Collaborative Learning Skills Used in Weblog

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Abstract

Computer-Supported Collaborative Learning (CSCL) is an educational setting that merges the idea of group-based learning with communication technology to support teaching. CSCL has attracted many researchers to study the nature of collaborative learning in a virtual context. This article discusses the collaborative learning skills among learners and it also explains the internal and external learning processes in a weblog. A qualitative approach was used to understand the actual processes that took place in this CSCL mode. The findings generally demonstrated that weblog permits learners to operate actively in a virtual mode as it encourages the sharing of information among them. The participants in this study have combined the internal and external factors to actively participate in a virtual context. This formulates an understanding that learning in a CSCL context is a collective mediation.

Keywords: CSCL environment, weblog, collaborative learning skills, internal and external factors

Introduction

Learning has become technologically driven and has invented wired classrooms equipped with sophisticated gadgets to support learning. The focus of instruction in language classrooms now has shifted from teachers drilling students to memorize facts to more autonomous learning modes where learners are involved in the negotiation of meaning. Today, learners could learn and collaborate by accessing the internet. This has created a technological society (Baker, 1994) and learning is now an integration of pedagogical groundings with computers.

Collaborative learning helps to develop a higher level of thinking skills. In a collaborative environment, students working together engage actively in the learning process rather than passively listening to information presented by their teacher. Students actively formulate ideas, discuss them, and receive immediate feedback and respond to the questions posted. Therefore, students could sharpen their leadership and social network skills. This will eventually lead to higher self-esteem.

The formulation of technological society in a collaborative learning environment has led to the intrusion of computers in the pedagogical field. A weblog can be seen as a

writing venue that is commonly read and commented by visitors or anyone who surfs by traveling through the weblog. A general feature of a blog is the sequence of the posts which are arranged in reverse chronological order, with new posts. The posts are arranged with the most recent at the top of the blog. A weblog is grounded with constructive and sociocultural theories as it provides an opportunity to unravel how learners share their ideas in a social context based on the replies submitted. The notion of constructing shared knowledge is perceived as Computer-Supported Collaborative Learning (CSCL). CSCL is a medium used to bind learners together (Kimball, 2001 & Anuratha, 2009). It allows learners to work in a group independently where the learner casts the role of both recipient and sender of knowledge. Computers are seen as machines that orchestrate learning in a student-centered learning mode. The presence of a weblog forum from the perspective of CSCL has changed the perspectives of learning as compared to the group discussions that took place a decade ago. It has also changed the Malaysian's perception of communication and technology which has eventually changed the notion of how students learn (Pramela, 2006a, 2006b; Wan Irham Ishak & Shafinah Mohd. Salleh, 2006). Extensive use of computers in the realm of pedagogy has directed towards numerous researches. Much work has been focused on how computers function in a learning environment and the conditions to support computer-based learning. However, less attention is given to understand the interaction and the processes that take place in a virtual mode (Warschauer & Kern, 2000; Sfard, 1998). According to McManus and Aiken in Soller (2001), there are three main skills in a CSCL mode: Creative Conflict, Active Learning, and Conversation. Every skill is represented by its subskills. Subskills are specific characteristics that represent each skill. A general overview of Creative Conflict skill and its subskill is it explains the notion of constructing arguments, explanation, and justification. Active Learning expresses the idea of encouraging others to "speak", ask questions, and provide an explanation. Conversation skill, on the other hand, encourages learners to progress through the task as they accept each other's reply and "listen" to their peers "talking".

The Study

This study aimed to find out the learners' collaborative learning skills and subskills that enhance interaction in the CSCL context. The attributes used in the skills and subskills can be used to further investigate the underlying processes that take place in the interaction. The term "process" explains the theoretical perspectives that are used to explain the shared collaborative knowledge in the interaction. The terms internal process and external process are used to unravel the learning processes. The internal process explains the aspect of cognition in an individual, whereas the external process is related to social factors.

