

Problem-Based Learning & Lexically-Based Extensive Reading in English for Medicine

by

Rohmani Nur Indah

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Supervised by

Prof. Siusana Kweldju



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ABSTRACT

This paper describes an action plan of an extensive reading program which is designed as the implementation of the concept problem-based and lexically-based learning. The first concept relies on the idea that the students are encouraged to take responsibility for their group and organize and direct the learning process with support from a tutor or instructor (Spencer, 1999). Meanwhile the lexically-based learning is meant to overcome the problem in EFL learning which is rooted from insufficient vocabulary and consequently need more serious learning (Kweldju, 2004).

In this program, the learners are given opportunity to read and explore report and commentary of various laboratory testing. It aims at developing careful reading, good analysis, and critical diagnosis. In addition, it builds up knowledge of vocabulary and structure in the authentic reading materials relevant to their major. The expected outcome of the course is to equip the learners to be graduates of Medicine faculty who have context-specific language skills to be used when they become physicians in international hospitals.

Keyword: extensive reading, lexically-based language teaching, problem-based learning approach

In reading comprehension classes today, many reading skills and strategies for use in everyday situation have been put in various emphases. Unfortunately, attempts at dealing with the many complex reading skills frequently come too late, at university level (Heaton, 1989). Therefore, understanding better the kinds of skill to assess in reading comprehension is a significant start. This is because reading comprehension only is not enough and should be followed by extensive reading.

Extensive reading is a part of the course in English as foreign language. It is given to improve the skills both in reading and literacy. Bamford states that the benefits of extensive reading are to increase learner's reading ability in the target language, develop positive attitudes toward reading, increase motivation to read, and make gains in various proficiency in the target language, including vocabulary and writing (in Greenberg et al.,2006). However, in the setting of English for Specific Purpose, encouraging learners to read authentic

materials such as books, magazines and newspaper should not simply focus on basic reading skills to cover the benefits of extensive reading.

In this action plan, the extensive reading course is designed as the implementation of the concept problem-based and lexically-based learning. The first concept relies on the idea that the students are encouraged to take responsibility for their group and organize and direct the learning process with support from a tutor or instructor (Spencer, 1999). Meanwhile the lexically-based learning is meant to overcome the problem in EFL learning which is rooted from insufficient vocabulary and consequently need more serious learning (Kweldju, 2004).

Specifically, this paper addresses the extensive reading action plan covering the subsections on (1) the course description; (2) the learners' reading skill; (3) the relation between the learning and the real world; (4) the problems to solve; (5) review of relevant theories; (6) reading materials and the lexico-grammatical complexity; and (6) learners' activities in problem solving process.

1. The Course Description

The course of English for Specific Purpose applying the extensive reading material chosen for this action plan is 'English for Medicine'. It is a course in the undergraduate program of the Medicine Faculty at Muhammadiyah University of Malang. This course offers the learning of English skills needed for the Medical area especially in content-area reading relevant to the profession of medical doctors.

English for Medicine is given as four credits course in two semesters for the first year students. This course involves team teachers which consist of an English tutor and a medical lecturer. The English tutor trains the basic reading skills as well as general English proficiency while the lecturer participates in assessing the learners' understanding on the technical terms in English.

In extensive reading, the learners are given opportunity to read and explore report and commentary of various laboratory testing. It aims at developing careful reading, good analysis, and critical diagnosis. In addition, it builds up knowledge of vocabulary and structure in the authentic reading materials relevant to their major. The expected outcome of the course is to equip the learners to be graduates of Medicine faculty who have context-specific language skills to be used when they become physicians in international hospitals.

2. The Learners' Reading Skill and Context Analysis

The learners taking this course should have at least intermediate reading skills as shown by their score in English reading section as part of the entrance test when they enrolled to the faculty. The learner and context analysis are presented in the following table 1. It is adapted from the context analysis employed in problem-based learning approach developed by Neville & Britt (2007: 236).

