ADAPTIVE CONTROL OF THOUGHT OUTPUT MODEL: ENGLISH GRAMMAR TEACHING METHOD FOR NON-NATIVE STUDENT A CLASSROOM RESEACH STUDY AT SMA 4 PRAYA

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Abstract; This study was aimed at improving the teaching ofgrammar of the eleventgradenon-native students at SMA 4 Prayaby using Adaptive Control of Thought Output Model. This research was action research which consisted of two cycles with threemeetings in each cycle. The subjects of this research were the researcher, the students, the English teacher, and the collaborators. The data collection techniques were observations, interviews, and tests. The data were in the form of qualitative data and quantitative data. The qualitative data were obtained from the field notes and interview transcripts. These data were analyzed using five steps i.e. assembling the data, coding the data, comparing the data, building interpretations, and reporting the outcomes. Meanwhile, the quantitative data were obtained from the pre-test and the post-test scores. These data were analyzed by comparing the mean scores of the pre-test and the post-test. The results of the research show that the use of the Adaptive Control of Thought Output Model in combination with applying various media and activities, such as pictures and games, could improve the teaching of grammar. Based on the qualitative data, the teaching activities become more well-planned and structured. From the group work activities, the students could build their cooperation and improve their participation. The uses of games and pictures could facilitate the students to understand the texts easily. Based on the quantitative data, the students' grammar comprehension scores increased. The students' mean score increased from 65.54 to 73.97. The improvement on the students' mean scores showed that the improvement of the teaching of grammar gave impacts to the students' achievement. From the data above, it can be concluded that the use of the Adaptive Control of Thought Output Model can improve the teaching of grammar for non native students.

Key words: cognitive theory of ACT, grammar comprehension.

INTRODUCTION

According to Rutherford (1987: 4) grammar is a necessary component of any language teaching program and thus plays an essential role in language teaching. However, since the middle twentieth century, the view whether English grammar should be taught or not has been remained controversial in English teaching field (Krashen, 1982: 31). According to Krashen and Terrel (1983: 27) grammar explanations should be avoided in the classroom simply because they take time away from acquisition activities. Krashen's (1992) challenged the limitations of grammar-based approach, but in fact, he doesn't deny the idea that students need to acquire a great deal of grammar. However, he holds that students will acquire more grammar if the course focuses on communications and provides pupils with sufficient comprehensible and meaningful input. Almost at the same period, a series of problems, like whether English grammar is learned or acquired, whether grammar teaching is necessary and how to teach grammar systematically, grammar explanations should be avoided in the classroom simply because they take time away from acquisition activities. Exploring new ways of grammar teaching is still a hot topic in English teaching, especially foreign language teaching field.

English grammar acquisition under non-native environment is a complex mental process which remains to be further explored. The existing researches have broadened the

scope of English grammar study, emphasized the importance of grammar teaching, but the research on how to help foreign language learners internalize their explicit grammatical knowledge into their grammatical competence under non-native environment is still in its infancy. Anderson's Adaptive Control of Thought (ACT) Model (Anderson, 1976: 43) rests on the distinction between declarative and procedural knowledge and discussed the three stages of transition from declarative to procedural knowledge. According to ACT, learners will go through three stages (cognitive, associative and automatic stage) from declarative knowledge to procedural knowledge in acquiring the automatic skills. This paper aims to put the ACT model into Indonesian students' grammar acquisition and automatic output process practice, combining with explicit grammatical knowledge and implicit grammatical competence, to construct a practical grammar automatic output model and help college students narrow the gap between their grammatical knowledge and their grammatical competence.

REVIEW OF RELATED LITERATURE

1. The Necessity of Constructing A Grammar Automatic Control of Thought Model

Cameron (2007: 2) mentions that grammatical knowledge is a tool: like any tool, it is for some people and unnecessary or unsuitable for others. When it is useful, and how it can be best used, are matters for teachers' professional judgment. Under native environment, though learners know little about grammatical rules, such as they even don't know what infinitive (including bare infinitive/ naked infinitive and split infinitive) is, but they can express themselves clearly by using infinitives. Therefore, it's no need for native English teachers to explain grammatical rules in detail. However, under non-native environment, because learners have no environment of acquiring grammatical competence, declarative grammatical knowledge acquisition is not only useful but also necessary. In such situations, foreign language teachers have to deliver the systematic rules of grammar to foreign language learners, so as to help them acquire the related declarative knowledge and prepare for the improvement of their language competence.

