Effectiveness of Interactive Radio Instructions on Junior Secondary School Students' Interest and Retention in Rivers South-East Senatorial District: Counselling Implications

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Abstracts

The study examined the effectiveness of Interactive Radio Instructions on Junior Secondary school students' interest and retention in Rivers south –east senatorial district, Rivers state. 10,026 Junior Secondary Schools II students formed the population. Krejcre and Morgan (1970) sampling size table was used to arrive at 371 students, while a multistage sampling technique was used to sample 371 students (male 190 and female 181) for the study. The demography of the sample was 161 rural and 210 urban students. Students' Interactive Radio Instructions Inventory SIRII was developed by the researchers and used for data collection. The questionnaire was given face validity by experts of Educational Technology and Measurement and Evaluation from the Department of Educational Foundations, Rivers State University Port Harcourt. SIRII was tested and a reliability of 0.71 was obtained using Kuder-Richardson Formula (KR-21). The findings from the study revealed that Interactive Radio Instructions were effective on students' interest and retention. The findings also revealed that there was no significant difference between the impact of Interactive Radio Instruction on Retention between rural and urban students. Thus, the authors recommend the incorporation of Interactive Radio Instructions (IRI) into the curriculum as one of the strategies for reaching out to Junior Secondary School students. Also, counsellors should counsel parents to provide radios and enabling environments that will afford their children the opportunities to be involved in the Interactive Radio Instructions (IRI) programme, which is an effective tool for learning.

Keywords: **Radio, Interactive, Instructions, Interest, Retention, Effectiveness**

Introduction

The desire to give better access to education and to ensure quality instruction delivery led to the adoption of different programs and strategies to ensure equitable accessibility of education globally. With the introduction of Information and Communication Technology (ICT) accessibility and quality of educational delivery was greatly improved. Radio instructions was not left behind as ICT also support internet driven radio broadcasting, making radio instructions viable educational medium equivalent to a formal school (Ugochukwu, & Ezeah, 2020). the use of radio instruction as a means of instruction predates Nigeria independence. When British Broadcasting Corporation approved the transmission of instructions on English Language via radio to Nigeria and other West African under British colony in 1933. The programme was encouraging, so when the Nigeria Broadcasting Service (NBS) was established in 1951 they cue into the exciting programme. This was also followed with the establishment of schools broadcasting units by the regional governments. The most notable among them was the establishment of Western Nigeria Broadcasting Services in 1959 which happened to be the first television station in Africa (Adegbija, Fakomogbon, Adebayo, 2013, P.278). At this point, Radio Instructions were a significant medium of instructions as many Nigerians glue to their radio set to improve their English language capabilities.

Radio instruction experienced innovation that brings in the interaction component in radio broadcasting. Several studies were carried out in Zambia, India, and Somali, (Lubinda, 2011; Bakshi & Jha, 2013; Dirir, 2011) to ascertain the level of impact on education and the results showed that the impact of radio education using the interactive radio instruction model was of various degrees. In Nigeria radio broadcast is widely used in dissemination of information and on civic education because 60% of people in Nigeria including those in the rural areas and students listen to radio due to the use of radio supported mobile phones (Obey, Emuru, & Itam, 2023). It is this wide coverage that make radio instruction the most accessible and reliable of civic education. Interactive radio instruction is now popular in Nigeria, judging from the Nomadic radio school commission by the Federal Government and all other radio instructions programmes organized by various radio houses across Nigeria.

Interactive Radio Instruction is seen as an approach that can support the conventional classroom. The World Bank agreed with this opinion given the high penetration of radio in many African countries Still, it is important to note that in spite of its successes in Africa and internationally, IRI generally remains outside the conventional school system ((World Bank, 2005 p.viii). Interactive Radio Instructions (IRI) is a distance education system that combines

radio broadcasts with active learning to improve educational quality and teaching practices (Ejodamen, & Raymond, 2018). IRI has been in use for more than 25 years and has demonstrated that it can be effective on a large scale with the lowest in terms of cost of education (The World Bank,2005, Save, 2017, p.6).

