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IMPACT OF ACOUSTIC BRODCASTING SYSTEM:AN ODISHA GOVERNMENT INITIATIVE TO TEACH SCIENCE SUBJECT

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Abstract

The Covid-19 pandemic pursued the countries all over the world to impose total lockdown in terms of all kind of economic, social cultural and educational activities all over the world, including a developing country like India. Stakeholders in the education sector decided to establish protocol for controlling the virus's spread and to fight this combat various media platforms and communication technologies were adopted as an alternative to teach science in schools. In Odisha, the state government adopted Acoustic Broadcasting System (Radio) as a medium of teaching science subject. For the present study a sample of total 120 students collected through purposive sampling to know the impact of acoustic broadcasting system in teaching science to school students .
The current study found a substantial variance in noise levels between 45 and 75dB, compared to an OSD of 20 to 50dB, indicating a slight disorder in the sound level, which is natural to human hearing. According to 70 percent of the data collected, there is a disconnect between what is printed on the board and what is spoken orally. This also highlighted that instructors need to enhance their radio communication skills, as everything written on the board (equations and symbols) in the Radio Studio must be communicated vocally as well.
Keyword: Acoustic broadcasting, Covid-19, Odisha, Teaching Science, Radio

Introduction

The COVID-19 pandemic has been one of the biggest disruptions to education the world has ever known affecting more than 90% of the world student's population. Many countries turned to online based distance education to ensure that learning never stops.
However, some 826 million students (50%) kept out of classrooms by the pandemic do not have access to a computer at home, according to a recent study by the UNESCO Institute of Statistics (UIS) and the Teacher Task Force. Around 706 million students lack internet access and 56 million live in areas not covered by mobile networks. Many countries had to quickly find effective solutions and television and radio have proven to be a good alternative in a context where online learning is not possible.
UNESCO and the European Broadcasting Union (EBU) organized a virtual workshop on Wednesday 27 May inviting representative from national broadcasters to present the programmes and innovations put in place as well as discuss the lessons learned on the use of radio and television-based distance learning. As online classes fail to reach most students due to poor mobile connectivity, the Odisha government has turned to radio to reach out to children in remote areas of the State. The School and Mass Education Department will launch classroom teaching through All India Radio**.**

Technological divide

Considering this technological divide, most countries around the world are also using television and/or radio-based programmes to implement distance education. Africa seems to be the most active in the efforts to leverage either TV or radio (70%), some combining both (34% of countries), while Europe and North America seems to be using less radio than other regions, yet very active in deploying TV-based distance education programmes.
The value of educational broadcasts through television and radio also goes beyond the needs of students alone. In some countries, these programmes are conceived to provide intergenerational learning, including in local languages. They also include issues such as health and psychosocial well-being, both of which are important in supporting populations affected by the threat of COVID-19.
However, the setting-up and use of as tools to provide distance education present major challenges, such as:

- The non-availability of educational content in audio-visual formats
- Difficulties of countries to produce content in quantity and quality in short time
- The absence of pre-existing partnerships for the design and broadcasting of the educational content.
- The need for communication and collaboration between education specialists and the professionals of the audio-

visual sector for the production of educational programmes.

- The lack of the knowhow and expertise in monitoring and evaluation of learning …

The aim of the present study was to establish a clear assessment of the impact of Radio (non-visual) teaching on students of class 1 to VIII in the schools of odisha as against the conventional teaching and practical system of teaching science.

Review of literature

Educational broadcasts for primary, secondary, and university students have been transmitted on radio.These programmes are primarily concerned with curriculum-based content, but they also attempt to assist students and teachers by offering up-to-date content knowledge, novel teaching approaches and methods, and the filling of curricular gaps. There are other programmes designed specifically for teachers and teacher educators (Nambhar Archana,2012).