Learning a foreign language involves the procedures of transforming declarative knowledge into procedural knowledge, and achieving the goal of internalization and acquisition. However in Indonesia, for a long period there is a common phenomenon that much has been focused on students' English grammatical knowledge while little was laid on their grammatical competence, leads to the gap between college students' English grammatical knowledge and their grammatical competence. For example, many teachers find that tenses are far more difficult to teach than vocabulary. Though teaching a lesson around a tense is obviously easier, it may be a different matter help students internalize and output English tenses freely. Despite their best efforts, most students still consistently misuse, misunderstand and misapply tenses, which is really a big headache to both students and teachers. Besides, foreign language learners are not sensitive to foreign grammar systems, partly because they often compare the grammar structures to their native ones, which usually confuse them in grammar acquisition and production.

In addition, the researches about foreign language learners' internalization from their grammatical knowledge into their grammatical competence are still far from enough. It is still a sticking point about how to help foreign learners internalize their grammatical knowledge and improve their implicit grammatical competence.

In order to understand Anderson's ACT model, it's necessary for us to make sure the interrelationship between declarative knowledge and procedural knowledge. Accordingly, English grammar rules belong to declarative knowledge, while how to use grammatical rules during language output is a kind of skill which belongs to procedural knowledge. "The first stage of procedural knowledge is declarative knowledge acquisition, the declarative knowledge is the basis of procedural knowledge; the second stage of procedural knowledge is achieved

through the application of rules and exercises of the declarative knowledge; the third stage is the highest stage of knowledge development, skills to achieve the degree of automation in language output" (Liansheng, 2004: 92-93). For example, after learning the usage of "gerund" systematically, students only obtained the declarative knowledge of gerund, namely, the grammatical rules and concepts of gerund, if they don't internalize the related knowledge, that is, don't put it into their procedural knowledge by applying it in daily communication or writing, they still cannot have the competence of outputting gerund in their speaking and writing.

As a general theory of cognition developed by John Anderson that focuses on memory processes, ACT distinguishes the three types of memory structures: declarative, procedural and working memory. Anderson's ACT Model (Anderson, 1976: 5) rests on the distinction between declarative and procedural knowledge. According to Anderson, a learner may acquire declarative knowledge suddenly, by being told, whereas he can only acquire procedural knowledge gradually, by performing the skills. A person can communicate his declarative knowledge verbally, but cannot communicate his procedural knowledge. On the basis of ACT, knowledge general begins as declarative information, while procedural knowledge is learned by making inferences from already existing factual knowledge.

According to ACT, the transition from declarative to procedural knowledge and working memory takes place in three stages. At the declarative stage, knowledge is just stored as facts, and it is quite difficult for learners to use procedural knowledge on the first stage. The second is the associative stage. A learner tries to apply the general rules acquired at the first stage into particular instance. For example, the learner may have learnt *'booked'*, *hooked* and *'helped'* as distinct items, but may come to realize that they can be represented more economically in a production set: 'If we generate the past tense of a verb, just added to the verb'. In the autonomous stage, in which procedures become increasingly automated, the mind continues to generalize productions. At this stage, the consciousness of using grammatical rules can disappear entirely, and learners will output language naturally. Learners can not only recognize the past tense in reading and listening, but also can use them freely in their speaking and writing.