Interactive Radio Instructions is a dual-audience approach in the context of the COMPASS project, involving direct instructions to students while modelling teaching strategies and classroom organization techniques for teachers. The primary objective of the IRI and face-to-face programs was to improve the quality of classroom instruction with an emphasis on active learning and student-centred methodologies (Solomon, & Sankey, 2010 p. 15). In real sense, Interactive Radio Instructions is basically a radio intervention aimed at reaching the unreachable and providing support in their studies.

There are empirical studies on the use of Interactive Radio Instruction, one of these studies is the study of Odey, Emuru, and Itam (2023) which examines radio as a pedagogical approach and students‟ academic performance in Nigerian universities. The findings revealed that radio is very effective as a pedagogical tool in education at the tertiary level. Ugochukwu, and Ezeah (2020) examined the impact of National Commission for Nomadic Education (NCNE) Interactive Radio Instruction (IRI) titled Radio School on primary one nomadic pupils in the North West geopolitical zone of Nigeria. The findings indicate that pupils in the experiment group scored higher in literacy, numerical and life skills than their counterparts in the control group. Based on these findings, the study recommends among others that the Federal, State governments should establish an AM Band Educational Radio Station to explore the potential of radio in terms of access and cost-effectiveness as panacea to the growing army of out of school children in Nigeria. The World Bank (2005) examined improving Educational quality through interactive radio instruction IRI in African, and the impact of IRI was high. This was based on data collected from a few regions in some countries in Africa. Solomon, and Sankey, (2010) studied interactive radio instructions: case study of Nigeria the results showed that performance of most of the first two cohort of pupils (COMPASS and LEAP cohorts) improved over time. Data gleaned from the questionnaires suggest very little changed in the environment of learning over the period of time pupils were tested. Factors associated with the pupils' personal lives such as language spoken at home, incidence of meals, sickness, and presence of radio in the home environment did not change over time. Similarly, factors associated with teachers, such as qualifications, gender, teacher experience, absenteeism, and training show no noticeable differences. Therefore, this subject

becomes an ongoing area where more information is needed to determine the viability and effectiveness of interactive radio instructions on students' performance, interest, and retention.

Students' interest is observed to have a significant role on the overall participation and performance of learners in a course. Mbaba, and Okwu, (2024 p.44) posited that one of the major intent for the use of presentation software is the capacity to engage and motivate learners' interest in learning. Interest becomes one of the factors in determining students' academic performance in a subject. But to Anigbo (2016), interest has to do with preparedness or mastery of a subject –matter background knowledge that can enable the learner to cope with further or next higher level of learning of the subject-matter or related learning. Mbaba, and Echeonwu, (2023 p. 20) stated that interest in most cases can be seen as a feeling or emotion that causes attention to focus on an object or a process. It is a mental state evoked by something like a quality, subject, or activity. It means to cause someone to become involved in something. Mbaba, Jimoh, and Bakori (2018 p.87) stressed that the interest of learners could be improved through appropriate teaching approaches or strategies. Interest in a subject is also seen as a reflection of what the students like doing with profound pleasure and enthusiasm. Students' interest can be a product of one activity or the other, interest can be emotionally or psychologically influenced. Thus, method and pedagogy can influence interest positively or negatively.

Students' retention is one of the variables that have been observed to be of great impact on how students learn. Retention can be observed as the ability to keep information that has been delivered through teaching in classroom and out of classroom and be able to recall it when it is required (Safo, Ezenwa & Wushishi, 2013). Students' retention may also be referred to as the capacity of a student to adequately sustain information given at any point in time and to deliver or apply it adequately when and where it is required. Students' retention is a process of determining how students' make progress in learning. (Gragg, 2019). Retention in a way is to determine the level of progress and capacity to give back what has been given to any one through teaching. Several kinds of literature have emphasized the place of interest and retention in and learning, therefore the use of IRI will have to capture students' interest to be able to effectively improve students' retention.