The following research questions were formulated for this study:

1. What are the skills and subskills used among the participants in the weblog?
2. To what extent the internal and external processes predispose a collaborative discussion in a weblog?

Literature Review

The broadest definition of collaborative learning is the combination of two or more learners working together in a learning environment. Roberts (2004) has defined collaborative learning as the interdependence of the individuals as they share ideas and reach a conclusion or product. Collaboration among learners is seen as an important crux to learning where participants interact with each other and exchange ideas and share information. In other words, collaborative means to work together in the concept of a shared goal and explicit interaction that leads to a structured collaboration process as opposed to just exchanging information or passing instruction. Collaborative learning views knowledge as a social construct that stimulates active social interaction that could stimulate learning as learners work together independently and bring together their results into the final output. Dillenbourg (1999) refers to this as a 'Horizontal division' that allows learners to shift roles among members, such as being the 'teacher', 'active listener, and 'leader'. Generally, learners will perform activities like asking questions, providing an explanation, and navigating the interaction that triggers learning. This will eventually generate both cognitive learning outcomes and social competency. Finally, collaborative learning found its way in the virtual world and created a new field in an educational scenario that merges the notion of group-based learning and the potential of communication technology.

Wasson (2007) and Lipponen (2001) define CSCL as an emerging paradigm of research to examine the presence of technology in enhancing peer interaction. CSCL is an extension of the traditional collaborative learning concept that requires researchers to look at various aspects to study the process of building collaboration. Learners gain positive learning experience from CSCL from active social interaction. Learners develop new knowledge in a virtual mode as they can share their thoughts from active discussion and information sharing. Less capable students could improve their skills as they are secured in an anonymous learning environment. Anonymity could promote active discussion as the weak ones will not hesitate to ask for help or feel intimidated to share their opinion. Even introverted learners who feel inferior to share their opinion in a face to face interaction would have more confidence and could benefit from more skilled peers. This could increase the success as a group as the learners have more time to reflect and respond without competing with the extrovert learners to be 'heard' or suffer from social barriers as visual ones are absent. Such interaction helps to foster intellectual competency as learners who collaborate can generate deeper levels of understandings. This is supported by Dillenbourg (1999), as he suggests peers learn through mechanisms that directly affects cognitive process such as actively constructing knowledge through verbalization and he also adds that virtual learning promotes social domain as learners work together to solve problems. The infusion of CSCL in the educational world is changing the nature of teaching and learning. It reflects profound effects on learning. In line with this, McManus & Aiken in Soller (2001) constructed a system based on Collaborative Skills Network Taxonomy. This taxonomy will be used to identify the preferred skills and subskills among the learners.
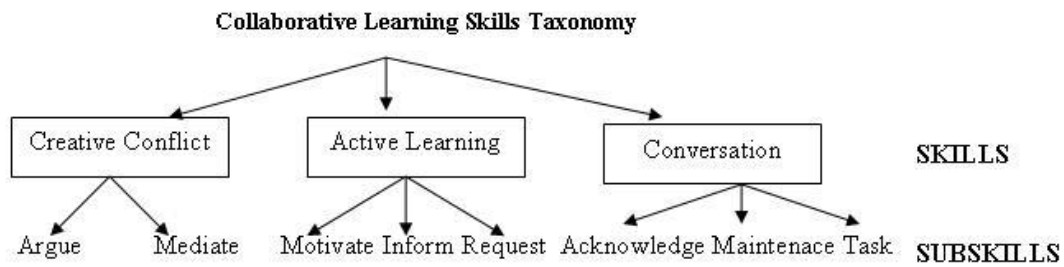
Source: Soller, 2001

Figure 1: Collaborative Learning Skills Taxonomy

Figure 1 illustrates the skills and subskills in a CSCL learning environment. The taxonomy highlights Creative Conflict, Active Learning, and Conversation as the main skills in a CSCL environment. The subskills for Creative Conflict are Argue and Mediate. The Active Learning skill is represented by Motivate, Inform, and Request subskills. The subskills for Conversation skills are Acknowledge, Maintenance, and Task. Relevant theoretical perspectives are important to further study taxonomy above to unravel the processes that take place in a CSCL context.

