

Effectiveness of Radio Gema Edukasi Broadcast Program on The Improvement of Student Learning Outcomes in Public High Schools of Bandar Lampung During Covid-19 Pandemic Period

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Abstract

The reasearch aims to analyze the effectiveness of Auditory Intellectual Repetition learning model based radio broadcast program on News Items learning material to students of grade twelve public senior high school in Bandar Lampung during Covid-19 pandemic period. The research was conducted in November 2020 via online learning to 32 students of SMA Negeri 2 Bandar Lampung that represented 17 Public Senior high schools in the city of Bandar Lampung. The evaluation of the experimental study was conducted by using test apparatus through Google Form questionnaires. Professionals in design, media, and materials were involved in order to evaluate the quality of the learning media. The validity evaluation of each test questions is done by using Pearson Product Moment formula. The reliability was examined with Chi Square formula. Hypothesis was tested by using non parametric statistic of Wilcoxon Signed Rank Test. Certain adjustment needed to be made due to the current situation of Covid-19 pandemy. One of it is the way the researchers collect the data from the research subjects. Pre-test and post-test experimental design is used for the study. The result had given different scores on the pre-test and post-test finding with the post test scores exceeded of that in the pre-test. The test result of the hypothesys indicated differences on the effectivity of the students' study output after using the Auditory Intellectual Repetition study model based radio program by radio Gema Edukasi in Bandar Lampung. The N-Gain calculation had indicated a high effectiveness. This had shown that Radio Gema Edukasi broadcast was effective to increase the study output of auditive students in public senior high schools in the city of Bandar Lampung.

Keywords: radio broadcast program, radio streaming, learning source, Auditory Intellectually Repetition, learning outcomes.

1. Introduction

The development in technology and science and also information has made English to be something familiar and it has been primer to master English as an international language. Students need to be serious in English learning so that they can speak English well. The abilities need to master in English are listening, writing, and reading. English mastery of students can be seen from the study output. The evaluation results of English lesson of public senior high schools in Bandar Lampung also becomes one of the reference; based on the recent national exam scores that is from academic year 2018/2019.

The average score of all students of 17 public senior high schools in Bandar Lampung is 51,56 indicating alow marks in comparison to the minimum passing score of English lesson of 78. The low score indicates that the understanding of English lesson materials has not been met yet by the students. The lack of understanding on English lesson on twelve grade students of senior high schools will bring negative on their basic ability in using English since after finishing their senior high years the students will continue to higher

degree of education or to enter job field that might use English in the activities. The following is the scores of English national examination of public senior high schools in Bandar Lampung academic year 2018/2019:

Table 1. Scores of English National Examination of Public Senior High Schools in Bandar Lampung Academic Year 2018/2019:
(Source: Office of Education and Culture of Lampung Province)

No.	Schools	Science class	Social class	Mean	Rank
1	SMAN 2	77,52	55,55	66,54	1
2	SMAN 9	71,79	54,76	63,28	2
3	SMAN 1	65,70	53,84	59,77	3
4	SMAN 3	70,44	47,80	59,12	4
5	SMAN 7	64,76	47,11	55,94	5
6	SMAN 10	61,53	49,01	55,27	6
7	SMAN 5	56,96	48,01	52,49	7
8	SMAN 12	58,74	44,00	51,37	8
9	SMAN 14	57,77	44,03	50,90	9
10	SMAN 15	54,65	46,09	50,37	10
11	SMAN 4	58,97	41,56	50,27	11
12	SMAN 13	56,52	42,03	49,28	12
13	SMAN 16	51,80	39,37	45,59	13
14	SMAN 6	52,35	37,58	44,97	14
15	SMAN 8	45,61	37,89	41,75	15
16	SMAN 11	46,03	36,84	41,44	16
17	SMAN 17	39,78	36,68	38,23	17
Mean		58,29	44,83	51,56	

English was chosen as the research material in this study based on the consideration that the item that might be effective to reach by auditif audio media is foreign languages that stresses on listening. News Item was chosen because it is quite normal these days to listen or read mass media or online media and such lesson item often appears in TOEIC, TOEFL, and also IELTS that determine students' English mastery. News item is information about events or daily events that are considered important and worthy as a news (Husein dan Pulungan, 2017:1).

