MODIFIED SCIENTIFIC APPROACH TO ENHANCE STUDENTS' LEARNING MOTIVATION AND SPEAKING ABILITY IN SMP NEGERI 6 NATAR

A Thesis

By:

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MASTER PROGRAM OF ENGLISH EDUCATION
LANGUAGE AND ARTS EDUCATION DEPARTMENT
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ABSTRACT

MODIFIED SCIENTIFIC APPROACH TO ENHANCE STUDENTS' LEARNING MOTIVATION AND SPEAKING ABILITY IN SMP NEGERI 6 NATAR

By

Faras Seruni

This study investigated the effectiveness of modified scientific approach to improve students' learning motivation and speaking ability. Moreover, the research examined the significant difference in students' improvement in learning motivation and speaking ability between those who were taught by modified scientific approach and original scientific approach and measured the correlation between students' learning motivation and speaking ability in experimental class. An experimental design was employed within a quantitative research framework, involving two classes of junior school students, each consisting of 34 pupils. The data were collected through speaking tests and learning motivation questionnaire given to the students before and after receiving the treatment. Then, the obtained data were analyzed by comparing the mean score of each group and running an independent t-test to measure the first and second research questions. The Pearson product-moment was used to examine the third research question. The results demonstrated a significant difference in students' learning motivation and speaking ability after the students were taught through the modified scientific approach and original scientific approach. This was evident from the n-gain of speaking scores in both classes: 0.77 in experimental class and 0.60 in control class. Furthermore, it was revealed that the learning motivation in experimental class was categorized at an average level, while in control class, it was at a low level. Moreover, there was a high correlation between students' learning motivation and speaking ability in experimental class. Therefore, this study affirms that modified scientific approach significantly enhances students' learning motivation and speaking ability. Considering the result findings, English teachers are encouraged to implement the modified scientific approach.

Keywords: *Gamification, Scientific Approach, Learning Motivation, Speaking Ability*

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By:
Faras Seruni

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The Requirements for S-2 Degree

In

Language and Arts Education Department of
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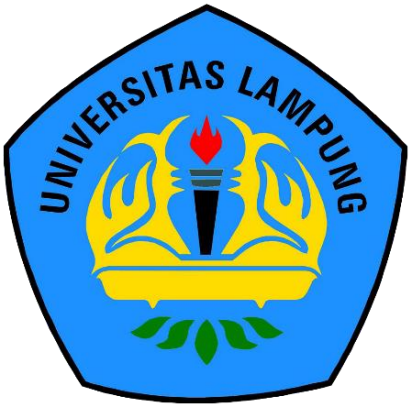

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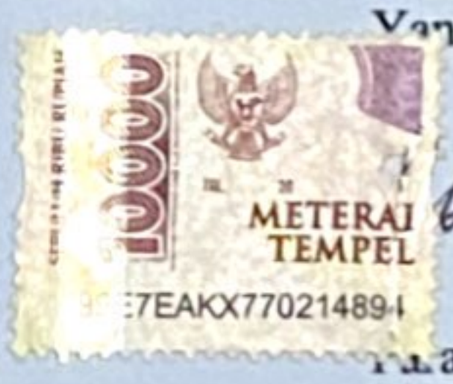

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CURRICULUM VITAE

Faras Seruni was born on September 2nd, 1999, in Bandar Lampung. She is the first child of Mr. Mustaqim and Mrs. Intan Suri. She has one younger sister named Fitridiani Sahzania.

She accomplished her formal education at TK Al - Azhar 7, Hajimena and finished in 2005. Then, she entered Elementary School at SD Negeri 1 Rajabasa Raya, Bandar Lampung and finished in 2011. She continued her education at Junior High School in SMP Negeri 22 Bandar Lampung and finished in 2014. After that, she pursued her study in SMA Negeri 1 Natar and completed her study in 2017.

In 2017, she continued her study at Islamic State of Raden Intan Lampung University, Education and Teacher Training Faculty, English Education Major. During her time in college, she was actively involved in the English Student Association (ESA) from the first semester until the sixth semester. She was also a member of the Human Cooperation Organization. She graduated in 2021, becoming the third-best graduate at the English department level.

Having graduated from bachelor's degree, she decided to level up her education by taking the *Pendidikan Profesi Guru* (PPG) program by Kemendikbud in Lampung University and successfully finished in 2023. At the same time, she pursued her master's degree and worked in a junior high school while doing her PPG program.

MOTTO

If We had sent down this Qur'an upon a mountain, thou wouldst certainly have seen it humbled and rent asunder for fear of Allah. And these are similitudes that We set forth of mankind that they may reflect

(Q.S Al – Hasyr : 21)

DEDICATION

From the depths of my heart, this thesis is dedicated to everyone who cares and loves me. I extend my deepest gratitude and dedication to Allah Subhanahu wata'ala, who always supports and guides His servants, and to Nabi Muhammad ﷺ, whose teachings illuminate our path from darkness to light. Heartfelt appreciation goes to my beloved parents, Mr. Mustaqim and Mrs. Intan Suri, for their unwavering support and prayers that have paved the way for my success; may Allah bless your lives abundantly. I am grateful to my cherished lecturers in the English Education Study Program at Lampung University, who have not only imparted knowledge but also significantly contributed to my personal growth. Lastly, a special dedication to my beloved students, whose enthusiasm and time amuse me daily.

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This thesis entitled "Modified Scientific Approach to Enhance Students' Learning Motivation and Speaking Ability" is submitted as compulsory fulfillment of the requirements for master's degree at English Education Study Program, Teacher Training and Education Faculty, Lampung University

With profound gratitude and a heart full of appreciation, the researcher extends her sincere thanks to the individuals who have been instrumental in the completion of this thesis, each playing a unique and significant role:

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Recognizing that perfection is an elusive goal, she hopes this thesis, imperfect as it may be, serves as a testament to the collective efforts and contributions of all involved, and stands as a valuable reference for future educational endeavors.

Bandar Lampung, 2 Februari 2024
The Researcher

Faras Seruni
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I. INTRODUCTION

This chapter discusses the background of the study which includes the reasons for conducting the research to improve students' learning motivation and speaking ability by implementing modified scientific approach. This chapter talks about the formulation of the research question, objectives of the research, uses of the research, scope of the research, and definition of terms.

1.1 Background of the Study

Today, many individuals utilize English to connect with people from many nations, languages, and cultural backgrounds. English is used extensively in a variety of industries, including medical, engineering, technology, tourism, and banking. As English is widely spoken across the world, there is a need for students to develop communication skills, and the ideal setting is the classroom. People need speaking skills to reach communication goals. Speaking allows people to interact with others, share ideas, and get to know them orally. Rao (2019) argues that out of the four language skills, speaking is the most crucial since it facilitates communication between people.

Moreover, Putra (2020) makes the case that modern English serves as a tool for communication as well as an aid in helping individuals work and adapt to their

surroundings in both the present and the future. Hence, speaking skill is crucial for learners of any language. It is explained by Kadamovna (2021) that learners must be specifically and carefully trained in the ability of speaking. Speaking is a two-way activity that involves the accurate transmission of ideas, knowledge, and feelings according to Florez and Cunningham (1999). Moreover, Royani, et al (2023) state that speaking is the act of communicating orally with people in order to convey thoughts or information. It is the most crucial means for speakers to express themselves through language. Therefore, speaking may be understood as a collaborative process of communication between two or more individuals in a shared setting.

Nevertheless, being able to speak English is not easy for all people, especially for Indonesian students. Based on Bueno in Rao (2019), one of the most challenging abilities that language learners must master is speaking. Students in Indonesia study English as a foreign language from primary school through university. Even though they had been studying English, they may understand English conversation but they find it difficult to speak in English. As stated by Rao (2019) even after years of language study, learners still struggle when it comes to speaking when necessary in real-world setting. There are some problems faced by the students in speaking English. It can be classified into two aspects as stated by Tika and Abadi (2021) which are students' linguistic problems such as lack of pronunciation, lack of vocabulary, and lack of grammar, and students' personality problems such as lack of confidence, shyness, and nervous. Moreover, Dalem (2017) explains that students are terrified of making mistakes since others may be laughed at. In line

with Salihun (2019), students feel inhibited when they try to speak English since they are shy, unconfident, and afraid of making mistakes. A further issue, according to La'Biran (2017), most students are less motivated to talk in class since speaking classes are tedious and uninspiring. From this perspective, it is possible to conclude that students are less likely to speak in class because they are hesitant and fearful of making mistakes caused by a lack of experience in pronouncing words.

