
THE ROLE OF KNOWLEDGE BUILDING DISCOURSE TO ENHANCE STUDENTS' CURIOSITY IN INQUIRY BASED CLASSROOM

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Abstract

Curiosity has been identified as driving force in doing an inquiry and one most important spur to educational attainment. As 2013 curriculum emphasizes the implementation of Inquiry Based Learning, teachers as curriculum executors should stimulate their students' curiosity. The study is aimed to investigate if Knowledge Building Discourse (KBD) is able to develop students' curiosity. The study was conducted in one private university in Cimahi. 25 junior students participated in this research. The study can be included into Second/Foreign Language Classroom Research. Classroom Research was employed to reveal the strength of KBD by identifying the students' and teacher's interaction in the classroom discourse. The study utilized rank scale to analyze spoken discourse from Sinclair and Coulthard (1992). In addition, the questionnaires were used to highlight the students' opinion towards KB. The result of the study shows that through KBD, the students are able to search and share information to the class rather than provide information to the class for the sake of answering the teacher's elicitation. It means, the implementation of KBD in classroom can enhance students' curiosity as KBD can produce discourse that allows students' inquiry to take place. Eventually, KB can be applied in 2013 curriculum which highlights Inquiry Based Learning in its teaching learning process.

Keywords: Knowledge Building, Knowledge Building Discourse, Inquiry Based Learning.

INTRODUCTION

Recently, inquiry based teaching (IBT) has become the trend in education. Indonesia applies scientific method instruction which is assumed to be the part of IBT. That is the reason that may underlie the conception stating that curriculum 2013 applies inquiry based Learning. So far, it has been found out that IBL can work well in science, how about in language learning? A research managed by Larsson (2001 p.8) states a teaching method that practices inquiry based learning to language education; would constitute a formidable challenge to whoever might choose to attempt it. The difficulty lies in constructing problem. The formulation of question in inquiry is based on real problem that requires conscious awareness to solve it. In contrast, the problem in language is not obviously real that requires systematically solution to solve it (Larsson, 2001, p. 6). As a consequence, it is rather

difficult to put language in inquiry framework which relies on the existence of real problem. Moreover, Larsson (2001, p. 6) explains that since it is difficult to create pure language problem so, the most possible way would be to combine language teaching with teaching of other subjects. With respect to English language teaching, this means that inquiry based learning is doable when English is used as a media to teach other subjects. Considering that KBD is a teaching framework under IBT, the current study is aimed to find out the role of KBD in language learning to enhance students' curiosity. The research is carried out in reading class in which the teacher teaches content of reading text instead of the language. Further, the study tries to investigate 1) whether KBD as one of teaching strategies under IBT is able to enhance students' curiosity and 2) how KBD is able to enhance students' curiosity.

The following section will discuss IBT, knowledge building discourse (KBD) as one of IBT frameworks, classroom exchange and curiosity.

LITERATURE REVIEW

This part is concerned with the theory of inquiry-based learning model, knowledge building discourse, classroom exchange, and curiosity.

Inquiry-based Learning Model

The idea of infusing 2013 Curriculum in Indonesia was started from the idea of Prof. Alkaf who took the opinion of Dyar, J.H. et.al (2011) innovator of Harvard Business who said that creative thinking can be built through a process of creative skills that are acquired through: Observing, Questioning, Experimenting, Associating, and Networking. There is, unfortunately, a significant constrain in teaching language by using this approach because the language is a tool to learn something-not the subject of a study: meaning that it will be difficult to formulate real questions concerning language. Therefore, the inquiry-based learning in language teaching can be done if the targeted language is used to study other subjects or in the framework of content based teaching (Larson, 2001). To make the students learn the language--by studying other subjects, then the students should be required to use the language skills to understand other subjects. These things can be done by executing KBD. Here is the explanation of Knowledge Building