Table 1. Learner and Context Analysis

| Area | | Target Population Characteristics |
|--|--|--|
| Learner analysis | Entry behaviors | Semester two of undergraduate Medicine; intermediate to early advanced reading skills; intermediate speaking skills, possibly low writing skills. |
| | Prior knowledge | Uncertain prior knowledge of autism diet, and possible misconception that must be corrected. |
| | Attitude toward instructional format | Possible hesitation in conducting presentations in English on their reading comprehension. |
| | Group characteristics | Some students may possess greater competency in understanding technical term in chemistry than other students. |
| Context analysis of learning environment | Adaptability of module to simulate the workplace | The selected reading materials are appropriate in terms of required lexical terms needed for diagnosing patient's diet pattern. |
| | Learning site constraints | Students will meet in tutorial session once a week and given much opportunity to consult with the teachers during the semester. |
| Context analysis of performance setting | Social aspects | Students need to develop team skills as they need to seek more information on autism diet through interview with the parents of autistic children |
| | Relevance of skills to workplace | The aim is to prepare students for their career responsibility such as diagnosing patient metabolism and present the report of analysis on autism diet program when they work in international hospital. |

3. The Relation between the Learning and the Real World

The current global world demands medical professionals who are flexible and adaptive, well versed in both their career responsibility and the language of foreign countries. The problem based learning approach produces graduates with the self-reliance, fundamental skill sets, and real-world experience to compete successfully as doctors of medicine. Therefore, the participating students should develop their proficiency in the target foreign language.

Implementing problem based learning approach, in the learning process students are guided to demonstrate creative thinking in terms of module development and management, prepare well in the report presentation, and enlarge networking with both nutrition experts and patient's parents. These are close to the practice of nutrition consultant as part of their responsibility as medical doctors in their future real world. The overview on the learning module and the instructional goal reflecting the real world practice is given in table 2.

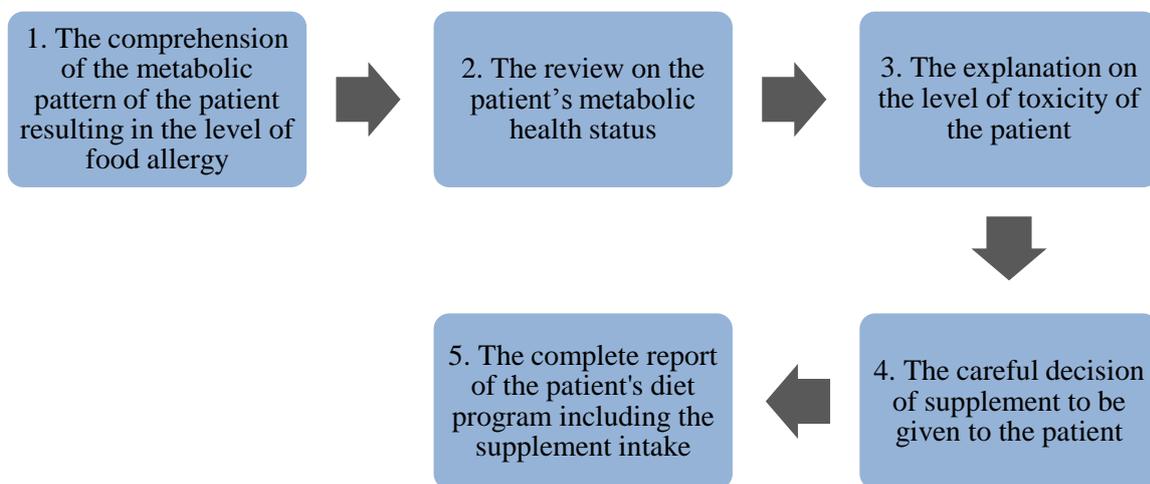
Table 2. Overview of the Learning Module

| Module | Subject | Instructional Goal |
|--------|---|--|
| 1. | Complete Report of Asian Food: IgG. | Learners are able to comprehend the metabolic pattern of the patient resulting in the level of food allergy. This activity is needed as nutrient consultant is part of the job of physician. |
| 2. | Comprehensive Digestive Stool Analysis. | Learners are to able to analyze the relation between the metabolic pattern and the microbiology of the patient's digestion. Understanding stool testing report is significant to make careful examination on patient's metabolic health status. |
| 3. | Elemental Analysis of Hair | Learners are able to compare between the toxic and nutrient elements of the patient's hair analysis. Such knowledge will be beneficial in describing the level of toxicity and explaining to the patient how to treat it. |
| 4. | Nutrient Food Source Guide | Learners are to relate between the possible supplements and the variation needed by the patient by considering the result of module 1, 2, and 3. The careful decision of supplement given to the patient belongs to the most important responsibility when doctors write prescriptions for their patients. |