Hereafter, the success of students' language learning is also affected by their motivation to learn. This motivation can help students to improve their skills. Sun (2019) states that motivation plays a great role in second language learning. It promotes the learning process and inspires and guides learners' learning. In line with Rehman and Haider (2013), motivation improves students' learning performance since it gives them the energy to complete the activity. As supported by Gusman, et al (2021) students' learning motivation affects students' achievement. It has been proven in junior high school students that student accomplishment is significantly impacted by their motivation to learn. Therefore, students with definite motivation will actively participate in language learning and this may lead to high learning efficiency.

Gardner (1985) declares that motivation is the single most influential factor in learning a new language. Furthermore, Hall in Al-Ghamdi (2014) argues that motivation is a key factor in accomplishing a particular activity. Besides, Setyowati (2019) asserts that ability and motivation are closely related. She proposes that students who have high motivation have high competence in English. It is supported

by Putra (2017) that motivated students may experience good effects and enjoyment in improving their speaking skills. Motivation becomes a way that exists in students' minds and influences their bodies to move and act in order to reach their goals.

Hence, motivation contributes to the accomplishment of specific activities and correlates closely with language ability. Since motivation has a positive impact on students' enjoyment and willingness to improve their speaking skills, students with high motivation tend to exhibit higher competence in English. On the other hand, students with low motivation tend to struggle with language learning and cause to have low English competence. Ultimately, motivation serves as a powerful force within the students' minds, influencing their actions and propelling them toward their language learning goals.

However, a study by Ayuningsih (2022) implies that junior high school students are not aware that English is important. They just learn English as a formality, only to succeed in exams and have a good score. Their awareness of learning to speak English, because it is important for their sustainability in life, is very minimal or even less. Further, a study by Yusda (2019) also finds that students' motivation for learning English at junior high school is classified at a medium level, implying that kids have average motivation to study English. It is also explained that extrinsic motivation is more dominant than intrinsic motivation.

Consequently, if students do not have motivation to study, they will not engage in the learning process and they will not experience the process of learning. To overcome this, the teacher has to be more creative in conducting classroom activities to make students become active and participate in speaking English in class. As mentioned by Rao (2019), English teachers might design entertaining language games for their students to encourage their students to talk in class. As stated by Darwan and Fadhlika (2023), in order to attain learning outcomes for a subject, teachers must be able to motivate students to learn, focus that drive toward those goals, and strengthen that desire to maintain consistency in learning behavior. As a result, teachers should have the competence to encourage students' learning motivation.

In accordance with the curriculum 2013, which focused on student-centered learning, the teaching and learning process should be implemented with an emphasis on the individual student, helping them develop a positive self-concept, sharpening their critical thinking abilities, and giving them the opportunity to practice communication skills (Lazim, 2013). Therefore, teachers are asked to make the teaching and learning process followed actively by the students and help them improve their interpersonal skills. The most used student-centered learning strategy is scientific approach. Based on Fauziati (2014), the scientific method is a teaching strategy that aims to impart knowledge with the same level of rigor as the finest science. Students make observations, form hypotheses about events, design tests to evaluate their ideas, and share their results with others. To implement scientific approach, teachers should follow five stages: observing, questioning,

experimenting, associating, and communicating. Scientific approach is believed as an approach to make the students active and improve their speaking. It is proved by Tyasti, et al (2017) that the application of a scientific approach effectively incorporated students' active participation in the teaching-learning process and improved three aspects of language: students' grammar, pronunciation, and vocabulary. Furthermore, according to Utami et al (2016), scientific approach can help students enhance their speaking skills. It is stated that 87.93% of students passed the passing grade. Scientific approach is able to help students be active in learning. Moreover, Raflesia and Sinaga (2019) state that applying a scientific approach improves students' speaking scores from the pretest to the posttest. Therefore, scientific approach can be a solution to make students active in class and be able to improve their speaking ability.

However, there are several issues when teachers use a scientific approach to teaching and learning English. According to Zaim (2017), there are five steps of scientific approach which are observing, questioning, experimenting, associating, and communicating. Not only the teacher finds it difficult to implement the stages of observing and questioning, but also the student finds it hard to follow this stage. Besides, the limited duration also makes the teacher unable to implement the rest of the stages and causes only several students involved to communicate what they have done in front of the class. In line with Juliansyah (2018), the teacher and students also find problems when scientific approach is implemented in the teaching-learning process. The problems that the teacher has are varied. They find it hard to select what activities and media which can be applied to support the

teaching and learning process. In this case, a solution is needed to develop this scientific approach, especially in the observing and questioning stages. In order to activate the students in the learning process and help them boost their willingness to be more engaged in classroom activities, the teacher must provide an interesting and diverse learning strategy.

In the teaching and learning process, a teacher's teaching strategy plays a great role in helping the learning process reach learning goals. Teachers must use a suitable learning strategy based on the objectives of the lesson that want to be accomplished and the material that wants to be learned. The activity in English education should create an environment that encourages students to actively engage and speak out in class while also increasing students' confidence in speaking English in class. One learning method that is believed to engage students' participation in class and make the learning process interactive and fun is using elements of games in language teaching, which is called gamification. There is a growing amount of scientific evidence that gamification can improve students' motivation and involvement in the learning process. Studies have shown that game elements, such as conflict, cooperation, competition, feedback, rewards, and leaderboards, can increase students' intrinsic motivation, promote a sense of challenge and competition, and foster a more enjoyable learning experience.

Gamification is regarded as a teaching technique for increasing students' motivation and participation in the learning process. According to Kapp (2012), playing games with uncertainty can change how students feel about learning,

increasing interest and more crucially, enhancing long-term memory and encoding. As proved by Nieto-Escamez and Roldan (2021) using gamification in online teaching for high school and university students in science subjects such as chemistry, biology, computer science, medical, and business during the pandemic era is an innovative, engaging, and efficient teaching strategy. Moreover, it is perceived as a fun activity. In line with Yurissa, et al (2022), conducting virtual learning for elementary school students using gamification. This classroom action research tells that students' motivation improved in PJOK learning and encourages elementary students to be competitive and in tackling problems.

Additionally, Grabner-Hagen and Kingsley (2023) confirm that the use of gamification in primary schools in the United States Midwest enhances academic achievements and increases student motivation in class because students have more fun, are happier, and pay more attention. As stated by Ghawail, et al (2022), who conducted a study in pharmacy at Alasmarya Islamic University, gamification enables students to engage actively in chemistry lessons and to experience effective and enjoyable learning. Some studies have been conducted related to the use of gamification in the teaching and learning process virtually, however, studies on the use of gamification in English language teaching for offline classes are rarely found. Besides, research on the use of gamification for junior high school students is harder to uncover than research on the use of gamification for elementary and university students. Therefore, this research would like to investigate the use of gamification in offline learning for young learners.

Furthermore, gamification in scientific approaches may be an effective tool for creating an engaging and dynamic learning environment that motivates students to actively engage in the learning process. One of the key benefits of gamification in education is that it taps into the intrinsic motivation of students, making learning enjoyable and rewarding. When students are motivated and engaged, they are more likely to be actively involved in the learning process, which can lead to better retention of information and improved speaking ability. Gamification helps to enhance the use of scientific approach by incorporating game elements and interactive experiences. It provides a dynamic and immersive learning environment that fosters the stages of the scientific approach. Based on Nieto-Escamez and Roldan (2021), gamification can be implemented together with traditional lectures and can be a useful method during post-COVID times.

The observing and questioning stages can be improved by integrating the storytelling and conflict elements of the game to provide guidance for students to start learning. According to Kapp (2012), the gamification of learning requires the use of storytelling. The storytelling aspect adds meaning and value to the experience. Toda, et al (2019) explain that storytelling can be provided by text stories or audio to deliver the story of the environment as a script. This element will help the teacher create an activity by telling a storyline at the beginning of learning and the students observe and pay attention to the story told. Furthermore, the elements of conflict might help the activity on questioning stages by challenge students to solve the conflict. The story must include a conflict that can trigger students to think about a given situation. Kapp (2012) defines conflict as a challenge

presented by an opponent. As supported by Landers, et al (2017) that conflict may be introduced into a learning environment by carefully weighing the challenges of certain assignments.

In conclusion, since there is a relation between motivation and students' learning success, teachers should create a teaching-learning process that catches students' attention to actively participate in class by integrating the use of game elements in scientific approach. Gamification in education may become an appealing and effective learning experience for students since it promotes the concept of engaging students with the content. Besides, applying game elements in scientific approach might diminish the limitation of scientific approach implementation in English language teaching.

1.2 Research Questions

By looking at the background of the study, the researcher formulates the research question as follows:

1. Is there any significant difference in speaking ability of the students who are taught by using a modified scientific approach and original scientific approach?
2. Is there any significant difference in learning motivation of the students who are taught by using a modified scientific approach and original scientific approach?
3. Is there any correlation between learning motivation and speaking ability of the students who are taught by using a modified scientific approach?

