CHAPTER II

THEORITICAL FRAMEWORK

A. Curriculum

1. Definition of Curriculum

Etymologically, the curriculum is derived from the latin word "curricula "means the distance of race that must be taken by a runner. In the past, the curriculum was defined as a period of education that must be taken by students to produce a diploma as a runner who had to take a distance of race to reach the finish line.[1] Terminologically, the curriculum has a variety of different interpretations according to the viewpoint of each expert. Based on the studies that have been conducted by many experts, the definition of curriculum can be viewed from two different sides; those are the old view and new view.

The old view is often called as the traditional view, which states that the curriculum is a subject that must be taken by students to produce a diploma. Meanwhile, new view is called modern view, that is the entire organized course, activities, and experience which pupils have under direction of the school, whether in the classroom or not.[2] Curriculum plays important role in education. It can be said that curriculum is the hearth of education since the quality of education as well as the outcomes are determined by how well the curriculum is arranged and implemented. According to Pater (1982)

[1]Susilo, Muhammad Joko. 2008. *Kurikulum Tingkat SatuanPendidikan*. Yogyakarta: Pustaka Pelajar.

[2]Oemar Hamalik.2009.*Dasar-DasarPengembanganKurikulum*. Bandung: Remaja Rosdakarya.

curriculum isthe plan or program for all experiences which the learner encounters under the direction of the school.[3]

In addition, Kunandar (2011) states that the definition of curriculum is a set of plans and arrangements regarding the purpose, content, and teaching material and methods as a guide of the implementation of learning activities to achieve specific educational goals by Government Regulation Number 19 year 2005 on National Education Standards.[4] Beside that Cahyono and Widiati (2011) state curriculum is a set plans and arrangements covering educational goals, contents, learning materials and learning methods intended as the guidelines in implementing the teaching and learning process to achieve the goals that have been set. It means that anything related to education system is documented which functioned as guideline for conducting teaching.[5]

From those definitions it can be constructed that curriculum is set of general plans and arrangement of instructional acts covering educational goals, contents, learning materials, and learning methods as well as strategies functioned as the guidelines in teaching for achieving the desired goals.

As some meanings are definitions of the curriculum explained before, basically it has a function as a guide or reference. The

---

[3]Muhammad Imam Mursydto,*Using Audio-Video Media To Impove Speaking Skill Of Grade X Vocational Srudents Of SMK PiamarrukmoSleman In The Academic Year Of 2013-2014(Yogyakarta State University, 2014)*

[4]Kunandar, k. 2011.Evaluasi Program *Pengembangan dan Implementasi Kurikulum TindkatSatuan Pendidikan (KTSP)*.Jep- Jurna lEvaluasi Pendidikan.

[5]Cahyono.Bambang, Yudi. And Utami, widiati. 2011. *The Teaching of English as a foreign Language in Indonesia*. State University of Malang Press.(2011)

functions of curriculum in each of the participant are different, such as teacher, students, principals, supervisors, parent, and community. For teacher, the curriculum should serve as guidance in implementing the learning process. For students, the curriculum serves as a study guide. For principals and supervisors, curriculum serves as a guideline in conducting supervisors. For parents, the curriculum serves as a guide in guiding children to learn at home. Meanwhile for the community, curriculum serves as a guide to provide assistance for the implementation of the educational process at school.[6]

The curriculum change is a process to make something or a condition be better. Curriculum change happens with reasons and purposes, to make it more relevant. Curriculum change can answer the demands toward the education that must be able to adjust the evolving dynamics in society.

2. The Curriculum 2013

The latest curriculum used by education in Indonesia is Curriculum 2013. Curriculum 2013 focuses on education based on competences and characters. Burke (1995) states competence is a knowledge, skill, and abilities or capabilities that a person achieves. Students are able to perform particular cognitive, affective, and psychomotor behaviors. Mulyasa states that character in the curriculum 2013 is a combination between manner or moral and knowledge based on competency standard

[6]Ruhitman, Toto. And Muthia, Alinawati. 2011. *Model Pengembangan dan Organisasi Kurikulum*. Dalam Ibrahim, dkk.,KurikulumdanPembelajaran. Jakarta: RajawaliPres

in every educational unit.[7] He also states that through the curriculum 2013, students are expected to increase and use through their knowledge independently and review character values and attitude to apply in daily behavior.[8]

The curriculum 2013 uses contextual method based on competences, characters and lesson which concerns with skills developed by competence approach. They are two theoretical bases which become the reasons of it, those are individual learning and mastery learning.[9] In individual learning, students are able to learn by their own way and based on their ability. In mastery learning, students are able to learn all materials with good evaluation based on appropriate learning system. In conclusion, the curriculum 2013 forces the students to develop their knowledge based on their own potential. The students learn from what they get inside and outside learning process naturally.[10]

---

[7]Mulyasa. 2013. *PengembangandanImplementasiKurikulum 2013*. Bandung: PT Remaja Rosdakarya.

[8]Mulyasa. 2013. *PengembangandanImplementasiKurikulum 2013*. Bandung: PT RemajaRosdakarya.