4. The Problems to Solve

In problem-based learning, problems are used as tools to develop problem-solving schemata. In this action plan, the problems to solve done in groups of five are described in figure 1 below.

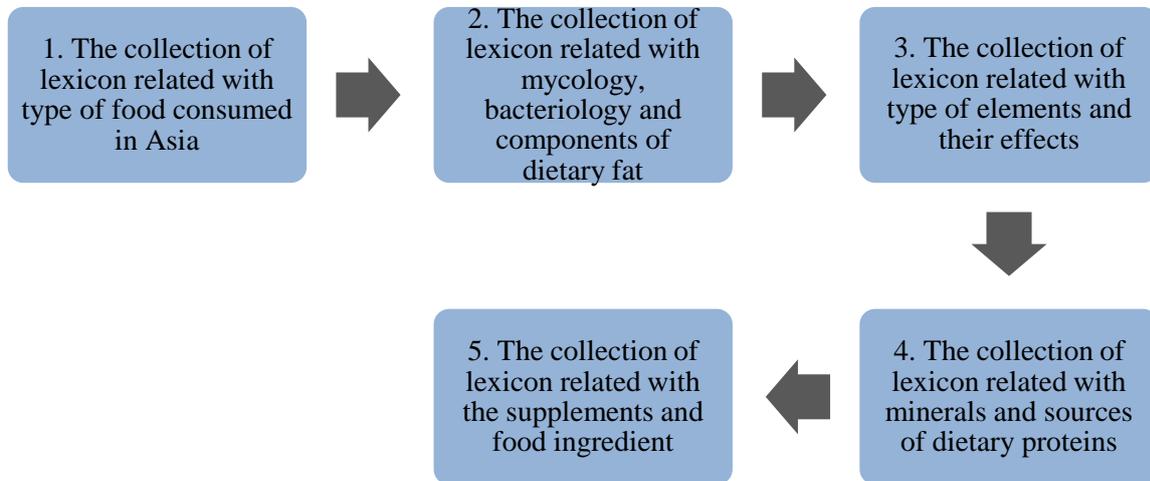
Figure 1. The Steps of Solving Problem



In the steps above, effective scaffolded design is applied. This means that the learning is in accordance with the student's cognitive load. The more scaffolding is given in step one to avoid overwhelming the students with problem intricates and prevent them from developing a solution at all. Less scaffolding is given in step two and three. As the steps progress the scaffolding gradually would be withdrawn until students are able to function completely autonomously in steps four and five.

The assessment is conducted during the process. The extensive reading course is implemented as the combination of problem-based and lexically-based learning concept. Therefore, the supplemental activities in steps above are designed to enrich learner's individualized lexical schemata as shown in figure 2.

Figure 2. The Lexically-based Supplemental Activities



5. Review of Relevant Theories

The following discussion is some theoretical review of extensive reading, lexically-based language teaching and problem-based learning approach.

5.1 Extensive Reading

Reading is an activity characterized by the translation of symbols, or letters, into words and sentences that have meaning to the individual. The ultimate goal of reading is to be able to understand written material, to evaluate it, and to use it for one's needs (Chall & Stahl, 2009). Meanwhile, extensive reading is an approach to language learning, including foreign language learning, by the means of a large amount of reading (Cobb, 2007). Here, the learners view and review of unknown words in specific context which will allow the learner to infer the word's meaning, and thus to learn unknown words.