Knowledge Building

According to Scardamalia & Bereiter (2003, as cited in Devilee, A., 2008) Knowledge Building is a result of an idea that continuously increased in a community. According to Chiarotto, L. (2011), Knowledge Building (KB) is a set of activities in which students gather and ask questions about ideas or theories, and revise their theories or ideas. Furthermore, Scardamalia (2002 as quoted in Devilee, A., 2008) mentioned that knowledge building is applied to instill the students' responsibility for themselves as well as for the group (community). The explanation of KBD seems to be similar to inquiry process proposed by (Coffman, 2013, p. 6) The detailed description of inquiry process can be found in figure 1 below:

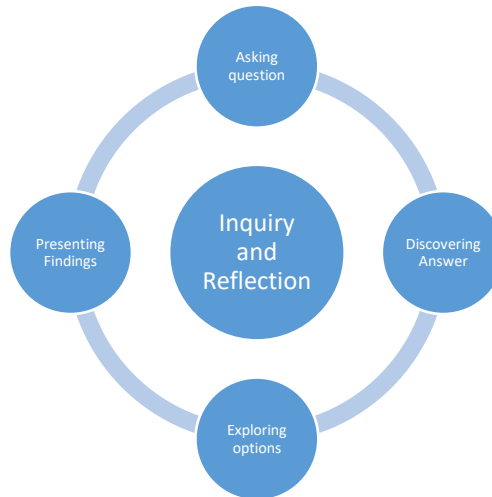


Figure 1. Inquiry Process (Coffman, 2013, p. 6)

Figure 1 illustrates that, all students in inquiry process are involved in the process of asking questions, discovering answer, exploring options and presenting finding. With refer to the meaning of KB above, it can be said that KB exists mostly in activities in which students gather and ask questions about ideas or theories, and discover answer to revise their theories or ideas. When the students are able to revise a particular idea, it means the students have gained new knowledge.

Knowledge Building Discourse (KBD)

Discourse in KB can be included in classroom discourse. With this respect, KB classroom provides opportunity to learners to develop not only knowledge- building competencies but also to see themselves and their work as part of civilization- wide effort to advance knowledge frontiers makes use the internet fully (scardamalia & Bereiter, 2006 p. 99). This means, under KBD framework, it can be found the slots in which the teacher administers space and time for students to find information through internet, as the first realistic means for students to connect with civilization, and to discuss the information among them. In this case KBD differs from traditional classroom discussion which focuses on a teacher directed forum for eliciting 'correct' answer (see Chiarotto, 2011, p. 11). The following is the unique role of KBD as a classroom discourse proposed by Chiarotto.

Table 1. The Unique role of KBD in Inquiry Based Learning

Discourse, rather than content delivery, shapes the direction and manner of learning
The teacher does not necessarily know in advance all of the questions and answer that may emerge from student discourse
The teacher nurtures student engagement by asking open- ended questions such as: “Did anyone notice/ read/ find out something that might help us understand our question?”

Students attempt to reconcile their own theories and ideas in light of new sources of information.
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Teacher supports them in this process by asking questions such as: "How does that information support your theory? Have you changed or added your theory?"
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The teacher models and facilitates multi- directional dialogue to help students internalize and practice it themselves: " Does anyone have something to build onto 'Joseph's idea, please pass on to another student.

It can be seen clearly in table 2 that KBD is unique as teacher is no longer a central of learning to whom students get knowledge instead teacher acts like friends that is the communication flows like conversation. That is the reason why in KBD, they sit together in the circle equally. In KBD, the teacher may start the conversation by facilitating students to actively participate and engage in learning process by asking the students real questions and together with students find answer to the questions by exchanging the information they have got from any sources. The students use a device that they pass from one student to other students and the one who holds the device should express his/ her opinion towards the particular topic they discuss. In order to make sure, that they share the "right" answer or information, they are able to access the internet or browse google. Eventually, KB is a model of teaching that offers classroom discourse displaying students' inquiry on particular idea or problem. To analyze KBD, the research will explore types of exchanges in classroom.