Prior research conducted in February 2020 on 34 students and 6 teachers of 6 schools; SMAN 1 Bandar Lampung, SMAN 2 Bandar Lampung, SMAN 4 Bandar Lampung, SMAN 7 Bandar Lampung, SMAN 14 Bandar Lampung and SMAN 17 Bandar Lampung revealed that teachers only use text books and modules as learning references. In addition, there are problems of lacking teaching references, students need more other study references to help them understand the lesson more and to overcome their learning difficulties, and then there's insufficient school facilities to support the radio streaming learning. For those reasons the students seek for other learning references from the internet, library and radio broadcasts.

The use of only text books or modules by the teachers would cost boredom for the students. The limitation of media and study reference in learning will eventually effect the students' study outcome. Learning media is one of the important factor that can contribute to the success of a learning (Ratminingsih, 2016). Interesting media could motivate the students to be willing and keeping on track on his/her learning, make study easy,

make learning effective and efficient and improve the study outcome in the end. But the students have not been provided with variations of study references in order to study in an exciting way. None the less there are now options to use technology based teaching references such as interactive video, multimedia, film, television broadcasts, and radio broadcasts.

The result of the prior research shows 83,3% respondents enjoy listening radio broadcasts; to listen to music or entertainment and news. 69% respondents use mobile phones as a device to listen to radio, and 31% respondents use radio sets and computers. 59,5% of the respondents have known radio streaming. Respondents who have heard Radio Gema Edukasi broadcasts reached 45,2%, frequently listen 7,2%, and never listen 47,6%. Respondents wish to listen for music or entertainment program, popular science and study tutorial from Radio Gema Edukasi broadcast programs.

2. Educational Radio Streaming as a Learning Resource

Radio is an electronic audio media that can capture certain sounds and waves so that communication information can be reached by the public and has practical educational value, formally or informally (Rohani, 2014: 87). One of the distinctive strengths of radio lies in the sound that can make listeners create unlimited imaginations, so it was called Radio is Theater of Mind by Hadley Cantril in his research in 1938. Educational radio is a radio that broadcasts educational contents with the purpose to create study atmosphere and learning process so that the students actively develop own self potential to have religious spiritual, self control, personality, intelligence, noble attitude, and skills needed by oneself, society, nation and country (Innayah, 2015). Educational radio broadcast is an instructional educative media that contributes much for education. It is good to be used in schools as aiding tool (Rohani, 2014:93). Schools can access the radio program broadcasted outside the school premise in relation to topics on class lessons or the school can also manage its own educational radio broadcasting whenever it is possible. Educational radio broadcast is not only targeting the teachers. There are many radio broadcast programs with educational mission targeting the general listeners. The broadcasts materials not only air educational contents, as class room education, but also content or materials with edutainment concept or an entertaining learning concept. Edutainment concept works on a conducive and fun learning process. This can happen because the communication process is smoother and more relax because of its auditory nature via voice communication, the announcer will find it easy in delivering messages in a more interesting program (Hayati, 2013).

The rapid development of information technology can not be avoided to give influence to education field. Streaming technology is becoming more familiar along with the development of information and communication. Streaming is a technology to play audio and/or video live or recorded, live from the server without needing to download the particular file (Kurniati et.al, 2009). Radio streaming is radio broadcasts without having to a radio set, but it has been possible to listen from computer set that is connected to internet network or through any mobile phone (Djamal dan Fachruddin, 2013). Radio streaming enables us to listen any materials in live manner by accessing via the internet (Imron, 2009). The radio streaming could reach wider audience for its to base on internet service that can reach consumers globally. This, of course, contradicts the conventional radio that has limited reach for it to base on broadcast wave (Prasetya, 2016). Thus, radio streaming or is known as internet radio is able to be learning media that can reach people globally. In the frame work of concept and principles of education technology, media is a study source (Gafur, 2012:109).

