

## Critical Thinking Levels of EFL Undergraduate Students of Universitas Brawijaya

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**Abstract: Critical Thinking Levels of EFL Undergraduate Students of Universitas Brawijaya.**

**Objective:** This study investigated the levels of CT of undergraduate students. **Methods:** Employing the mix-method design and two instruments (1) Watson Glaser Critical Thinking Appraisal and (2) interview, the study involved 352 students who are in the first year of their study. **Findings:** Related to CTS, it showed that most of the students can determine the answer correctly in terms of (1) Deduction 63.07%; (2) Arguments 62.16%; (3) Interpreting information 59,92%; (4) Assumptions 50,19%; and (5) Inferences 37.15%. In sum, only 54.40% of students in their first year indicate low CT ability. It is in line with the results of the interview which postulates that 57% of the students do not really understand what and how to improve their CTS and they need some help to improve it. **Conclusion:** The University should provide learning and activities which can increase their CTS, especially the inferencing dimension.

**Keywords:** EFL, CTS, reading, assessment.

**Abstrak: Tingkat Berpikir Kritis Mahasiswa S1 di Universitas Brawijaya. Tujuan:** Penelitian ini menyelidiki tingkat berpikir kritis mahasiswa S1. **Metode:** Menggunakan desain penelitian campuran dan dua instrument (1) Penilaian Watson-Glaser Critical Thinking dan (2) wawancara, penelitian ini melibatkan 352 mahasiswa yang sedang berada di tahun pertama studi mereka. **Temuan:** Terkait keterampilan berpikir kritis, penelitian menunjukkan bahwa sebagian besar mahasiswa dapat menentukan jawaban dengan benar dalam (1) Pengambilan kesimpulan 63.07%; (2) Argumentasi 62.16%; (3) Menginterpretasi informasi 59.92%; (4) Asumsi 50.19%; dan (5) Inferensi, 37.15%. Secara keseluruhan, hanya 54,40% mahasiswa tahun pertama yang menunjukkan kemampuan berpikir kritis rendah. Sejalan dengan hasil wawancara yang menyatakan bahwa 57% mahasiswa tidak begitu memahami apa dan bagaimana cara meningkatkan kemampuan berpikir kritis dan mereka membutuhkan bantuan untuk meningkatkannya. **Kesimpulan:** Universitas seharusnya menyediakan pembelajaran dan aktifitas-aktifitas yang dapat membantu meningkatkan CTS mahasiswa, terutama dimensi inferensi.

**Kata kunci:** EFL, CTS, membaca, penilaian.

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## ■ INTRODUCTION

Critical Thinking Skills, further called CTS, is one the skills that is required to survive in this globalization era. The tight and worldwide competition in this era requires people to have CTS to innovate ideas in technology, to increase educational quality and to produce outstanding human resources (Kameo, 2007). CTS in this study are defined as the ability to analyze and assess source of information to challenge the authority to identify the weakness of the argument using certain standards or criteria. The given standards and criteria are taken from Paul (2006) who elaborates CT into eight elements of reasoning and nine intellectual standards.

These eight elements of reasoning are establishing purpose, raising questions, looking for information, making inferences, constructing concepts, making assumptions, drawing implications and establishing point of view, and nine intellectual standards. These eight elements actively help establish reasoning skills to achieve particular intellectual standards. These standards are the nine intellectual standards considered as standards of judging something intellectually which consist of the ability to identify clarity, accuracy, precision, relevance, depth, breadth, logic, significance and fairness. These nine standards can be used as a measurement to see how critical someone in thinking is. Since the eight elements and the nine standards of CT by Paul (2006) has been proved to be successful in measuring the CT of the students in different levels of competence (Stonewater & Wolcott, 2005; Crook, 2006; Scanlan, 2006; Niewoehner & Steidle, 2008).