Extensive reading is contrasted with intensive reading, which is slow, careful reading of a small amount of difficult text – it is when one is "focused on the language rather than the text". Extensive and intensive readings are two approaches to language learning and instruction, and may be used concurrently; intensive reading is however the more common approach, and often the only one used.

Getting students to read English text concerns with many reasons. In the first place, students are given good exposure to English. Reading texts provide good models for English writing. In addition, reading texts also provide opportunities to study language: vocabulary,

grammar, punctuation and the way to construct sentences, paragraphs and texts. Lastly, good reading texts can introduce interesting topics to stimulate discussion, excite imaginative responses and be the springboard for well-rounded, fascinating lessons (Harmer, 1998). These reasons become the consideration in choosing the material for the action plan.

There are some characteristics of efficient and inefficient reading underpinning this action plan. They are as listed by Ur (1996: 148) in the following:

| Aspect | <i>Efficient</i> | <i>Inefficient</i> |
|--------------------------------|---|---|
| 1. Language | The language of the text is comprehensible to the learners | The language of the text is too difficult |
| 2. Content | The content of the text is accessible to the learners; they know enough about it to be able to apply their own background knowledge. | The text is too difficult in the sense that the content is too far removed from the knowledge and experience of the learners. |
| 3. Speed | The reading progress fairly fast: mainly because the reader has 'automatized' recognition of common combinations, and does not waste time working out each word or group of words anew. | The reading is slow: the reader does not have a large 'vocabulary' of automatically recognized items. |
| 4. Attention | The reader concentrates on the significant bits and skims the rest, may even skip part he or she knows to be insignificant. | The reader pays the same amount of attention to all parts of the text. |
| 5. Incomprehensible vocabulary | The reader takes incomprehensible vocabulary in his or her stride: guesses its meaning from the surrounding text, or ignores it and manages without; uses a dictionary only when these strategies are insufficient. | The reader cannot tolerate incomprehensible vocabulary items; stops to look every one up in a dictionary; and/or feels discouraged from trying to comprehend the text as a whole. |
| 6. Prediction | The readers think ahead, hypothesizes, predicts. | The reader does not think ahead, deals with the text as it comes. |
| 7. Background information | The reader has and uses background information to help understand the text. | The reader does not have or see background information. |
| 8. Motivation | The reader is motivated to read: by interesting content or a challenging task. | The reader has no particular interest in reading. |
| 9. Purpose | The reader is aware of a clear purpose in reading; for example to find something, to get pleasure. | The reader has no clear purpose other than to obey the teacher's instruction. |
| 10. Strategies | The reader uses different strategies for different kinds of reading. | The reader uses the same strategy for all texts. |

In reading, there are four identifiable skills. *First*, skimming which is reading for gist, e.g. quickly glancing through an article to see if it interests the reader. *Second*, scanning or reading to locate specific information, e.g. locating a telephone number in a directory. *Third*, intensive reading where the reader is trying to absorb all the information given, e.g. reading dosage instruction for medicine. *Fourth*, extensive reading where the reader deals with a longer text as a whole, which requires the ability to understand the component parts and their contribution to the overall meaning, e.g. reading a newspaper article, short story or novel

(Wright, 1992). Based on the action plan referred in this paper, the fourth skill namely extensive reading has been the emphasis.

Based on its model, reading includes discovering meaning in print and script, within a social context, through bottom-up and top-down processing and the use of strategies and skills (Gebhard, 2000). The bottom-up process starts with the ability to recognize words, phrases and sentences, while the top-down process relies on the background knowledge related to the content of the text. These models are introduced in extensive reading program.

In addition to the reading model employed, Anderson and Pearson found that second language reading learners depend on specific examples in memory as well as on abstract and general schemata because word meanings are context sensitive (in O'Malley and Pierce, 1996). Schemata refers to knowledge already stored in memory, while abstract and general schemata refer to distinctive features that make up generic categories. In this course action plan, the students should have general knowledge or schemata on human metabolism function as the given texts discuss about the food and supplements, otherwise they may find it difficult if they know nothing about the relation between food and metabolic function.