Statement of the Problem

The need for a shift from a teacher-centred mode of instruction to a learner-centred has been one of the main reasons for interactive radio instructions. It is assumed that Radio instruction

can support the regular classroom as a means of reinforcement in learning and enhancement of performance. Consequently, related literature explicates a paradigm shift from a stereotyped methodology to a more interactive mode in which radio instruction comes in. When radio instruction is properly utilized, it is expected that students' performance will be better in the various oral tests of language skills in English (Solomon, & Sankey), 2010). The use of IRI to support students learning and reaching the out of school has generated lots of research to ascertain its viability as an approach suitable for students learning.

The introduction of ICT, in education and the availability of internet and satellite enhanced radio programmes penetration in Nigeria embolden its usage in entertainment and education. Ghavifekr and Rosdy (2015) concur with the global notion of integrating digital wares in teaching and learning settings as a means for enhancing students' collaborative learning skills in varied sociocultural contexts. In light of these arguments, interactive radio instruction has kick-starts in several states in Nigeria and many other African countries are not left out. More so, the influence of Interactive Radio Instructions (IRI) on students' interest in learning had been identified through some studies (Krapp, Hidi & Renning, 2015; Yu-Ie, Chi-Hus, Chiny-yaw, 2011). However, with the use of Interactive radio instruction, it's not clear if IRI can enhance students' interest and retention in Rivers State. Howbeit, the research so far conducted on this subject has not provided consistent results to guarantee the use of IRI. Hence, it is not clear if interactive Radio Instruction influences basic education students' interest in learning and retention in any way. Thus, the need to study the effectiveness of interactive radio instructions on students' interest and retention in Rivers south-east senatorial district, Rivers state.

Purpose of the study

This study is aimed at identifying the effectiveness of Interactive Radio Instructions (IRI) on students' interest and retention in Rivers South-East, specifically, the study shall determine the:

1. the effectiveness of Interactive Radio Instruction on junior secondary school Students' interest in Learning
2. the effectiveness of Interactive Radio Instructions on junior secondary school students' retention;
3. the effectiveness of Interactive Radio Instructions on junior secondary school students' interest based on gender.

Research questions

The following research questions were formulated to guide the study;

1. What is the effectiveness of Interactive Radio Instructions (IRI) on junior secondary school students' interest in learning?
2. What is the effectiveness of Interactive Radio Instructions (IRI) on junior secondary school students' retention?
3. What is the effectiveness of Interactive Radio Instructions (IRI) on junior secondary school students' interests based on gender?

Hypotheses

The following null hypotheses were tested in this study at a .05 significant level

1. There is no significant relationship of interactive radio instruction between students' interest and retention among junior secondary school students in Rivers South-East senatorial district.
2. There is no significant difference in the effectiveness of Interactive Radio Instructions on retention between rural and urban students of Rivers South-East Senatorial District
3. There is no significant difference between the effectiveness of Interactive Radio Instructions on junior secondary school students' interests based on gender

Methods

This study adopted a descriptive survey in Rivers south-east senatorial district of Rivers State. The study was carried out on Junior Secondary two students (JSS II), the population of the students for the study were all 10,026 Junior Secondary School students in Rivers South-east senatorial district. Krejcre and Morgan (1970) sampling size table was used to arrive at 371 students, while multistage sampling was adopted. Simple random sampling was used to select 24 Junior Secondary Schools in Rivers south- east senatorial district, judgmental was used to identify students who had or are currently using Interactive Radio Instructions while convenience sampling technique was used to sample the 371 students (male 190 and female 181) from the sampled 24 junior secondary schools in Rivers south-east senatorial district for the study. The demography of the sample also includes rural and urban schools 161 students from rural schools and 210 from urban schools. Students' Interactive Radio Instructions Inventory (Questionnaire) was developed by the researchers and used for data collection.

The questionnaire has two sections, section A provides details on respondents' personal information and demography. The questionnaires was given face validity by experts of Educational Technology and Measurement and Evaluation from Department of Educational

Foundations, Rivers State University Port Harcourt. SIRI was tested among 30 students who were not involved in the study in Oyigbo metropolis, Rivers State, and a reliability of 0.71 was obtained using the Kuder-Richardson Formula (KR-21).