Learning resource covers any source of data, people, items that are possible to use separately or combined for the students to use optimally to facilitate study activities (Warsita, 2020:210). Perceival and Ellington in Prastowo (2018:28) state that effective study sources must meet three aspects: quickly available, promote self motivation, individualistic, such must meet various needs of the students for autonomous learning.

The Information Communication and Technology Center of Education and Culture for Education and Culture as the Regional Technical Implementation Unit of the Education and Culture Office of the Province of Lampung, Indonesia has developed Radio Gema Edukasi as educational radio media by the motto “share knowledge to all” was established in 2015 and is broadcasted streaming in www.disdikbud.lampungprov.go.id. or <https://radiogemaedukasi.net> with the purpose to facilitate learning process and serves as alternative reference source for the teachers and students arranged in the form of audio with a fun approach in order to support the improvement of qualified, robust, and competitive education service to lead for intelligent and ethical society. The content of Radio Gema Edukasi consists of broadcast materials designed to deliver educational messages, so it is expected that Radio Gema Edukasi can be used as a study source for teachers and students. The contents are produced by working together with teachers and students as the hosts. When following the contents or educational materials regularly and intensively the streaming of Radio Gema Edukasi, it is expected that the people in general can educate themselves and others. The impact of regular and intensive tuning in or listening the contents or materials presented by Radio Gema Edukasi is expected to improve the listeners’ knowledge. As Prayudha dan Rustam states in Innayah (2017), radio also has strong characteristics to influence the society aside from the role to educate, to inform and to stimulate the people to be a smart, critical, active, full of initiative.

3. Learning Outcomes

Study is an interaction process with all situations around an individual student (Rusman, 2017:1). Study can be seen as a process that leads to a purpose and process of doing through various experiences. Study refers to a common term for an ever lasting change of abilities caused by experience and the process of changing takes place (Smaldino, Lowther, & Russel, 2008:373). Arsyad in Innayah (2014) states that the activity of study can only be successful if one studies and experiences personally the active study process. Study will only be effective if study is given many chances to do something, through multimethod and multimedia so that the students can actively interact much by using any potential the students have.

Reigeluth and Merrill in Uno dan Lamatenggo, (2011:75) defines study outcome as all effect that can be used as indicators of scores from the uses of learning method in different conditions. There are three classifications of learning outcomes: Effectivity, efficiency, and attractiveness. There are two factors that contribute to the success of students study (Slameto, 2010:58), namely: (1) internal factors that cover biological, psychological, and fatigue; (2) external factors namely family, school and the society.

Reigeluth Instructional Theory (Miarso, 2011:254) mentions that instructional or learning consists of three variables: 1) learning conditions, consisting of students characteristics that cover daily life patterns, literacy, social-economy background, etc; as well as lesson characteristic that covers the aim of the lesson, and the problems on reaching it; 2) Learning treatment, consisting of learning materials organising that covers how to design autonomous learning materials; delivery strategy that covers the consideration to use certain media to teach certain lesson, what to use and who to present, how to deliver, etc and also activity organising that covers decision to develop and manage and how and when to use certain learning materials and the delivery strategies; 3) Learning output, covering effectivity, efficiency, and the interest of learning.

4. Auditory Intellectually Repetition Learning Model

Joyce and Weil in Rusman, Kurniawan dan Riyana (2012:38) defines learning model as a conceptual framework that is used as guidelines in operating a learning that consists of basic elements (1) syntax, operational learning stages, (2) social system, atmosphere and norms applied in the learning, (3) principles of reactions, defines how a teacher should view, treat, and responds to students, (4) support system, all facilities,

materials, tools, or study environment that support learning, and (5) instructional and nurturant effects-study output earned based on the target goals (instructional effects) and study output outside the target goals (nurturant effects).

Auditory Intellectually Repetition (AIR) learning model as to Dave Meier (2003) in Shoimin (2014:29) is a learning model that consists of Auditory, Intellectually, and Repetition. Auditory components, meaning that ears are used in learning of talking and listening. Intellectually means that the thinking ability needs to be trained through logical thinking exercises, creating, investigating, identifying, discovering, constructing, problem solving and applying. Repetition means to repeat is needed in a learning in order to get a thorough and wide understanding, students need to be trained by finishing questions, assessments and quizzes.