[9]Kemendikbud. 2016. *The Implementation of Scientific Approach in English Teaching (*2013a). *Minister of Education and Culture Decree No. 81A/2013: Implementasi Kurikulum.*
Retrieved April, 14, 2016, from
http://sdm.data.kemdikbud.go.id/SNP/dokumen/Kur/Permen%20Nomor%2081A%20th%202013%20ttg%20Implementasi%20Kurikulum.pdf

[10]Kemendikbud. 2016. *The Implementation of Scientific Approach in English Teaching (*2013a). *Minister of Education and Culture Decree No. 81A/2013: ImplementasiKurikulum.* Retrieved April, 14, 2016, from
http://sdm.data.kemdikbud.go.id/SNP/dokumen/Kur/Permen%20Nomor%2081A%20th%202013%20ttg%20Implementasi%20Kurikulum.pdf

B. Definition of Scientific Approach

Scientific is something that is related to science. This word is derived from the word "science". Scientific Approach means method by using science rules. Therefore, scientists who use this approach for their research should use the rules of science. It is also stated in the Online Longman Dictionary that scientific approach is a process in finding out information in science by testing ideas through experimenting and making decisions based on the result. It can be said that this approach can be called as a technique in investigating, observing, gaining, and also integrating the phenomena by previous knowledge.[11]Generally, this approach is used by scientists in doing a research related to the phenomena of science or natural world. It is used by scientists because of the reliability of this approach for obtaining knowledge. Ary, et al (2002) mentions that scientific approach is used for observing the phenomena and have used it to explain, predict, and control the physical phenomena.[12]

Using scientific approach as method in doing the research means that the researcher should follow the step in order. There are several steps in scientific approach that should be followed. McLelland explains that some steps in scientific approach are observation, defining question or problem, research (planning, evaluation current evidence), forming a hypothesis, prediction from the hypothesis deductive reasoning), experimentation (testing the hypothesis),evaluation and analysis, peer review and evaluation, and

[11]Suharyadi. 2013. *Exploring Scientific Approach in English Language Teaching*. Bandung: Alfabeta

[12]Ary, D., Jacobs, L. C., &Razavieh, A. 2006.*Introduction to Research in Education*. South Melbourne: Thomson.

publication. That step used by the researchers or scientists was usually called as discovery skills.[13]

The steps in scientific approach for conducting research are described by. McLelland as follows:

1. Observation

Observation as a process is discovering something in such a phenomenon. The discovery of a phenomenon will occur because the observer has interest on it. The discovery may even be by change, although the observer is forced to do the observation.

2. Question

The following step after the researcher doing the observation is questioning. Observation will lead to some question that need to be answered. The aim why the question based on observation need to be answered is respond to human curiosity.

3. Hypothesis

By doing the observation, it will result in formulating scientific questions that are answerable to generate formation of hypothesis. Hypothesis is a process in answering the questions that have been formulated. Hypothesis cannot be developed without the research problem. The development can be done by characterizing the subject of investigation. Hypothesis is generally consistent with existing knowledge and conductive to further inquiry.

[13]Mclelland, C. V. 2006. *The Nature of Science and the Scientific Method. The Geological Society of America*. Retrieved March 10, 2014, from http://www.geosociety.org/educate/NatureScience.pdf.

4. Experiment

   The process of experiment designed to prove or disprove the hypothesis if the prediction is correct, hypothesis will not able to be rejected.

5. Evaluation

   Evaluation is important to make sure that the conclusion has been made is not wrong. It is usually done by presenting it in scientific meeting. So, it can be reviewed if there is an incorrect thing inside the research paper. The evaluation process is very important for scientists to make their researches be accurate, innovative, and comprehensive.[14]

The steps mentioned above which are used by scientists using Scientific Approach is similar to the process of thinking in every human in generating idea. It is also stated by McLelland that scientific method is a way of learning process by using critical thinking that will produce creative ideas.

Considering the relevancy and reliability, scientific approach is adopted for teaching and learning activity. Besides, the students' learning outcomes will increase by using this approach. Therefore, the students learning active participation and their knowledge will be improved. It is in line with Suharyadi that scientific approach is very effective to increase

[14]Mclelland, C. V. 2006. *The Nature of Science and the Scientific Method.The Geological Society of America*.Retrieved March 10, 2014, from http://www.geosociety.org/educate/NatureScience.pdf.

the students' learning outcomes and stimulate them to be actively involved in the teaching and learning activity.[15]

For the entire teaching and learning activity with scientific approach, the terms which are used come from Dyer, et al. in the teaching and learning activity using Scientific Approach. The steps of Scientific Approach for scientific learning are rearranged by considering the three domains in taxonomy for learning by Bloom as the goal of education (Ministry of education, 2014). Those are cognitive (thinking), affective (emotion/feeling), and psychomotor (physical/kinesthetic).In the implementation for the teaching and learning activity, those steps are developed based on the needs of learning.[16]

a) Cognitive or thinking domain

Based on the 1956 work, *The Handbook I-Cognitive Domain*, behavioral objectives that dealt with cognition could be divided into subsets. These subsets were arranged into taxonomy and listed according to the cognitive difficulty — simpler to more complex forms. In 2000-01 revisions to the cognitive taxonomy were spearheaded by one of Bloom's former students, Lorin Anderson, and Bloom's original partner in defining and publishing the cognitive domain, David Krathwohl. Please see my page entitled Anderson and Krathwohl-Bloom's Taxonomy revised for further details.[17]

---

[15]Suharyadi. 2013. *Exploring Scientific Approach in English Language Teaching*. Bandung: Alfabeta

[16]*https://thesecondprinciple.com/instructional-design/threedomainsoflearning/*

