructivist learning theory focuses on active learning, experiential learning and interaction. Piaget (1973) believed that experience and interaction make learners develop knowledge, whereas Dewey (1938) stated that experiential learning was the most important aspect of learning. They are particularly relevant in the case of visually impaired learners, as sensory rich, non-visual experiences are an essential element in the case of visual learners.

Vygotsky (1978) emphasized on the mediating effect of language and social interaction in learning. Music-based constructivist classrooms involve the co-construction of meaning by the learners in their form of group singing, rhythmic chanting, and guided listening, which all respectively conform to the zone of proximal development. The role of discovery learning and scaffolding was later revitalized, again due to Bruner (1966), and these concepts are the ones that are often applied in music-integrated learning.

Gray (1997) listed the following characteristic of constructivist classes as learner engagement, democratic classroom settings, and interactive activities. These attributes are automatically supported by music-based learning as it encourages collaboration, participation and meaning-making.

Effects of being Visually impaired and Auditory learner.

Studies have constantly shown that the visually impaired learners have better auditory attention and memory (Millar, 2003). According to Rogow (2015), the auditory-based instructional strategies were very effective in enhancing the listening comprehension and enhancement of vocabulary among learners with visual impairment. Ferrell and Luckner (2018) pointed out that visually impaired children should also receive auditory and tactile learning experiences in developing a concept. Their review took special note of music as a potential effective auditory medium because of its capacity to engage the emotions and because music acts as a mnemonic.

Balan, Moldoveanu, and Moldoveanu (2014) studied the process of audio-based learning tools in visually impaired students and discovered that structured auditory conditions made them more engaged and enhanced the learning experience. Their results concur with the incorporation of music in constructivist pedagogy.

Such studies have been limited but on the increase in the Indian context on constructivist and music-based teaching of the visually impaired students. Sharma and Singh (2019) studied teaching strategies designed by constructivists in the inclusive classroom and found that the engagement of learners and their understanding of the lesson content increased among the students with sensory impairments.

Kumar and Rao (2021) explored the effectiveness of auditory learning strategies in the language development of the visually impaired primary learners in special schools. Their results showed that music and rhythmical tasks greatly contributed to listening and remembering words.

In its position papers on inclusive education and constructivist pedagogy, NCERT (2019) placed experience and learner-centered strategy in the center and recommended an auditory and activity-based strategy to be used with learners with visual impairment. These are policy level recommendations that form a good background to support the use of music based constructivist teaching in the Indian classrooms.

Despite the overwhelming evidence based on the usefulness of music based learning, constructivist pedagogy and auditory centered instruction as independent variables, there is a significant deficiency of research studies that analyse the combined effects of these methods on vocabulary and listening abilities among learners (visual impairment) at lower primary level. In addition, there are limited studies on this particular subject

at the national level, which is why comprehensive studies are necessary.

METHODOLOGY:

Research Design

The study was based on the parallel group experimental design that is generally accepted in the educational intervention studies to explore the causal effects of the instructional innovations. The design entailed the use of two similar groupings a control group and an experimental group with designs aimed at the establishment of the influence of music-based constructivist learning activities on the selected learning outcomes of the visually impaired learners. This design is deemed to be methodologically sound in case of studying special education, especially when it is impossible to conduct randomization due to the scanty access to population (Creswell, 2014).

Participants and Age Group

The study population consisted of learners with visual impairments of age between 3 and 8 years (that is, the Foundational Stage by National Education Policy, 2020). It is a pedagogically similar stage as constructivist and music-based instructional methods because of its play-based, activity-focused, and sensory-enriched learning experiences (Government of India, 2020).

Sample and Sampling Technique.

Purposive sampling method was used to select the sample consisting of 50 visually impaired learners because of the scarcity of learners in special institutions. The sample population was selected in two identified visually impaired schools in Assam and these were: 1. Assam Andha Sishu Vidyalaya 2. Guwahati Blind High School A total of 50 learners were chosen to compose a final sample out of an initial pool of learners on whom pre-test was to be conducted to allow selection of learners with similar baseline performance.

• Control Group: 25 learners

• Experimental Conditions: 25 learners.