In addition to the distinction above, there are three stages namely knowing which includes recognizing sentence structure and recalling factual information, comprehending which refers to finding meaning and paraphrasing sentences, and applying which aims at being able to form generalization and drawing conclusions (Oka, 1992). In extensive reading developed in this course action plan, the students involve the three stages above all at once scaffolded only in the first three steps of activity mentioned in Figure 1.

The stages in reading may involve various activities such as: teacher gives pre-question, learners compose do-it-yourself questions, learners summarize the content in a sentence or two and note points of similarity or difference of content, and learners re-present its content through a different graphic medium, e.g. map, diagram, etc (Ur, 1996). These stages should be practiced in the class of this action plan.

Regarding the reading activities above, there are some teaching reading principles: (1) reading is not merely a passive skill; (2) students need to be engaged with what they are reading; (3) students should be encouraged to respond to the content of a reading text, not just to the language; (4) prediction is a major factor in reading; (5) match the task to the topic; and (6) good teachers exploit reading texts to the full (Harmer, 1998). These belong to crucial principles to be noted in this action plan

Basically, there are roles of extensive reading in language learning: (1) to provide 'comprehensible input'; (2) to enhance learners' general language competence; (3) to increase

the students' exposure to the language; (4) to increase knowledge of vocabulary; (5) to lead to improvement in writing; (6) to motivate learners to read; (7) to consolidate previously learned language; (8) to build confidence with extended texts; (9) to encourage the exploitation of textual redundancy; and (10) to facilitate the development of prediction skills (Bell, 1998). The roles are consolidated during the implementation of extensive reading in this action plan.

In extensive reading program, some practical advices are to maximize learner involvement, involve the reader interview, read aloud to the class, encourage students for presentations and written work based on the reading, use audio material avoid the use of tests, discourage the over-use of dictionaries, monitor the students' reading, and maintain the entertainment (Bell, 1998). Students choose their own reading material and are not compelled to finish uninteresting materials. Reading material is normally for pleasure, information or general understanding; reading is its own reward with few or no follow-up exercises after reading; reading is individual and silent. Reading speed is usually faster when students read materials they can easily understand.

The assessment in extensive reading program is to judge how much the students are getting out of their materials. Informal assessments such as a simple conversation about the book can be a good place to start. In larger classes with time constraints preventing teacher from meeting with each student individually, written evaluations like book letters or book reviews can be used. Students discuss their respective books or articles, work on a compare and contrast of the books' plots or characters, make brief presentations to the class about their books and what they think of the book as they read and after they finish.

5.2 Lexically-Based Language Teaching

Lexically-based language teaching believes in how to facilitate learning rather than in how to teach. It has its own approach, methodology and syllabus. It puts an emphasis on the importance of raising students' awareness on the acquisition and use of lexicon. Language is basically words as words are the basic building blocks of language. Even syntax is lexically-represented in the mental lexicon. Therefore, as far as words are concerned, meaning becomes the center of discussion (Kweldju, 2005).

The lexical approach to second language teaching has received interest in recent years as an alternative to grammar-based approaches. The lexical approach concentrates on developing learners' proficiency with lexis, or words and word combinations. It is based on the idea that an important part of language acquisition is the ability to comprehend and produce lexical phrases as unanalyzed wholes, or "chunks," and that these chunks become the

raw data by which learners perceive patterns of language traditionally thought of as grammar (Lewis in Moudraia, 2001).

The term lexical approach, suggests that lexis is the basis of language which is misunderstood in language teaching because of the assumption that grammar is the basis of language and that mastery of the grammatical system is a prerequisite for effective communication. The key principle of a lexical approach is that "language consists of grammaticalized lexis, not lexicalized grammar." (Lewis in Moudraia, 2001). Therefore, the central organizing principles of any meaning-centered syllabus should be lexis

In the lexical approach, lexis in its various types is thought to play a central role in language teaching and learning. Nattinger (in Moudraia, 2001) suggests that teaching should be based on the idea that language production is the piecing together of ready-made units appropriate for a particular situation. Comprehension of such units is dependent on knowing the patterns to predict in different situations. Instruction, therefore, should center on these patterns and the ways they can be pieced together, along with the ways they vary and the situations in which they occur.