1.3 Objectives of the Research

The objectives of this research are to find out the answer to the research questions as follows:

1. To find out the difference in speaking ability between the students who are taught by using modified scientific approach and original scientific approach.
2. To find out the difference in learning motivation between the students who are taught by using modified scientific approach and original scientific approach.
3. To find out the correlation between learning motivation and speaking ability of the students who are taught by using a modified scientific approach.

1.4 Uses of the Research

The uses of this research are explained based on the followings:

a. Theoretical Uses

This finding of the research provides more contribution to previous research. This research is expected to give information about the significance of students' speaking ability by using modified scientific approach. Moreover, other researchers can use the information and the findings in this research as a reference to conduct other research related to this topic.

b. Practical Uses

For the English teachers, the result of this research will inform them to implement modified Scientific Approach in the teaching and learning process which hopefully improves the use of original scientific approach and may engage

students' participation in class which help them to improve their learning motivation and speaking ability.

1.5 Scope of the Research

The scope of this research focuses on the implementation of the modified scientific approach and the original scientific approach. To achieve the objective of the research stated previously, two classes consisting of EFL learners will be chosen as the research samples. Each class will be treated differently to see the significant difference between both treatments. Besides, the students' learning motivation and speaking ability in both classes will be investigated to see whether they have improved or not after the treatment. Moreover, the researcher will be focused on the class that is being taught by using modified scientific approach to see the correlation between students' learning motivation and speaking ability.

1.6 Definition of Terms

In order to avoid misunderstanding, the following terms are defined as follow:

1. Speaking

   Speaking is a verbal activity in producing sounds to deliver information in making communication between two or more people.

2. Learning Motivation

   Learning motivation is a desire to take action in order to achieve something. It is one of the most influential factors in language learning.

3. Scientific Approach

   Scientific approach is a method in teaching and learning in curriculum 2013 that focuses on students' participation in the classroom. This method has five steps which are observing, questioning, experimenting, associating, and communicating.

4. Gamification

   Gamification is a careful and considered application of game thinking to solve problems and encourage learning using all the elements of game that are appropriate.

This chapter has explained the background of the study, the formulation of the research question, the objectives of the research, the uses of the research, the scope of the research, and the definition of terms.

II. LITERATURE REVIEW

This chapter outlines the research theories. It discusses a variety of topics, including the definition of speaking, types of speaking, teaching speaking, learning motivation, scientific approach, gamification, game elements, modified scientific approach, procedures for teaching speaking using scientific approach, procedures for teaching speaking with modified scientific approach, theoretical assumptions, and hypotheses.

2.1 Speaking

The following is an explanation of the concept of speaking, the type of speaking, and the aspect of speaking.

2.1.1 Definition of Speaking

Speaking is one of the productive skills in English. The product of speaking skill is the ability of a person to produce a word, phrase, or sentence orally. Lado in La'Biran (2017) states that speaking is a capability to converse in real-life situations and to express oneself. Based on Tasmia (2019), speaking is one of the abilities used to communicate and express ideas to people worldwide for a range of purposes, including networking, relationships, business, and international travel. She goes on to say that this productive talent is the capacity to convey a meaning or message effectively so that the audience can react to it.

Hence, speaking refers to the ability to communicate in real-life situations and express ideas verbally.

Based on La'Biran (2017), speaking refers to the act of uttering words, vocal expressiveness, and the capacity to communicate in a certain language. Moreover, Sudarmo (2021) argues that, for a variety of reasons and circumstances, speaking enables people to communicate, share ideas, and express emotions. Here, the crucial component of effective speaking mastery is viewed as the skill that transforms the circumstance from ordinary to remarkable. In line with Salihun (2019), by speaking, people can express their ideas, thoughts, or feelings orally and use it to do daily communication with other people. Therefore, speaking is a way of expressing ideas, opinions, and feelings by using words that come from the speaker's mouth in order to communicate with other people.

Additionally, Royani, et al (2023) explain speaking is the act of conveying thoughts, feelings, or opinions to other people using words or articulatory sounds with the goals of informing, entertaining, and persuading. Speaking may be learned through the use of many teaching and learning strategies. As claimed by Cameron in Nirmawati (2015), speaking is the active expression of meanings via language in a way that allows others to understand them. It is also seen as a social, contextualized, interactive communication event. According to many experts' interpretations, speaking is viewed as an interactive activity that

involves creating, receiving, and digesting information in order to express meaning and make others comprehend.

2.1.2 Type of Speaking

According to Brown and Abeywickrama (2004), the types of speaking are imitative, intensive, responsive, interactive, and extensive. The explanation of each type is as follows:

a. Imitative

This type is about the capability to imitate the word, phrase, or sentence. Brown and Abeywickrama (2004) explain that imitative is an ability to parrot back. In imitating, there is no concern about the ability to understand a piece of information or to convey a message in conversation. The only role here is to listen and repeat what is being said.

b. Intensive

Short statements are made in response to the other person during this sort of speech. Producing language in an intensive way is done to show mastery of a limited range of grammatical, phrasal, lexical, or phonological links according to Brown and Abeywickrama (2004). He also mentions the classroom activities in this type of speaking include reading aloud, sentence and dialog completion, and translation to a simple sentence.

c. Responsive

Responsive is a type of speaking that involves interaction and test comprehension at the limited level of only one or two follow-up questions or

answers which has meaning. The activity in the classroom can be in the form of conversation, greeting, small talk, simple requests, and comments.

d. Interactive

Interactive is in line with responsive, however interactive is more complex and the length of the answer is longer. Based on Brown and Abeywickrama (2004), interactive types include two forms of language which are transactional and interpersonal language. Transactional language is exchanging specific information that has a purpose while interpersonal language is exchanging information to maintain social relationships.

e. Extensive

This type of speaking is a monologue oral production such as speech, presentations, and storytelling. Extensive is a planned production of language and participants only act as a listener.

In short, there are five types of speaking which are imitative, intensive, responsive, interactive, and extensive.

2.1.3 Aspect of Speaking

According to Harris' (1969) theory, speaking analysis involves five different elements: pronunciation, grammar, vocabulary, fluency, and comprehension. The explanation for the aspect is as follows:

1. Pronunciation

According to Kurniati, et al (2015), pronunciation relates to a student's ability to communicate clearly. The phonological principles regulating how sounds

change and pattern in a language are examined. Additionally, Ilham, et al (2019), state that pronunciation refers to the phonological process, which is a grammar component comprised of the parts and concepts that define how sounds change and pattern in a language.

2. Grammar

Grammar is described as a systematic method of accounting for and forecasting an ideal speaker's or hearer's understanding of the language. All well-formed or grammatical utterances in the language may be created by following a set of rules or principles. While it is sufficient for students to understand one another when speaking, they also need to comprehend how the correct sentences should be put together when making them orally.

3. Vocabulary

Vocabulary is a collection of words that are used to express ideas. A wide vocabulary is necessary for effective language use since without it, one cannot take advantage of the language's structure and functions. Based on Kurniati, et al (2015), if a person's vocabulary is poor, they will be unable to communicate or convey ideas effectively in both spoken and written forms. Speaking more fluently will make it simpler to express ideas, emotions, and thoughts.

4. Comprehension

Understanding what others are saying and what one is saying is crucial for students while speaking. It also teaches learners how to effectively communicate with others by helping them grasp what they want to say.

5. Fluency

Harris (1969) states that it is the speed of the flow of speech. It is the ability to speak easily and smoothly. Ilham, et al (2019) explain that a relatively quick speaking rate and a minimal number of pauses are indicators of fluency. These signals imply that the speaker does not spend a lot of time looking for the words that need to be said.

In brief, five aspects of speaking can be used to analyze and assess speaking ability. The aspects are pronunciation, grammar, vocabulary, fluency, and comprehension.

2.2 Teaching Speaking

Teaching speaking means making students able to use the language orally. The primary goal of English language teaching is to prepare students to communicate effectively in English. Based on Lumettu and Runtuwene (2018) the goal of teaching English as a second language is to prepare students for communication in the English language, both verbally and in writing. When someone can meaningfully express what they feel and think by words or body language, or when they can comprehend what someone else is saying, that person is said to be communicating well. In line with Davies and Pearse in Leong and Ahmadi (2017), the primary goal of English language teaching is to prepare students to use English successfully and appropriately in conversation. Therefore, teaching speaking concerns making students use English to communicate in order to deliver their ideas and emotions.

Hereafter, Brown (1994) proposes some principles for designing speaking techniques. The following are some considerations for teachers when creating a speaking technique. Firstly, use strategies that address the range of learner demands, such as accuracy-based language instruction or message-based instruction that emphasizes engagement, meaning, and fluency. Secondly, provide approaches that are naturally motivating. Teachers should make an effort to speak about students' interests and eventual objectives, as well as their needs for knowledge, competence, and autonomy. Moreover, assist them in seeing how the activity will benefit them. It typically pays to explain the purpose of tasks to students, as they frequently don't understand them.