Relevant Theories and Perspectives to Study CSCL

The two main approaches to theoretically conceptualize the internal and external processes are to explore the cognitively oriented acquisition perspectives and the socio-culturally based perspectives in learning. Thus, the study builds on constructivist theory to make interpretations from the individual cognition approach (internal process) and explores the sociocultural perspectives to investigate how learners work together (external process) to create new knowledge or understand a particular context.

Although the theories applied emerged decades ago, they are still applicable because this study views technology as an integral part of learning. Therefore, technology is not contradicting pedagogical aspects but is the cause of the transition between collaborative learning and the emergence of CSCL. The constructivist theory focuses on how an individual learner creates meaning out of their environment. Learning is believed to be more on individuals than on the surrounding of the individual participation (Piaget, 1977). Kanselaar (2002) delineates that learning is the active participation of learners in solving problems critically based on their prior knowledge. Bereiter (2002) on the other hand perceives learning as individual learners' construction of knowledge where learners define their learning objectives. To sum up, constructivism can be understood as a process of constructing new knowledge based on learners' ideas and previous knowledge. Therefore, the constructivist theory provides an opportunity to study the depth and complexity of the participants' ability to argue and share ideas with their peers.

Unlike the constructivist perspective that emphasizes more on the individual, the sociocultural perspective emphasizes on the surrounding of the individual participation. Wertsch (1991) notes that the sociocultural perspective should be perceived in the context or surroundings of the learners. Learning is seen as a result of shared activity. In this sense,

solutions are achieved through the dynamic behavior of the surrounding members in a group. In other words, knowledge has only significant value in the context of joint activity. Rogoff's (1998) approach towards sociocultural perspective is by concentrating on scaffolding activity. The presence of a more knowledgeable individual in the learning process can lead to effective learning. The "expert" member in the learning group will coach those who need help. This will bridge the expert's understanding with the one who needs assistance. Therefore, two individuals trying to solve a complicated problem will not have the same level of expertise, thus the novice will be facilitated by the expert in the meaning-making process. The context situates and foregrounds the learning process. Hence, the sociocultural perspective aids in studying the social setting in which knowledge is embedded. The concept of a supportive environment in fostering learning collectively can be examined by applying a sociocultural perspective.

By situating the thought of studying the internal and external process, constructivist and sociocultural perspectives provide a framework for understanding how learning takes place in a CSCL context.

Methodology

Data gathering and analysis were guided by qualitative theory techniques. Qualitative techniques were designed to explore how a topic was being discussed where it requires the researcher to listen to the participants and construct a picture based on their ideas (Creswell, 1994). In line with this, the researchers analysed the aspect of collaborative learning in weblogs posted by a group of postgraduates by employing the constructivist and sociocultural perspectives. Patton (2001) interprets qualitative research as an attempt where a researcher wants to seek a real-world setting to understand the actual process that takes place in a situation. This explanation is in line with the purpose of the study which is to identify the preferred collaborative skills and subskills and to study the learning processes that take place in a virtual context. The first research question is basically to identify the preferred collaborative learning skills and subskills by calculating the frequency of the number of attributes representing the skills and subskills in each weblog posting. Attributes are the sentence openers for each skill and subskill. The second research question seeks to understand the process that takes place in a real academic setting. Statistics and figures cannot help a researcher to predict a situation; instead, it takes a qualitative approach to allow researchers to illuminate, understanding, and extrapolates the situation. The nature of the study which is to investigate a deep understanding of group actions and interactions that involves an inevitable interpretation of meanings based on the theoretical perspectives has led to the use of the qualitative approach in prompting excellent educational research.