SIRE was administered to students who have been listening to radio instruction within Rivers South-East senatorial district. All the 371 questionnaire administered only were successfully retrieved from the respondents and used. The data collected were analyzed using mean and standard deviation to answer research questions while hypothesis one was tested with Pearson's Product Moment Correlation Coefficient PPMC and hypotheses two and three were tested using a t-test. A decision mean of 2.5 was used as the basis for decision-making.

Results

Research Question 1: What is the effectiveness of interactive radio instruction on junior secondary school students' interest in learning?

Table 1: Mean responses of students on the impact of interactive radio instruction on junior secondary school students' interest in learning

S/N	Items on interest	SA	A	D	SD	Mean	Std. D	Remark
1.	I am motivated to search for the details of the lessons on the radio	107	132	42	90	2.69	1.13	Agree
2.	A quick way of learning on the go	106	116	109	40	2.78	0.98	Agree
3.	The contribution and responses of other students have taken away shyness from me	110	99	78	84	2.63	1.13	Agree
4.	Students' interactions on the radio have improved my boldness and communication skills	77	98	158	38	2.58	0.93	Agree
5.	My learning culture has improved, curtsy of the challenges from students' interactions on radio	79	126	62	104	2.49	1.11	Disagree
	Grand Mean					**2.63**	**0.70**	**Agree**

Table 1 shows the mean responses of students on the effectiveness of Interactive Radio Instructions on Junior Secondary School students' interest in learning. The respondents agreed on the following items, that I am motivated to search for the details of the lessons from the radio (mean = 2.69, SD=1.13) and Quick way of learning on the go (M=2.78, SD=0.98) The contribution and responses of others students have taken away shyness from me (M=2.63, SD=1.13) and Students' interactions on the radio have improved my boldness and communication skills (M=2.58, SD= 0.93) Similarly, the respondents disagreed that 'my learning culture has improved curtsy of the challenges from students' interactions on the

radio (M=2.49, SD=1.11). The grand mean response of 2.63 is above the decision mean of 2.50 indicating the positive effectiveness of interactive radio instructions on junior secondary school students' interest in learning in Rivers South-East Senatorial District.

Research Question 2: What is the effectiveness of interactive radio instruction on students' retention?

Table 2: Mean responses of students on the impact of interactive radio instruction on students' retention

S/N	Items on interest	SA	A	D	SD	Mean	Std. D	Remark
1.	Interactive radio instruction gives me quick rehearsal for retention	94	124	78	75	2.64	1.07	Agree
2.	Interactive radio instruction is mostly used as a way of revision	79	109	32	151	2.31	1.21	Disagree
3.	I could attempt questions in examination on topics that were taught in the classroom and reversed through interactive radio instruction	111	115	73	72	2.71	1.09	Agree
4.	I can easily remember what was said during interactive radio instruction	122	69	68	112	2.54	1.23	Agree
5.	Interactive radio instruction has helped to improve my ability and performance in Civic and English language	74	91	119	87	2.41	1.05	Disagree
	Grand Mean					**2.52**	**0.60**	**Agree**

Table 2 shows students' responses on the effectiveness of interactive radio instruction on their retention. Table 2 above also presents the grand mean on the effectiveness of interactive radio instruction on students' retention (M= 2.52, SD=0.06 greater than 2.50 points of agreement. The result reveals that respondents agreed that 'Interactive radio instruction gives them a quick rehearsal for retention' at the mean response of (M=2.64, SD=1.07 I could attempt questions in the examination on topics that were taught in the classroom and reversed through interactive radio instruction (M=2.71, SD=1.09) and 'I can easily remember what was said during interactive radio instruction (M=2.54, = 1.23), in the same vein, the respondents disagreed that 'Interactive radio instruction is most used as a way of revision (M= 2.31, SD=1.21) and 'Interactive radio instructions have helped to improve my ability and performance in Civic and English language (M=2.41, SD= 1.05). So since the overall mean of the variables from item 1 to item 5 is 2.52, this means that Interactive Radio Instructions is effective on students' retention.

Research Question 3: What is the effectiveness of Interactive Radio Instructions on students' interests based on gender?