Although CTS are important to conduct in the teaching and learning process, there are some constraints that hamper their implementation in the classroom; one of them is the cultural constraint. CT-based learning, as mentioned above, is not yet cultivated well in EFL teaching

and learning in Indonesia due to cultural constraints. Kameo (2007) reported that no matter how good CT sounds in theory, it cannot be automatically transplanted into a culture which holds different values. There are two dimensions of culture in her point of view namely power distance and individualism. The former deals with the authority given by teachers to the students, and the latter related to the individualism. She emphasized that Indonesian students tend to respect their teachers too highly such as accepting answers of a question without questioning and waiting for top-down instruction without initiating. These two factors might be the indicators of valuing submissiveness that do not encourage the development of CTS (Kameo, 2007). In terms of individualism, she added that EFL students tend to be dependent upon the teacher and upon each other. As a result, they tend to have low independence, self-reliance and self-confidence.

Aside from cultural constraint, there are things that need to be considered that may hamper the implementation of CTS in the classroom which can be mentioned such as, emotion of the students themselves while learning, also the transferability and generalizability of the said skills (Mansoor & Maryam, 2011). Those are things that might be needed to be considered while implementing the CTS in a classroom. The emotion of the students can heighten or lower their ability to think critically at times, which even though it might be able to help them make a better judgment and analysis, unstable emotion can lead the opposite. Another factor to talk about are the transferability and the generalizability of the CTS itself. How can those skills be used and implemented and used in the subject of choice, or how effective the said skill be implemented in a subject which result may differs from one to another.

The above mentioned constraints need to be overcome properly. Some of the ways to minimize the problems are by cultivating CTS in

all levels of education in Indonesia and integrating CT with four language skills. For example by incorporating the CTS with other subjects or language skills, and encouraging the EFL learners to think critically as early age as possible. If CT is cultivated properly as early as possible, Indonesian students may get used to thinking critically since the beginning. One of the ways to teach CT is by including the last three aspects of Bloom Taxonomy of cognitive domain that is analysis, synthesis and evaluation as well as the last two domains of Barrett's Taxonomy namely evaluation and appreciation in the question and answer section (Huitt, 2004). In cultivating reading habit among the students, teachers could always encourage the students to develop their evaluation and appreciation on a particular topic. For example, instead of asking the literal and comprehension questions, teachers could stimulate questions that involve evaluation and appreciation such as "how about you?", "what will you do if you are in this position?" and so forth. These stimulating questions could raise the students' awareness and develop their thinking level.

Integrating CTS with other language skills such as reading, writing, speaking and listening are proven to yield more effective result as well. Some research findings indicated that activating this skill is proven to be effective in enhancing reading, writing and vocabulary (Crook, 2006; Scanlan, 2006; Niewoehner & Steidle, 2008). In this study, the CTS are integrated with EFL reading due to the demand of mastering EFL reading for academic purposes in higher education (Cahyono & Widiati, 2006; Sulistiyo & Suharmanto, 2006).

The role of CTS in EFL reading proficiency in this study falls under the need to be able to analyze and to assess source of information in the reading selection. In analyzing, the readers are expected to find both literal and inferential

meaning stated in the reading text. While in assessing, the readers should make evaluative judgment to go further beyond the text itself. Such an analysis and evaluation are parts of higher order thinking based on Bloom taxonomy of cognitive domain (Huitt, 2004).

The EFL proficiency should cover the accepted CT aspects namely evaluating, analyzing, synthesizing and forming argument as well as the arguments, assumptions, deductions, inferences, and interpreting information. A learner is considered having the high CT level if he/she meets the four aspects of the CTS. Danczak (2017) states that assessing the students reading comprehension/proficiency requires the four aspects to see the ability as a whole. Thus, the present study will measure the EFL undergraduate students of Brawijaya university with the purpose of measuring the level of the CTS of the students. the result of the research is expected to give new insight on how good the students perform in reading and the result will also contribute to the advancement of the reading course which, hopefully, cover the four aspects of CTS.

Until recently, it was generally assumed that students who attended college would develop CTS by attending classes, by listening to lectures and participating in class discussions, and by taking tests and completing regular course assignments. Several studies, however, have indicated that improving students' thinking requires more explicit teaching of CTS (Bangert-Drowns & Bankert, 1990). Yet research findings on the most effective methods for improving students' CT abilities have been inconclusive. McMillan (1987) reviewed 27 studies that investigated the effect of various courses and programs on CT abilities among college students, and he found that while results have failed to support the use of specific instructional or course conditions to enhance CT, they did support the conclusion that college attendance improves CT.