Further, encourage the use of authentic language in meaningful contexts. The teacher must emphasize the incorporation of real-world language use in the learning process, such as providing a real-life situation for students to do a speaking activity. Moreover, providing appropriate feedback and correction is beneficial for students' development in learning. Feedback serves as a crucial tool in guiding learners, offering insights into their strengths and areas that require improvement. Next, teachers may take advantage of the natural link between speaking and listening. Goals for both listening and speaking can work together seamlessly as you concentrate on speaking, and these two skills can complement each other.

Additionally, allow students to begin a spoken conversation. A large portion of ordinary classroom engagement is defined by the teacher initiating language use.

However, being good at oral communication means more than just responding; it involves starting conversations, choosing topics, asking questions, directing discussions, and changing subjects. When planning speaking activities, consider whether you're giving students the chance to initiate conversations.

According to the experts' opinion, teaching speaking means assisting students to achieve the main objective of learning the English language, which is having the ability to use the language orally in communicating. There are some principles that can be followed to design speaking techniques.

2.3 Learning Motivation

All successful people undoubtedly have a driving force behind their actions. Someone who lacks motivation is defined as unmotivated, whereas someone who is stimulated or activated in the direction of a goal is seen as motivated. According to Brown (1994), motivation is an innate need, feeling, or desire that pushes a person to take on a particular activity. In another interpretation, motivation is the desire to take action. In accordance with Ihsan (2016), motivation is a psychological concept that acts as an internal condition that drives people to achieve particular goals. Further, Makmun (2012) explains that motivation is the power, forces, or energy in oneself to make a move in a certain direction. In short, motivation is seen as a desire that pushes a person to take action toward achieving particular goals.

Moreover, Hall (2011) claimed that motivation is a crucial component in order to complete a specific action. Motivation is an important component of language learning. According to Dornyei (2005), motivation is one of the factors that significantly affects language learning because it serves as the main impulse for starting a second language study and later as the motivation to continue the learning process. In line with Rehman and Haider (2013), motivation is a vital component in students' learning and accomplishment at all levels of school. It can be concluded that motivation plays an important role in language learning as it serves as the driving force for initiating and sustaining the learning process. It is a key factor that significantly influences students' engagement, perseverance, and success in learning a second language.

Hereinafter, Ibrahim and Widodo (2022) define learning motivation as all internal efforts that result in learning activities, guarantee the continuation of learning activities, and provide direction to learning activities so that the intended goals are attained. In line with Masni (2015), learning motivation is the internal driving force that propels students to engage in learning activities so that the intended learning outcomes can be realized. Based on Darwan and Fadhlika (2023), learning and motivation are two concepts that are connected. Learning motivation is the most important factor in carrying out learning activities; without motivation, people would not engage in learning activities.

Therefore, learning motivation encompasses internal efforts that lead to continuous and purposeful learning activities, guiding individuals toward their

desired goals. It serves as the internal driving force that propels students to actively participate in learning tasks, ultimately enabling them to realize intended learning outcomes. The interconnectedness between learning and motivation highlights that without sufficient motivation, students are less likely to engage in learning activities. As a result, educators and institutions must develop a positive learning atmosphere that encourages and nourishes student motivation.

According to Makmun (2012), there are several indicators that can be used to measure students' learning motivation. Learning motivation consists of some indicators, namely: (1) learning duration, which is about how long someone is able to use the time to do an activity; (2) activity frequency, which is about how often an activity is done in a period; (3) persistency, which is the continuity at the purpose of the activity; and (4) perseverance, which is the ability to face hindrance and difficulty. (5) devotion, which is about making sacrifices to reach the goal. (6) The ambition level is the aim that will be accomplished by the action that will be performed; (7) qualification level, which discusses the result or outcome of the activity; and (8) attitude, which refers to the conduct displayed throughout the learning activity, such as a positive or negative attitude.

Moreover, Saeed and Zyngier (2012) support that students' motivation relates to how much work and concentration they put into learning in order to attain success. Further, Fitriani (2017) declares that motivation is a need for students that has to be fulfilled to increase their spirit in finishing the task. This means that students may work for an extended period of time without ceasing. Then, they are tenacious

in facing the challenges and bear the responsibility for completing the learning activity successfully.

Thus, motivation is the willingness of a person to do something and it plays a great role as an influence to achieve something. Learning and motivation are related to each other. Learning motivation contributes as a driving force for students to engage in learning activities. In measuring learning motivation, some indicators can be used as guidance namely: learning duration, activity frequency, persistency, perseverance, devotion, qualification level, and attitude.

2.4 Scientific Approach

The 2013 Curriculum is a curriculum based on the Ministry of Education Regulation No. 103 Year 2014 about Learning in Primary Education and Secondary Education. It has replaced the previous curriculum, which was a competency-based school-level curriculum. This curriculum uses a scientific approach. In the 2013 Curriculum, the teacher is asked to use scientific approach, which is intended to empower teachers to make the learning activities based on stages of scientific method.

Based on Nurdyansyah and Musfiqon (2015) scientific approach is intended to make students know, understand, and practice what is being learned scientifically. The rigor of science at its finest is applied to the design of a scientific approach. Students observe things, develop hypotheses about the phenomena, design experiments to test their hypotheses and present their results to others (Fauziati,

2014). The focus of this approach is on students. The students are intended to participate actively in exploring the material. Based on the Ministry of Education Regulation, scientific approach has five learning methods that can be adjusted with each characteristic of a lesson. The following are learning steps of scientific approach based on the Ministry of Education Regulation (2014) and Fauziati (2014):

1. Observing

   The activity is observing with the senses such as reading, listening, watching, or observing a picture with or without media. This step is intended to create students' curiosity about the material that will be discussed in class.

2. Questioning

   Secondly, after observing, the students are expected to ask about a thing that they do not understand from what they have observed or the students may ask for detailed information of the observed thing. In this stage, the students are expected to be critical.

3. Gathering information or experimenting

   This stage aims to explore and gather information from various sources. The students are asked to explore information relating to the material given in the class. The activities include reading references, doing experiments, surfing the internet, watching videos, etc.

4. Associating or processing information

   The students process information which already gathered. In this step, the students think inductively or deductively to make a conclusion based on what the students have done from the previous step about the material.

5. Communicating.

   The students are asked to present what they have got. The activities can be in the form of a group presentation, summarization, practice, or demonstration. The students can present their ideas verbally or in written form. This aims to develop their language skill and express their ideas briefly.

In short, scientific approach is a phenomenal way to conduct the teaching-learning process in curriculum 2013. It is intended to make students learn through scientific method that has five stages to be followed which are observing, questioning, experimenting, associating, and communicating.

2.5 Gamification

The concept of gamification is the use of game design elements and mechanics in non-game contexts, such as education, marketing, or workplace training, to engage people to achieve a specific goal or outcome. According to Kapp (2012), gamification is the thorough and studied use of game thinking for problem solving and learning, employing all suitable game features. He claims that gamification is more than simply adding points, prizes, and badges to learning activities. It is also supported by Terril in Welbers, et al (2019) who define gamification as the process of incorporating game concepts into other digital sites to improve engagement. Moreover, Deterding, et al (2011) explain gamification as a learning innovation in which game aspects are integrated into non-game situations. Therefore,

gamification is considered an application of game elements in a non-game context that can be perceived as an innovative way of learning.

Additionally, Maloney (2019) states that gamification combines well-designed digital and non-digital games to improve learners' language skills, and it includes game or play components in the learning environment to boost engagement and involvement. Games have an incredible motivational ability to get people to engage. Even without any kind of reward, only for the enjoyment of playing and the prospect of winning states Flores (2016). Moreover, Grabner-Hagen and Kingsley (2015) support the idea that gamification in education allows the teacher to gamify an activity. It incorporates game elements and reward systems into the learning process to motivate and engage students while also encouraging healthy competition. Students study a subject and practice skills in the same way as they would when playing a game. In short, the use of gamification in education is about gamifying the learning activities in the classroom by applying game elements. It gives an opportunity to boost students' engagement and help improve their motivation.

The use of gamification in learning can make the educational experience challenging and fun while at the same time motivating the learners to move forward argues Vassileva (2008). Moreover, integrating gamification in education can provide a more appealing and effective learning experience for students (Flores, 2016). In other words, gamification can be used to enhance learning experiences by making them more engaging and interactive for students. However, it is important

to design gamification elements carefully and thoughtfully and to ensure that they are aligned with the learning objectives and goals of the educational activity.

2.6 Game Elements

Kapp (2012) is a renowned instructional designer and expert on the topic of gamification. He outlines several key game elements that can be applied to educational settings to enhance learning experiences. Here are game elements based on Kapp's model:

1. Goals

   Goals are objectives that learners strive to achieve. They provide direction and focus which can help to motivate learners to persist in their efforts to learn.