These are designed to introduce teachers to new teaching methods, curricular revisions, and advanced subject, among other things. This service must be meticulously tailored to the rapid changes in the field of education as a result of technical and psychological impacts. Teachers have to be oriented to these changes and their knowledge in content and methodology need to be updated. Hence radio broadcast for teachers have gained much importance today than before. In many states like Kerala, Gujarat, Maharashtra, Assam and Tami, Nadu Radio stations have organized Radio-cum-correspondence (Bosch Andrea, Rhodes Rebecca, Karjuki Sera,2012).

Various projects to employ radio in English learning have also been implemented in various states. Between 2001 and 2004, the 3-year bilingual interactive radio course "Aamhi Ingraji Shikto / We Learn English" was introduced in Pune and Mumbai to teach spoken English to Marathi speaking students. From 2005 to 2008, each of the three years of the radio course featured a reading and writing component. From 2009 forward, All India Radio has been broadcasting "Aamhi Ingraji Shikto" to all Pune Zilla Parishad elementary schools. "Aao Angrezi Sikhe / We Learn English," the Hindi version of this course, was televised in the following states: • Delhi (2002–2004) • Jharkhand (many districts) • Rajasthan (two districts) • Uttarakhand (four districts) (2 districts) • Uttar Pradesh (India) – 2008–2010 (1 district) This project's outcome was really encouraging (Lalima Tripathi,2013).

Millions of students have listened to this radio course in various states of India. As the radio course was broadcast during the school-day, and sometimes repeated at night by All-India Radio (AIR), many adult listeners also benefitted from the broadcasts. The AIR Listenership Survey in 2002 estimated that about 200,000 urban and rural people, outside the formal school system, were listening to the CLR radio lessons in Pune District alone, making it one of the most popular radio programmes in Pune District. The impact of this English Radio Course on Listening and Spoken English Skills of Students was seen as follows-

• The radio course had a significant impact on the listening and speaking English skills of a large number of students who listened to the English radio course programmes. Students in rural and urban Class 5 who had just started learning English and listened to the 90 radio lessons scheduled for Class 5 spoke considerably more English than Class 7 students from the same schools who had not been exposed to the radio programme.

• After three years of radio courses, rural Class 7 students were not only able to speak English more fluently, but they were also able to write better than rural Class 9 students who had not been exposed to the radio programme. Teachers were overjoyed that the radio classes aided them in teaching spoken English, and that the lessons met a genuine need to boost their students' confidence and speaking skills

• Teachers were extremely appreciative that the radio lessons helped them to teach spoken English, and that the lessons fulfilled a real need to improve the confidence and abilities of their students to speak English.

• Based on the significant impact of the radio course on the English skills of Class 4 rural students studying in Pune district government schools, a 2011 independent evaluation recommended that this 3-year course should be broadcast throughout Maharashtra state In the present era of technology Radio has also modified its form. Its scope is widened by accessibility on mobiles, online channels; face book links of radio channels and programmes, as well as interactive radio. This has added to the benefits of Radio as an educational tool in country like India.

Research Methodology

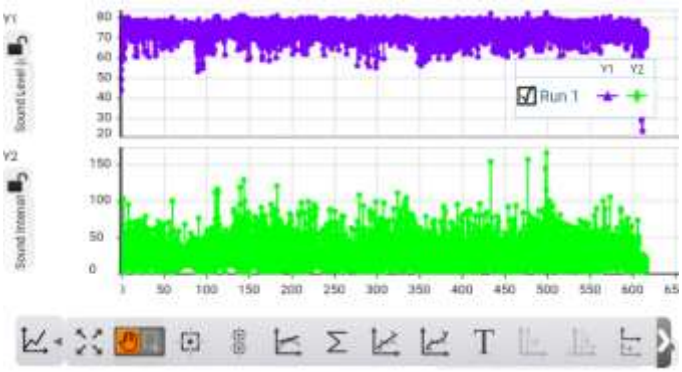
Sample of total 120 students from 10 government schools collected to know the impact of Acoustic broadcasting on learning science subject. Schools were selected through purposive sampling to know the impact of Radio teaching on the subject of science at school students.