Table 3: Mean responses of students on the impact of interactive radio instruction on students' interest based on gender

S/N	Items on interest	Male, N = 190		Female, N = 181	
		Mean	**Std. D**	**Mean**	**Std. D**
1.	Interactive radio instruction gives me quick rehearsal for retention	2.79	1.08	2.58	1.17
2.	Interactive radio instruction is a way of revision	2.90	0.95	2.65	1.00
3.	I could attempt questions in examination on topics that were taught in the classroom and reversed through interactive radio instruction	2.81	1.11	2.45	1.13
4.	I can easily remember what was said during interactive radio instruction	2.67	0.89	2.48	0.96
5.	Interactive radio instruction has helped to improve my ability and performance in Civic and English language	2.55	1.15	2.42	1.07
	Grand mean	**2.74**	**0.65**	**2.52**	**0.73**

Table 3 shows the mean responses of students on impact of interactive radio instruction on students' interest based on gender. The table shows grand mean score of 2.74 for male students and 2.52 for female students. Since the grand mean scores of male and female students were above the decision mean of 2.50, it implies that Interactive Radio Instructions' effectiveness on students' interest based on gender is positive.

Hypotheses

Ho_1: There is no significant relationship between interactive radio instruction between students' interest and retention among junior secondary school students in Rivers South-East senatorial district.

Table 4: Result of the relationship between interactive radio instruction and students' interest and retention in junior secondary school students

Variables	Mean	Std. D	r-value	P-value	Remark
Students Interest	2.63	0.7	0.051	0.325	Significant and Positive Relationship
Students Retention	2.52	0.6			

Table 4 shows the result of the relationship between interactive radio instruction and students' interest and retention in junior secondary school students. The table reveals that there is no significant relationship between interactive radio instruction between students' interest and retention of junior secondary school students in Rivers South-East senatorial district (p-value = 0.325> 0.05). Hence, null hypothesis one is accepted at 0.05 alpha level.

Ho_2: There is no significant difference in the effectiveness of Interactive Radio Instructions on retention between rural and urban students of Rivers South-East Senatorial District

Table 5: Summary of t-test result on the impact of interactive radio instruction on retention between rural and urban students of Rivers Southeast senatorial district

Location	n	Mean	Std. D	Df	t-test	Sign	Remark
Urban	210	2.48	0.56	369	-1.422	.156	NS
Rural	161	2.57	0.65				

The above table shows the summary of the t-test result on the impact of interactive radio instruction on retention between rural and urban students of Rivers's southeast senatorial district. The mean and standard deviation score for urban students is 2.48 and 0.56 respectively, while the mean and standard deviation for rural students is 2.57 and 0.65 respectively. The t-test value of -1.422 and a significant value of .156> 0.05 at 369 degrees of freedom were also recorded. This result implies that there is no significant difference in

interactive radio instruction on retention between rural and urban students of Rivers South-East senatorial district. Therefore, the null hypothesis two was retained.

Ho3: There is no significant difference between the effectiveness of Interactive Radio Instructions on junior secondary school students' interest based on gender

Table 6: Summary of t-test result on the impact of interactive radio instruction on junior secondary school students' interest based on gender

Gender	n	Mean	Std. D	Df	t-test	Sign	Remark
Male	190	2.74	0.65	369	3.173	.002	Significant
Female	181	2.52	0.73				

Table 5 shows the summary of the t-test result on the impact of Interactive Radio instructions on junior secondary school students' interests based on gender. From the table, male students had mean and standard deviation scores of 2.74 and 0.65 respectively, while female students had mean and standard deviation scores of 2.52 and 0.73. The t-test value is 3.173 and the significant value is .002 <0.05 at 369 degrees of freedom. This indicates that there is a significant difference between the effectiveness of Interactive Radio Instructions on junior secondary school students' interest based on gender in favour of male students, hence the null hypothesis is rejected.