McMillan has cautioned against generalizing these findings to all methods or courses, citing weak research designs, a lack of good instrumentation appropriate to the interventions being evaluated, and a lack of a common definition and theory of CT. Halpern (1993) has suggested that available assessment instruments may contribute to the problem of determining the effectiveness of various models for CT. She has argued that assessment instruments must be made more sensitive in order to measure subtle increases in CTS and dispositions. Clearly, more research is needed to determine which educational experiences yield the greatest gains in CT.

CT can be broadly defined in different contexts, but we found that the categories included in the rubric. Represented commonly accepted aspects of CT (Danczak et al., 2017). A good Critical Thinking Assessment should include some aspects namely evaluating, analyzing, synthesizing, and forming arguments. The first aspect is evaluating in which when completing a task, students must evaluate the relevance of information that they will ultimately use to support a claim or conclusions (Zohar et al., 1994; Miri et al., 2007). An evaluating category is included in both CT and information processing rubrics because evaluation is a key aspect of both skills. The second one is students also need to analyze that same information to extract meaningful evidence to support their conclusions (Miri et al., 2007; Bailin, 2002; Lai, 2011). The analyzing category provides an assessment of a student's ability to discuss information and explore the possible meaning of that information, extract patterns from data/information that could be used as evidence for their claims, and summarize information that could be used as evidence. The third aspect is synthesizing in which students are asked to connect multiple pieces of information in order to draw a conclusion or make a claim (Huitt,

1998; Lai, 2011). Synthesizing involves identifying the relationships between different pieces of information or concepts, identifying ways that different pieces of information or concepts can be combined, and explaining how the newly synthesized information can be used to reach a conclusion and/or support an argument. The last one is informing argument in where students should be able to form a well-structured and valid arguments (Facione, 1984; Lewis & Smith, 1993; Glassner & Schwarz, 2007; Lai, 2011). It is very important to identify the levels of CT of the undergraduate students, especially in their first year, to challenge the university to identify the weakness using certain standards or criteria so that the university can produce outstanding human resources, achieve particular intellectual standards, and increase educational quality. Therefore, given needed to be clear, this research attempts to investigate the levels of CT of the undergraduate students in Universitas Brawijaya.

## ■ METHODS

### Participants

The participants of this study are 352 EFL students who are in the first year of their study when this research was conducted. Prior to the research, they are taught the basic knowledge of CT within the first half of the semester to ensure they know what and how to deal with CTS.

### Research Design and Procedure

Employing the mix-method design, the researchers designed a lesson plan for English language learning in which potential CT activities were integrated. Adopting the CT test and creating an interview guide, there were four meetings prior to the administration of the CT appraisal test in which the CT activities were integrated into the subject matter, for instance, reading or discussion.

### Instruments

The present research employed two instruments namely, the first instrument pictured in Table 1 is Watson Glaser Critical Thinking Appraisal test which covers arguments, assumptions, deductions, inferences, and

interpreting information (Ennis, 1958). The CT test is adopted since it is a standardized test which is developed to measure the ability to think critically, especially for job placement as well as learning purposes. The following are the indicators of each CTS component.

**Table 1.** Watson glaser critical thinking appraisal test

No	W-GCTA Dimensions	Indicators	Number of Questions
1	Analyzing Arguments	Able to identify argumentative cohesion devices, such as: <i>however, but, yet</i>	5
2	Assumptions	Able to give a critical opinion, such as: <i>how can ...? How do we know ...?</i>	5
3	Deductions	Able to summarize important conclusions, such as: <i>so ..., in sum ...</i> ,	5
4	Inferences	Able to infer meaning, such as: <i>what have you inferred as ...? If ...?</i>	5
5	Interpreting Information	Able to retell information given, such as: <i>Without referencing the text, students are asked to describe or write the passage from their own perspective.</i>	5

The second instrument is the interview guide to gain in-depth information about what and how they deal and improve their CT ability. The data collection is done based on the administration of the Critical Thinking Appraisal test and the interview session with 10 students and 3 lecturers.

### Data Analysis

Descriptive statistics are frequently referred to as tools that provide an accurate assessment of data ranging in size from the smallest to the largest data (Hartanto & Yuliani, 2019). Then the results of the students' WGCT and interview were analyzed using descriptive statistics Critical Thinking Appraisal test and a transcription of the interview results.