2. Construction Of English Grammar Automatic Output Model Based On Act

Though declarative knowledge and procedural knowledge are different, both of them are aimed at helping foreign language learners internalize their knowledge into their competence. In order to achieve the state of grammar automatic output, foreign language learners should first of all experience two stages: "grammatical knowledge acquisition" and "grammatical competence training". "Grammar automatic output" belongs to the third stage of automation; while "grammatical knowledge acquisition" and "grammatical competence" are equivalent to the processes of "cognitive" and "associative" stage of ACT model, which equated to the explicit grammatical knowledge accumulation, practice and transformation. These two stages are the preconditions to the formation of foreign language learners' grammar automatically output model. Practice, application, feedback and transformation are the basis and conditions in the internalization from declarative knowledge into procedural knowledge. That is to say, to foreign language learners under non-native environment, grammatical competence training contributes to their grammar automatically output process. In the process of realizing the state of one's grammar output automation, both declarative and procedural knowledge areindispensable.

If grammar teaching only stays at the stage of grammatical knowledge presentation, foreign language learners can only get declarative knowledge. Creating native-like grammar acquisition environment and providing learners with enough chances to use grammatical rules will accelerate the internalization from their explicit grammatical knowledge to their grammatical competence. Implicit grammatical knowledge, or we can call it grammatical competence, is tacit

knowledge which is not easily visible and expressible, and is often acquired unconsciously or subconsciously. So, what the foreign language teachers should not neglect is to bring the "real" or native-like environment to foreign learners.

With the advent of the Internet, there are many new teaching tools and equipments can be used to improve our grammar teaching effect. For example, the introduction and application of multimedia technology to foreign language teaching, it can not only provide students with real language environments and vivid contexts, but also can help to explain the abstract grammatical knowledge by using pictures and other animation or cartoons (Du Xiaohong, 2009: 42-45), which gives non-native English learners favorable external conditions of grammar acquisition.

A. RESEARCH METHOD

1. Type of the Research

This research can be classified as action research since it is conducted toimprove the teaching of reading in the classroom. Action research is a kind of research in which the teacher can involve in, in order to improve some aspects of their teaching or to evaluate the success or appropriateness of particular techniques or procedures (Harmer: 2002). This research aims to improve the quality of teaching and learning process.

The research was conducted based on the preliminary observations of the teaching and learning process, and the interviews done to the English teacher and some students.

2. Design of the Research

The research on improving the teaching of reading through the Silent Card Shuffle Strategy focused on developing the materials and media on the topics that would be taught. It was conducted collaboratively with the English teacher, thecollaborator, and the students.

The procedures of the research consisted of formulating the problems which happened during the English teaching and learning, planning the actions, implementing the actions, observing the implementation of the actions, and making reflections from the actions.

The researcher created various materials with different difficulty levels for each set of cards which were used in every meeting. The materials were adjusted to the topics in the Standard of Competence and Basic Competence.

3. Setting of the Research

The research was conducted in SMA 4 Prayawhich is located inPraya, Central Lombok. The class that became the object of the research was XI A and XI class. This school was selected as the research setting because the researcher was interested in solving the problems related to the teaching and learning process which were found in the school.

4. Schedule of the Research

The research was done in the second semester in the academic year 2014/2015. It was conducted from March to May 2015. In conducting the research, the researcher followed the schedule of the English subject of Class because the research was conducted in this class.

5. Technique of Data Collection

The research data were collected in the forms of qualitative data which weresupported by quantitative data. The qualitative data were acquired through observations and interviews. The researcher collected the opinions and comments about the actions from the research participants. They were asked about their expectations toward the research as well. The data were to describe about the learning process using Adaptive Control of Thought Output Model and to know the changes or impacts after conducting the actions. Meanwhile, the quantitative data wereobtained from the students' scores in the pre-test and the post-test. It aimed to know about the students' result after the actions had been conducted.

The types of the data, the research instruments, and the data collection techniques are presented in the table below.

The Data Collection Techniques and Research Instruments

No	Data	Instruments	Collection Techniques

1.	Pre-test and post-test scores	Test	Pre-test and post-test
2.	Field notes	Observation checklist	observation
3.	Interview transcript	Interview guidelines	interview

1. Observation

The observations were conducted to monitor the teaching and learning process in class while the researcher was implementing the actions. The data were collected by observing the learning process in the class. During the observation, the collaborator was sitting at the back, observing, and taking notes about the activities. The results were reported in the form of field notes.