Classroom Exchange

Sinclair and Coulthard (1992 p.21) offer rank scale to analyze spoken discourse. Sinclair and Coulthard propose 21 speech acts that can be categorized into two major classes of exchange; Boundary and Teaching. The function of boundary is to signal the beginning and the end of what the teacher considers to be a stage in the lesson. Meanwhile teaching exchanges consist of eleven categories with specific function and unique structures. The eleven categories are divided into six free exchanges and five are Bound. The function of bound exchanges is simply to reiterate the head of preceding free initiation. On the other hand, the six free exchanges are subcategorized into four groups according to function, and the two of the groups are further subdivided according to whether teacher or pupil initiates, because there are different structural possibilities. The four main functions of exchanges are informing, directing, eliciting and checking.

Curiosity

Curiosity has been identified as driving force in child development and one of the most important spurs to educational attainment (Loewenstein, 1994). To stimulate curiosity, it is worth finding the origin of curiosity. Rawson et. al. (2012) through RSA project proposes 4 theories that stimulate curiosity. The 4 theories include a need to survive, an incongruity, a gap and a tactile or a physical engagement. With regard to KB, the study will find out the enhancement of students' curiosity from the utterances expressed by teacher and students in KBD.

METHODOLOGY

In accordance with the purpose and research questions, the study implemented classroom research. Nunan (1990) explains that classroom research is a research that is

carried out in the language classroom for the purpose of answering important questions about learning and teaching of foreign language. Classroom Research can focus on teachers or on students or on the interaction between teachers and learners. Regarding the methodology, the study is a classroom research that focuses on the interaction between teacher and students during KBD. In this case, the research was undertaken at the English Education Department of a private university in Cimahi, West Java. The research site was chosen as the site represents higher education in general and the researcher has accessed to the site. The participants were 25 junior students. They were chosen randomly. The students attended reading 5 subjects were able to join the research. The junior students were selected as by this time the students have already got more elaborated texts and they are assumed to have already got enough English ability so they were able to conduct discussion and find information in English. Classroom Discourse analysis is used in this study as it is included into one of four traditions in second/ foreign language classroom research (see Chaudron, 1988. As cited in Nunan, 1990)

Data collection

Choosing discourse analysis as research tradition, the study utilized observation, questionnaires and interview to gain the data about knowledge building and students' curiosity. The observation was carried out to portray the real condition of knowledge Building activity. All teacher and learning utterances during the observation were recorded and analyzed. The classroom discourse was taken from two different stage of setting. In the first stage, **In the first stage**, the teacher still holds dominant role as the central of knowledge. Although the teacher has started to provide opportunity for students to express their response to the questions given. However the types of questions, which usually come from the teacher, are mostly confirming. In the second stage, the teacher acts as facilitator. The teacher similarly guides students with the questions but the questions given are real questions. In this case, the teacher and students together find answer to the questions and discuss their findings. The improvement of students' curiosity were investigated through the gap in KB stage that facilitated the students to raise their curiosity. The gap itself was predicted to be arisen from the questions and information given either by teacher or by the peer students.

DATA ANALYSIS AND DISCUSSION

The study focuses on analysing discourse in KBD. In data collection section, it has been told that the classroom discourse was conducted in two different stages. The discourse between teacher and students in this first stage can be found in the following table.

Exchanges in classroom discourse in stage1

Table 2. The number and types of utterances shared in stage 1

Label	Symbol	Teacher	Students
Starter	S	1	
Elicitation	EI	6	
Check	Ch	1	
Directive	D	1	

Information	I	2	
Clue	Cl	2	
Cue	Cu	1	
Nomination	N	8	
Reply	Rep		8
React	Rea	1	
Accept	Acc	8	
Evaluate	E	4	
Conclusion	Con	1	

The table shows that in the first stage the teacher starts the lesson with starter (1) and during the interaction, the teacher employs elicitation instead of directive, check or nomination. The number of elicitations are 8 times. It goes similar in the number of reply stated by the students (reply =8). The discourse reveals that students give response to the teacher's utterance only in the form of reply (8), nothing else. When the answers are as expected as the teacher's thought, the teacher accepts the answer. Yet if the answer is not similar to the one being predicted, the teacher gave feedback in forms of reacts (1), clue(2), cue (1), evaluation(1), and information. In addition, to get the right answer, the teacher also utters a lot of nomination for giving opportunity to the students to respond the elicitation. The discourse, which is full of elicitation and nomination, is resulted in predictable answer given by students as the response to the elicitation. It means, the first stage did not meet the requirement of KB in which the teacher does not necessarily know in advance the questions and answer that may emerge from students discourse (see Chiarotto, 2011 p. 11). As a result, It is hardly found any new information in the first stage.