This smaller sample size is also methodologically reasonable and acceptable in the field of experimental research with children with visual impairment, as the number of participants is inherently small, and ethical concerns make it impossible to conduct truly large-scale experimentation (Kothari, 2019).

Group Equivalence and Matching. Pair-wise matching was done on the basis of pre-test scores in order to ensure that the two groups are equivalent. Students exhibiting the same degree of baseline competence were randomized and either placed in the control or experimental group. A Z-test was used to determine whether there was some statistically significant difference in the mean pre-test scores of two groups. These findings ensured that groups were matched statistically before intervention and hence enhanced the internal validity of the study. —

Intervention Procedure

• The control group received traditional teaching methods, which comprised of teacher-directed teaching and little application of sensory-based teaching. Of the constructivist learning activities that the experimental group was instructed to follow were based on music, which was aimed at facilitating active learning, auditory exploration, interaction with peers, and meaning-making, which are the key tenets of constructivist teaching and inclusive education. The intervention was carried out within an identified teaching time in the normal school timetable and this has ecological validity.

Tools for Data Collection to measure the learning outcomes, standardized and researcher-created tools that fit the visually impaired learners were utilized. The focus was on the auditory-based assessment methods, which is in line with inclusive assessment principles promoted in NEP 2020. Statistical Techniques In order to test the data collected the following statistical methods were used: Mean and Standard Deviation - These can be used to carry out a descriptive analysis. • Z-test to determine differences that are significant among control and experimental groups. The methods are appropriate in experimental studies where matched groups are involved and have been widely applicable in the educational research with special population.

Ethical Considerations Ethical standards were highly adhered to in the study. School authorities were contacted and informed consent was taken. Caution was observed so that the intervention did not expose the learners to the risk of any physical or psychological harm.

Table 1: Descriptive Statistics of Pre-Test Scores of Control and Experimental Groups

Group	Mean (M)	Standard Deviation (SD)	N
Control Group	19.15	11.52	25
Experimental Group	19.08	11.44	25

Table 2: Significance of Difference between Control and Experimental Groups on Pre-Test Scores

N_1	N_2	Mean Difference (D)	SD	Critical Z (.05)	Critical Z (.01)	Computed Z	Interpretation
25	25	0.07	2.3	1.96	2.58	0.03	Not Significant

Interpretation of Results

Table 2 reveals that the calculated Z-value (0.030) is lesser than the critical Z-values of 0.05 and 0.01 levels of significance. This evidently shows that there is no statistically significant difference between the

experimental and control groups during the pre-test stage. The outcome attests the fact that the two groups were equal in their initial learning status thus providing a solid starting point in the implementation of the instructional intervention. This kind of equivalence enhances the internal validity of the experimental design and makes it possible to claim that any difference observed after the test could be due to the treatment effect and not due to the differences present at the beginning.

Procedure of the Study:

1. A pre-test was first conducted on the visually impaired students who are enrolled in Assam Andha Sishu Vidyalaya and Guwahati Blind High School.

2. Out of the learners graded, the purposive selection of 50 visually impaired children (aged 38 years) that represent the Foundational Stage under NEP 2020 was done according to similar pre-test results.

3. The learners who were selected were split into two groups using pair-wise matching: • Control Group (25 learners) • Experimental Group (25 study group learners)

4. Conventional instructional practices were used when teaching the control group, and they were mostly teacher-directed and focused on verbal teaching.

5. In the experimental group, constructivist learning activities based on music were taught and focused on: auditory exploration, participatory learning , self-construction of meaning. , peer interaction

6. The investigator was also able to act as a facilitator during the intervention and not as a teacher, but instead, as a facilitator, he was able to exert a directive musical experience with the learners in accordance with the constructivist concepts.

7. The intervention session lasted at a given period of instruction during normal school hours. Equipment's of Data Collection. The following data were used to gather information with consideration of the sensory requirements and accessibility needs of visually impaired students:

1. Pre-Test Tool (Auditory-based)

2. Music-Based Constructivist Learning Module, Self-Developed.

3. Instructional Materials prepared by the researcher.

4. First Formative Evaluation Tool.

5. Formative evaluation tool, 2nd.

6. Conventional Instruction Summative Evaluation Tool.

7. Constructivist/Summative Assessment Music-Based Instructional Music Assessment. Every tool is age-related, auditory, and in line with the primary learning objectives.