[17] https://id.wikipedia.org/wiki/Taksonomi_Bloom

Taxonomies of the cognitive domain

<table>
<tr><td>Bloom’s Taxonomy 1956</td><td>Anderson and Krathwohl’s Taxonomy 2001</td></tr>
<tr><td>Knowledge:
Remembering or retrieving previously learned material. Examples of verbs that relate to this function are:
<table><tr><td>know
identify
relate
list</td><td>define recall
memorize
repeat</td><td>record
name
recognize
acquire</td></tr></table></td><td>Remembering:
Recognizing or recallin g knowledge from memory. Remembering is when memory is used to produce or retrieve definitions, facts, or lists, or to recite previously learned information.</td></tr>
<tr><td>Comprehension:
The ability to grasp or construct meaning from material. Examples of verbs that relate to this function are:
<table><tr><td>restate locate
report
recognize
explain
express</td><td>identify
discuss
describe
discuss
review
infer</td><td>illustrate
interpret
draw
represent
differentiate
conclude</td></tr></table></td><td>Understanding:
Constructing meaning from different types of functions be they written or graphic messages, or activities like interpreting, exemplifying, classifying, Summarizing, inferring, comparing, or explaining.</td></tr>
</table>

Application:

The ability to break down or distinguish the parts of material into its components so that its

Organizational structure may be better understood. Examples of verbs that relate to this function are:

analyze	differentiate	experiment
compare	contrast	scrutinize
probe	investigate	discover
inquire	detect survey	inspect
examine	classify	dissect
contrast	deduce	discriminate
categorize		separate

Analyzing:

Breaking materials or concepts into parts, determining how the parts relate to one another or how they interrelate, or how the parts relate to an overall structure or purpose. Mental actions included in this function are *differentiating, organizing, and attributing,* as well as *being able to distinguish between* the components or parts. When one is analyzing, he/she can illustrate this mental function by creating spreadsheets, surveys, charts, or

<table>
<tr><td></td><td>diagrams, or graphic representations.</td></tr>
<tr><td>Synthesis: The ability to put parts together to form a coherent or unique new whole. Examples of verbs that relate to this function are:<table><tr><td>compose
produce
design
assemble
create
prepare
predict
modify tell</td><td>plan invent
formulate
collect set up
generalize
document
combine relate</td><td>propose
develop
arrange
construct
organize
originate
derive
write
propose</td></tr></table></td><td>Evaluating: Making judgments based on criteria and standards through checking and critiquing. Critiques, recommendations, and reports are some of the products that can be created to demonstrate the processes of evaluation. In the newer taxonomy, evaluating comes before creating as it is often a necessary part of the precursory behavior before one creates something</td></tr>
</table>

<table>
<tr>
<td>Evaluating:The ability to judge, check, and even critique the value of material for a given purpose.
Examples of verbs that relate to this function are:
<table>
<tr><td>Judge assess
compare
evaluate
conclude
measure
deduce</td><td>Argue
decide
choose rate
select
estimate</td><td>validate
consider app
value
criticize
infer</td></tr>
</table>
</td>
<td>Creating:
Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing. Creating requires users to put parts together in a new way, or synthesize parts into something new and different thus creating a new form or product. This process is the most difficult mental function in the new taxonomy.</td>
</tr>
</table>

b) Affective domain

Like the cognitive domain, the affective domain is hierarchical with higher levels being more complex and depending upon mastery of the lower levels. With movement to more complexity, one becomes more involved, committed, and self-reliant. Note the parallel between external and internal

motivation. As one moves from being externally to internally motivated, one moves to higher levels.

Taxonomies of the Affective domain

Level	Description	Action Verbs describing Learning Outcomes
Characterization	All behavior displayed is consistent with one's value system. Values are integrated into a pervasive philosophy that never allows expressions that are out of character with those values. Evaluation at this level involves the extent to which one has developed a consistent philosophy of life (e.g., exhibits respect for the worth and dignity of human beings in all situations).	Avoid Display Exhibit Internalize Manage Require Resist Resolve Revise
Organization	Commitment to a set of values. This level involves 1) forming a reason why one values	Abstract Formulate Balance Select Compare

	certain things and not others, and 2) making appropriate choices between things that are and are not valued. One is expected to organize likes and preferences into a value system and then to decide which ones will be dominant.	Systemize Decide Theorize Define
Valuing	Display behavior consistent with a single belief or attitude in situations where one is neither forced nor asked to comply. One is expected to demonstrate a preference or display a high degree of certainty and conviction.	Act Express Argue Help Convince Organize Debate Prefer Display
Responding	One is required to comply with given expectations by	Applaud Participate Comply

	attending or reacting to certain stimuli. One is expected to obey, participate, or respond willingly when asked or directed to do something	Play Discuss Practice Follow Volunteer Obey
Receiving	One is expect to be aware of or to passively attend to certain stimuli or phenomena. Simply listening and being attentive are the expectations	Attend Listen Be aware Look Control Notice Discern Share Hear

c) Psychomotor domain

This domain is given primarily for information. Other courses within the curriculum stress this various levels of psychomotor performance (e.g., Clinical Skills Laboratory, Pharmacy Practice I). Psychomotor behaviors are performed actions that are neuromuscular in nature and demand certain levels of physical dexterity.

Level	Description	Action Verbs describing Learning Outcomes
Naturalization	High level of proficiency is necessary. The behavior is performed with the least expenditure of energy, becomes routine, automatic, and spontaneous.	Automatically Spontaneously Effortlessly With ease Naturally With perfection Professionally With poise Routinely
Articulation	Requires the display of coordination of a series of related acts by establishing the appropriate sequence and performing the acts accurately, with control as well as with speed and timing.	Confidence Smoothness Coordination Speed Harmony Stability Integration

		Timing Proportion
Precision	Requires performance of some action independent of either written instructions or a visual model. One is expected to reproduce an action with control and to reduce errors to a minimum.	Accurately Proficiently Errorless With balance Independently With control
Manipulation	Performance of an action with written or verbal directions but without a visual model or direct observation. The action may be performed crudely or without neuromuscular coordination at this stage. Notice that the action verbs are the same as those for the imitation stage. The difference is that these actions are performed with the aid of written and verbal instruction, not visual demonstration.	Align Place Balance Repeat Follow Rest (on) Grasp Step (here) Hold
Imitation	The learner observes and then imitates an action. These	Align Place

	behaviors may be crude and imperfect. The expectation that the individual is able to watch and then repeat an action.	Balance Repeat Follow Rest (on) Grasp Step (here) Hold

1. Notion Of Approach

Based on Permendikbud Number 65 Year on Process Standard, the preferred learning model in Curriculum 2013 implementation is Inquiry Based Learning model, Discovery Learning model, Project Based Learning model, and problem based learning model (Problem Based Learning).