## ■ RESULTS AND DISCUSSION

This section presents the findings and discussion of the research which provides the

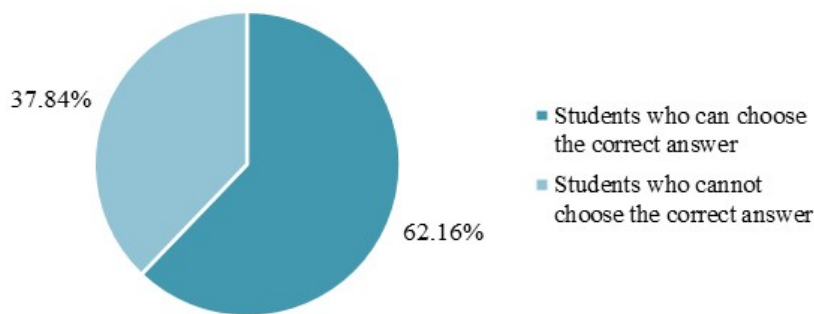
result of the data collection and the elaboration of the implication of the results. This section provides information about the data of each dimension of the critical measure, namely argument, assumption, inferences, deduction and interpreting information.

### Levels of Argument Ability of Universitas Brawijaya EFL Students

This finding showed that most of the students have high CTS in terms of telling argument ability. It can be shown based on the students who can pick the correct answer, 62.16%. According to the result of the correct answer in terms of argument, most of the students can identify the correct answer from question 20 which stated that "Yes, greater economic unity between countries improves foreign relations between those member countries, which in turn makes each country stronger." 279 out of 352 students can state the correct answer which is a strong

argument. It was followed by question 22 which stated that “No, the money spent on these programs could be used to increase funding for education and healthcare, which would lead to increasing the quality of life for a country’s people.” 278 out of 352 students can identify the

correct answer which is a strong argument. Next, 269 out of 352 students can correctly answer question number 8 which states that “Yes, giving greater flexibility will improve their work-life balance, and therefore their productivity.”



**Figure 1.** Level of argument ability of Brawijaya EFL students

However, most of the students are not able to answer questions number 4, 1, and 11. 234 out of 352 students cannot pick the right answer. The question is “Yes, companies which have no control over the size of their workforce will be highly vulnerable to economic climates and market changes.” Most of the students choose a strong argument that is not correct. Then, 190 out of 352 students chose a strong argument and it was the wrong answer. The question mentions that “Yes, downsizing will protect the company from bankruptcy in hard economic times.” 184 out of 352 students select the wrong answer, which is a strong argument. The question states that “Yes, the existence of minimum wages is a key part of a civilized society.”

An individual makes an assumption when they essentially take it for granted. The individual is given statements to read then numerous suggested assumptions are subsequently presented (Watson & Glaser, 2002). The findings indicate that the students are mostly able to decide whether the reasons offered, either agree or no,

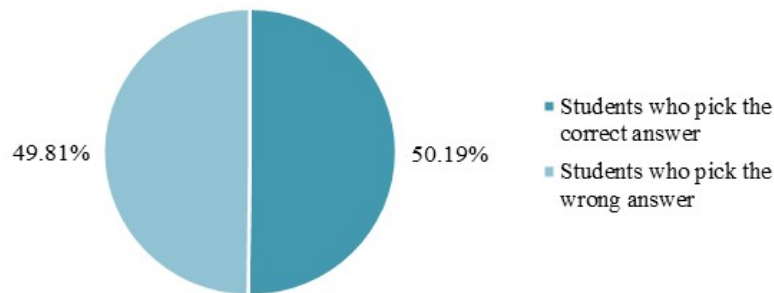
strong or weak. A reading discussion group that includes in their four meetings apparently has been demonstrated to be one of the effective techniques to boost learners’ confidence in using English. In line with (Omar & Albakri, 2016), reading, writing, speaking, listening, viewing, and visual literacy could contain in the English language classroom to assist students to develop their CTS, however, each of the objects has advantages and disadvantages when it comes to the CTS.