Discussions

The findings from the research questions addressed the effectiveness of Interactive Radio Instructions on junior secondary school students' interest in learning. The findings proved the high effectiveness of interactive radio instructions on students' interest. This is in agreement with Mbaba, et al., (2024), Mbaba, etal., (2023) and Mbaba, et al. (2018). These studies agree that students' interest is impacted when interventions such as presentation software, Open Educational Resources (OER) and multimedia elements respectively are used in the teaching and learning process. The outstanding difference between the related studies is that Interactive Radio is presented as a support instructional approach to conventional face-to-face classroom instructions.

Research 2 indicates interactive radio instruction has an impact on junior secondary school students' retention in learning. This result aligns with Ugochukwu, et al., (2020) who studied the impact of Interactive Radio instructions on achievement in literacy and life skills in Northern Nigeria among nomadic pupils. The experimental group's performance was higher

than the control group. This study is also in agreement with the following studies (Bashi, et al., 2013; Odey, et al., 2023; Solomon, et.al., 2010; Save, 2017) whose findings indicate a positive impact on the use of Interactive Radio Instructions (IRI).

The study tested the first hypothesis "There is no significant relationship of interactive radio instruction between students' interest and retention among junior secondary school students in Rivers South-East senatorial district" The results of the findings indicate that there is no significant relationship between interactive radio instruction between students' interest and retention among junior secondary school students in Rivers South-East senatorial district (p-value = 0.325> 0.05). And the results indicate that interest has no relationship with retention in learning when IRI is used. This finding is in agreement with (Emmanuel, et al., 2021; Safo, et al ., 2013). Whose studies did not find a relationship between student interest and retention. The retention capability can only be influenced independently, just as performance. While interest may join to drive the process of curiosity that may enhance interest, meaning that retention is not a product of interest but the approach or intervention used in teaching students.

This study also tested the influence of location on the effectiveness of IRI among junior secondary school students. The results indicate no significant difference in the effectiveness of Interactive Radio Instructions between rural and urban schools. This finding aligns with Ejodamen, and Raymond, (2018) whose study also affirmed that teaching intentions have no rural and urban influence on the learning process. Hypothesis three tested the significant difference between male and female interest using Interactive Radio Instructions. The findings revealed significant differences in favour of male students. One of the reasons for these results is that males are likely to have the inquisitiveness to listen, more so, there are more males with radio sets than female folk arguably. The study also aligns with other studies that confirm significant differences between male and female interest in the use of multimedia (Mbaba, et al., 2018). The general observation will be that Interactive Radio Instructions is worth using as a support program for basic education students.

Conclusion

The impact of interactive radio instruction was assessed, and the findings have shown that such intervention can enhance teaching and learning by enforcing retention. The findings also established that students' interests were enhanced, making the use of interactive radio instruction an approach needed for reaching the unreachable. On the influence of environment on the use of interactive radio instruction, the findings also confirmed that

location such as rural or urban has no clear influence on the use of interactive radio instructions. However, male students possessed higher interest when radio was used in teaching at the junior secondary schools.

Counselling Implications

From the above findings, there are several issues that counsellors will need to address for effective implementation of IRI at the basic education level. Thus, counselling implications may stress the following,:

1. Counsellors should counsel parents to provide radios and enabling environments that will afford their children the opportunities to be involved in the Interactive Radio Instructions (IRI) programme, which helps students learn effectively.
2. Guidance counsellors should interface with the Government to provide learning centres with audio facilities in Rivers State in rural and urban cities that students can visit during the Interactive Radio Instructions (IRI) to learn with others, which aid retention. Counsellors should be encouraged to be present in such learning centres to provide guidance to learners who are experiencing psychological issues in the centres.
3. Counsellors should also organize seminars, talk-shows on the advantages of the Interactive Radio Instructions (IRI) program in rural and urban cities in Rivers State.

Recommendations

Based on the findings of the study, the researchers made the following recommendations:

1. Incorporation of Interactive Radio Instructions (IRI) into the curriculum as one of the strategies for reaching out to Junior secondary school students;
2. The instructional programs that are aired through radio instructions should be monitored and evaluated by expert instructional designers;
3. Hence the use of Interactive Radio Instructions is confirmed to be impactful to users, experts should identify the topics and subject areas in which this approach can be used.

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