2. Interview

The researcher held the interviews to some students and the English teacher about the activities in the teaching and learning process before and after the implementation of the actions. The researcher developed some questions as the guideline in the interviews. The information was recorded in interview transcripts.

3. Pre-test and Post-test

The pre-test was conducted before the actions were implemented, while the post-test was done after the actions. The pre-test and the post-test were in the form of grammar tests. The assessment technique was a multiple choice form. The pretest and the post-test were used to measure the students' reading skills about narrative texts. The data of the pre-test and the post-test were collected in the form of students' scores. The mean score of the post-test would be compared with the mean score of the pre-test. This aimed to know the improvement of the students' reading skills on narrative texts.

6. Technique of Data Analysis

After conducting the research, the researcher analyzed the data from the observation checklists, field notes, interview transcripts, and the results of the pre-test and the post-test. The researcher also compared the data from the observations, the interviews, and the pre-test and the post-test scores. The researcher collected the data from all of the research members.

In analyzing the qualitative data, the researcher used the processes of analyzing data proposed by Burns (2010: 104-105) as presented below.

1. Assembling the data

The researcher collected the data from the observations, the interviews, the pre-test and the post-test, including the reflections that were made after conducting the actions. In this step, broad patterns and ideas were needed.

2. Comparing the data

After the data had been categorized, the researcher needed to compare the data from different sources of data, for example the interviews compared with the observations andthe pre-test and the post-test scores. This aimed to see whether the data showed the same conclusion or the contrasts.

3. Building meanings and interpretation

The researcher needed to think deeply about the data and explored for more detailed aspects from the data. It was necessary to develop questions, making connection, and making further explanation of the data. Then, the researcher refined her own "personal theories" about the findings of the research.

4. Reporting the outcomes

The last step was reporting the main process and the outcomes of the research that were well supported by the data.Meanwhile, the quantitative data (the students' grammar scores) were analyzed by calculating the mean scores of the pre-test and the post-test. The mean scores of each test were compared. The increase of the mean scores indicated that the students' reading skills were improved. The improvement of students' reading skills became one of the indicators for the improvement of the teaching process.

7. Procedure of the Research

To conduct action research, the researcher followed some steps. According to Kemmis and McTaggart (1988) in Burns (2010: 7-8), there are four broad steps in a cycle of action research:

1. Planning

In this step, the researcher collected much information from the observations and the interviews done to the teacher and the students. The researcher observed the English classroom teaching and learning process in class. This aimed to identify the problems which happened during the teaching and learning process. After that, a plan of actions wasdeveloped to solve the problems and make some improvements of a specific area of the teaching and learning process. The actions were planned based on the problems, the Standard of Competence and Basic Competence, as well as the condition of the school.

2. Action

After designing a plan, the researcher implemented the actions. The actions were conducted in two cycles consisting of three actions in each cycle. Each cycle was done in three meetings.

3. Observation

While the action was being implemented, the researcher with the help of the collaborator observed the learning process. This aimed to find out the weakness and the positive aspects that were needed to be fixed up and developed.

4. Reflection

After doing the observation, the researcher reflected to the actions. Then, the researcher discussed the problems and the achievement during the implementation of the action with the English teacher and the collaborators. From the discussion, the researcher made an evaluation. This gave influences to the researcher in designing the actions for the next cycle or in deciding whether there would be the next cycle or not.

In addition, Mills (2003: 26) proposes a step which is called reconnaissance. This step is a preliminary information gathering in which the researcher collected adequate information about the research target. The researcher takes time to reflect with the beliefs and understandings about the nature and context of the general idea which has been developed.

RESULT OF THE RESEARCH

The reconnaissance stage was done to gather adequate information about the teaching and learning process in the class. This process involved identifying the field problems, weighing the field problems, determining the actions to solve the problems and drawing the relationship between the field problems and the actions.

a. Identifying the Field Problems

Itcan be inferred that the teaching and learning process was not yet effective. The students gave inadequate responses to the teacher's explanation. The classroom activity mostly focused on books andstudent worksheets or LembarKerjaSiswa (LKS).There were also some problems related to the classroom management. Some students were noisy during the teaching and learning activities.