To determine the learning model to be implemented can consider things as follows:

- Compatibility of learning model with attitude competence on KI-1 and KI-2 as well as knowledge and skill competence in accordance with KD-3 and / or KD-4.
- Compliance of learning models with KD-1 characteristics (if any) and KD-2 that can develop attitude competence, and suitability of learning materials with KD-3 and KD-4 demands to develop knowledge and skills competencies.

- The use of a scientific approach that develops learners' learning experiences through observing, questioning, experimenting / collecting information, associating / associating, and communicating.

  Here is an example of activities in the learning model associated with a scientific approach (5M).

a) Model Inquiry Learning

Inquiry learning model is usually more suitable for mathematics learning, but other subjects can use the model of origin in accordance with the characteristics of KD or learning materials. The steps in the inquiry model consist of:

1. Observation / observing the sharing of natural phenomena. This activity provides a learning experience to learners how to observe facts or phenomena in certain subjects.
2. Asking questions about the phenomena encountered. This stage trains the learner to explore the phenomenon through a good questioning activity on teachers, friends, or through other sources.
3. Filing allegations or possible answers. At this stage learners can associate or reason into the possible answers to the questions posed.
4. Collecting data related to the allegations or questions asked, so that in the activity learners can predict the allegations or the most appropriate as a basis for formulating a conclusion.
5. Formulate conclusions based on data that has been processed or analyzed, so that learners can present or present the findings.

b) Model Discovery Learning

1. Stimulation (giving stimulus). In this activity the teacher gives stimulants, can be readings, or pictures, or situations, in accordance with learning materials / topics / themes that will be discussed, so that learners get experience learning observed conceptual knowledge through reading activities, observing the situation or see the picture.
2. Problem Statement (identify problem). From these stages, learners are required to find out what problems are faced, so that in this activity learners are given experience to ask, seek information, and formulate the problem.
3. Data collecting (collecting data). At this stage learners are given the experience of finding and collecting data / information that can be used to find solutions to problem solving faced. This activity will also train accuracy, accuracy, and honesty, as well as familiarize learners to find or formulate alternative solutions, if one alternative fails.
4. Data Processing (process data). Data processing activities will train learners to try and explore the ability of their conceptual knowledge to be applied in real life, so this activity will also train the logical and applicative thinking skills.
5. Verification (verify). This stage leads learners to check the truth or validity of the data processing, through various activities, such as asking friends, discussing, or finding relevant sources from books or media, and associate it to be a conclusion.

6. Generalization (conclude). In this activity learners are herded to generalize the results conclusion on an event or similar problems, so this activity can also train the knowledge of metacognition learners.

c) Problem Based Learning

This learning model aims to stimulate learners to learn through various real problems in everyday life is associated with knowledge that has or will be learned through the steps of learning as follows:

1. Orienting learners to the problem. This stage is to focus learners to observe the problem that becomes the object of learning.
2. Organize learning activities. Organizing learning one of the activities so that learners to convey various questions (or ask) to the problematic review.
3. Guiding independent and group investigations. At this stage learners experiment (try) to obtain data in order to answer or resolve the issues studied.
4. Develop and present the work. Learners associate data found from experiments with various other data from various sources.
5. Analysis and evaluation of problem-solving process. After learners get an answer to the problem, then analyzed and evaluated.

d) Project Based Learning

This learning model aims at learning that focuses on complex issues that learners need in investigating and

understanding learning through investigation, guiding learners in a collaborative project that integrates the various subjects (materials) in the curriculum, providing opportunities for learners to explore the content (material) by using various means that are meaningful to him, and doing experiments collaboratively.

The learning steps in project based learning are as follows:

1. Prepare project questions or assignments. This stage as a first step to learners to observe more deeply to the questions that arise from the existing phenomenon.
2. Design project planning. As a concrete step, answering the questions is made a project plan can be experimented.
3. Set up a schedule as a concrete step of a project. Scheduling is very important for the project to be done in accordance with the time available and in accordance with the target.
4. Monitor project activities and developments. The teacher monitors the project implementation and progress. Learners evaluate the project being done.
5. Test results. Facts and experimental data or research are linked to various other data from various sources.
6. Evaluate activities / experiences. This stage is undertaken to evaluate activities as a reference for improvement for project tasks on the same subjects or other subjects.[18]

[18]Musfiqon,Nurdyansyah, *Pendekatan Pembelajaran Saintifik,Model Pembelajaran Saintifik* (Sidoarjo: Nizamia Learning Center, April 2015) p.132

C. Scientific Approach in the Curriculum 2013

The Curriculum 2013 is approach implemented in the academic year of 2013/2014 as the revision of KTSP 2006. It is in line with Mulyasa who stated that the curriculum 2013 is the development of KTSP 2006. In this case, there are some elements changed in the curriculum but it concerns of four elements.[19]

Ministry of Education and Culture (2013) elaborates that scientific Approach in the teaching and learning process includes observing, questioning, experimenting or exploring, associating, and communicating and creating for all the subjects. For a certain subject, material, and situation, probably the scientific approach cannot be applied procedurally.

