THE IMPACTS OF MODELED-READING STRATEGY ON STUDENTS' REASONING SKILL ABILITY

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Abstract

In spite of being included into receptive skill, reading is no longer considered as a passive activity of learning. It is known that readers should be actively engaged during the reading process in attempt to achieve comprehension. This study sought the impacts of the application of modeled reading in increasing students' reasoning skill, both verbally and logically. Conducted by following quasi experimental characteristics, this study employed one-group pretest post-test design. There were 23 college students involved as the samples who were given a pretest, teaching treatment, and a post-test. The instruments used were two types of test: verbal reasoning test and logical reasoning test. Each set consists of 10 questions. During the data collection or test, the students were given 25 minutes to answer each set, for both the pretest and the posttest. Later, the data were analyzed using normality test and t-test to see if there is any significance increase after the treatment. The results unveil that both skills enhance after the treatment with modeled reading. First, students' ability in verbal reasoning ability increases from 34.7 to 77 and logical reasoning ability increases from 65 to 83.4 in average. In conclusion, applying modeled reading can expand students' cognitive ability in sharpening their verbal and logical reasoning which are beneficial during their learning, especially in reading comprehension.

Keyword*:* Reading Comprehension, Cognition, Verbal Reasoning, Logical Reasoning, And Modeled Reading.

INTRODUCTION

In learning, thinking process is the most important variable. Critical thinking in education can be traced to Dewey's concept in 1916, which is the first timing point when the concept of critical thinking was first discussed[1]. Dewey who is an American philosopher urged that goal of every process of education to make students able to think in a critical and solutive way. As a matter of fact, students who come to classroom are not empty-minded, they carry all questions

and beliefs that they have learned since the very first day of their life[1]. From this stance, it can be stated that the purpose of education is philosophical oriented; the procedures including the curriculum organization and the implementation of all teaching techniques should be mapped based on the philosophical essence of education[1]. A state of continuousness or *progressivism* is a philosophical-based belief emphasizing that human can learn best when they are co-dependent with nature and real–life activities. Dewey himself is a frontier proponent of this progressivism belief since the critical thinking is mainly employed when the students are exposed to real-life scenes during learning process. Hence, this is considered vital to the educational process, both in the present and in the future.

In addition, critical thinking is seen to activate when learners are provided with authentic materials during the learning process[2]. The implementation of this concept basically has been done in all classrooms. Teachers always prepare their teaching materials to be as authentic as they can be. As soon as the use of internet and other technological uses are induced to the teaching and learning process, the critical thinking ability of our students is being challenged. The information they receive from the internet is more than enough, it is even flooding their mind; and this leads to the fact that they need to revisit their procedures of critical thinking performance, especially in reading performance. Critical thinking itself poses questions on every mind that thinks about it and this enables students to explore more of what they have not thought of before. This is the timing when the learning process occurs[3]. In this circumstance, teachers need to set goals or learning objectives to specify the students performance needed to be achieved in every class or meeting. Providing reading materials are most likely to be beneficial in brainstorming the students' mind to activate their critical thinking ability, to question and dig their own existing concepts about the issue(s) they are reading.

Based on the preliminary survey, potential problems that frequently appear to English reading in classroom is that the lack of vocabulary. Krashen supports that vocabulary and grammar are two key items required in every language to comprehend the meaning of both spoken and written discourse[4]. Without the two key items, the learners cannot be stated to understand the target language. However, it is not necessarily the problems of lacking of vocabulary. After unstructured interviews with the respondents, it was found that they did not how to synthesize ideas they obtained from a certain passage, a certain sentence. When each vocabulary is fragmented from the sentence, they know exactly the meaning; but it is constructed in the passage context, they lost the meaning of that vocabulary. The researchers are interested in peering the core factor(s) of this condition; and the most potential factor(s) leading to this condition is the thinking process, or rhetoric construction of the participants.

To [1]be more specific, Indonesia in general still has low reading score based on the PISA research. Surely, in Aceh, students are also still struggling with reading. The lacking condition of reading comprehension is still faced by Acehnese students and. Consequently, it inhibits

[5]D. H. Schunk, & B. J. Zimmerman, Developing self-efficacious readers and writers: The role of social and self-regulating processes. Newark, Del: International Reading Association, 1997.
[6]R. Anderson, P. Wilson, P., & L. Fielding, "Growth in reading and how children spend their times outside of school", *Reading Research Quarterly,* 23, 1988, p. 285–303.
[7]David Nunan, *Practical English Language Teaching.* Singapore: The McGrow Hill Education Asia, 2003.
[8]Seyler. *The Reading Context, Developing College Reading Skills.* New York: Northern Virginia Community College, 2004.
[9]T. A. Polk, & A. Newell, Deduction as verbal reasoning. *Psychological Review,* 102, 1995, p. 533–566.

students' future potential and hinders their problem-solving skills. For struggling readers, a technique named Modeled-Reading has been introduced and is suggested by many experts.[5]

Modeling in reading is defined as showing the thought patterns, strategies, and techniques used during reading to students, usually by reading the texts out loud[5]. Teachers indeed play an important role in this process, and teachers who read on regular basis can perform better modeling to their students. As Anderson et al. stated that the following process goes back to the students, such as the length of time they spend reading whether inside or outside the classroom[6]. In brief, modelling in reading follows the steps below. First, as the teacher presents a reading text, he/she reads the text alout to the students. In this case, it isvery urgent that the students follow the tecaher's reading. The reading is supposed to be careful reading, which means that the text should be read at a very slow pace, and word-by-word. Later, along with the reading, the teacher construct the meaning of the text as a whole,without necessarily translating it. The effort emphasizes more on comprehension. Last, the students are provided with another text so that they can try out similar reading method on their own.