A total of 11 postgraduate students pursuing a Masters degree (from a literature-based course) participated in this research. The participants were given a literary text (The White Heron, a short story) to analyse via a weblog. All the students in the course who participated in the weblog are taken as the sample for the research. All respondents possess a basic degree.

The procedure to conduct the research was divided into five stages. The first stage was to collect the data from the weblog. Stage 2 was the data reduction stage; a stage to

simplify the rich information and also to focus on a specific context. It covers 50 percent of the overall postings in the weblog. Stage 3 refers to the coding phase. The participants' pseudonyms were coded in an alpha-numeric form such as P1 (ASH). "P1" refers to the position of the posting in weblog, whereas "(ASH)" refers to the abbreviation of the participants' pseudonym. The next stage (Stage 4) is the process of compressing the data collected. The data collected in these earlier stages was extended into tables to discern systematic patterns. The assembly of frequency counts of the skills and subskills in the data in a systematic way helped to interpret the initial process of data reduction. The tables with relevant textual evidence from the data provided an important idea to obtain an overall view of the preferred collaborative learning skills to probe meaningful insights about the CSCL environment. The final stage (Stage 5) was to make logical assumptions by correlating the content (data) with the tables. The logical assumption in this stage includes the identification of established theories related to the data. Firstly, as to study the preferred learning skills, frequency counts were used to identifying the "weight" of the components in the collaborative skills. The identification of the preferred skill is obtained from the participants based on the attributes found in the participants' replies. The data gathered was tabulated and converted to a percentage count. A higher score and percentage counts indicate a high level of preference. Then, the correlation between the content of the interaction (data) and the theoretical perspectives was used to understand to what extent learners participate in online interaction in a CSCL environment. The researcher closely analysed the internal and external processes skills in the data to understand the nature of interaction in a CSCL environment.

Data Analysis and Discussion

This section presents the findings of the study based on the analysis of the data obtained. The first section identifies the skills and subskills used in the collaborative learning skill taxonomies followed by the analysis of the internal and external processes.

Identification of the skills and subskills used based on the Collaborative Learning Skill Taxonomy

Identification of the dominant skills and subskills is to capture the understanding of how learners generate discussion in a CSCL mode. It will also be an important tool to visualize and interpret the learners' involvement in the learning processes. As mentioned earlier, the attributes (sentence openers) were identified and categorized according to the relevant skills and subskills. Table 1 explains the frequency of the skills which were obtained by calculating the total number of frequency of the subskills. Active Learning skill represents 59.82% of the overall interaction, which is equivalent to 207 attributes out of 346. The second most used skill is the Conversation skill containing 75 attributes with a percentage of 21.68%. The lowest number of attributes lies in Creative Conflict skill which represents a percentage of 18.5%.

Table 1:
Identification of the Skills in the Collaborative Learning Conversation Skill Taxonomy

Skills	Number of Attributes	Percentage (%)
Active Learning	207	59.82
Conversation	75	21.68
Creative Conflict	64	18.5
Total	346	100.00

Table 2 represents the breakdown of the subskills.

Table 2:
Identification of the Subskills used in the Collaborative Learning Conversation Skill Taxonomy

Skills	Subskills	Number of Attributes	Percentage (%)
Active Learning	Inform	196	94.69
	Request	9	4.35
	Motivate	2	0.96
	Total	207	100
Conversation	Acknowledgement	39	52
	Task	24	32
	Maintenance	12	16
	Total	75	100
Creative Conflict	Argue	64	100
	Mediate	0	0
	Total	64	100

The total number of attributes generated by Active Learning is 207. The Inform subskill represents 196 attributes (94.69%), followed by Request, 9 (4.35%), and then Motivate only constitutes 2 (0.96%) attributes. Creative Conflict represents Mediate and Argue subskills. 64 attributes comprising a total of 100% represent the Argue subskill and no attributes were identified for the Mediate subskill. Conversation skill constitutes Acknowledgement, Maintenance, and Task subskills. The highest attribute for Conversation skill is Acknowledgement representing 52% (39 attributes). The percentage for Task and Maintenance subskills is 32% (24 attributes) and 16% (12 attributes).

