

# **Inspirations and Innovations for English Classroom**

*Editor*

**Bambang Yudi Cahyono**

*State University of Malang, East Java, Indonesia*



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## Mini Research and Classroom Discussion: Media to Boost Students' Cognitive Skills

Nurul Choyimah

*State Institute of Islamic Studies at Tulungagung, East Java*

Life at present is getting more complicated. Students, teachers, workers, officials, and any other professions are demanded to be smarter and more skillful in response to competitive pressures in their communities. Besides, knowledge and technology are growing very fast. In consequence, equipping ourselves with any instruments and devices needed to deal with them is called for.

Relying on those demands, education should be able to assist learners in becoming self-sustaining and lifelong learners. As such, education should not merely focus on the acquisition of literacy skills: simple reading, simple writing, and simple calculating, but rather higher literacy ones such as reading and thinking critically, expressing ideas clearly and persuasively, and solving complex problems smartly. To cope with these demands, education should provide with learning environment which can maximize the students' potential. Students' potential can be maximized if the learning environment pays much attention to their knowledge, skills, attitudes, and beliefs. Besides, the potential of students can be maximally reached if students can learn something by understanding (Bruner, cited in Bransford et al., 1999: 136). In addition, learning environment should ease teachers in assessing students, that is the one giving opportunities for feedback and revision (Bransford, et al., 1999: 140).

Inquiry learning is believed to be able to meet such learning environments. Inquiry learning is an educational activity in which students individually or collectively investigate a set of phenomena—virtual or real—and draw conclusions about it (Kuhn et al., 2000: 496-497). In inquiry learning, learners are required to formulate questions, plan their methods to answer the



problems they have formulated, solve the problems, and justify their conclusions. As such problem solving and logic and reasoning skills are outweighed.

The next question is: what learning activities enabling students to maximize their skills in problem solving and logic and reasoning? Conducting mini research and presenting the report of the research in classroom discussions is a good inquiry activity since it requires students to formulate research problems, plan strategies to answer the problems formulated in advance, classify and map scattered findings in order to answer the problems, and make conclusions.

This chapter tries to expose teaching steps in implementing the teaching and learning activities in a content course: Pragmatics. The exposure to the teaching steps is initiated with the brief review on the cognitive skills involved in it: thinking and language skills. Besides, the concepts of research and mini research are touched on as well.

### COGNITIVE SKILL

What is cognitive skill? Cognitive skill is a set of abilities to understand, think, and learn. Cognitive skill is related with how people optimize the use of their brain. It is believed that cognitive skill might influence performance in other domains, including the academic domain. Many studies have proved that cognitive skill might contribute a lot to the academic performance. Smith's study proves the hypothesis. Smith (2011) investigated the relationship between cognitive ability and academic achievement among fourth graders in a public elementary school. His study revealed that there is a strong positive correlation between students' cognitive ability and their grades in mathematics and reading.

Likewise, it is believed that cognitive skill is also influenced by other factors, such as school environment. Finn et al (2015) investigated the impact of school on both academic performance and cognitive skills. On the other hand, other study, the one by Kuhn et al (2000) suggests that activities during teaching learning process will be beneficial to the development of cognitive skills if the activities are initiated with requisite skills. In further explanation, they confirm that the sequence of cognitive skills in curriculum should be well-planned.

Cognitive skill is classified into some broad skills, and each of which is divided into some sub skills. **Thinking and reasoning** as well as **language skills** are the two cognitive skills presented in this chapter.

### THINKING SKILLS AND REASONING

Thinking skill deals with the ability to reason either inductively or deductively, generate hypotheses, and test hypotheses. Reasoning is the skill which is concerned with the ability to draw conclusions by relating some facts and conditions. Determining relevant facts and irrelevant ones is the starting point of reasoning. In relation with this, Bransford et al. (1999: 499) mention that reasoning is the process of drawing conclusions from principles and from evidence. Reasoning is divided into two types: deductive and inductive reasoning.

Deductive reasoning is the process of drawing conclusions based on some propositions. Proposition itself, in general, can be defined as an assertion, which might be either true or false (Bransford et al., 1999: 499). *Students of English department are both intellectually and socially smart, Statistics is one of difficult courses, or Indonesia is an agriculture country* are the examples of propositions. A conclusion is made of some connected propositions. In their further explanation, Bransford et al. explain that deductive reasoning is divided into *conditional reasoning* and *sylogistic reasoning*.