The next activity carried out by the researcher was interviewing the English teacher and some students. From the interviews, the researcher gathered the teacher's and the students' viewpoints about the English teaching and learning process. The students were also asked about their difficulties in learning English.

It could be identified that the problems of the teaching and learning process of reading came from the students, the teacher, the teaching techniques, the materials, and the use of media. The students' problems were related to their difficulties of reading, their motivation of reading, and their attitudes toward reading activities in the classroom. The problems of the teaching techniques were related to the learning activities which seemed monotonous. The learning activities lacked group activities and other interesting activities, such as games. Next, the problem was related to the materials and media. The materials were mostly based on Student Worksheets or LembarKerjaSiswa(LKS) andbooks. If the materials were mostly taken from the LKS which focused on grammatical and textual aspects, it would reduce the teacher's creativity in developing the learning materials and media. The materials in the LKS only developed the students' cognitive domain, whereas the students' affective and psychomotor domains needed to be enhanced as well. It was necessary to use

different kinds of learning materials and media to facilitate learning.

b. Weighing the Field Problems

As there were many problems occurring during the process of teaching and learning, it was necessary to determine the urgent and feasible problems which needed to be solved. Then, the researcher and the teacher had a discussion to weigh the problems based on the urgency and feasibility. Based on the urgency level, the problems were classified into three categories, i.e. very urgent, urgent, and less urgent problems.

c. Determining Actions to Solve the Problems

After identifying the field problems that were urgent and feasible to be overcome, the researcher and the teacher formulated some action plans to solve the problems. There were some actions which were planned based on the discussion.

1) Using Adaptive Control of Thought Output Model as the strategy for teaching grammar in the classroom.

2) Using many varieties of pictures containing jumbled words, word definitions, pictures, or paragraphs to build the students' vocabulary inputs.

3) Using games to gain the students' interests and motivation during theteaching and learning process.

4) Giving grammar exercises to check the students' comprehension of the materials (narrative texts).

Research Discussion

According to observation and interviews done at the reconnaissance stage, it could be identified that there were many problems occurring in the teaching and learning process related to the teaching of reading. The activities were monotonous. The same stages of activities were done repetitively – explanation, exercises, and tests. The classroom activities also lacked the use of media and games. The materials were mostly taken from books or Student Worksheets or LembarKerjaSiswa (LKS).The LKS only focused on grammatical and textual aspects, whereas the students also needed the more complete explanation and different kinds of materials to help them understand the lesson. Besides there were some problems related to the students' reading skills.

To overcome the problems related to the teaching of reading, some actions were implemented. The main action was implementing Adaptive Control of Thought Output Model as the main activity. ACT was chosen because it could provide more opportunities for the student towork in groups. Furthermore, it could provide the students with vocabulary inputs for the texts. This strategy consists of five steps of learning, namely grammar identification Justify and Refine, Circulate and Observe, Return and Refine, and Teacher Debriefing. Those steps could be adjusted to the time allocation of the lesson. If there was limited time, the "Circulate and Observe" and "Return and Refine" steps could be omitted. The steps should be adjusted to the activities as well.

The implementation of Adaptive Control of Thought Output Model was combined with other actions i.e. using various media (pictures), using games, and giving reading exercises. This aimed at improving the students' reading skills. From the reading exercises, the students could practice their reading ability and they could improve their vocabulary as well.

The actions were conducted in two cycles consisted of three meetings foreach cycle. Based on the reflection of Cycle 1, the problems related to the teaching of grammar could be overcome. The learning activities were more enjoyable. The students were interested in doing the five steps of learningactivity in the class. The media were designed differently in every meeting. The media were used for the activities such as matching words and definitions; matching words, definitions, and pictures; and arranging jumbled paragraphs into a good story. The researcher used pictures to present the story plot. Besides, the Adaptive Control of Thought Output Model was also used in Cycle 1. The students joined the game enthusiastically. Rewards were used to maintain the students' interest of the learning activity. After doing the five steps of learning activities, the students were given the

grammar exercises to develop their comprehension.