The participants generally had a high preference in providing information as they actively exchange ideas. However, the participants made fewer requests to their peers as the form of a request made in the interaction is unlike the typical way of students requesting for information. The participants were generally aware of the subject matter but often requested further explanation to enrich their discussion. Finally, for the Motivate subskill, only two students used this attribute. Reinforcing a reply was given for presenting an attractive point. However, encouragement given was also entailed by

disagreement. In this context, the motivation given can be perceived as a positively foresaid argument to avoid disputes. Out of 346 attributes, only 39 attributes were identified as Acknowledge subskill from the Conversation skill. The participants generally accepted and showcased appreciation of the contribution made by others. 24 attributes represented Task subskill which explains the participants' attempt to coordinate the group. The participants summarized information to request for change of focus. Summaries provided by the participants were a combination of the individual's perception and information gathered from others. Summaries were also dominantly used to strengthen a particular point of view before progressing to a new topic of discussion. Finally, the Maintenance subskill which functions to request confirmation to validate information constitutes only 12 attributes. It explains that the participants were generally aware and confident in terms of the opinions shared with others. The participants were more inclined towards making interpretations, evaluations, and presenting evidence to strengthen the claims made instead of maintaining the task by explicitly complementing others or navigating the group to progress to new subject matters. Finally, the Creative Conflict skill that encompasses Mediate and Argue subskills delineates no attributes for Mediate subskill and 64 attributes for Argue subskill. The participants actively constructed argumentative statements upon opposing viewpoints. Although the attributes for Creative Conflict appear to be the lowest, it can be perceived as the most important skill and subskill as the controversies were followed by extensive explanation, elaboration, and justification. These were normally summarized with inferences which were an implicit way of interpreting and also ending a conversation. This eventually built an active interaction as the participants worked together to submit their postings.

Analysis of the dialogues identified in the skills and subskills used

The collaborating team had a common interest in participation. Under this condition, the researchers identified coherence in interaction. Coherent interaction is an important aspect to ensure the participants have sufficiently understood the claims and feel satisfied by providing relevant information to the subject matter discussed in earlier postings. Adding information to a claim made by other participants require sufficient evidence related to the previous postings. This process involves a request for clarification, interpretation, and necessary evidence to initiate the next turn or to display continued attention to generate active learning. Therefore, coherent interaction can clearly explain the skills and subskills based on the attributes employed by the participants. Figure 1 reflects that participants were inclined towards Active Learning.

Figure 1: An Example of Interaction Pattern among Six Participants at the beginning phase of the Interaction

P3 (PVC) claimed that the elements of nature are the greater idea while personal ideas are monetary rewards. This claim is disagreed by P4 (MMR). Then, P15 (PVC) argued that the claim proposed in P3 (PVC) is valid and further justified rather than giving up by creating inconsistency in the delivery of opinion. Then, P11 (MMR) agreed to P5 (HVC) that the protagonist is not materialistic but disagreed with the perception that nature is the greater idea. Lastly in the coherent chain, P13 (DWN) agrees to P5 (HVC). Generally, the participants were able to learn independently by assisting each other mainly by providing extensive information. The participants actively explained their ideas and also the claims made by their peers. Most of the participants constructed independent claims or arise a new understanding which was supported by self-explanation to support their claim and convince other participants. The explanation given was by providing textual evidence as it strengthened clarity in the author's claim. To ensure continuity in interaction, self-explanation is further supported by feedback from other group members. The active participation among group members to provide information created interaction patterns that formulate an enriched learning environment.