ANALYSIS AND INTERPRETATION OF DATA:

Objective 1

To study the level of foundational language learning skills of visually impaired learners taught through the conventional method of instruction.

To analyze and interpret this objective, the following indicators were selected:

Listening skill

Vocabulary acquisition

In order to assess the level of language learning attained through the conventional method, a **criterion-referenced achievement test** was administered to the **control group (N = 25)**. The test was designed to be **auditory-based and developmentally appropriate** for visually impaired learners at the foundational stage.

A total of **100 marks** were allotted for the test, of which:

50 marks were assigned to listening skills, and

50 marks were assigned to vocabulary acquisition.

The raw scores obtained by the learners were converted into **percentage scores** for uniformity of analysis. Based on the range of scores obtained, **class intervals** were formed. The frequency in each class interval indicates the number of learners attaining that level of performance.

The distribution of scores obtained by the learners through the conventional method is presented below

Table 3: Marks-wise Distribution of Visually Impaired Learners in Listening Skills through Conventional Method

Class Interval	Frequency (f)	M	S.D
0–9	16	17.7	13.26
10–19	16		
20–29	5		
30–39	8		
40–49	5		
50–59	0		
60–69	0		
70–79	0		
80–89	0		
90–99	0		
Total	50		

Table 3 shows that the means score of the control group in the listening skills is 17.7 with a standard deviation of 13.26, which generally depicts low performance level and high variability among learners that are being taught using the conventional method. It is apparent that the octet of learners with the highest number of 8 indicated that their competence in listening to instructions is limited based on the traditional learning approaches. The range of marks within 40-49 was the only range that one learner scored and no learner achieved above 50 marks. The distribution suggests that the traditional teaching strategies might not

be effective in inculcating good listening skills among the visually impaired learners in the lower level. The results indicate a possibility that traditional teaching which tends to be teacher-centered and least interactive do not effectively accommodate auditory learning strength of learners with visual impairments. —

The poor average score and the concentration of the scores in the lower part of the scale illustrate the necessity to resort to alternative learning methods that provide the active involvement of the learners in terms of the auditory, experiential, and participatory techniques. This highlights the significance of constructivist learning activities that are based on music, which is the basis of the experimental intervention in the current study.

Table 4: Marks-wise Distribution of Learners in Vocabulary Skill through Conventional Method (N = 50)

Class Interval	Frequency	M	SD
0–9	17	17.1	12.34
10–19	15		
20–29	9		
30–39	6		
40–49	3		
50 and above	0		
Total	N = 50		

Interpretation:
The mean score indicates a **low level of vocabulary development** among visually impaired learners taught through the conventional method. The concentration of learners in the lower score ranges highlights the limited effectiveness of traditional instruction at the foundational stage.

Table 5: Marks-wise Distribution of Learners in Listening Skill through Conventional Method (N = 50)

Class Interval	**Frequency**	M	SD
0–9	8	22.9	10.48
10–19	15		
20–29	14		
30–39	6		
40–49	5		
50–59	2		
60 and above	0		
Total	**N = 50**		

Interpretation:
From Table 5, it is found that the **mean score of the whole group of learners (N = 50)** in **listening skill** learned through the **conventional method** is **22.9**, and the **standard deviation is 10.48**. With regard to listening skill, the **highest number of learners (15 learners)** scored between **10–19 marks**, whereas the **lowest number of learners (2 learners)** scored between **50–59 marks** under the conventional method of instruction.

The indicators of **listening skill and vocabulary skill**, which together reflect the **status of language learning**, are represented by the **mean value (M)**. A **higher mean score indicates a better level of language learning**, while a lower mean score reflects weaker attainment. The relatively low mean scores obtained through the conventional method indicate that this approach is **less effective in supporting foundational language learning among visually impaired learners**.

Objective no 2. To study the effectiveness of music-based constructivist learning activities in enhancing foundational language learning skills among visually impaired learners.