2. Rules

   Rules are constraints that define the boundaries of the game. They provide structure and consistency and help to create a sense of fairness and balance.

3. Conflict, Competition, or Cooperation

   Conflict, competition, or cooperation are game mechanics that create social dynamics and interaction between learners. They can help to increase engagement and motivation by creating a sense of challenge or shared purpose.

4. Time

   Time is a game mechanic that adds urgency and pressure to the learning experience. Time limits can help to create a sense of challenge while providing learners with a sense of accomplishment when they complete tasks or achieve objectives within a given timeframe.

5. Reward Structures

   Reward structures are the systems by which learners earn points, badges, or other forms of recognition for their achievements. They help to create a sense of accomplishment and progress and can motivate learners to continue learning and striving to achieve their goals.

6. Feedback

   Feedback is a critical element of game-based learning, as it provides learners with information on their performance and progress. Feedback can be positive, negative, or neutral, and can help learners to identify areas of strength and weakness.

7. Levels

   Levels are a way to track progress and provide a sense of achievement. By progressing through different levels, learners can see their progress and feel a sense of accomplishment.

8. Storytelling

   Storytelling is a crucial component of gamification in education and training. The tale aspect makes the encounter more relevant and meaningful. It provides context for the task and guides players through the game as they seek to complete plot pieces and achieve the game's objective.

9. Curve of Interest

   The curve of interest is the idea that learners' interest and engagement may increase or decrease over time. Game mechanics can be used to help maintain learners' interest and motivation over time by introducing new challenges or increasing the difficulty of tasks.

10. Aesthetics

    Aesthetics refers to the visual and audio elements of the game, such as graphics, sound effects, and music. Aesthetics can help to create an immersive and engaging learning experience that appeals to learners' senses.

11. Replay or Do Over

    Replay or do-over is a game mechanic that allows learners to repeat tasks or activities to improve their performance. This can help learners to identify areas of weakness and improve their skills over time.

To summarize, there are several game aspects that may be used in the teaching and learning process, including objectives, rules, conflict, competition, collaboration, time, reward systems, feedback, levels, storytelling, the curve of interest, aesthetics, and replay/do-over.

2.7 Modified Scientific Approach

Scientific approach is used as an approach for every subject in the 2013 Curriculum. In accordance with English language teaching, Zaim (2017) states that scientific approach is believed to be an effective way for students who have a good basic ability to communicate orally in English. Nevertheless, there are some problems regarding the implementation of this. According to Zaim (2017), from the five stages of scientific approach namely observing, questioning, experimenting, associating, and communicating, not only the teacher finds it difficult to implement the stages of observing and questioning. It is explained that the problems faced by

the students in both stages are their limited vocabulary, which makes it hard for them to express ideas related to the things they observed, so they just keep silent. Moreover, in the questioning stages, students have difficulty creating questions, and it is observed that some students are afraid of making mistakes. In line with Atmarizon (2016), it is difficult to invite students to ask questions since they are afraid to speak out. Regarding this, Muslimah, et al (2017) argue that the implementation of scientific approach makes students less active in the learning process of questioning stages.

Besides, the limited duration also makes the teacher unable to implement the rest of the stages and causes only a number of students involved to communicate what they have done in front of the class. In line with Juliansyah (2018), the teacher and students also find problems when scientific approach is implemented in the teaching-learning process. The problems that the teacher has varied. They find it hard to select what activities and media can be applied to support the teaching and learning process. As stated by Atmarizon and Zaim (2016), the teacher experienced some problems while implementing scientific approach. In this study, the research elaborates on the problem faced by the teacher at each stage. In the observing stages, the teacher faces that the students have a low interest to be a part of the process. Then, in questioning, it is really hard to invite students to ask a question. In the communicating stage, the teacher said that they did not have enough time to mark all students. Therefore, in order to overcome the problem, the researcher intends to use elements of the game in scientific approach.

Gamification is applying game elements that help to boost students' engagement in class participation and improve the learning stages of scientific approach. The use of gamification in learning is proven to an engaging and fun. In line with Purnama, et al (2019), the result of their interview with students proves that games can be an interesting method to be applied in the learning process and make them convenient and easier to grasp English. Furthermore, Kapp (2012) suggests that gaming uncertainty might affect the emotional experience of learning, increasing engagement and, more significantly, boosting encoding and subsequent memory. As proved by Nieto-Escamez and Roldan (2021), using gamification in online teaching for some sciences such as chemistry, biology, computer science, medicine, and business during the pandemic era is an innovative, engaging, and efficient teaching strategy. Moreover, it is perceived as a fun activity.

Yurissa, et al (2022) conducted virtual learning for elementary school students using gamification. This classroom action research shows that students' motivation improved in PJOK learning and encourages elementary students to be competitive and tackle problems. Moreover, Grabner-Hagen (2023) confirms that the use of gamification improves academic performance and motivates students in class because they have fun, feel optimistic, and pay more attention. As stated by Ghawail, et al (2022) who conducted a study in pharmacy at Alasmarya Islamic University, gamification enables students to engage actively in chemistry lessons and to experience effective and enjoyable learning.

Farhan (2019) says that gamification may stimulate three crucial aspects of learning: emotional, intellectual, and psychomotor. Based on his research, students said that there is a lot of convenience to understand and attract students' attention because if they do not use this gamification, they will be bored. As supported by Rofida (2022), students show positive attitudes towards gamification, which helped them improve their pronunciation and enrich their vocabulary. By considering the emotional, intellectual, and psychomotor aspects of learning, gamification not only captures students' attention but also contributes to positive attitudes and tangible improvements in specific skills, such as language pronunciation and vocabulary enrichment. As educators continue to explore effective teaching methodologies, integrating gamification appears to be a promising strategy for fostering a more dynamic and interactive learning experience. Moreover, Wulantari, et al (2023) say that gamification enables real-time feedback and progress monitoring, both of which are critical components of efficient language acquisition. Students receive real-time feedback on their performance. This keeps students engaged, increases their self-awareness, and fosters a growth mentality.

Gamification can significantly enhance the stages of scientific approach, primarily observing and questioning. In the observing stage, gamification can make the observation activity more interactive and engaging by applying the storytelling and conflict elements of the game. Students can be presented with scenarios or the conflict element of the game that require them to observe and identify phenomena. By incorporating the game elements, the activity in class can capture students' attention and encourage them to carefully observe and analyze the given

information. Then, by presenting conflict to the students, gamification can stimulate their thinking and encourage them to come up with some questions. Moreover, gamification can improve the activity in the questioning stage by integrating it with the cooperation element in the game. The cooperation elements can provide opportunities for students to collaborate and exchange ideas among students, creating a more dynamic and interactive questioning stage.

2.8 Procedures of Teaching Speaking of Scientific Approach

Following the stages of scientific approach in the 2013 curriculum, there are five stages to teach speaking using the scientific approach, namely:

1. Observing

   Students are observing or listening to a video or audio. They focus on what is being said in the audio or video and try to comprehend what is being discussed in the audio or video.

2. Questioning

   Students are asking questions regarding the material that they do not understand.

3. Experimenting

   Students are searching and gaining information about the material from various sources.

4. Associating

   Students are processing the information they got to make a brief explanation about the information they got regarding the material.

5. Communicating

   Students are presenting or practicing the material. The activities can vary relating to the material.

2.9 Procedures of Teaching Speaking with Modified Scientific Approach

Goals, rules, time, and curve of interest elements of the game appear on the game while students follow the teaching and learning process by using Educaplay and Quizziz. Moreover, the reward structure appears after students do the task on each part. The activities are wrapped in aesthetic elements of the game which will provide visual and audio elements of the game, such as graphics, sound effects, and music. Aesthetics can help to create an immersive and engaging learning experience that appeals to learners' senses. Finally, there are levels of game elements that appear when students can replay/do over the first battle. If the students pass the first battle and have a high score, they can choose another level to be played.