### **Levels of Assumptions Ability of Universitas Brawijaya Students**

The table above showed that half of the Brawijaya students can identify the correct answer of CT related to assumption. 50.19% of students pick the correct answer, and 49.81% choose the wrong answer. Most students can identify the correct answer to questions number 30, 39, and 33. 286 out of 352 students can choose the correct answer that is an assumption made. It is question number 30 that states “Unemployment is an indicator of economic depression.” Next,

253 out of 352 students determine the correct answer that states the assumption made. It is question number 39 that mentions “VAT increases the price customers pay for things.” Then, 225

out of 325 students select a correct answer that mentions assumptions not made. The question is “whether some Universities outside of Chile are free.”



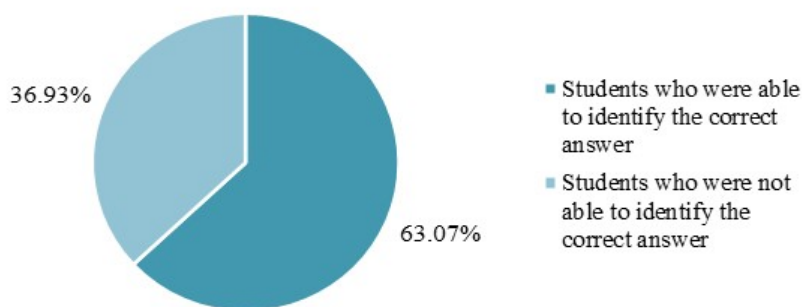
**Figure 2.** Level of assumptions ability of Brawijaya EFL students

Although half of the students can identify the correct answer, the others still cannot mention it. Most of the students mention the wrong answer to questions 26, 36, and 34. Question 26 mentions that “The governments of monarchic nations are responsible for setting tax rates on their citizens,” but only 126 out of 352 students can identify the correct answer which is an assumption not made. It is followed by question 36 which states that “Chilean students want to attend university.” Only 138 out of 352 students can find the correct answer which is an assumption not made. Lastly, 209 students pick the wrong answer from question 34. It talks about “Staging protests that will influence the costs of Chilean university education.” The overall 50,19% reveals that the student’s assumption ability increases during the process of finding the best solution. They will be selecting information or views from a group of friends and be trying to understand what is being conveyed (Watson and Glaser, 2009). This process often occurs in discussion activities in the Discussion-Presentation class where the assumption dimension frequently takes

place during discussion activities, particularly when students and lecturers are analyzing “trigger” topics.

### **Levels of Deductions Ability of Universitas Brawijaya Students**

In terms of deductions, more than half of students can determine the correct answer by 63,07%. Most students can identify the correct answer to questions number 44, 48, and 51. Only 49 students out of 352 students select the wrong answer, so more than 300 students select the correct answer from question number 44. The question mentions that “Sarah’s company is more likely to fail than a well-established company.” Then, more than 300 students can determine the correct answer, which in conclusion follows from question 48 which states “It is a sound business model to advertise baked goods as “French” or “Belgian” as this is more likely to result in successful sales.” Then it is followed by question 51 which mentions that “May is usually dry.” 273 out of 352 students can pick the correct answer which the conclusion does not follow.



**Figure 3.** Level of deductions ability of Brawijaya EFL students

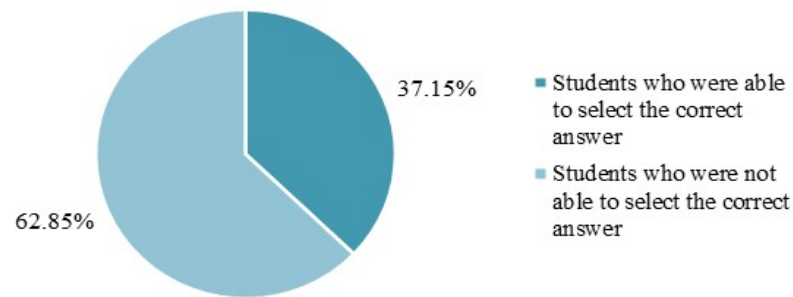
Although more than 50% out of 352 students can identify correct answers, some students choose the wrong answer. Most students cannot choose the correct answer to questions number 40, 49, 41, and 58. Less than half students are able to determine the correct answer, only 98 out of 352 from question number 40. The question states that “Outsourcing functions to business process outsourcing companies will cut expenses.” It is followed by question number 49 which states “It rained more than expected in May 2012.” 214 out of 352 students cannot answer the correct one. Lastly, 199 students cannot determine the right answer from both questions 41 and 58. Question 41 mentions that “The aim of this company’s outsourcing was to make the organization more profitable,” and question 58 tells “The scent from Coley’s candles is made from fruits and berries.” Analysis of the findings clearly reveals that the deduction dimension has increased because the problem-solving learning process requires deductive reasoning skills (Albanese & Mitchell, 1993). Group formation formed in the four meetings prior to the administration of the CT appraisal test has given the students the space to develop evaluation skills by discussing and evaluating each other’s ideas based on the information obtained to get the right solution. However, in this process, students tend to only accept information conveyed by their group of friends and often without