AIR learning model contains steps such as: First, students are divided into some groups, each consists of 4-5 people. Second students listen and pay attention to the teachers explanations. Third, each groups discusses the target materials and write the discussion results then present it in front of the class (Auditory). Fourth, during the discussion, students will get questions or problems related to the materials. Fifth, each group must think how to apply their discussion result and to increase their ability in problem solving (Intellectually). Sixth, after a discussion, students will get the repetition of the materials by finishing an individual assessment or quizzes (Repetition).

The steps of AIR learning model that can be adapted to the Radio Gema Edukasi Broadcast program in this research are: 1) Preliminary activities that cover the announcer and the tutor greet the students and the teachers. Then the announcer explains AIR learning model to the students so that the students fully understand the aim and the goal of the method; 2) The main activity that covers the tutor states the goal that is about to reach (auditory), the tutor delivers stimulus in the form of explanation about the lesson about to heard by the students via Radio Gema Edukasi broadcast program (auditory), the tutor gives sample questions and tips in answering the questions to make the students understand the lesson more (intellectually); 3) Closing that covers the tutor gives the summary of the lesson learnt for repetition/strengthening (repetition), the tutor instructs the students to form a group that each consists of 4 students and gives different tasks for each members related to the delivered lesson (repetition), the tutor asks the teacher and students to talk and discuss the related task in the class when the learning process can be done as usual (repetition).

One of the learning style that will be observed in this study is the auditory style. Auditory as one of the learning modes is really important in understanding the lessons. It deals with how we absorb information when communicating or learning by listening. Ears are used in learning by hearing, listening, talking, presenting, arguing, giving opinion and giving replies (Elinawati, 2018). Auditive students can learn faster by using verbal discussions and listening to the teacher's explanation (Rusman, Kurniawan, dan Riyana, 2012:34). They can understand meanings delivered by the teachers from the voice tones, speaking pace and other auditory matters.

Munadi (2008:58) explains, in our live we tend to spend much time to listen rather than to do other kind of communication methods. Hargie and partners' research in 1926 discovered that 70 per cent of our wake time is used to communicate, that is listening, talking, reading and writing. When the time allocation is divided for those activities, it shows that 42 per cent used for listening, 32 per cent for talking, 15 per cent for reading, and 11 per cent for writing. This has also been supported by a research done by Rankin in 1929 that found that 45 per cent of wake time is used listen. As well as Barker and associate's research in 1980 that discovers that in average the college students use 53 percent of their wake time to listen. Considering the fact that university students face lots of reading and writing assessments, the percentage of listening for those who are not students might be even higher. The research finding of Hargie and Rankin also backs up Barker's.

5. Methodology

The research focused on students of grade twelve of public senior high schools in Bandar Lampung. Sampling technique is purposive sampling that is to select sample with certain consideration (Sugiyono, 2018:85). Samples of this research were chosen to represent school categories with the predicate low, medium, and high based on the scores of English lesson from the National Examination 2018/2019 seen in table 1. The selected school was chosen based on the highest score on the National Examination with a class of 32 students from SMAN 2 Bandar Lampung. The number has met the qualification of sample for case comparison research that is 30 elements per group according to Gay and Diehl in Riyanto and Hatmawan (2020:14).

This research is a quantitative research with pre-experimental design research design. It is said as pre-experimental due to the fact that there are foreign variables that also contributes to the formation of dependent variable. As to say, the experiment results that is a dependent variable is not only influenced by the independent variable. This happened because of the absence of control variable, and samples were not randomly selected. (Sugiyono, 2018:74). The research took place in November 2020-April 2021, aimed to measure the effectivity of broadcast program of Radio Gema Edukasi that is based on AIR learning model to public senior high school students of grade twelve in Bandar Lampung during Covid-19 pandemy. Comparative analyses was used to compare the differences of before and after using the Radio Gema Edukasi broadcast program that based on AIR learning model.