Exchanges in Classroom Discourse stage 2

Table 4. The number and types of utterances shared in stage 2

Label	Symbol	Teacher	Students
Starter	S	1	
Elicitation	El	4	
Check	Ch	7	
Directive	D	4	
Information	I		9
Nomination	N	9	
Acknowledge	Ack	2	
Reply	Rep		4
Comment	Com	3	
Accept	Acc		
Evaluate	E		

The table reveals the teacher and students' utterance during classroom interactions. It can be seen here that the teacher reduces the elicitation. In the first discourse, there are about 8 elicitations but in the second stage there are only 4 elicitations. In addition, in the second stage, it can be found more checks (7) and directive (4). It means that the teacher asked students to do something aside from saying. In this case the teacher asked students to find information in pair and later the teacher gave chance for students to present their

findings. In discussion session, the students shared the information (9) they had found and replied the teacher's elicitation and check.

In the second stage, it can be found more directive from teacher - asking students to inquire the information. After inquiring, students can inform and reply the teacher's elicitation. Such situation allows knowledge building to take place because during KBD, teacher was possible to hold inquiry stage in which students searched for information and discussed with their own group before they present their findings to the whole class member. In discussion session with their own group or with whole classmate, the students can gain knowledge and build understanding regarding one particular knowledge. In this respect, it can be concluded that a good KBD should contain teacher directive asking students to inquire and find information, teacher check to make sure that the students can follow and carry out the order and feedback from students in form of student inform even student elicit. Further session will discuss the enhancement of students' curiosity.

The enhancement of Students' Curiosity

In this study, the enhancement of curiosity will be found out through the percentage of students' utterance showing the existing set of knowledge and the knowledge they desire to find. The following is component of free exchanges from stage one and stage two Table 5. The percentage of students' inquiry

Free Exchange	Stage 1		Stage 2	
	Number	Percentage	Number	Percentage
Directive	1	10	7	29
Elicit	6	60	4	16.5
Check	1	10	4	16.5
Teacher inform	2	20		
Students inform			9	38
Students elicit				
Total	10	100	24	100

It can be seen from the table that the number of directive is increasing. In the first stage, there is only 10 % directive while, in the second stage the percentage of directive is 29 %. It means the teacher asked students to do something more than in the first stage. In this case, the teacher asked students to inquire the information in group and let them discuss rather than he/ she explain the lesson to students. During that time the students take the initiation to find the information and discuss the finding. Next during and after the discussion the teacher checked the students work. That is the reason why the percentage of check in the second stage is bigger than that of in the first stage. In the second stage the percentage is 16,5% but in the first stage, there is only 10 %. Regarding elicitation, in the first stage, the teacher elicited as much as 60 %. The data reveal that the teacher elicited the students by asking questions that the teacher actually knows the answer to the questions. Consequently, the number of teacher feedback in the form of cue, clue, information, acceptance, as the responds to the student's answers can be found in the first stage. On the other hand, the number of teacher's elicitation the second stage is less than that of in the first stage. The elicitation seems to be replaced by real question. That is why it is hardly found teacher's feedback in the second stage. In reverse, there are a lot of

student's giving information (38%). It means the students share the information they have got from any sources. In addition, to make sure that students do their job, the teacher check the students learning process.

Based on the data presented before, the study concludes that second stage is more likely to resemble KBD than the first stage, meaning that the situation in second stage accommodates students' curiosity more than the first stage.

The Students' opinion toward KB

In order to investigate the students' opinion toward KB, questionnaires were utilized. The following is the data about students' opinion toward KB in percentage.