The first step of Scientific Approach is observing. mcLelland (2006) says that observing is the first scientific method involving the observation of a phenomenon, event, or problem. Based on this definition, activities conducted in this step are observing and identifying a certain object by using the five senses. Minister of Education and Culture's Decree No 81A /2013 on the curriculum implementation states that in this step the student are able to read, listen, pay attention, or see object (Kemendikbud,2013a).[20] In this step, Priyana (2014) proposes three teacher's roles, those are (1) teacher assists students to list items to know, to get comprehension,

---

[19]Mulyasa. 2013. *Pengembangan dan Implementasi Kurikulum 2013*. Bandung: PT Remaja Rosdakarya.

[20]Kemendikbud. 2016. *The Implementation of Scientific Approach in English Teaching (*2013a). *Minister of Education and Culture Decree No. 81A/2013: ImplementasiKurikulum.* Retrieved April, 14, 2016, from http://sdm.data.kemdikbud.go.id/SNP/dokumen/Kur/Permen%20Nomor%2081A%20th%202013%20ttg%20Implementasi%20Kurikulum.pdf

and to produce the target text: (2) teacher provides list of items from which students can select some: (3) teacher makes some items in the input salient. Thus, the teacher is required to facilitate and guide the students in learning activities, while the students actively participate in observing the object provided.[21]

The second step of Scientific Approach is questioning, According to Minister of Education and Culture Desree No 87A/2013 on the curriculum implementation, questioning is done by raising any questions related to the information found in observation to gain additional information (Kemendikbud, 2013a).[22] In accordance to this statement, Priyana (2014) states there are three activities carried out in this step. First, teacher provides opportunity to student to conduct a question-answer. Second, teacher asks students to formulate questions based on their knowledge. Third, teacher encourages students to propose temporary answer based on their knowledge. This step aims to develop the students' creativity, curiosity, and critical thinking.

The next step is experimenting or exploring. Based on McLelland (2006), an experiment is designed to prove or disprove the hypothesis that has been established by researcher. Meanwhile, an experiment in the curriculum 2013 is conducted by the students to gain an authentic learning result. As stated in the Minister of

[21]Priyana, J. 2014. *Language Learning Activities in the Scientific Method Step- Based Classroom*.Retrieved May 29, 2016, from http://eprints.uns.ac.id/26050/1/72.__Language_Learning_Activities_in_the_Scientific-Method.pdf

[22]Kemendikbud.(2013b). *ModulPelatihanImplementasiKurikulum 2013*.Retrieved February 21, 2016, from http://puskurbuk.kemdikbud.go.id/downloads/viewing/ModulPelatihanImplementasi_Kurikulum_2013/Paparan_Mendikbud_pada_Workshop_Pers.pdf/

education and Culture Decree No 81A/2013 on the curriculum implementation, the aims of experimenting step are to develop the students' skill in implementing their knowledge, gaining information, building learning habit, and understanding long life learning (Kemendikbud, 2013a). In this step, the role of teacher based on Priyana (2014) is providing worksheet and learning resource for the students.[23]

The fourth step of Scientific Approach is associating. The definition of association according to Daryanto (2014) is a process of thinking logically and systematically about empirical facts which are observable to draw a conclusion.

Associating in learning activities are activities to process the information gained to obtain the conclusion. Minister of Education and Culture's Decree No 81A/2013 on the curriculum implementation states that students are forced to improve their understanding from learning material, paying attention to the teachers' explanation, reading books, or doing any activities to strengthen the students' understanding (Kemendikbud 2013a). According to Priyana (2014), the teacher role is to help the students to see pattern, to answer question, and to draw conclusion. It means that the teacher is a facilitator for the students to strengthen their understanding in gaining information.

The last step of Scientific Approach is communicating Minister of Education and Culture Decree No 81A/2013 on the curriculum

[23]Priyana, J. 2014. *Language Learning Activities in the Scientific Method Step- Based Classroom*.Retrieved May 29, 2016, from http://eprints.uns.ac.id/26050/1/72.__Language_Learning_Activities_in_the_Scientific-Method.pdf

Implementation states the students are able to present the result of the products, make a conclusion based on the results of the analysis orally, written or other media in this step (Kemendikbud, 2013a). The activity that can be conducted by the students in communicating step is presenting their works.

Based on the above explanation, learning process by using Scientific Approach can be done in a variety of learning activities. The curriculum 2013 promotes Scientific Approach as the basic approach. As stated by Minister of Education and Culture Decree No. 22/2016, to strengthen the Scientific Approach, integrated thematic (thematic between the subjects) and thematic(thematic in each subjects) need to apply discovery learning or inquiry learning (Kemendikbud,2016a). Furthermore, Project-based learning is used to foster the students' ability to produce contextual work, both in individual and group. The same decree also explains the selection of those approaches which is based on the characteristics of competence, the subject, and the level of education.

D. Definition of speaking

Explaining the definition of speaking, Widowson state that "speaking is the active productive skill and it is the ability of someone to communicate orally with others."[24] Speaking is being capable of speech, expressing or exchanging thought trough using language.

[24]Widdowson.H.G. *The Teaching English as Communicatio*n (New York : Boston University of Edinburgh, 1984) p.20

Speaking is an important productive skill because students need to acquire information. In speaking students learn to use the right pronunciation, stress, and intonation patterns in order to communicate successfully. Nunan states that "speaking is a productive aural/oral skill and it consists of producing systematic verbal utterances to covey the meaning".[25]Absolutely they must possess basic type of speaking in the first time because it can help teachers to provide their students with practice in using English, to inform students "progress and also to get information about students."[26]In short, speaking is oral communication that carry out the feeling though the words to deliver the information.