Conditional reasoning is the process of drawing conclusions by basing on if-then propositions. The propositions suggest that if a conditional situation *a* is met, then the consequence *b* will happen, and a well-reasoned conclusion can be made from the relationship between them. If *a*, then *b*. *a*. Therefore *b*. For example, "if you are students, then you have to do the exam. You are a student, therefore you have to do the exam. This is a concrete example of a deductive conclusion, and this is a well-reasoned conclusion. In such a conclusion, a reasoner affirms the conditional situation. A well-reasoned conclusion can also be made by denying the consequence. For example, "if you are a student, then you have to do the exam. You are not a student. Therefore, you do not have to do the exam.

Sylogistic reasoning is the process of drawing conclusions from two premises (Bransford et al, 1999: 505). Sylogism comprises a major premise, a minor premise, and a conclusion. Sylogism describes a specific relationship between two items. The items might be objects, categories, or attributes. Bransford et al explain further that sylogism is divided into linear sylogism and categorical sylogism.

In a linear sylogism, each premise contains two items whose relation is linear. The relationship is generally indicated with either a quantitative or



qualitative comparison. In such a syllogism, a reasoner needs to determine a relationship between two premises that do not occur in the same premises. See the example in the box.

Premise 1 : *Andy is smarter than Andrew*  
Premise 2 : *Andrew is smarter than me*  
Conclusion : *(Who is the smartest?)*

In the above syllogism, a reasoner is required to make an inference who the smartest is. Premises 1 and 2 merely mention that item 1 is smarter than the item 2. They do not state which one is the smartest one among others. In such a case, a reasoner needs to relate between premise 1 and 2 so that she/he can make a conclusion who the smartest is.

Categorical syllogism is the other type of syllogism. The premises state something about the category memberships of the terms (Bransford et al, 1999: 507). Each premise contains two items. The linkage between the first and the second item in each premise is indicated with categorical membership. In such a case, a reasoner needs to make an inference that the first item in the first premise is or is not the member of the second item of the second premise. See the example in the box.

Premise 1 : *All students of English study program are the members of SAC*  
Premise 2 : *All SAC members are good readers*  
Conclusion : *Therefore, all students of English study programs are good readers*

On the other hand, inductive reasoning can be understood as the process of drawing conclusions from specific facts and observations. As such, conclusions are drawn by basing on the collection of facts in the field, and there is no logically certain conclusions as in deductive reasoning. For example, observing some birds, a reasoner might conclude that all birds can fly. Such reasoning, however, does not result in logically-certain conclusions, but rather only a strong or highly probable conclusions (Bransford et al., 1999: 513).

## LANGUAGE SKILLS

Language skills deal with the ability to relate between a specific symbol with a sound structure and visual object. Performing language skills relies much on cognitive skills since it needs the ability to relate between sound and visual symbols with their referents.

Listening is an active skill. Phonological awareness is badly needed in listening skill. It needs the ability to relate between spoken symbols and their referents. Hearing the spoken symbol /mi:t/, a listener must relate it with its referent. In short, listening needs the ability to process spoken information. Gebhard (2000: 144) mentions that there are two distinct processes involved in comprehending spoken English: *bottom-up processing* and *top-down processing*. Bottom-up processing is the process of decoding a spoken message by analyzing its sounds, words, and grammar. In top-down processing, on the other hand, a spoken message is decoded by using the listener's background knowledge.

Likewise, speaking involves cognitive skills, in particular the ability in making decisions. Conversing with others, a speaker is demanded to be aware of the purpose of the conversation (Gebhard, 2000: 169). The awareness on conversation purposes, either transactional or interactional, entails the strategies of having the conversation. A conversation having transactional purposes will have different strategies from the one having interactional purposes. Determining the purpose of the conversation and choosing relevant strategies are the realization of cognitive skills.

Reading written texts needs cognitive skills as well. It needs the ability to recognize words and figure out the meaning of the words. As you manage to decode the meaning of each word, you need to integrate the meaning of them so that you would get a coherent idea. You continue this process for subsequent words and sentences to formulate a discourse. Clearly, the normal ability to read is not at all simple (Stenberg ; 2009: 383). To Gebhard, the process in reading is similar to the one in listening, in the sense that it encompasses bottom-up processing and top-down processing (2000: 199). To comprehend written texts, readers rely much on the ability to recognize words, phrases, and sentences (bottom-up processing) and their encyclopedic knowledge concerning the texts (top-down processing). In his further explanation, Gebhard explains that those processes interact each other when readers read, results in some degree of understanding.