Activities used to develop learners' knowledge of lexical chains include: intensive and extensive reading in the target language; first and second language comparisons and translation—carried out chunk-for-chunk, rather than word-for-word—aimed at raising language awareness; repetition and recycling of activities, such as summarizing a text orally one day and again a few days later to keep words and expressions that have been learned active; guessing the meaning of vocabulary items from context; noticing and recording language patterns and collocations; working with dictionaries and other reference tools; and working with language corpuses created by the teacher for use in the classroom or accessible on the Internet (Nattinger in Moudraia, 2001). These activities are highly recommended for a successful implementation of lexically-based language teaching.

Willis has attempted to provide a rationale and design for lexically based language teaching and suggests that a lexical syllabus should be matched with an instructional methodology that puts particular emphasis on language use. Such a syllabus specifies words, their meanings, and the common phrases in which they are used and identifies the most common words and patterns in their most natural environments (in Moudraia, 2001). Thus, the lexical syllabus not only subsumes a structural syllabus, it also describes how the "structures" that make up the syllabus are used in natural language.

5.3 Problem-Based Learning (PBL) Approach

PBL is a student-centered pedagogy in which students learn about a subject in the context of complex, multifaceted, and realistic problems. Working in groups, students identify what they already know, what they need to know, and how and where to access new information that may lead to resolution of the problem. The role of the instructor is that of facilitator of learning who provides appropriate scaffolding of that process by (for example), asking probing questions, providing appropriate resources, and leading class discussions, as well as designing student assessments.

Characteristics of PBL are: (1) learning is driven by challenging, open-ended, ill-defined and ill-structured problems; (2) students generally work in collaborative groups; (3) teachers take on the role as "facilitators" of learning (Neville & Britt, 2007). The characteristics have been elaborated in the design of the group work extensive reading in this action plan.

PBL may position students in a simulated real world working and professional context which involves policy, process, and ethical problems that will need to be understood and resolved to some outcome. By working through a combination of learning strategies to discover the nature of a problem, understanding the constraints and options to its resolution, defining the input variables, and understanding the viewpoints involved, students learn to negotiate the complex sociological nature of the problem and how competing resolutions may inform decision-making.

PBL provides students with opportunities to examine and try out what they know, discover what they need to learn, develop their skills for achieving higher performance in teams, improve their communications skills, state and defend positions with evidence and sound argument, become more flexible in processing information and meeting obligations, and practice skills that they will need after their education (Spencer, 1999). The opportunities given to the students are reflected in the steps of the activities in figure 1 and 2.

The following steps are simplified model of PBL: (1) explore the issues by introducing an "ill-structured" problem and its significant parts; (2) ask students to list what they know to solve the problem; (3) guide them to make the group's analysis of they will need to know to solve it; (4) ask them to list out possible solutions from strongest to weakest and to choose the best one, or most likely to succeed; (5) students are to present defend their conclusions, and (6) review their performance (Spencer, 1999). These steps are scaffolded efficiently during the implementation of PBL in the action plan.

The acquisition and structuring of knowledge in PBL is thought to work through the cognitive effects such as initial analysis of the problem and activation of prior knowledge through small-group discussion; elaboration on prior knowledge and active processing of new information; restructuring of knowledge, construction of a semantic network; social knowledge construction; learning in context; and stimulation of curiosity related to presentation of a relevant problem.

6. Reading Materials and the Target Lexicon

The reading materials suggested to lead the learners into the problem solving activities consist of the following module:

Table 3. Reading Materials and the Target Lexicon

| Module | Reading materials | Target Lexicon |
|--------|--|---|
| 1. | Complete Report of Asian Food: IgG | The collection of lexicon related with type of food consumed in Asia |
| 2. | Comprehensive Digestive Stool Analysis | The collection of lexicon related with mycology, bacteriology and components of dietary fat |
| 3. | Elemental Analysis of Hair | The collection of lexicon related with type of elements and their effects |
| 4. | Nutrient Food Source Guide | The collection of lexicon related with minerals and sources of dietary proteins |

Learners are taking note on the target lexicon in the form of vocabulary list written in cards ordered alphabetically. The tutor will check the learners ability to recall the target lexicon periodically. By using the individualized vocabulary list in cards, students are expected to enrich their vocabulary size.