Speaking skill is one of the language skills that are very essential to support further oral communication especially in English, but it is the most difficult skill to develop. So that, the writer optimize of multiple intelligences in speaking classes can be achieved through creative and innovative learning activities. Learning materials can be combined in a single theme presented by taking into account student characteristics such as interests, talents, and intelligence, so that every student has the opportunity to succeed according to his or her strengths.

E. Teaching Speaking

[25]Nunan, David, *Practical English Language Teaching* (Boston : McGraw Hill, 2003)

[26]Pappas et al, *Becoming A Creative Teacher: A Manual for Teaching English*, (New York: Routledge, 2011), p.26

Many teachers agree that students should learn to speak the second language by interacting with others. So, students should master several speaking components such as comprehension, pronunciation, grammar, vocabulary, and fluency. In brief, English teachers should be creative in developing their teaching/ learning process to create good atmosphere, improve the students' speaking skill, give attention to the speaking components, and make the English lesson more exiting. For this reason, the English teacher should apply appropriate methods and techniques of teaching speaking.

Oral skills have hardly been neglected in EFL/ESL courses (witness the huge number of conversation and other speaking course books in the market), though how best to approach the teaching of oral skills has long been the focus of methodological debate. Teachers and textbooks make use of a variety of approaches, ranging from direct approaches focusing on specific features of oral interaction (e.g., turn-taking, topic management, and questioning strategies) to indirect approaches that create conditions for oral interaction through group work, task work, and other strategies.[27]

To sum up, teaching is an activity which not only done in the classroom but also be done outside the classroom which lead by a teacher as an educator and conveyor the teaching material for the students to the get the understanding.

1. Problems in teaching Speaking

[27]Jack C. Richards, *Teaching Listening and Speaking*, p. 19.

In teaching speaking there are problem that faced by the teacher, the problem not only come from the internal factors but also from the external factors. The problems of these issues will be explained as follows:

a. Internal factors

Internal factors of teaching speaking English for EFL learners are commonly become obstacles in teaching speaking English. The problems are native language, age, exposure, innate phonetic ability, identity and language ego, motivation and concern for good speaking. The problems of teaching speaking will be explained above:[28]

1) Native language

The native language is the most influential factor affecting a learner's speaking. Brown states, "If you are familiar with the sound system of learner's native language, you will be better able to diagnose learner difficulties".[29] Many L1-L2 carry overs can be overcome through a focused awareness and effort on the learner's part." By the statement it concludes that mother language of learners will be a problem in teaching speaking English, if the teacher cannot understand the fact and decided a way to solve the condition moreover if the linguistic aspects of the native language learners have is English as Foreign Language (EFL) and it is totally different with target language. In the

[28]Nuraini and Kristi. *The Barriers of Teaching Speaking English for EFL Learners.*University of Muhammadiyah Jember. Volume 01, No. 1, May 2016, p. 10

[29]Brown, *H.D. Teaching by principles: an interactive approach to language pedagogy. (Englewood Cliffs, NJ: Prentice Hall Regents (1994). P283.*

condition, linguistically, the difference of L1 and L2 is the fundamental factor that determines success of a speaking class.

2) Age

Children who are speaking English under the age of puberty stand an excellent chance of "sounding like a native" if they have continued exposure in authentic contexts. Beyond the age of puberty, while adults will almost surely maintain a "foreign accent", there is no particular advantage attributed to age. A fifty year old can be as successful as an eighteen year old if all other factors are equal. Although, Brown argues that remind the learners are older, that "the younger, the better" is a myth[30]. It is because, in fact, every step of age has its own characteristic that sometimes has a potency to be a problem in teaching speaking. Learners are often described as children, young learners, adolescents, young adults or adults[31]. The term children are generally used for learners between the ages of about 2 to about 14.

Brown gives clearer map of children characteristic that could be problem in language teaching. Children are still in an intellectual stage. Therefore, they are centered on the here and now, on functional purposes of language. They have little appreciation for our adult notions of "concreteness" and they certainty cannot grasp the Metal

[30]*Brown, H.D. Teaching by principles: an interactive approach to language pedagogy. (Englewood Cliffs, NJ: Prentice Hall Regents (1994). P87*

[31] Jeremy Harmer, *How to Teach English*, (Edinburg: Longman2007), p.14.

language used to describe and explain linguistics concepts. Actually children are often innovative in language forms but still have a great many inhibitions. They are extremely sensitive, especially to peers. Moreover, their egoism is still being shaped, and therefore the slights of communication can be negatively interpreted. Children are also focused on what this new language can actually be used for here and now.

3) Exposure

It is difficult to define exposure. One can actually live in a foreign country for some time but not take advantage of being "with the people." Research seems to support the notion that the quality and intensity of exposure are more important than mere length of time. Brown says that: if class time spent focusing on speaking demands the full attention and interest of the learners, then they stand a good chance of reaching their goals.[32] The statement shows that in terms of exposure the discussion will be very fuzzy. Some learners may be more interest by quality and intensity of exposure the teacher gives in speaking class. Some of the learners may have contradictive condition; they prefer to get long time of exposure in reaching the speaking class goal. The relativity is an obstacle in teaching speaking so the teacher should know the condition of his or her learners in order to be able to give suitable exposure. Innate phonetic ability often referred to as having an "ear" for

[32]Brown (2000, p. 285)

language, some people manifests a phonetic coding ability that others do not. In many cases, if a person has had exposure to a foreign language as a child, this “knack” is present whether the early language is remembered or not. Others are simply more attuned to phonetic discriminations. Some people would have you believe that you either have such a knack, or you do not. Therefore, if speaking seems to be naturally difficult for some learners, they should not despair; with some effort and concentration, they can improve their competence. In other words, sometime speaking skill often placed as a talent from an individual. The perspective is not wrong because many researches, especially in education have proven that human has specific talent or intelligence.