Writing is an active language skill. It relies on cognitive skill as well. In writing, a writer is demanded to decide which lexical choices are relevant for a certain message, which grammar structure is appropriate for a certain case, what mechanics fit the sentences, and many others.

### UNDERSTANDING RESEARCH AND MINI RESEARCH

What is research? Research is a way to acquire dependable and useful information whose purpose is to discover answers to meaningful questions by applying scientific procedures (Ary, et al., 2010: 19). Given that the main purpose of a research is discovering answers of meaningful questions, it suggests that one of the main components of research is research problem/s. Once a researcher completes her or his research, she or he has to make a report. The main aspects that must be included in a research report are research problem, relevant theories, methods of answering the research problems, findings, and discussion.

What is mini research? Mini research is a miniature of research, or it is a copy of research but in a smaller size. It is a copy of research means that the essence of research is present in it. It suggests that all components of real research are present in it. As such, the components of real research in mini research are as follows: the background of study, research problem/s, review of relevant theories, research methods, findings and discussion. The presentation of those components, however, is simplified in many ways. The simplification includes the number of research problem, the coverage of related literature, the number of research participants, the number of data, the depth of analyses, and the comprehensiveness of the discussion.

### PRACTICAL STEPS IN IMPLEMENTING THE TEACHING STRATEGY

In order to get great advantages from the implementation of this teaching strategy, some considerations and practical steps that follow should be taken into account.

**Preparation.** Preparation entails preparing any aspects included in the teaching and learning process. Teaching objectives, teaching materials, teaching activities, references, evaluation, and meeting schedule are the aspects that should be taken into account in preparation. All of them are represented in a syllabus or course outline. Teaching objectives are the 'destination' that a teacher would like to reach. One of the objectives of the course is that

students are able to conduct a mini research and present the report of it in classroom discussions. Teaching materials are concerned with the topics being discussed within the given semester. Research on Pragmatics is one of the topics presented in the given semester. This topic is intended to equip students with the knowledge concerning research on Pragmatics. Concerning teaching activities, each semester is divided into two halves. The first half of the semester is used for discussing theories concerning Pragmatics. In this time, I explain everything by lecturing method of teaching. The second half the semester is used for student presentation.

**Teaching.** How is the teaching technique implemented? As touched on earlier, in the first half of each semester I explain theories on Pragmatics. Within this time, I explain linguistics in general and its classification, deixis, conversational implicature, relevance theory, speech act, politeness, and research on Pragmatics. Discussing the topic of research on pragmatics, I explain the nature of research, approach commonly applied in pragmatics research, data and data collection methods commonly applied in pragmatics research, and data analysis. The discussion on those topics on research is intended to equip students with sufficient knowledge on Pragmatics research. As the discussion is completed, the students are asked to form groups consisting of two students, and each group is required to conduct a mini research concerning the theories that have been discussed. As such, each theory might be studied by more than one group.

In the second half of the semester, students are required to present the report of their mini research in classroom discussions. Each group has 30 minutes for paper presentation and discussion. During the discussion, audience gives comments and questions. As the question-and-answer session ends, I give some evaluation on their paper and presentation.

**Evaluation.** The evaluation of the activity can be done as the question-and-answer session in each presentation ends. The evaluation entails evaluating the students' understanding to the discussed theory, research methodology, the presentation of research findings, analysis, and conclusions. The evaluation can be either orally or in written form.

### DISCUSSION

One of the hallmarks of this teaching strategy is learning by experiencing. It emphasizes on the students' experience rather than their memory. By far textbooks, teaching activities, and evaluation are filled with disconnected



facts, and students are expected to memorize. For example, in the teaching of Pragmatics, students are expected to know by heart what deixis is, what properties of deictic expressions are, what differences between deictic expressions in language X and the ones in language Y, and many others. Dealing with research methodology course, students are demanded to understand the differences between deductive and inductive reasoning, the concepts of data, methods of data collections, methods of data analysis, and many others.