Table 3. The percentage of students' opinion towards KB

No	Statement	Ss	S	N	Ts	Sts
1	I am looking for the information about the topic discussed in the class as I am curious	27	59,4	8,1	5,5	
2	In KBD, I get the new information mostly from internet and discussion with my friends and the teacher	8,1	51,3	35,2	5,4	
3	Once I get new information about the related topic, I am eager to find more information about it and share it with other friends	21,6	37,8	35,2	5,4	
4	When the teacher gives us a problem to solve, I am sure my friends will try to find the answer to questions. So, it is not necessary for me to search the information. Therefore I will wait for them to give me the information.	13,5	10,8	43,2	19	13,5

The table reveals the data about students' opinion on KB. The data of the first question show that most students want to find the information because they are curios. From 37 subjects, there are about 86,4% of students who agree that they are curious to find new information. There are only a few students who do not agree (5,5 %) and the rest are undecided (8,1%). These findings support the theory saying that the curiosity is stimulated by human drive (see Rawson et.al. 2012). This means that a person searches the new information because he is curious about something.

Regarding the second research questions, the table shows the percentage of students in KBD who get new information related to the topic discussed in the class from internet and discussion with their peers and the teacher. 59,4 % of the students agree that they get information mostly from the internet and discussion, 35,2% of students are undecided, and 5,4 % of students disagree. This finding supports the unique role of KBD which states that in KB students share their findings through discussion and attempt to create their own theories and ideas in light of new information. (see point 4 & 5 unique role of KB).

With respect to the third question, 59,4 % of students agree that they like to find any information related to the topic being discussed and even agree to share the information with their friends. 35,2 % of students are undecided and 5,4 % of students disagree. This finding provides highlight that in KBD, students are asked to carry out discussion or dialogue

with their partner in the group or among groups so that the students can internalize the new information and practice to share the ideas.

The fourth question asked students if they prefer to find the answer to the question rather than wait for others to find the information. The result illustrates that 24,3% of students agree that they prefer waiting to searching the information, 43,2 % are undecided, 32,5 % of students are willing to seek the information. The big number of students, who prefer to choose undecided in the table, display the condition of students who are not accustomed to discussing and inquiring the information as they usually get the answer from teacher.

CONCLUSIONS

This article reports the use of KB in an EFL classroom. The conclusions that can be withdrawn from the research are that when KB is properly conducted:

- The students search and share information to the class rather than provide information to the class for the sake of answering the teacher's elicitation.
- The students search information from any sources; internet, magazine, newspaper and contribute more information. Such situation will stimulate students' curiosity.
- KB will facilitate students to find the information, discuss and attempt to create their own theories and ideas in light of new information.

Overall, the implementation of KB in classroom will produce discourse that allows students' inquiry to take place as it provides students slots to search for information. For further research, it is suggested that the teacher find out the contribution of KBD on the English acquisition: will the students be able to acquire English through KBD?.

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Appendix

21 speech acts offered by Sinclair and Coulthard

Label	Symbol	Definition
Marker	M	Realized by a closed class of items – ‘well’, ‘OK’, ‘now’, ‘good’, ‘right’, ‘alright’. When a markers is acting as the head of a framing move it has a falling intonation, [1] or [+1], as well as a silent stress. Its function is to mark boundaries in the discourse
Starter	S	Realized by a statement, question or command. Its function is to provide information about or direct attention to or thought towards an area in order to make a correct response to the initiation more likely.
Elicitation	EI	Realized by a question. Its function is to request a linguistic response.
Check	Ch	Realized by a closed class of polar questions concerned with being ‘finished’ or ‘ready’, having ‘problems’ or ‘difficulties’, being able to ‘see’ or ‘hear’. They are ‘real’ questions, in that for once the teacher doesn’t know the answer. If he does know the answer to, for example, ‘have you finished’, it is a directive, not a check. The function of checks is to enable the teacher to ascertain whether there are any problems preventing the successful progress of the lesson.
Directive	D	Realized by a command. Its function is to request a non-linguistic response.
Information	I	Realized by a statement. It differs from other uses of statement in that its sole function is to provide information. The only response is an acknowledgement of attention and understanding.
Prompt	P	Realized by a closed class of items – ‘go on’, ‘come on’, ‘hurry up’, ‘quickly’, ‘have a guess’.Its function is elicitation by suggesting that the teacher is no longer requesting a response but expecting or even demanding one.
Clue	Cl	Realized by a statement, question, command, or moodless item. It is subordinate to the head additional information which helps the pupil to answer the elicitation or comply with the directive.
Cue	Cu	Realized by a closed class of which we so far have only three exponents, ‘hands up’, ‘don’t call out’, ‘is John the only one’. Its sole function is to evoke an (appropriate) bid.