The social and cognitive constructions in a CSCL mode

To ensure the interaction goes on with appropriate collaborative skills, the participants posed questions to their peers. The questions addressed to their peers were seen as a social factor to elicit extended thinking. The participants asked questions to gain an alternative view. It explained the participants' role to construct knowledge beyond the ability of each

peer to supply knowledge. It was seen as a valuable strategy to pursue the task. Besides that, the participants also asked questions to request further explanation to extend the topic further. Lastly, questions were asked to invite others to contribute to the interaction. This indicates that the authors increased the opportunity for other members to contribute. The participants also ended the topic discussed explicitly and implicitly based on understanding gained from the context of learning. In terms of dealing with conflict, the interaction is not a smooth sailing journey as some of the contributions made did not solely fit in the group's common thinking. This led to conflict and it attracted other peers' concern and this created a socially mediated conversation. The ability to put forward competitive attributes is due to the contributions made by others. This explains how members in a collaborative learning environment co-construct meaning together. The participants also demonstrated supportive behaviour to reach a deeper discussion and handle complex issues in delivering opinions. The participants showed interest and concern to invite others to participate.

In terms of the internal process, the participants discussed issues beyond literal meaning by providing contradicting statements. This attempt required a higher level of thinking on the individual's part. At this stage, individuals needed to think critically to seek for information. The participants also practised self-question-asking, where questions formulated, were answered by the one who initiated the doubt. Therefore, the answer to the question constructed can be treated as the individual's attempt to seek for a solution without solely depending on their peers' assistance. It does not only improve the participants' ability to solve problems but also exemplifies that learning is individually centered.

To this point, we have seen how internal and external processes interchangeably predispose discussion in a virtual context. It has now broadened the lens of understanding of how learning takes place in a virtual context. It encapsulates that learning in a virtual context via weblog forum is a collective process that is interrelated especially in formulating understanding among the participants. Figure 2 shows how the internal and external processes meditate together in a learning environment.
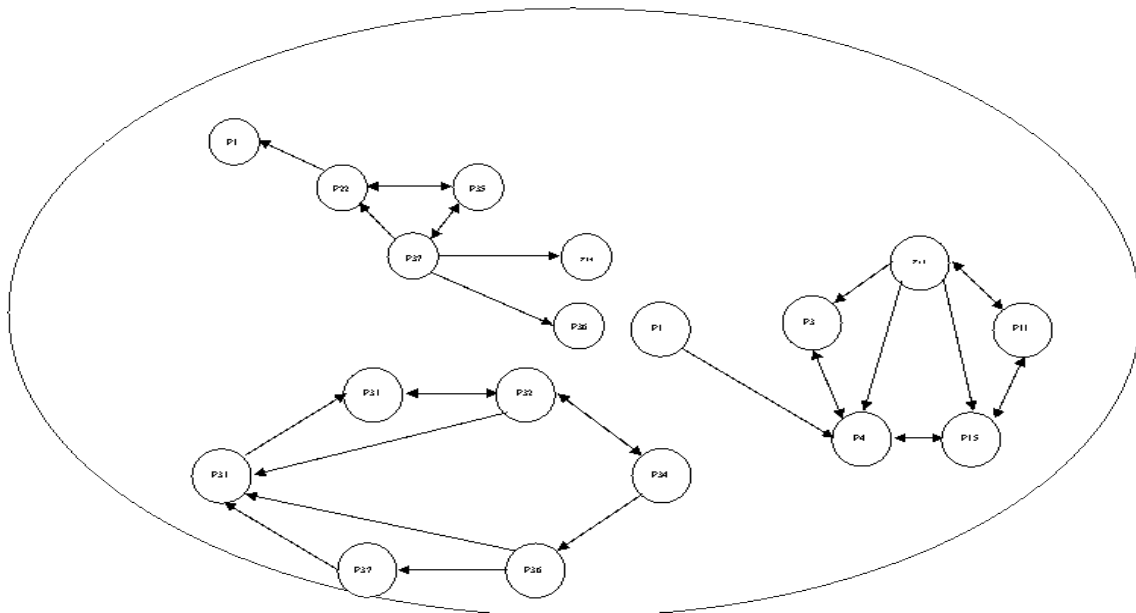
Figure 2: Interaction Patterns showing how learning takes place in a CSCL Environment