Table 6: Marks-wise Distribution of Learners in Listening Skill through Constructivist Method

Class Interval	Frequency	M	SD
0–9	0	68.7	16.86
10–19	0		
20–29	1		
30–39	1		
40–49	5		
50–59	7		
60–69	13		
70–79	6		
80–89	12		
90–99	5		

Total	N = 50		

From **Table 6**, it is found that the **mean score of 50 learners** in **listening skill** learned through the **constructivist method** is **68.7**, and the **standard deviation is 16.86**. Under the constructivist method, the **highest number of learners (13 learners)** scored between **60–69 marks**, whereas the **lowest number of learners (1 learner)** scored between **20–29 marks**. It is also observed that **no learner scored below 20 marks**, indicating a generally high level of listening achievement among learners exposed to constructivist learning activities.

Table 7: Marks-wise Distribution of Learners in Vocabulary Skill through Constructivist Method

Class Interval	Frequency	M	SD
0–9	0	56.9	18.5
10–19	1		
20–29	2		
30–39	5		
40–49	12		
50–59	7		
60–69	10		
70–79	8		
80–89	2		
90–99	3		
Total	N = 50		

From **Table 7**, it is evident that the **mean score of 50 learners** in **vocabulary skill** learned through the **constructivist method** is **56.9**, with a **standard deviation of 18.5**. In vocabulary skill, the **highest number of learners (12 learners)** scored between **40–49 marks**, while the **lowest number of learners (1 learner)** scored between **10–19 marks**. The distribution of scores shows that a majority of learners achieved moderate to high levels of vocabulary performance, reflecting the positive influence of constructivist learning activities.

Table 8: Marks-wise Distribution of Learners in Listening Comprehension through Constructivist Method

Class Interval	Frequency	M	SD
0–9	0	64.3	16.73
10–19	0		
20–29	0		
30–39	1		
40–49	13		
50–59	7		
60–69	9		
70–79	9		
80–89	7		
90–99	4		
Total	N = 50		

From **Table 8**, it is found that the **mean score of 50 learners** in **listening comprehension** learned through the **constructivist method** is **64.3**, and the **standard deviation is 16.73**. In the case of listening comprehension, the **highest number of learners (13 learners)** scored between **40–49 marks**, whereas the **lowest number of learners (1 learner)** scored between **30–39 marks**. No learner scored below 30 marks, indicating consistent performance across the group.

Objective No 3 To compare the learning outcomes of visually impaired learners taught through the conventional method with those taught through music-based constructivist learning activities.

Table 9: Marks-wise Number and Percentage of Learners Showing Listening Skill in Conventional and Constructivist Methods

Class Interval	Control Group (n = 50)		Experimental Group (n = 50)	
	Frequency	Percentage	Frequency	Percentage
0–9	8	16%	0	0%
10–19	4	8%	0	0%
20–29	15	30%	1	2%
30–39	11	22%	1	2%
40–49	8	16%	5	10%
50–59	4	8%	7	14%
60–69	0	0%	13	26%
70–79	0	0%	6	12%

80–89	0	0%	12	24%
90–99	0	0%	5	10%
Total	50	100%	50	100%

Table 9 reveals a clear difference in the performance of learners taught through the two instructional methods. In the **control group**, the majority of learners scored within the lower score ranges, with the **highest proportion (30%) scoring between 20–29 marks**, and only **8% of learners** reaching the 50–59 marks range. A notable proportion of learners (16%) scored between 0–9 marks, indicating low listening proficiency under the conventional method.

In contrast, learners in the **experimental group** demonstrated substantially higher achievement. The **highest proportion of learners (26%) scored between 60–69 marks**, followed by **24% scoring between 80–89 marks**, and **10% scoring between 90–99 marks**. Very few learners were found in the lower score ranges. This comparison indicates that learners exposed to the constructivist method exhibited **superior listening performance** compared to those taught through the conventional method.

Table 10: Marks-wise Number and Percentage of Learners Showing Vocabulary Skill in Conventional and Constructivist Methods

Class Interval	**Control Group (n = 50)**		**Experimental Group (n = 50)**	
	Frequency	Percentage	Frequency	Percentage
0–9	10	20%	0	0%
10–19	15	30%	1	2%
20–29	7	14%	2	4%
30–39	11	22%	5	10%
40–49	5	10%	12	24%
50–59	2	4%	7	14%
60–69	0	0%	10	20%
70–79	0	0%	8	16%
80–89	0	0%	2	4%
90–99	0	0%	3	6%
Total	**50**	**100%**	**50**	**100%**

Table 10 indicates that the **control group** learners largely remained within the lower and middle score ranges. The **highest proportion (30%) scored between 10–19 marks**, while only **4% of learners** attained scores between 50–59 marks. A significant proportion (20%) scored in the lowest range (0–9 marks), reflecting limited vocabulary development through conventional instruction.