being accompanied by activities to evaluate the validity and accuracy of the information, even though the discussion during the process of problem-solving makes a major contribution to improving CTS (Tiwari et al., 2006).

### **Levels of Inferences Ability of Universitas Brawijaya Students**

The result of questionnaires in terms of Inferences related to Brawijaya students’ CTS indicated that less than 50% were able to select the correct answer. In addition, some students can identify the correct answer to questions number 62, 65, and 66. In Question number 62, 184 out of 352 students can choose the correct answer which is probably true. The question explains “It is known that the Chinese government leave areas such as ‘research’ and ‘development’ from their official figures, however, this would also suggest that other areas of spending are also omitted from their official figure for military spending.” 163 out of 352 can select the correct answer which is false. Question number 65 mentions about “In 2010, the United States of America spent less on its military defence than the Chinese government.” Then, 151 out of 352 students can select the correct answer which is true. Question number 66 states that “There are concerns that Turkey’s development is at risk of faltering in the years after 2011.”





**Figure 4.** Level of inferences ability of Brawijaya EFL students

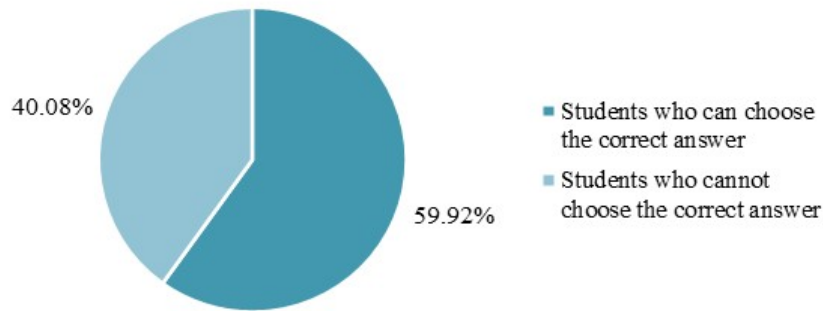
Moreover, more than half of the students choose the wrong answer. Most of the students wrongly choose the answers number 71, 73, and 74. Only 41 students out of 352 students can identify the correct answer to question number 71. The correct answer is false. The question states “The ‘dumb-blonde hypothesis’ says that more attractive women are less capable of being intelligent.” It is followed by question number 73 which states “The method of selecting future employees adopted by the Belgian public sector has helped to eliminate discrimination in the Belgian public sector.” Only 119 out of 352 students can identify the correct answer which is more information required. Lastly, only 87 out of 352 students can determine the correct answer which is probably false from question number 74. The question mentions about “The method of selecting future employees adopted by the Belgian public sector has had the effect of increasing discrimination based on appearance within the Belgian public sector.”

The findings indicate that the students do not understand how to make good or correct inferences. In spite of the importance of this dimension, they fail to create inference from the given premise or case which measures their ability to draw observed or supposed facts. The result of the interviews shows that the students are

mostly confused to decide the degree of truth of each observed or supposed fact in which they had to choose one out of five options. Brown (2003) explained that unequal distribution of the multiple-choice answers leads to the less valid result of the test. This may lead to the failure of the student’s performance in inferencing since the other four dimensions provide two options for each question.