Bid	B	Realized by a closed class of verbal and non-verbal items – ‘Sir’, ‘Miss’, teacher’s name, raised hand, heavy breathing, finger clicking. Its function is to signal a desire to contribute to the discourse.
Nomination	N	Realized by a closed class consisting of the names of all the pupils, ‘you’ with contrastive stress, ‘anybody’, ‘yes’, and one or two idiosyncratic items such as ‘who hasn’t said anything yet’. The function of the nomination is to call on or give permission to a pupil to contribute to the discourse.
Acknowledge	Ack	Realized by ‘yes’, ‘OK’, ‘mm’, ‘wow’, and certain on-verbal gestures and expressions. Its function is simply to show that the initiation has been understood, and, if the head was a directive, that the pupil intends to react.
Reply	Rep	Realized by a statement, question or moodless item and non-verbal surrogates such as nods. Its function is to provide a linguistic response which is appropriate to the elicitation.
React	Rea	Realized by a non-linguistic action. Its function is to provide the appropriate non-linguistic response defined by the preceding directive.
Comment	Com	Realized by a statement or tag question. It is subordinate to the head of the move and its function is to exemplify, expand, justify, provide additional information. On the written page it is difficult to distinguish from an informative because the outsider’s ideas of relevance are not always the same. However, teachers signal paralinguistically, by a pause, when they are beginning a new initiation with an informative as a head; otherwise they see themselves as commenting.
Accept	Acc	Realized by a close class of items – ‘yes’, ‘no’, ‘good’, ‘fine’, and repetition of pupil’s reply all with neutral low fall intonation. Its function is to indicate that the teacher has heard or seen and that the informative, reply or react was appropriate.
Evaluate	E	Realized by statements and tag questions, including words and phrases such as ‘good’, ‘interesting’, ‘team point’, commenting on the quality of the reply, react or initiation, also by ‘yes’, ‘no’, ‘good’, ‘fine’, with a high-fall intonation, and

		repetition of the pupil's reply with either high-fall (positive), or a rise of any kind (negative evaluation).
Silent strees	^	Realized by a pause, of the duration of one or more beats, following a marker. It functions to highlight the marker when it is serving as the head of a boundary exchange indicating a transaction boundary.
metastatement	Ms	Realized by a statement which refers to some future time when what is described will occur. Its function is to help the pupils to see the structure of the lesson, to help them understand the purpose of the subsequent exchange, and see where they are going.
Conclusion	Con	Realized by an anaphoric statement, sometimes marked by slowing of speech rate and usually the lexical items 'so' or 'then'. In a way it is the converse of metastatement. Its function is again to help the pupils understand the structure of the lesson buy this time by summarizing what the preceding chunk of discourse is about.
Loop	L	Realized by a closed class of items – 'pardon', 'you what', 'eh', 'again', with rising intonation and a few questions like 'did you say', 'do you mean'. Its function is to return the discourse to the stage it was at before the pupil spoke, from where it can proceed normally.
Aside	Z	Realized by a statement, question, command, moodless, usually marked by lowering the tone of the voice, and not really addressed to the class. As we noted above, this category covers items we have difficulty in dealing with. It is really instances of the teacher talking to himself: 'It's freezing in here', 'Where did I put my chalk?'