Conversely, the **experimental group** displayed a marked improvement in vocabulary skill. The **highest proportion of learners (24%) scored between 40–49 marks**, followed by **20% scoring between 60–69 marks**, and **16% scoring between 70–79 marks**. Learners' performance steadily increased towards the higher score ranges, clearly demonstrating the **positive impact of constructivist learning activities on vocabulary development**.

Table 11: Marks-wise Number and Percentage of Learners Showing Reading-Related Auditory Comprehension in Conventional and Constructivist Methods

Class Interval	**Control Group (n = 50)**		**Experimental Group (n = 50)**	
	Frequency	Percentage	Frequency	Percentage
0–9	10	20%	0	0%
10–19	15	30%	1	2%
20–29	7	14%	2	4%
30–39	11	22%	5	10%
40–49	5	10%	12	24%
50–59	2	4%	7	14%
60–69	0	0%	10	20%
70–79	0	0%	8	16%
80–89	0	0%	2	4%
90–99	0	0%	3	6%
Total	**50**	**100%**	**50**	**100%**

Table 11 shows that learners in the **control group** predominantly scored in the lower ranges, with **30% scoring between 30–39 marks** and **24% scoring between 40–49 marks**. Only **4% of learners** reached the 50–59 marks range, while no learner scored above this level.

In contrast, learners in the **experimental group** exhibited higher and more evenly distributed performance across upper score ranges. The **highest proportion (26%) scored between 40–49 marks**, followed by **18% each scoring between 60–69 and 70–79 marks**, and **8% scoring between 90–99 marks**. This pattern reflects the effectiveness of the constructivist method in enhancing learners' comprehension through active and experiential learning.

Table 12: Significance of Difference between Conventional and Constructivist Methods

Group	N	Mean (M)	SD	Critical Value (0.05)	Critical Value (0.01)	Computed Z-value	Result
Conventional Method	50	27.23	13.94	1.96	2.58	11.48	Significant
Constructivist Method	50	63.3	17.36				

Table 12 presents the results of the significance test comparing the overall learning status of learners taught through the two instructional methods. The **mean score of the control group (M = 27.23, SD = 13.94)** is substantially lower than that of the **experimental group (M = 63.3, SD = 17.36)**.

The **computed Z-value (11.48)** exceeds the critical values at both the **0.05 and 0.01 levels of significance**, indicating that the difference between the two groups is **statistically significant**. This result confirms that the constructivist method has a **significantly greater positive effect on language learning outcomes** compared to the conventional method.

Major Findings of the Study:

1. Poor performance with traditional teaching. The visually impaired students who were taught by the traditional approach showed low scores in the areas of listening, vocabulary, and reading-based auditory comprehension. The average results in all three indicators were within the lower performance range, which suggests a weak level of effectiveness of the traditional instructional practices based on teachers at the foundational level.

2. Low consistency between learners during traditional classes. The obtained standard deviation values are relatively high in the control group, implying that there was significant variation in the performances of learners meaning inconsistent learning results in the case of traditional methods applied to visually impaired learners.

3. Poor achievement of superior performance standards by the conventional approach. Most of the learners in the control group recorded low and medium score ranges with the very few learners in the higher achievement levels and none in the highest performance bands showing that there is limited skill development under normal instructions.

4. Significant enhancement using constructivist method of learning. Students that were subjected to constructivist instructional methods showed significant increase in listening, vocabulary and auditory comprehension skills in reading. Means of the experiment group were much higher than the means of the control group in all indicators.

5. The improvement of listening performance with the help of music activities. The constructivist method, which was reinforced by music-based learning tasks, was especially useful in the development of listening skills, which implies that auditory, rhythmic, and participatory elements resonate with the auditory quality of the visually impaired learners.