Test by design professional, media professionals, material professionals was conducted to earn data on learning media quality viewed from aspects on broadcasts scenario of Radio Gema Edukasi, audio and the communications and English learning materials. Scoring scales for the instruments by professional are 4 (very good), 3 (good), 2 (sufficient), 1 (insufficient). Validity and reliability measurements of each test instruments, data normality testing, and hypothesis testing were done before analyzing effectiveness level. Validity indicates the accuracy of a test. A test is valid when the test measures what should be measured (Sugiyono, 2018:121). Test used were questions on News Item materials in the form of ten multiple choices questions given before (pre-test) and after (post-test) using the learning media. To test the validity of each items, the score on the related item is correlated with the total score by using Pearson Product Moment. If $r_{xy} > r_{table}$ with significant rate 5% then the item tested is valid. The validity test indicated that each test item is valid because $r_{xy} > 0,497$. The reliability test is using Kuder Richardson 21 formula in order to measure the consistency of a test instrument to result a relatively firm score in different situation. If $r_i > r_{table}$ with significance rate 5% then the item tested is reliable. The reliability test indicated that each test item is reliable because $r_i = 0,664 > 0,497$.

Data normality test aims to value whether data spread collected normally distributed or not by using Chi Square formula. If $Xh^2 \leq Xt^2$, then data distribution is normal, but if the value of $Xh^2 \geq Xt^2$ data distribution is abnormal. Normality data calculation indicated that $Xh^2 = 468,4235 > Xt^2 = 11,0705$, which means data distribution is abnormal. Hypothesis testing is using non parametric statistic Wilcoxon Signed Rank Test to identify average differences of object if the data is abnormally distributed. If $Z_{count} < Z_{table}$ then H_0 is rejected and H_1 is accepted, on the contrary if $Z_{count} > Z_{table}$ then H_0 is accepted and H_1 is rejected. Based on hypothesis testing $Z_{count} = -4,937 < Z_{table} = -1,96$ which means there is the difference of effectiveness of students; learning outcome after studying by using broadcast program of Radio Gema Edukasi with AIR learning model.

Effectiveness testing is done by looking at the normalized gain (N-Gain). Learning to be said as effective if $N\text{-Gain} \geq 0,70$. The calculation result is interpreted by using normalized gain index in the following table:

Table 2. Normalized Gain Index Value (Source: Hake, RR. 1999)

Normalized Gain Index	Classification
$(g) \geq 0,70$	Tinggi
$0,30 \leq (g) < 0,70$	Sedang
$(g) < 0,30$	Rendah

6. Result and Discussion

Based on the preliminary research data show that nearly half of the total respondents have never heard Radio Gema Edukasi broadcast program. This means that teachers and students have not been accustomed on the use of Radio Gema Edukasi broadcast program in learning that can happen because lack of socialization from the Information Communication and Technology Center of Education and Culture to schools. The teachers and students who participated in the production of Radio Gema Edukasi radio broadcasts themselves do not really introduce the program in their schools or they do not really use the content in the class learning. On the other side, students find alternative of learning sources which one of it is the internet because the school learning only uses text books.

The validity measurement has indicated that each question item is valid and the reliability measurement has indicated that each question item is reliable so that each item deserves to be tested as a test instrument. Data normality calculation test has shown abnormal data distribution. The testing was conducted to students of grade twelve in SMA Negeri 2 Bandar Lampung that consists of 32 students by using questionnaire via Google Form. The lowest score of the students is 2 and the highest is 9 from the pretest while from the post test the lowest score is 3 and the highest is 10. The calculation resulted N-Gain with the score 0,82, showing a high effectiveness classification so that AIR learning model based on the News Item lessons from Radio Gema Edukasi broadcast is effective as study source for students of public senior high schools. The students have auditive learning mode that relies the success of the learning through hearing. This sort of students are able to memorize faster through loud text reading or by listening to the radio (Rusman, Kurniawan, dan Riyana, 2012:34).

Radio Gema Edukasi broadcast program AIR learning model based as a study source has met the requirement as the effective study source according to because the media: 1) quickly available, easy to access and to use; 2) enables the students to empower themselves, motivate oneself, to be responsible in studying because the media offers different kind of learning; and 3) individualist that can complete the students' need in learning independently, possible to conduct without the help of the teachers.