7. Learners' Activities in Problem Solving Process

During the problem solving process, learners are engaged in the activities as mentioned in Figure 1 and 2 above. The learners' engagement are related to the implementation of the concept of problem-based learning approach covering student-centered learning, small-group learning, tutor as facilitator or guide, and self-directed student learning.

Student-Centered Learning

Problem-based learning places students in the center of the instructional paradigm to take control of their own learning by identifying what they need to know to better understand and manage the problem which they are working and determining where they will get that information (Neville & Britt, 2007). The problem to solve is the ideal construct of patient's diet program which required several masteries such as the concept of food allergy especially for autistic patient, the vocabulary of nutritional elements, and the comprehension of metabolic pattern as well as dietary ingredients.

Small-Group Learning

Problem-based learning groups in this action plan consist of five students. The primary goal of small-group learning is to stimulate realistic team-based working environment and to foster a community of practice to provide: (1) an opportunity for mutual engagement, (2) a joint enterprise, and (3) a shared repertoire (Neville & Britt, 2007).

The small-group learning is chosen as problem-based learning is more collaborative than cooperative. Collaborative learning manifests characteristics of participation, interaction and synthesis, whereas cooperative learning is characterized by a divide-and-conquer mentality (Neville & Britt, 2007).

There are differences between heterogeneous and homogeneous groups. The first is more likely to lead controversies within the group which increases the time required to a consensus and complete tasks. The later is suggested because the composition is more conducive to group collaboration (Neville & Britt, 2007). However, in this action plan there is no treatment given to manage the type of group. As the group's members are determined by the students themselves, it is assumed that any heterogeneity occurred would not lead to controversies since they must be responsible toward their own decision.

Tutor as Facilitator or Guide

Tutor is present to lead students in the appropriate direction without prescribing instruction who did not give students a lecture or factual information, did not tell the students whether they were right or wrong in their thinking, and did not tell them what they ought to study or to read. Tutor is a person who monitors and criticizes the reasoning skills of the students, facilitates the cognitive processes of the students through probing questions, indirectly stimulates deeper analysis of the topic, and acts as an intermediary between faculty and students (Neville & Britt, 2007). In this action plan, the tutors are those who simply

facilitate the learning process and does not provide specific content information as the students can access a lot of information from any possible relevant resource.

Self-Directed Student Learning

Self-directed student learning leads students to become independent thinkers, capable of assessing a problem and discovering on their own the resources that can be used in its solution. Students who participate in problem-based learning involved in this course action plan are expected to remain better lifelong learners than students who participate in a traditional curriculum.

Concluding Remark

This action plan refers to an effort to develop a well-designed extensive reading in which two prominent concepts are combined into practice namely lexically-based language teaching and problem-based learning approach. By giving the medicine undergraduate student opportunity to read and explore report and commentary of various laboratory testing, careful reading, good analysis, and critical diagnosis are attained. In addition, it builds up knowledge of vocabulary and structure in the authentic reading materials relevant to their major. This is done through lexically-based language teaching which puts an emphasis on the importance of raising students' awareness on the acquisition and use of the target lexicon. In addition, the steps of the activities proposed in this action plan have characterized the principles of problem-based learning approach.

During the implementation of extensive reading program, learning is driven by challenging, open-ended, ill-defined and ill-structured problems which are accomplished in collaborative groups where teachers take on the role as facilitators. As the long-term goal, the learners are equipped to be graduates of Medicine faculty who have context-specific language skills to be used when they become physicians in international hospitals.

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APPENDIX

- I.** Complete Report of Asian Food: IgG
- II.** Comprehensive Digestive Stool Analysis
- III.** Elemental Analysis of Hair
- IV.** Nutrient Food Source Guide