Cycle 2 was conducted to solve the problems which emerged in Cycle 1 and to improve the students' participation and vocabulary as well. Adaptive Control of Thought Output Model was also implemented in Cycle 2. The pictures were more varied and were adjusted to the learning activities. The pictures were used for the activities such as classifying the words of the main text of the storyand matching words and pictures. A game was also used in Cycle 2. It was grammar identification competition, but was conducted in larger groups than in Cycle 1. The students enjoyed learning using a group competition. After that, the grammar exercises were given to the students.

The reflection showed that the implementation of the Adaptive Control of Thought Output Model and the accompanying actions were successful to improve the teaching of reading. The following discussion showed how Adaptive Control of Thought Output Model improved the teaching of grammar.

1. Adaptive Control of Thought Output Model was useful to improve the teaching and learning process of grammar comprehension. This learning strategy became one variation of learning activities. When the students did the five steps of learning activities, they enjoyed working in groups. Moreover, from those activities they gained vocabulary inputs for the whole texts. It was helpful for the students to learn using pictures rather than words only.
2. The materials that were used in the teaching and learning activities before were mostly taken from LembarKerjaSiswa (LKS) so the learning activities mostly depended on books. By applying Adaptive Control of Thought Output Model, the researcher could make the learning activities less monotonous.
3. The use of pictures both in the presentation stage and reading text worksheets made the students understand the texts easily. It facilitated the students to understand the story of the texts.
4. From the finding, it could be inferred that the use of pictures made the students think faster. They became more challenged. The pictures could increase their interests in learning. They were more engaged in the learning activities if the games were applied. The competition among the groups made the classroom atmosphere more enjoyable. The rewards also motivated them to have a good team-work during the game.
5. The grammar exercises gave the students chances to practice their grammar comprehension. The grammar exercises were designed using different kinds of grammar tasks such as answering questions related to the texts, multiple choices, and filling the blanks with suitable words. By completing the grammar tasks, the students could develop their grammar comprehension.

CONCLUSION

This research was aimed at improving the teaching of reading by using the Adaptive Control of Thought Output Model to the eleventh gradestudents. In thisresearch, ACT was implemented in two cycles. This strategy consists of five steps, namely grammar identification, Justify and Refine, Circulate and Observe, Return and Refine, and Teacher Debriefing. Besides the main activities i.e. picture arranging activities, the researcher also implemented some additional actions such as applying games, and giving various reading exercises.

In relation to the discussion in the previous chapter, it can be concluded that the implementation of ACT and the supporting actions could improve the teaching of reading. To support the result of the research, there were two kinds of data used in this research i.e. qualitative data and quantitative data. Both data were described as follows.

The qualitative data were obtained from the field notes and interview transcripts. From the qualitative data, the results show that the implementation of ACT could make the teaching and learning process more effective. The teaching activities become more well-planned and structured. Besides, ACT provided the opportunities for the students to work in groups. From the group work activities, the students could build their cooperation and participation in the learning

activities. They enjoyed learning more by working in groups.

Furthermore, the use of cards could facilitate the students to understand the texts. The students also got easier to understand the texts by using the pictures which were used in the cards and in the reading exercises. They could get visual images about the story plot of the texts. The students were more engaged when they were joining the games.

Grammar identification games were done in the form of group competition. The students could actively participate in those activities. In addition, various grammar exercises were given to the students. It could give opportunities for the students to develop their reading skills.

In terms of quantitative data, the improvement of the teaching of reading could be seen from the result of the pre-test and the post-test. Based on the results of the pre-test and the post-test, the mean score of the post-test was higher than the mean score of the pre-test. The mean scores increased from 65.54 to 73.97. It increased 8.43. The improvement on the students' mean scores showed that the improvement of the teaching of reading gave impacts to the students' achievement.

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