Students' ability in performing reading ability in foreign language is viewed as fundamental expertise for scholarly students. Besides, it is also an essential way to learn a language. Reading is not merely skimming words over words, but also to gain the ideas encoded by the authors in the text. This is what known to as comprehension in reading. Nunan stated that in reading the readers need to consolidate data and information found in a text to conform their own experience information in attempt to fabricate meaning[7]. Seyler further indicated that reading is the process of understanding the meaning of phrases, not the words alone[8]. Hence, reading is not limited to decoding the words written in a text, but also decoding the explicit and implicit information encapsulated in the text. And the ability to connect and reconnect the data during the reading process is determined by the learners' capacity to perform logical thinking or better known as critical thinking—which in this study is narrowed to peer only into logical and verbal reasoning. *Logical Reasoning* is a high-quality reasoning which operates critically. This type of reasoning enable a person to posit ideas logically, identify fallacies, detecting inconsistency and unclarity, locating issues and ideas, and generating issues and arguments. Meanwhile, *Verbal Reasoning* is basically a logical work with words. It involves verbal items, deductions, inferences, and syllogisms[9]. Some factors that are considered as the regularites this process are difficulty effect, validity effect, atmosphere effect, conversion effect, figural effect, belief bias, and elaboration effect. The scheme in logical reasoning requires the learners to determine the continuation of the picture pattern. This type of thinking is named logical reasoning and it does not involve any descriptive explanations in the process. Logic plays its major role in this type of test.

Meanwhile in verbal reasoning, it requires the learners to peer into the words to find out the meaning of the premises. In this type of thinking, logic fundamentally plays its role for later be proceeded to semantic or pragmatic knowledge to configure between the meaning and the context[9]. Since there are two steps of process, this verbal reasoning is considered as more complicated.

In attempt to seek more information to the base on this study, theoretical reviews is essential to expose more of the connection between Modeled Reading Strategy and logical thinking, especially in this current article. Modeled Reading Strategy, or some expert would call it Guided Reading Strategy, is closely assisting the students based on their ability to provide the enhancement in reading comprehension. Grouping is common in this strategy where various

reading levels are found in a class[10]. This strategy basically benefits for both students and teachers. For students, Modeled Reading Strategy connects between reading and discussion, which is important for them to transfer their logical understanding into verbal understanding through words. Meanwhile for the teacher themselves, Modeled Reading Strategy provides them with the opportunity to increase the teaching system for reading so that students can explore [2]more into their own way of thinking and peeing the data from the text. Balajthy and Wade said that Modeled Reading Strategy is intended to assist students with recollecting what they have read, confirming that the data they have reviewed is correct and coordinating as well as and recognizing relationship in the text[11].

According Burkins and Croft, the common procedures of Modeled reading is as below. First, the teacher ensures that the students in the classroom are not overcrowded and they are all at similar level of reading. Second, the teacher should choose a suitable text for the students with that certain level (usually struggling readers level). Third, the teacher introduces the text by reading the phrase by phrase and clarifies if there is some unclear information or some students might need exemplification. Fourth, the teacher listens to students reading the text. Fifth, the students are prompted to integrate the reading process with verbal discussion, which is to discuss ideas and find the cohesion of ideas in the text. Last, the teacher initiates a meaningful conversation or discussion to enhance the meaning gained by the students from the text they have just read[12].

As indicated by Brunner and Croft, this modeled reading strategy is intended to assist students with reading for specific details and rebuild the author's meanings. It implies that modeled reading strategy is a technique to help students—in this case also the readers—to comprehend the message of the author and reconstruct the information to be self-understood data in their logics. In short, modeled reading strategy is one of good method that can be utilized in reading instruction. This technique not just beneficial to recall what they have read and affirm the information, but also to improve students to portray the data into a meaningful interpretation.

Modeled reading strategies are best when it can promote students to perform creative and critical thinking in attempt to improve their thinking skill ability. Focusing on these issues, connected with the advancement model of learning English through by using Modeled Reading, it can evoke more advancement to students. At this point, when a model of reading strategy learned from teacher can be assimilated, comprehended and applied appropriately, the learner's intellectual ability can be streamlined[13].