1. The Difficulties in Speaking

   As Dunkel, Richards, and Ur stated in Brown (2001:270-271), many people regard that speaking is difficult. The following eight characteristics of spoken language are adapted from several sources.

   a. Clustering

      Fluent speech is phrasal not word by word. Learners can organize or output both cognitively and physically through clustering.

   b. Redundancy

      The speaker has an opportunity to make meaning clearer through the redundancy of language.

   c. Reduced forms

Contractions, elisions, reduced vowels etc. are special problems in teaching spoken English. Learners who never learn colloquial contractions sometimes speak too formal in causal context. They become bookish and stilted.

d. Performance variables.

In spoken language there is a process called thinking time. During this thinking time, learners can employ a certain number of performance hesitations, pauses, backtracking, and correction. Some examples of thinking time in English such as inserting fillers like uh, um, well, you know, I mean etc. Hesitation phenomena are the most salient difference between native and nonnative speakers of language.

e. Colloquial language

Students should be familiar with words, idioms, and phrases and they practice to produce these forms.

f. Rate of delivery

It is one of the characteristics of fluency. Teachers should help learners achieve an acceptable speed along with other attributes of fluency

g. Stress, rhythm, and intonation

The stress-timed rhythm of spoken language and its intonation patterns convey important message in any communication forms.

h. Interaction forms

Having no interlocutor will rob the speaking skill components, one of them are the creativity of conversational negotiation.

F. Implementation Scientific Approach in teaching speaking

The Curriculum 2013 has purpose to create independent learners and improve motivation to learn. Regarding to these purposes, in the learning process the lesson plan is designed to develop the students' motivation, interest, curiosity, creativity, initiative and inspiration, autonomy, learning skill, and learning habit. In this context, the government beliefs that Scientific Approach is suitable to be implemented in learning process (Mulyoto, 2013). [33]

Scientific Approach is applied to all levels of studies during the learning process. This approach is also used in all subjects including English (Mulyasa, 2013). [34]The learning process must touch the three competences, namely attitude, skill and knowledge. Attitude relates to the question of "why". Skill refers to the question of "how". In addition, knowledge deals with the question of "what". The Ministry of Educational and Culture (2013) also explains that this curriculum elaborates the steps of developing language teaching and learning activity by using scientific approach as the following: 22

1. Observing

[33]Mulyoto.2013. *StrategiPembelajaran di Era Kurikulum 2013*. Jakarta: PrestasiPustakaraya.

[34]Mulyasa. 2013. *PengembangandanImplementasiKurikulum 2013*. Bandung: PT RemajaRosdakarya.

The activity conducted in this step is the activity which uses the five senses like seeing, hearing, watching, listening and also reading. The thing observed is the material in the form of facts, concepts, and also procedures. The material form of facts like interpersonal or transactional text, special text, functional text, and language feature in the form of text, video, or audio recording. The material in the form of concept can be the material like social function of a certain texts and also the generic structure. The alternative activity in the process of observing can be activity like watching conversation video, watching simple movie, read story book, newspaper, magazine, brochures, leaflets, banner, and poster writing in English.

According to Priyana (2014) in this stage, teacher has some rules, they are:

a) Assisting students to list items to know to get comprehension and produce the target text.
b) Providing list of the materials from which students can be select.
c) Making some materials from the topic

2. Questioning

Questioning is the process of constructing knowledge. It is the concept of asking about social function of a text and the generic structure though group or class discussion. In the process of questioning, students' curiosity and critical thinking should be developed. So that their questions will be highly thinking questions. Questioning also demands the active participation of the students. In order to make questioning

activity well conducted and the goal is achieved, the teacher should prepare questioning guide in the form of the steps which have to be passed by the students The Ministry of Education and Culture explain the activities carried out in this stage are:

a) Providing opportunity to students to conduct question – answer
b) Asking students to formulate question based on the identified material in observation.
c) Encouraging students to propose temporary answer based on the knowledge

According to Priyana, (2014) the role of the teacher in this stage are the teachers assists students to make questions and teacher provides a number of questions, then the students can start to ask several questions.

3. Experimenting

Experimenting activity is the activity to internalize knowledge and the skill learned by the student. In this process, the students try to express the newly learned knowledge and use language ability in the real world through the activity like simulation, role play, presentation, discussion, and playing game. The activities carried out in this stage are as follows:

a) Student collects the fact, and then they can go to communicate. Students explore and construct experimenting in order to get vocabularies, structure and other language to get the communicating in the context.
b) Teacher pays attention, gives feedback, or asks the peer's presentation in order to enrich the understanding of the text.

a. Students communicate the statements orally.
b. Students write each statement in the students' own notebook.

According to the Ministry of Educational and Culture 2013 the conducted activities are able to be done by conducting role play, simulation, presentation, discussion and playing game. The role of teacher in this stage is providing worksheet and learning resource for students (Priyana, 2014).[35] Worksheet is necessary to help students to explore the material. Learning resource is going to assist students to collect the information to answer their formulated questions.