It should not be denied that facts are important. Some research findings cited by Bransford et al confirm that experts' abilities to think and solve problems depend strongly on a rich body of knowledge about subject matter (1999: 9). In their further explanation, they mention that usable knowledge is not the same as a list of disconnected facts. Experts' knowledge is connected and organized around important concepts; it is conditionalized to specify contexts in which it is applicable; it supports understanding and transfer rather than only the ability to remember (1999: 9). It suggests that in addition to memorizing and understanding facts, students need to try how to organize disconnected facts in order to make them meaningful. In the context of Pragmatics teaching cited earlier, deictic expressions and two classifications of reasoning are two disconnected facts. Those two facts will be meaningful if students use data on deictic expressions as the medium to think inductively. On the basis of several data on deictic expressions at hand, they come to the conclusion that properties of deictic expressions in language X are different from the ones in language Y. using this strategy of learning, students have an opportunity to draw a conclusion inductively in a real case. This is learning by understanding, not merely by memory. Relying on this experience, students can use the same strategy to solve similar problems in different cases. In such a case, students are trained to be active learners, and they are better prepared to transfer what they have learned to new problems and settings (Bransford et al, 1999: 13). In short, this teaching strategy trains students to organize some disconnected facts into a meaningful and unified new knowledge, and it leads them how to transfer their knowledge in different time and settings.

Conducting mini research and having classroom discussions are quite effective for improving students' language skills as well. Prior to conduct the research, students are demanded to read a lot in order to have solid understanding on the topic discussed and good methods to answer research prob-

lems. Writing is the other language skill that can be sharpened through this teaching strategy. Students are required to write a long discourse systematically, cohesively, and coherently. Background of the study should be connected with research problems, and they must be relevant with theories. Research methods must be written and organized in such a way so that it clearly describes how the research problems are answered. Findings and analysis need to be presented systematically so that readers can easily catch the researchers' findings. As research activities and research results are completely reported in written form, students are to present it in classroom discussions. In this activity, students' speaking skill is the main concern. Students are faced with situations in which they have to maximize their skills in speaking. They have to implement their knowledge they have learned in speaking courses. Opening conversation, maintaining interaction, taking turns, pronouncing words in proper pronunciation and intonation, arguing, negotiating ideas, are just a few examples of conversational aspects that must be realized during the classroom discussions.

Conducting mini research and classroom discussions are good media to sharpen students' problem-solving skill. Research is basically a scientific effort to solve problems. Research problem is the heart of a research. Any activities in a research—reviewing theories, setting up solid research methods—are in the frame of answering research problems. In the activity of conducting a mini research, students are required to be sensitive in identifying problems and constructing strategies to solve the problems. Identifying problems means that students are demanded to be able to identify problematic situations. For example, deictic expressions are scattered in front of them, but they might fail to recognize the role deictic expressions in the fluency of communication. Once students identify the existence of problems, they still have to formulate them well enough to understand how to solve them. As the problems are clearly formulated, the next step is constructing strategies to solve them. The strategy might involve how to determine data, decide methods of data collection, and steps in data analysis. In short, mini research trains student to organize knowledge and work systematically to bear on problem solving. This, in long turn, can sharpen their automaticity. Such automaticity will be transferred in a condition in which students face novel problems. As working systematically has been internalized in their mind, solving novel problems will be governed by automatic process. In sum, enquiry learning in the form of conducting mini research

and presenting the report in classroom discussions has, at least, three pluses: (1) it enables learners to learn by understanding; (2) it sharpens their language skills; and (3) it can improve their problem-solving skills.

## CONCLUSION

This chapter suggests that each course in English study program provides some facts. Research Methodology course, for instance, presents considerable facts concerning methods in research. Facts related to research design, types of data, data collection methods, research participants, and data analysis are a few examples of facts discussed in the course. Likewise, a content course such as Pragmatics provides other facts apparently not connected with facts in Research Methodology course. Other facts are presented in language-skill courses in which students learn how to use the target language. In order to be meaningful and usable, those disconnected facts should be linked properly. A content course should be combined with other relevant content course/s and language-skill courses so that students find them meaningful. Being trained to integrate some disconnected facts from different courses, students are made to be accustomed to managing information in a meaningful way. Finding out a teaching strategy enabling students to combine some disconnected facts into unified and meaningful ones is one of the challenges faced by lecturers.

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