Table 2. 1 Procedure of teaching speaking with scientific approach and modified scientific approach

Scientific Approach	Modified Scientific Approach
1. Students observe or listen to a video or audio. **(Observing)** 2. Students ask questions regarding the material that they don't understand. **(Questioning)** 3. Students search and gain information about the material from various sources. **(Experimenting)**	1. Teacher provides a story that has a conflict on Padlet. **(Storytelling-Conflict)** Students read the story and analyze the conflict given on Padlet. **(Observing)** 2. Students work in pairs to discuss the conflict in the story. **(Cooperation)** Each student shares thoughts and asks other friends

Scientific Approach	Modified Scientific Approach
3. Students process the information they got to make a brief explanation about the information they got regarding the material. **(Associating)** 4. Students present or practice the material. The activities can vary relating to the material. **(Communicating)**	regarding to the given conflict. **(Questioning)** 3. Teacher asks students' understanding of the story given and gives an elaboration of the conflict. **(Associating)** 4. Students play a battle in gathering information. **(Experimenting)** Teacher gives feedback of students' experiments after the battle. **(Feedback)** Students replay or do over the battle on the experimenting stage. **(Replay/Do Over-Levels)** Students see their position on the leaderboard. **(Reward Structure)** 5. Students practice to use the material through Educaplay/Padlet. **(Communicating)** In communicating stage, students compete with each other to get a high score. **(Competition)** Teacher shows the final leaderboard to the students. **(Reward Structure)**

The table above explains the different procedures for teaching speaking by using an original scientific approach and a modified scientific approach. The game elements are being incorporated into the stages of the scientific approach. Firstly, the observing stage is inserted with storytelling and conflict elements of the game. The game elements used in this stage help students build up connectivity to the material. To start using a language, it is crucial to create a meaningful context for students to think of the authentic language of a specific occasion. The given

context provided by the story, which has a conflict, is a starter for the students to think about the language that they are going to use in a certain situation. According to Brown (1994), one of the considerations in designing speaking techniques is using authentic language in meaningful contexts. Hence, by providing a story and conflict in the observing stage, students are invited to picture a certain situation in using authentic language to do a speaking activity.

Secondly, the questioning stage is incorporated with cooperation. According to Brown (1994), giving students opportunities to initiate oral communication, such as nominate topics, ask questions, control conversation, and change the subject, is part of oral communication ability. Therefore, the questioning stage is combined with cooperation elements of the game to allow students to initiate a conversation regarding the story provided on the observing stage. It is supported by Kapp (2012) that cooperation can create social dynamics and interaction between learners. By inserting the cooperation elements, students can discuss the story provided on the observing stage. After that, the associating stage in original scientific approach is substituted in modified scientific approach. The associating stage becomes the third stage. This stage is important to ensure students' comprehension of the previous activity and elaborate on the importance of doing the activity. It is believed that assisting students in seeing how the activity will benefit them is needed (Brown, 1994).

Next, the experimenting stage is incorporated with several game elements, namely feedback, replay/do-over, and levels. The experimenting stage is the most

effective stage for gaining speaking expertise. This stage asked the students to practice the material. In practicing language, sometimes students make mistakes and need correction as a development in learning. According to Brown (1994), providing appropriate feedback and correction helps students develop their learning skills. Feedback serves as a crucial tool in guiding learners, offering insights into their strengths and areas that require improvement. Hence, providing feedback and corrections is crucial while students are practicing the language to keep them improving. After the students are aware of their mistakes, it is perfect to give them the opportunity to correct them. Thus, the replay/do-over game elements can create an opportunity for students to work on their mistakes. By replaying the game, students can repeat their tasks to improve their performance (Kapp, 2012).

Lastly, Brown (1994) explains that providing intrinsically motivating techniques is one of the principles in designing speaking techniques. The competition and reward structure give a sense of challenge and accomplishment for the students, so they are eager to compete to get a high score on their performance. These game elements are able to make the implementation of a modified scientific approach motivating. Based on Kapp (2012), reward structures help to create a sense of accomplishment and progress, which can motivate students to continue learning and striving to achieve their goals. Moreover, the competition elements in the communication stage help to increase students' engagement by creating a sense of challenge.

2.10 Theoretical Assumption

The implementation of scientific approach enables students to be active in the classroom since the syntax urges students to engage in the classroom in order to build up their understanding of the material. However, there are several flaws in the implementation of scientific approach as teachers find it difficult to decide the kinds of activities to be implemented in the observing and questioning stages, and due to this unclear activity at each stage, students find it hard to follow the teaching and learning process. Besides, each syntax of scientific approach is too broad to be followed by the English teacher.

Those issues can be tackled by integrating gamification into scientific approach. As explained before, gamification can be a powerful strategy to improve the use of scientific approach since there are game elements that offer a variety of activities. Game elements can be inserted at each stage of the scientific approach, especially at the observing and questioning stages. The deficiency in the implementation of the observing stage lies in what activities the teacher can provide in the early stages to make students observe. At this point, the game's conflict and storyline components can be added by the teacher. Students must be exposed to the language itself in accordance with language teaching. Moreover, in the questioning session, by using elements of cooperation students may find it easier to cooperate with others to share their thoughts and formulate a question regarding the storyline and conflict that are discussed on the observing stage.

Besides, by using gamification, the learning process is covered with an aesthetic game element by using a website or application of a game that can attract students' engagement and be used for continuous learning. The game elements let students enjoy learning so they can lose their negative feelings about teaching and learning. Therefore, the teachers are advised to employ gamification to foster autonomous and favorable learning environments.

2.11 Hypothesis

There are three hypotheses based on the research questions in this research, which are:

1. There is a significant difference in speaking ability of the students who are taught by using modified scientific approach and original scientific approach.
2. There is a significant difference in learning motivation of the students who are taught by using modified scientific approach and original scientific approach.
3. There is a correlation between learning motivation and speaking ability of the students who are taught by using a modified scientific approach

This chapter has explained the literature review that needs to support the research. the following chapter will go into the research methodology.

III. METHODS

This chapter describes the method utilized to perform the research. There will be an explanation of the study design, data variables, data source, sampling and data collection techniques, research instruments, instrument validity and reliability, research process, data analysis, and hypothesis testing.

3.1 Design

With a quantitative approach, this study used an experimental design to examine the difference in students' learning motivation and speaking ability between the modified scientific approach and the original scientific approach. The two groups were given different treatments of the independent variable. The research design could be seen as follows:

G1 T1 X1 T2
G2 T1 X2 T2

Note:
G1: Experimental Group
G2: Control Group
T1 : Pre-test
X1: Treatment with modified scientific approach
X2: Treatment with original scientific approach
T2: Post-test

Moreover, this research employed a correlational design to see the correlation between learning motivation and speaking ability. The research used Pearson product moment to calculate the score of learning motivation and speaking ability.

3.2 Variables

This study included two variables: the dependent variable (Y) and the independent variable (X). The dependent variable is the primary variable in the investigation. This variable is a product of other interactions between variables involved in research (Setiyadi, 2018). Moreover, a dependent variable is also known as an output variable, which is influenced by the independent variable (Sugiyono, 2015). Besides, there is a variable that is used to influence the dependent variable, namely the independent variable (Setiyadi, 2018). It is supported by Sugiyono (2015), who argues that the independent variable causes changes in the dependent variable. Learning motivation and speaking ability are considered the dependent variables (Y). Then, the independent variables (X) are the modified scientific approach and the original scientific approach. For the third research question, the independent variable (X) is learning motivation, and the dependent variable (Y) is speaking ability.

3.3 Data Source

The source of data in research is the subject from which the data is obtained. The subjects of the research are people or objects that can provide information to answer the formulation of the problem.

3.3.1 Population and Sample

The participants for this study were the first-semester seventh-grade students from SMP Negeri 6 Natar. There are 34 pupils in each class. This study employed a purposive sampling strategy. According to Sugiyono (2015), purposive sampling is

a sampling approach that takes specific factors into account. In this study, the researcher chose a sample of students from classes 7A and 7C who meet the criteria of this research, which is that every student in this class owns and can use a smartphone.

3.3.2 Setting

The research was conducted at Junior High School 6 Natar. The school is located at Beringin Street number one, Tanjung Sari, Natar, South Lampung. This school could be considered a new school that was formed on August 9th, 2021. This school was first called SMP Negeri 3 Natar, and this school had two buildings, which were in Hajimena and Tanjung Sari, but the government separated these two school buildings and made the school building in Tanjung Sari SMP Negeri 6 Natar. The researcher chose this school in accordance with the modified scientific approach effect on the junior high school students, which is located in the suburb, and since the school still uses Curriculum 2013.

3.4 Data Collecting Technique

This study's data consists of students' speaking scores from performing dialogues dealing with the speaking components described by Harris (1969), including pronunciation, fluency, vocabulary, grammar, and understanding, as well as scores from students' learning motivation questionnaires. Before beginning the treatment, the researcher gathered data by providing a speaking test and a learning motivation questionnaire. The researcher used the following steps to acquire the data:

1. Administering Questionnaire

   Before the test and treatment began, the students were asked to fill out a questionnaire about their motivation to know the students' motivation before the treatment.

2. Pre-test

   This test aimed to measure the students' speaking ability before the treatment. The teacher explained what the students had to do and what aspect was being scored by the teacher. The teacher gave ten minutes for the students to prepare themselves regarding the topic which was asking and giving self-information. While conducting the test the researcher asked students to record themselves for about fifteen minutes and submit the video to class Padlet.