Learning output is influenced by various variables. Based on the data analyses, learning condition during the pandemic has influenced students learning process. Covid-19 pandemic has forced the education unit to perform online learning in order to cut down the spread of Covid-19. This has caused this could not be conducted in the physical classroom. Thus, the stages of AIR learning model from radio broadcasts program must be adjusted with the condition.

There are some steps of AIR learning model that can not be applied or put into the broadcasts program because the stages involve direct face to face interaction in the class room. The learning steps are: 1) group discussion and group presentation with other groups give questions or state an opinion (intellectually); 2) The teachers give out quizzes or work sheets to students to finish individually then submitted for scoring and reviewing for recalling the materials learnt (repetition); and 3) the teachers give home work related to the discussed lessons or to ask the students to summarize on the discussed lessons (repetition).

The reduction of those learning stages will eventually influence the students' level of understanding on the lessons delivered. Dave Meier (2003) in Shoimin (2014:30) states that, intellectually aspect in learning will

emerge whenever the students are involved in problem solving activities, discovering questions, looking an filtering information, applying new ideas, creating creative ideas, and creating personal meaning when doing group works in the class room. Repetition aspect means more depth, widening, firming by giving quizzes, work sheets, and to summarize the lessons learnt that can accustome the students to finish lessons problems and will always be ready to face exams. The two aspects are eliminated to adjust with the curent learning situation during the time of pandemy despite the fact that those aspects heavily effect on the students' undertanding on the learnt subjects thus it also effects the study outcome.

Testing instruments used to measure effectiveness must also be adsuted with the online learning situation, that is by using online questionnaires. The writer could not perform any direct class observation or to observe and to monitor the students when they listen to radio broadcast program and doing the group work neither to observe the teachers' attitude in the learning process. The testing data collection was done through online questionnaire via google form so that the writer couldn't observe if the students follow the instructions well and correct, conduct the task according to the instruction from the radio broadcast program, whether they fill in the questionnaire by themselves, finishing the group work, analysing motivation or interest in the learning, and to identify troubles in using the learning media related to signal or devices. Variable that influence the study outcome matches with Nakayama et al (2014) Bhuasiri et al (2012) research findings that the factors to maximize student learning outcomes in online learning are influenced by many factors, namely technology, student's characteristics, instructor's characteristics, and school institutional support. The group assessments from the students could collect eight texts of News Item: 1) Indonesia Receives First COVID Vaccine from China's Sinovac; 2) Minister Expects MXGP 2017 to Boost Tourism; 3) MotoGP, Marc Marquez: A Week to Decide on Surgery Again; 4) Indonesian Maid Beheaded; 5) Actor Didi Petet Died at The Aged of 58th; 6) Pamekasan Student Wins Math Contest in Romania; 7) A Boy Hidden in Wheel Well of Airplane Survived; dan 8) Town Contaminated.

7. Conclusion

The validity measurement has indicated that each question item is valid and the reliability measurement has indicated that each question item is reliable. Data normality calculation test has shown abnormal data distribution. Hypothesis measurement has indicated there is effectivity differences on students learning outcome after using studying by Radio Gema Edukasi dengan broadcast program with AIR learning model. N-Gain calculation of the test resulted the score 0,82 that indicates a high effectivity classification so that Radio Gema Edukasi broadcats program on News Item materials based on AIR learning mode is effective as as learning source for public senior high school students in Bandar Lampung with auditive learning style. The result of condition or learning surrounding found that treatment or learning method, the characters of instructor and students, and other problems in achieving learning goal could influence the calculation of the effectivity of Radio Gema Edukasi broadcast program that is based on AIR learning model to improve student learning outcomes.

This study has limitations, namely the limited number of research participants, the reduction of several steps of the AIR learning model, and research conducted on online learning. Future research should consider a larger number of research participants, apply whole steps of AIR learning model, and conduct research on direct face to face interaction in the class room to get a better representation of effectiveness of Radio Gema Edukasi broadcast program to improve student learning outcomes.

Acknowledgement

Great gratitude to SMA Negeri 2 Bandar Lampung and The Information Communication and Technology Center of Education and Culture for Education and Culture of the Education and Culture Office of the Province of Lampung that have facilitated this research.

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