4. Associating

Associating activity is the process of the developing the ability to classify and compare ideas and phenomena and to be a part of memories. For English, in this step, the students are guided to classify and compare text based on the social function, text structure, and language feature and connect information inter-texts for enrichment to create text. The activities can be role play, writing, and communicating the fact or contextual. The role of the teacher in this stage is to help students to see pattern on material to answer question. Then teacher help student draw conclusion (Priyana, 2014)

[35]Priyana, J. 2014. *Language Learning Activities in the Scientific Method Step- Based Classroom*.Retrieved May 29, 2016, from http://eprints.uns.ac.id/26050 /1/72.__Language_Learning_Activities_in_the_Scientific-Method.pdf

5. Communicating

Communicating aims to develop ability to express or present all the knowledge and skill learned. In this activity, not only knowledge and skill will be presented but also the problems and success in the learning process. This activity describes completely students' ability of attitude, knowledge, and skill. The activities that can be conducted in communicating process are presenting their material or works in front of the class, writing the report, publish their writing wall magazine or social media. The teacher has role to give feedback and correction, and enrich the knowledge that students construct. Feedback and correction are the teachers' respond to students' construct of new knowledge.

Based on the previous explanation, the writer defines Scientific Approach as the basic conception which forms the background of formulating learning method based on scientific step.

G. Implementation Scientific Approach in teaching speaking

The Curriculum 2013 has purpose to create independent learners and improve motivation to learn. Regarding to these purposes, in the learning process the lesson plan is designed to develop the students' motivation, interest, curiosity, creativity, initiative and inspiration, autonomy, learning skill, and learning habit. In this context, the government beliefs that Scientific

Approach is suitable to be implemented in learning process (Mulyoto, 2013). [36]

Scientific Approach is applied to all levels of studies during the learning process. This approach is also used in all subjects including English (Mulyasa, 2013). [37]The learning process must touch the three competences, namely attitude, skill and knowledge. Attitude relates to the question of "why". Skill refers to the question of "how". In addition, knowledge deals with the question of "what". The Ministry of Educational and Culture (2013) also explains that this curriculum elaborates the steps of developing language teaching and learning activity by using scientific approach as the following: 22

1. Observing

   The activity conducted in this step is the activity which uses the five senses like seeing, hearing, watching, listening and also reading. The thing observed is the material in the form of facts, concepts, and also procedures. The material form of facts like interpersonal or transactional text, special text, functional text, and language feature in the form of text, video, or audio recording. The material in the form of concept can be the material like social function of a certain texts and also the generic structure. The alternative activity in the process of observing can be activity like watching conversation video,

[36] Mulyoto.2013. *Strategi Pembelajaran di Era Kurikulum 2013*. Jakarta: Prestasi Pustakaraya.

[37] Mulyasa. 2013. *Pengembangan dan Implementasi Kurikulum 2013*. Bandung: PT Remaja Rosdakarya.

watching simple movie, read story book, newspaper, magazine, brochures, leaflets, banner, and poster writing in English.

According to Priyana (2014) in this stage, teacher has some rules, they are:

a) Assisting students to list items to know to get comprehension and produce the target text.
b) Providing list of the materials from which students can be select.
c) Making some materials from the topic

2. Questioning

Questioning is the process of constructing knowledge. It is the concept of asking about social function of a text and the generic structure though group or class discussion. In the process of questioning, students' curiosity and critical thinking should be developed. So that their questions will be highly thinking questions. Questioning also demands the active participation of the students. In order to make questioning activity well conducted and the goal is achieved, the teacher should prepare questioning guide in the form of the steps which have to be passed by the students The Ministry of Education and Culture explain the activities carried out in this stage are:

a) Providing opportunity to students to conduct question – answer
b) Asking students to formulate question based on the identified material in observation.
c) Encouraging students to propose temporary answer based on the knowledge

According to Priyana, (2014) the role of the teacher in this stage are the teachers assists students to make questions and teacher provides a number of questions, then the students can start to ask several questions.

3. Experimenting

Experimenting activity is the activity to internalize knowledge and the skill learned by the student. In this process, the students try to express the newly learned knowledge and use language ability in the real world through the activity like simulation, role play, presentation, discussion, and playing game. The activities carried out in this stage are as follows:

a) Student collects the fact, and then they can go to communicate. Students explore and construct experimenting in order to get vocabularies, structure and other language to get the communicating in the context.
b) Teacher pays attention, gives feedback, or asks the peer's presentation in order to enrich the understanding of the text.
    a. Students communicate the statements orally.
    b. Students write each statement in the students' own notebook.

According to the Ministry of Educational and Culture 2013 the conducted activities are able to be done by conducting role play, simulation, presentation, discussion and playing game. The role of teacher in this stage is providing worksheet and learning resource for students

(Priyana, 2014).[38] Worksheet is necessary to help students to explore the material. Learning resource is going to assist students to collect the information to answer their formulated questions.

4. Associating

Associating activity is the process of the developing the ability to classify and compare ideas and phenomena and to be a part of memories. For English, in this step, the students are guided to classify and compare text based on the social function, text structure, and language feature and connect information inter-texts for enrichment to create text. The activities can be role play, writing, and communicating the fact or contextual. The role of the teacher in this stage is to help students to see pattern on material to answer question. Then teacher help student draw conclusion (Priyana, 2014)

5. Communicating

Communicating aims to develop ability to express or present all the knowledge and skill learned. In this activity, not only knowledge and skill will be presented but also the problems and success in the learning process. This activity describes completely students' ability of attitude, knowledge, and skill. The activities that can be conducted in communicating process are presenting their material or works in front of the class, writing the report, publish their writing

[38]Priyana, J. 2014. *Language Learning Activities in the Scientific Method Step- Based Classroom*.Retrieved May 29, 2016, from http://eprints.uns.ac.id/26050/1/72.__Language_Learning_Activities_in_the_Scientific-Method.pdf

wall magazine or social media. The teacher has role to give feedback and correction, and enrich the knowledge that students construct (Priyana, 2014). Feedback and correction are the teachers' respond to students' construct of new knowledge.

Based on the previous explanation, the writer defines Scientific Approach as the basic conception which forms the background of formulating learning method based on scientific step.