3. Treatment

   The treatment took place after the pre-test was done. There were six meetings in conducting the treatments based on the lesson plan made by the researcher In this study, three meetings were held to conduct the treatment using the modified scientific method and three meetings to conduct the original scientific approach.

4. Post-test

   This test was conducted after the treatment was done. It aimed to measure the speaking ability of the students in having a dialogue about the topic given by the teacher. The post-test was recorded for about eight to ten minutes and transcribed. Then, the result of the test was compared to the pre-test‘s result. The test was conducted to investigate whether there was an improvement in

students' speaking ability after they were taught by modified scientific approach.

5. Administering Questionnaire

   This questionnaire was used to know whether the students' motivation improved or not after the treatment.

3.5 Research Instruments

A research instrument is a tool or device used by researchers to collect data in order to investigate a particular phenomenon or answer research questions. The following are the instruments used in this research, namely:

3.5.1 Speaking Test

The speaking test served as the performance assessment for this study. According to Brown and Abeywickrama (2004), a test is a method of assessing students knowledge and abilities in a certain topic. The researcher utilized a speaking test to see if students speaking abilities improved. Speaking ability was the student's performance in making a dialogue about introducing themselves. At first, the pre-test measured the students' initial ability to speak, and then the post-test took place after treatment.

3.5.2 Questionnaire of Learning Motivation

The researcher distributed a questionnaire to determine each student's motivations. A questionnaire is a group of questions or a written statement that the respondent must answer (Sugiyono, 2015). This questionnaire was derived from Makmun's

(2012) eight learning motivation indicators. There were thirty items in the questionnaire to measure students' learning motivation, as can be seen in the table specification of the Learning Motivation Questionnaire. The questionnaire displayed multiple-choice questions, which had four options (A, B, C, and D). Every choice has its score. The range of the score from A to D is 4 to 1 (see Appendix 1). The researcher used a Likert scale in scoring the questionnaire results.

Table 3. 1 Item of Learning Motivation Questionnaire

Indicator	Item	Total
Learning duration	1,2,3	3
Activity frequency	4,5,6,7	4
Persistency	8,9,10,11,12	5
Perseverance	13,14,15	3
Devotion	16,17,18,19,20	5
Aspiration Level	21,22,23	3
Qualification level	24,25,26	3
Attitude	27,28,29,30	4
Total items		30

3.6 Validity and Reliability of Instruments

The test's validity and reliability must be evaluated in order for it to meet excellent test requirements. They are as follows:

3.6.1 Validity of the Speaking Test

Validity is appropriate, meaningful, and useful for the result assessment with the purpose of the assessment (Gronlund in Brown and Abeywickrama,2004). There were some types of validity in determining the validity assessment result namely:

1. Content Validity

Content validity is checking the relationship between the assessment and the material, whether it is connected or not. Based on Setiyadi (2018), content validity relates to the whole question item in an instrument. To ensure this type of validity, the researcher matched the test items and assessed if the test already represented the content to be tested. In this study, the researcher obtained the curriculum for a seventh-grade junior high school from the 2013 English Curriculum, created the material, and administered the exam based on the learning objectives supplied by the syllabus. Each test item's degree of agreement was measured by the validator, who is an English teacher from the school, in order to determine whether the test was valid. The researcher provided a table of checklists for the validator.

2. Construct Validity

Construct validity is required for an instrument that uses some indication to measure one feature (Setiyadi, 2018). Furthermore, according to Nurweni (2018), a test's construct validity should be proven by test items created in accordance with the theory of what is being examined. To assess the construct validity of the test, the researcher used expert judgment to determine if the speaking test was consistent with the theory of the speaking element. The student's speaking skills were examined using Harris' theory of oral production test. There were five aspects to the scoring rubric: pronunciation, vocabulary, grammar, fluency, and comprehension (Harris, 1969). Hence, the researcher provided a table checklist to know the level of agreement from the validator. The validators were the teachers in SMP Negeri 6 Natar, namely; Dra. Intan Suri, who graduated from English

Education at Lampung University, and Dian Mayasari, S.Pd. who graduated from Sriwijaya University.

Table 3. 2 Validity of the Speaking Test

Test	Construct		Content	
	Rater 1	**Rater 2**	**Rater 1**	**Rater 2**
Pretest	100%	100%	100%	100%
Posttest	100%	100%	100%	100%
Average	100%		100%	

It is displayed in the table above that the overall percentage of construct validity is 100%. In other words, the two raters agree that the instruments for conducting pretest and posttest have fulfilled construct validity. Similarly, having the average score of 100%, the tests have met the criteria of content validity based on the result from the rater. Therefore, it can be said that the pretest and posttest made by the researcher are valid.

3.6.2 Validity of Learning Motivations Questionnaire

To check the validity of the questionnaire, the researcher utilized a table judgment for the experts. The table checklist was checked by two experts to validate the items of the questionnaire. The experts involved were two English teachers and the researcher. The expert judged the questionnaire items based on the theory of learning motivation indicators used in this research from Makmun (2012). The experts involved in this research to validate the questionnaire are two counseling teachers on SMP Negeri 6 Natar, namely: Jenny Fajar Rohendah Sary, S.Pd. and

Maghdalena Gustiana, S.Pd. They both graduated from the counseling and guidance department at STKIP PGRI Bandar Lampung and learned about learning motivation.

Table 3. 3 Validity of the Questionnaire

Test	Construct		Content	
	Rater 1	**Rater 2**	**Rater 1**	**Rater 2**
Pretest	100%	100%	100%	100%
Posttest	100%	100%	100%	100%
Average	100%		100%	

As the table above clearly shows, the construct validity of the questionnaire is 100%. Likewise, the content validity of the questionnaire is 100% as well. With an average score of 100% from raters, the questionnaires have met the criteria for content and construct validity. As a result, the researcher's pretest and posttest are valid.

3.6.3 Reliability of the Speaking Test

A reliable test should be consistent and dependable. The test should yield similar results to the same test for the students (Brown and Abeywickrama, 2004). This research utilized inter-rater reliability. Inter-rater reliability is having more than one rater score students' work without any discussion or cooperation between raters during the process of scoring (Nurweni, 2018). Therefore, to make the test reliable, this research employed two raters to judge students' speaking abilities. The first rater was the researcher herself, and the second was the English teacher of seventh

grade students named Dian Mayasari, S.Pd. who graduated from Sriwijaya University.

Moreover, Setiyadi (2018) adds that reliability is described statistically using correlation calculations by looking for a coefficient between 0 and 1, if the coefficient is close to 1 then the reliability is high. After gathering the data, the researcher assessed the coefficient value between two raters using the reliability criterion given by Setiyadi (2018), as follows:

1. Very low reliability has a range from 0.000 to 0.200.
2. Low reliability has a range from 0.200 to 0.400.
3. The average reliability range from 0.400 to 0.600.
4. High reliability has a range from 0.600 to 0.800.
5. Very high reliability has a range from 0.800 to 1. 00.

Based on the explanation above, it can be assumed that the students' speaking ability test was reliable if the values accomplish the range of 0.600 to 0,800 (high reliability). To know the result of the coefficient, the researcher used Rank-order Correlation with the formula:

$$r = 1 - \frac{6 \sum d^2}{n\,(n^2-1)}$$

Notes:
r = reliability of the test
n = number of students
d = difference of rank correlation
1 – 6 = the constant number (Hatch and Farhady, 1982:206)

3.6.4 Reliability of Questionnaire

The researcher employed Cronbach's Alpha Coefficient to assess the consistency of questionnaire items since it was the most often used tool for examining

questionnaire reliability. The alpha runs from 0 to 1. The greater the alpha, the more trustworthy the questionnaire was. The researcher utilized the post-test score to assess the questioner's reliability. Furthermore, to determine the categorization of reliability, the researcher utilized the following scale:

a. Between 0.800 to 1.00 = very high reliability
b. Between 0.600 to 0.800 = high-reliability
c. Between 0.400 to 0.600 = moderate reliability
d. Between 0.200 to 0.400 = low-reliability
e. Between 0.000 to 0.200 = very low reliability

3.7 Research Procedure

The researcher implemented the research procedures to make the process of the research systematic. The following are the steps:

1. Determining population and sample

   The population of this research was the seventh-grade students of SMP Negeri 6 Natar. The sample was the students from a class who were able to use a smartphone.

2. Selecting the material

   The material was based on the English subject syllabus of junior high school.

3. Administering pre-learning motivation questionnaire

   The students answered the learning motivation questionnaire by using Google Formulir.

4. Administering the pre-test

   The pre-test took place before the treatment and the teacher instructed the students by providing a simple example of the pre-test. As a result, the students were able to comprehend it. The pre-test was designed to determine the

student's ability to speak before the treatment. The students film their performance in speaking. Then, students upload their speaking videos on the Padlet provided by the teacher.