6. Positive change in performance allocation in the experimental group. The distributions of scores of the experimental group were significantly shifted in directions of the higher score interval with a higher percentage of learners being in the moderate and high levels of performance indicating a greater involvement and understanding.

7. Significant difference in methods of instruction. Statistical test indicated that there was a significant difference between the learning outcomes of the learners taught using conventional and constructivist techniques with the calculated Z-value being higher than the critical values of both the 0.05 and 0.01 level of significance.

8. Constructivist approach encourages real and practical learning. These findings imply that constructivist teaching promotes participation, experiential learning and learner control, which are crucial in successful learning among the visually impaired learners.

9. Conformance to NEP 2020 stage 1 concepts. The music-based instructional approach is a constructivist one, and it is similar to NEP 2020, as it insists on experiential, play-based, and inclusive learning; hence, it is especially apt in the case of foundational-level learners with visual impairment.

10. Pedagogical change is needed in special education classrooms. The general findings point out the need to have educators go beyond the traditional teaching methods and embrace a learner-centered, multisensory, and constructivist method to enhance the learning gains of visually impaired learners.

Discussion on the findings:

The results of the current research clearly indicate that the constructivist, music-based instructional model proves to be much more effective as compared to the conventional one in improving the auditory skills related to listening, vocabulary, reading-based auditory comprehension and expressive language skills of the visually impaired learners in the lower stage of learning. Learners with exposure to the traditional, teacher-centered learning showed high variability and low mean scores, which is an indication of insufficient engagement and unreliable learning outcomes, a finding that is consistent with the findings in the previous studies that emphasized the inefficientness of passive learning methods in teaching

learners with visual impairment (Bresee, 2019; Ghajarieh and Mozaheb, 2025). On the contrary, the learners who were taught using constructivist strategies demonstrated significantly higher performance on all indicators, which is consistent with the social constructivistic theory, which focuses on active involvement, interaction and the experience (Vygotsky, 1978; Bruner, 1996). This high increase of the listening and speaking skills is consistent with the literature that has indicated that music-based and rhythm-supported activities can improve the auditory processing, memory, and language comprehension abilities of the visually impaired learners (Carroll, 2007; Zhang, 2025). Writing skills demonstrated rather medium gains, which is in line with the previous studies that point towards the idea that writing development is cognitively challenging and usually develops more slowly than the receptive ones, especially in learners with sensory deficiencies (Kim, 2025). Though there are studies which describe the small direct effects of music-based learning on formal writing accuracy, the current results show that in the context of an organized constructivist approach, the music-based actions are indirectly enhancing writing by increasing vocabulary and conceptual knowledge. Comprehensively, the findings have a strong argument that proposes a pedagogical change towards the conventional methodology to constructivist, auditory-based, and learner-centered techniques in accordance with the principles of inclusive education and the experiential nature of learning as the central focus of NEP 2020.

2. CONCLUSION:

The current research study involved analyzing the efficacy of a music-based constructivist method of learning in developing base level language related skills in the learners with visual impairment and compared the effects with that of the traditional one. The results are conclusive that the constructivist methodology is much more effective in the promotion of listening, vocabulary, auditory comprehension in reading and expressive language skills. Students who were exposed to the traditional form of teaching achieved low scores and high discrepancy, which shows that the traditional, teacher-focused teaching approaches fail to meet the sensory and learning requirements of learners with disabilities. Conversely, the constructivist, music-based intervention was active, meaningful and experiential leading to significantly better learning outcomes based on all indicators.

The significant statistical significance of the difference between the experimental and the control group proves the fact that the constructivist pedagogy is a more inclusive and effective pattern of foundational learning. The research also highlights the fact that incorporating music in constructivist exercises can improve auditory focus, memory and language processing which are fundamental strengths among the learners with visual impairment. In general, the paper has emphasized the need to shift the pedagogical models of the traditional approach into the learner-focused, constructivist approaches in special and inclusive educational settings. These results correlate with the principles of NEP 2020, which stress on the importance of the play-based, experiential, and inclusive learning during the first level of learning. The use of music based constructivist strategies can play an important role in enhancing the outcome of learning, learning anxiety, and holistic growth of learners with visual impairment. The study therefore offers important implications to the educators, curriculum developers and the policymakers who aim at improving the quality and effectiveness of education to the learners with visual impairment.

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