The location of a radio studio within the study area was chosen to determine the acoustic impact on science education. For that site, smart phones with SPARKvue software were utilized to record the data. SPARKvue.In an easy-to-use, icon-based user interface, the software integrates multimedia education, real-time data collecting, and advanced scientific analysis tools. SPARKvue is a mobile application developed by SPARKvue (apps) is compatible with all PASCO PASPORT sensors and interfaces (SPARKvue User’s Guide). Technology-based scaffolding, location-aware functionality, visual/audio representation, digital knowledge-construction tools, and digital knowledge-sharing mechanisms are among the design aspects seen in science learning apps.

The 120 students were engaged on a WhatsApp platform to see if the teacher's equations and symbols written on the board (in the Radio studio) were truly communicated verbally via the acoustic broadcasting technology.

Data Analysis and Interpretation

Researcher used the SPARLvue mobile app that helped in graphical representation of frequency, sound level, and sound intensity variations. In the following graph Y1 and Y2 represent sound level and sound intensity respectively while the x-axis represents the frequency. The graph shows the frequency, sound level and intensity of acoustic broadcasting regarding the science teaching. The frequency variation ranges between 0 and 615 Hz, 55 to about 80 dB of sound level and 0 to about 65µW/m2 of sound intensity. This suggests anarchy in the standard sound level of Apartments and Homes, approximated to be between 35 and 45dB (McIwain, 1973) and (Ahmet, 1994).



It was observed that the studio data was recorded to sound intensity variation between 0.0 and 1.0 µW/m2 within a frequency range of 0 and 640 Hz. The sound level variation from the studio recordings ranges from 20 to 50 dB. This sound level variation is within the range of normal sound level of Radio studio, 25-30 dB (McIwain, 1973) and (Ahmet, 1994). This therefore validates the recording capacity of the Mobile Phones used for acoustic data collection in this research.

Table 1,2 shows the response of students regarding the quality of sound and concept understanding .According to 58.4% student sound quality of teaching programs were good whereas for 41.6% it was bad. Whereas the 25% students said that they were able to understand the science based concept whereas 75% said they were unable to understand the science concept and practical. Radio has the advantage of permitting the teaching of subjects in which classroom teachers are untrained or lacking certain knowledge sets. Another benefit for multi-grade classroom use is that radio can provide instruction for one group of students, whilst the teacher is occupied with another. Table 1 gives the tabular representation of this data.

Table 1 Acoustic broadcasting effective

		FREQUENCY	PERCENTAGE
	YES	**50**	**41.6%**
	NO	**70**	**58.4%**
	TOTAL	**120**	**100%**

Table 2 shows that the 25% students said that they were able to understand the science based concept whereas 75% said they were unable to understand the science concept and practical. Because it can cross huge distances and reach a big number of people, radio is a mass media that can be used to strengthen an education effort. No other medium has the educational capacity to stimulate and develop abstract thinking in its audience, as well as to enrich and activate the listener's imagination. But it also has its limitations also and maybe that is the reason why it was not found very effective by students.

Table2 Able to understand science concept

		FREQUENCY	PERCENTAGE
	YES	**30**	**25%**
	NO	**70**	**75%**
	TOTAL	**120**	**100%**

Conclusion

According to the results of the acoustic analysis, the sound level in the studio (originating studio data) is around the boundaries of normal studio sound levels of between 25 and 30 decibels, but the studio may not be free of internal or external noise that affects the acoustics quality at the receivers' end. To this aim, it is recommended that sound in the studio be sufficiently loud and that the studio be clear of echoes or other interfering reflections in order to effectively decrease reverberation. To increase the acoustics quality at the receivers' end, the studio should be free of unwanted resonance, according to the recommendation. Based on the studied sampled data, it has been determined that Radio studio instructors need to strengthen their radio communication abilities so that everything printed on the board is likewise delivered orally. This is to demonstrate for effective note taking by the student.

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