5. Conducting treatment

   The treatment was completed in six meetings. Each meeting lasted 80 minutes. The teaching and learning process was based on the lesson plan created by the researcher using the techniques of the modified scientific approach for the experimental class and the original scientific approach for the control class.

6. Administering post-test

   The post-test took place after the treatment. The students performed a conversation regarding asking and giving self-information by filming themselves using their cellphones. Then, submit it to Padlet.

7. Administering post-learning motivation questionnaire

   After the treatment, students answered the learning motivation questionnaire by using Google Formulir.

8. Analyzing the data

   The result of the test was analyzed by presenting the collected data in Microsoft Excel and then calculating the mean score of students' learning motivation and speaking ability in each class. After that, the researcher processed the statistical calculation by using SPSS.

3.8 Data Treatment

Before utilizing the Independent Group T-test to explore the hypotheses set forward by Setiyadi (2018), three essential assumptions must be met:

1. The data are an interval.
2. The data are taken from a random sample in a population (non-absolute).
3. The data are distributed normally.

Thus, it is essential to find out the normality and the homogeneity of the test before having further analysis of the result.

3.8.1 Normality Test

The main goal of the normality test is to know whether the data are normally distributed or not. To determine the value, the researcher utilized the Saphiro Wilk to analyze the data. Below is the formula:

H_0: The distribution of the data is normal.

H_1: The distribution of the data is not normal.

The level of significance used is 0.05. HO is accepted if the result of the normality test is higher than 0.05 (sign > 0.05).

3.8.2 Homogeneity Test

A homogeneity test must also be conducted before the data is processed. This test is run to see the similarity of the distribution between the two classes. The hypotheses are:

H_0: The data is taken from two samples in the same variances. (homogeneous)

H_1: The data is not taken from two samples with the same variances. (homogeneous)

The null hypothesis (HO) is accepted if the significant level of the test is higher than 0.05.

3.9 Data Analysis

Before answering the three research questions, the researcher tabulated the score of learning motivation and speaking ability from both classes. After that, the data were analyzed by using some steps below:

1. Calculating the mean score of pre-test and post-test of learning motivation and speaking ability.
2. Getting the improvement to see whether there is a significant difference in students' speaking ability after being taught by a modified scientific approach and original scientific approach.
3. Obtaining the gain score of speaking ability from both classes.
4. Answering the first research question by using an independent group t-test to know the significant difference between the experimental class and the control class. Independent groups t-test is used to compare two different groups that are taken from a different situation as well states Setiyadi (2018).
5. Getting the improvement of students' learning motivation score in order to find whether there is a difference in students' learning motivation after being taught by a modified scientific approach and original scientific approach.
6. Obtaining the gain score of learning motivation from both classes.
7. Answering the second research question by using an independent group t-test to determine the significant difference between the experimental class and the control class.
8. Answering the third research question by using Pearson product moment to know the correlation between students' learning motivation and speaking

ability in the experimental class. The formula of Pearson product moment is as follows:

$$r_{xy} = \frac{N\ (\sum XY) - (\sum X)(\sum Y)}{\sqrt{\{N\ \sum X^2 - (\sum x^2)\}\ \{(N\ \sum Y^2 - (\sum y^2)\}}}$$

r_{xy} = correlation coefficient between variable x and y
N = number of samples
$\sum_{xy}$= the number of multiplications between x and y
$\sum$X = total of variable x (motivation)
$\sum$Y = total of variable y (speaking ability)
$\sum x^2$= the square of the value of x (motivation)
$\sum y^2$= the square of the value of y (speaking ability)

(Hatch and Farhady, 2015:198)

3.10 Hypothesis Testing

The hypothesis is a temporary answer to the research question. Setiyadi (2018) explains that a hypothesis in research is a statement of variable distribution or the relation between two variables that would be investigated. There were two hypotheses in this research namely null hypothesis (H_0) and alternative hypothesis (H_1). The formula for testing the hypotheses of this research is:

H_1 = Sig. <0.05

3.10.1 Hypothesis Testing on RQ1

The researcher utilized an independent t-test in order to find out whether there was a significant difference in students' speaking ability who taught with modified scientific approach and original scientific approach. The hypothesis of the research question could be drawn as follows:

H_0: There is no significant difference in speaking ability of the students who are taught by using modified scientific approach and original scientific approach.

H_1: There is a significant difference in speaking ability of the students who are taught by using modified scientific approach and original scientific approach.

3.10.2 Hypothesis Testing on RQ2

The researcher used an independent t-test to calculate the questionnaire result in order to find out whether there was a difference in students' learning motivation. The hypothesis of the research question could be drawn as follows:

H_0: There is no significant difference in learning motivation of the students who are taught by using modified scientific approach and original scientific approach.

H_1: There is a significant difference in learning motivation of the students who are taught by using modified scientific approach and original scientific approach.

3.10.3. Hypothesis Testing on RQ3

The researcher used Pearson product moment to find out the correlation between students' learning motivation and speaking ability. The hypothesis of the research question could be drawn as follows:

H_0: There is no correlation between learning motivation and speaking ability of the students who are taught by using a modified scientific approach.

H_1: There is a correlation between learning motivation and speaking ability of the students who are taught by using a modified scientific approach.

This chapter has described the research methodology including the research design, data variables, data source, sampling technique, data collecting technique, research instrument, validity and reliability of instruments, research procedure, data analysis, data treatment, and hypothesis testing.

V. CONCLUSION

This chapter presents the conclusion, the limitations, and the recommendations of the research.

5.1 Conclusion

In conclusion, there is a significant difference in students' speaking scores between those who were taught with the modified scientific approach and the original scientific approach. The modified scientific approach, incorporating the game elements, proves to be an effective method in capturing students' attention, fostering engagement, and enhancing overall learning outcomes. The incorporation of game elements not only engages students but also facilitates a self-directed learning process, allowing them to learn from their mistakes without hesitation. As a result, students become active learners, maintaining concentration and persistence throughout the learning process. This leads to a better learning outcome.

Moreover, the positive impact on students' learning motivation is evident, as the game elements create a comfortable and stimulating learning process. Although students' learning motivation in both classes has improved, the improvement in the experimental class is higher than that in the control group. The modified

scientific approach appears to be successful in fostering a desire to talk and learn. As seen by the improvement in students' learning motivation, which is shown by questionnaire answers that highlight enhanced learning duration, persistence, and positive attitudes. Therefore, it implies that the implementation of modified scientific approach improves students' learning motivation.

Moreover, the observed high correlation between learning motivation and speaking ability implies that motivated students have a stronger incentive to practice the language, ultimately leading to better speaking skills compared to their less motivated. In essence, the modified scientific approach, enriched with game elements, not only transforms the learning environment but also elevates students' learning motivation and speaking abilities, emphasizing its efficacy in language education.

5.2 Limitations

It is crucial to acknowledge a limitation in this research, primarily related to the reliance on the sample, the use of motivation questionnaires, and the integration of game apps to gamify classroom activities. The generalizability of the findings may be constrained by the specific characteristics of the chosen sample. Variability in students' backgrounds, prior experiences, and individual preferences could impact the applicability of the results to a broader population.

Additionally, while motivation questionnaires provide valuable insights into students' perceptions, they might not capture the full complexity of motivational factors. Students are still confused in answering the questionnaire since some

questions are not in accordance with their background and the learning process in that school so it is not understandable for them. Moreover, the Students' motivation is a complex issue impacted by a variety of internal and external elements that may not be fully captured in the questionnaire format. Moreover, the use of game apps to gamify class activities, while effective in enhancing engagement, may not be universally applicable across different educational contexts or subjects. The effectiveness of gamification may vary based on the nature of the content and the diverse learning styles of students. Besides, the use of Educaplay in presenting students' scores is hard to interpret and some devices can not access the game application because it is not supported.

5.3 Recommendations

Based on the research findings, the researcher provides several recommendations to be considered:

1. Considering the positive outcomes of using modified scientific approach in improving students' speaking ability, English teachers are encouraged to apply the modified scientific approach to teaching foreign languages. However, teachers should make sure the game application is suitable for the lesson and accessible on all devices.
2. Games are always perceived as fun activities for young learners. The students' excitement about following the learning process makes them eager to reach the learning goal. By applying the modified scientific approach to boost students' learning motivation, teachers should pay close attention to students' progress in following the learning steps through their cellphones.

3. Concerning the observed high correlation between students' learning motivation and speaking ability, teachers are suggested to build students' learning motivation in order to maintain their engagement in the learning process.
4. For other researchers, it is recommended to conduct the upcoming research by choosing a sample that has a similar level of education as this research in order to justify the findings of the research since most of the previous researchers' samples are higher level students, such as undergraduate students and senior high school students.

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