#### **Levels of Interpreting Information Ability of Universitas Brawijaya Students**

The results of students’ ability to interpret information related to CT show that more than half of the students can identify the correct answer. Most of the students can identify question numbers 76, 80, and 84 correctly. More than 200 students can identify the correct answer to question number 76. The answer is that the conclusion does not follow. The question refers to All themed clubs in London that sell unusual drinks. In addition, most of the students can correctly answer question number 80, which conclusions follow. The question mentions that the British National Library is in the United Kingdom. 285 out of 352 students can select the correct answer to question number 84, which the conclusion follows. The question states that Hannah cannot be promoted because she doesn’t have enough experience.



**Figure 5.** Level of interpreting information ability of Brawijaya EFL students

Although more than half of the students can determine the correct answer, there are more than 30% of the students cannot. Most of the students wrongly select the right answer in questions number 81, 82, and 86. Only 123 out of 352 students answered question number 81 correctly, which conclusion does not follow. The question talks about “If a person obtains an MBA, their income will increase.” Question number 82 states that “If a person obtains an MBA from a top business school, their income will be higher than that of the average MBA graduate.” Only 102 out of 352 students can pick the right answer, which conclusion does not follow. Moreover, only 102 out of 352 students can correctly choose the answer to question number 86, which the conclusion does not follow. The question talks about “In 3 years’ time, assuming that Hannah has not been promoted, she will be overqualified for her current position.” The findings show that in this dimension, students are required to understand deeply about the information given. It will encourage students to seek sufficient information, interpret, assimilate, and organize data, so students can perform data interpretation accurately. Prior to this research, to ensure they know what and how to deal with CTS, the students were taught the basic knowledge of CT within the first half of the semester. Four meetings prior to the administration of the CT appraisal

test in which the CT activities were held and integrated into the subject matter, for instance, reading or discussion activities. Arends (2012) further reveal that CT can be boosted through learning activities that use the discussion technique and argumentation.

Based on tables one to five, it indicates that more than half of the students of Universitas Brawijaya have low CTS. The table shows that more than half of the students can answer the questions correctly but the number is sufficient to tell that they will be successful learners in the university. The conclusion cannot be made yet since the result of their learning is in progress for the next two weeks. The factor which inhibits the students to succeed in the test is the “inappropriate level of difficulty of the test items”. Also, the CT test in this research is adapted from the Watson Glaser Critical Thinking Appraisal which might be less appropriate for the students who do not understand and use English in their daily-based communication. Language, English, might hinder their understanding of the test items which causes the failure to choose the best answer which can be inferred from the statement or fact provided. Brown (2003) stated that the test item should be appropriate to the level of the test takers to gain the best information related to the ability being tested. For instance, “*Some people think that prospective employees*

should include a photograph with their application form. Such practice has traditionally been criticized for allowing more attractive individuals to get ahead in their careers over 'plain' colleagues. However, one study demonstrates that this is, in fact, untrue. Ruffle, the creator of this study, attributes his findings to the 'dumb-blonde hypothesis' – that beautiful women are thought to be unintelligent. Ruffle submits that companies would be better advised to adopt the selection model employed by the Belgian public sector, where CVs are anonymous and candidate names, also gender photographs are not allowed to be included on CVs. Such a model allows the candidate to be selected on factors relevant to the role applied for". The passage is likely more appropriate for students who are in the second or third year of their study in which they have already learned the subject or understood the concept the topic better. Thus, it is suggested to provide the students with a passage which is suitable for their level, so that the result is valid enough to measure their ability, especially in inferencing.

### ■ CONCLUSIONS

Although the five dimensions are playing important role in the development of the CT of the students, the one which needs more attention is the inferencing dimension because the students scored very low. The teaching and learning process should give much more attention to the development of this ability. 37% for the inference is the lowest score compared to the other dimensions which reach more than 50%. Thus, the teaching and learning process in Universitas Brawijaya should accommodate students' knowledge of inferencing which is believed to be an important dimension which contributes to the CT.

The University should provide the students with activities from which the undergraduate can increase their CTS. The learning should be rich in CT activities, especially the inferencing dimension since the result indicates that they need help in drawing conclusions from a given or proposed fact or premise. Thus, the research suggests that the University should integrate any CT activities into the subject matter. It is also suggested to the future research to provide the students with a passage which is suitable for their level so that the result is valid enough to measure their ability in inferencing.

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