The coded circles in the wide circle represent each individual in the subgroup. The arrows represent the connection between the participants in the subgroups. The structure (see Figure 1) in the subgroup explains the transformation of information from one group to another between the members of the network. The space in the wide circle reflects the social context in the interaction. The individual mind denotes how individual behaviour influences learning. As mentioned earlier, the participants actively debated issues contradicting their thought. Therefore, it can be inferred that disagreements stimulate individual learners to actively indulge in the Explain skill. Presentation of contradicting issues cause disjoint among the learners. The mismatch among the group members can be seen as the fundamental characteristic for the individual learners in the group to provide proper evidence and explanations. Individual perception will influence others because the contradicting statement sets a demand for others to accept or reject the opinion. This is the point where learning becomes a social affair because the individual thought is extended with other members' involvement in the group. Although sociocultural perspectives are embraced and acknowledged, it is still important to submit to the development of individual learner's involvement to produce insightful views. Figure 2 also garners that surrounding is an important venue for learners to participate in learning as the community around 'forces' individuals to participate in the discussion by inviting them to join or asking for clarifications. Through such a relationship and behaviour, participants collaborate towards a shared goal. As the participants make references and acknowledge each other, knowledge is transmitted throughout the interaction. This constant interaction has led the group of learners to formulate a few subgroups that are bound together. One of the reasons that the learners can operate in a dual-mode is due to the nature of the asynchronous mode of learning where learners could participate and respond at their convenience. The advent of the asynchronous mode of learning has opened up possibilities for learners to reflect, revisit, and construct comments independently. A wide range of cognitive and social attributes in the interaction could be

due to the aspect of anonymity. The anonymous context and the use of pseudonyms could have influenced the participants to create numerous responses that create "noisy" but productive learning opportunities.

Therefore, it is plausible to summarize that the participants are both cognitively and socially inclined. Hence, learning involves the presence of both social and cognitive factors.

Conclusion

Individual thought is a necessary condition in the creation of constructive learning (Piaget, 1977). Driven by this need, learners perceive learning as a self-perception process. This perspective reflects the participants in the present study as the individuals put forward contradicting statements by thinking critically, constructing hypothetical questions, or evaluating others' points of view based on the individuals' understanding. Expression of the opposing point of view is a form of self-perception as the individual learners come to understand and interpret a text differently by themselves. This perception lays the foundation of how individuals make sense of the world without any help or support from others. Being able to substantiate a new set of evidence and providing hypothetical statements for opposing points of view also explains an individual's ability to operate concretely to be more logical and differ from others.

Vygotsky, on the other hand, believes that social engagement is pertinent in learning. Participants actively constructed questions that responded to conflict and progress through the task by introducing new topics due to the engagement with other peers. All these actively-involved the participants to fit in the discussion. Some of the more receptive participants added to comments made by others. Some of them joined or further continued the discussion when was invited by their peers to contribute their ideas. Asking questions to other participants for clarification or further assistance reveal that the participants possess the collaborative skill. Parallel to this situation, learning does not take place in isolation by an individual, but rather in a social context. In other words, learning is shaped by social attributes of the learning community such as when they attempt to progress through the task, participate in the conflicting situation, and partake in social behaviour.

A general understanding that could be formed based on the findings is that learning reflects the combination of both internal and external processes. Thus, the internal and external processes can be seen as a collective device that learning is formulated from an individual's understanding of a group activity or vice versa. In other words, the research indicates that both social and cognitive strategies are a collective process that formulates understanding among the participants.

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