Previous studies have been conducted on this topic. Various results have been found as well. Widdowson et al. found out that the students' reading performance increases after the teacher made demonstration in reading, which is also referred to as Modeled Reading strategy. This increase is seen as a natural performance increase; the students' comprehension inclined because they do understand the materials and how to procedurally render the information enclosed in the passage they read[14]. In short, Jones & Wills further urged that having appropriate

[2] [10]I.C. Fountas, & G.S.Pinnell, *Guided Reading: Good First Teaching for All Children*. Portsmouth: Heinemann, 2001.
[11]Balajahty and Wade. *Strugling reader : assessment and instruction in grade K-6.* New York: A division of Guilford Publisher, 2003.
[12]J.M. Burkins, & M. M. Croft, *Preventing misguided reading: New strategies for guided reading teacher.* Newark: International Reading Association, 2010.
[13]Derya Can, The Mediator Effect of Reading Comprehension in the Relationship between Logical Reasoning and Word Problem Solving. *Participatory Educational Research,* 7(3), 2020, p. 230-246.

reading models at school[15]. This is profoundly helpful especially for struggling readers. This fact is also supported by Pluck et al. that by implementing this reading technique, i[3]t affects more significantly on struggling readers compared to proficient readers[16]. The modeling process is believed to pattern a reading habit—which is needed most by the struggling readers. Meanwhile the proficient readers have already had the reading habit and information processing paths during reading, the struggling readers are still to be encouraged to create such paths.

However, the question about the differences between verbal critical thinking and logical-critical thinking still remains unanswered. Proceeding to find out the answer to this research gap, which is also considered as the novelty of this current research, the following premise was synthesized as the research hypothesis:

H_0: There is no increase in students' logical and verbal reasoning ability after the treatment with Modeled-Reading strategy.

H_a: There is an increase in students' logical and verbal reasoning ability after the treatment with Modeled-Reading strategy.

From the hypothesis above, it is clear that the objective of this study is to find out whether there is an increase in students' logical and verbal reasoning ability after the treatment with Modeled-Reading strategy. This research contributes to the finding out the perspective that in teaching reading—when most of the time the teacher requires students to read words, it is important to construct mind mapping that provide comprehension to the students logic as well. Hence, both logical and verbal comprehension can be reached.

RESEARCH METHOD

This study implemented quantitative research approach with experimental design. Experimental design, as defined by Brown, is systematically designed to control variables so that the test results obtained can be more valid and reliable[17]. This type of design involves strategies to control and measure the variable involved from the stance of quantity, length of time, consistency, and deviation values between or among variables[18]. This study adopted pretest-posttest design with single group where the researchers tested the participants at first to see their base score before; and after that, the treatment was carried out using Modeled-Reading teaching strategy to finally test them again in order to see the effects of this strategy on their thinking performance.

It is necessary to specify that the purpose of this study is not oriented on the score of reading performance, but on the score of verbal and logical thinking scores, instead. This study has two variables which are independent and dependent variables. The independent variable is

[14]D. Widdowson, R. Dixon, & D. Moore, The effects of teacher modeling of silent reading on students' engagement during sustained silent reading. *Educational Psychology,* 1996, 16(2), p. 171–180.
[15]T. Jones, & R. Wills, *Reading aloud, silent reading and "booktalk" in upper primary school classes: Teachers' reading programs, motivations and objectives.* Retrieved June 25, 2005, from http://www.aare.edu.au/04pap/jon04484.pdf
[16]M. L. Pluck., E. Ghafari, T. Glynn & S. McNaughton, Teacher and parent modeling of recreational reading. *New Zealand Journal of Educational Studies,* 1984, 19(2), p, 114–123.
[17]H. D, Brown, *Language assessment: principles and classroom practices.* San Fransisco: San Fransisco University Press, 2007.
[18]A. Mackey & S.M. Gass, *Second Language Research: Approachology and Design.* New Jersey: Lawrence Erlbaum Associates, 2005.

Modeled-Reading strategy that was used in teaching reading to increase their thinking performance, not reading performance. The dependent variable is students' thinking performance (verbal and logical reasoning abilities). Although this study only involved single group design, the normality test and items validity and reliability test were also considered important for the data to fulfill the quantitative data analysis criterion to be proceeded with the T-test or hypothesis testing.

1). Population and Sample

This study was conducted at Syiah Kuala University, Aceh, Indonesia. The sample used was total sampling which was taken based on the criteria that all samples are struggling readers. There were 23 students majoring in non-English department. They were considered as struggling readers because of their low TOEFL score especially in reading section. All scored below 40 in reading only. In addition, this sample was drawn by total population sampling. They further clarify that *Total Population Sampling* is using the whole population is involved as the sample. This kind of sampling is possible when there is very limited amount of population but at the same time, every member of the population has fulfilled the criteria of the samples.

2). Research Instrument

Concerning the research instrument, this study used test: logical reasoning test and verbal reasoning test. The test items were taken from *Buku Pintar TPA (Tes Potensi Akademik)* by Sholechul Azis which was published in 2013. To ensure that each item is valid ad reliable, the following table consisting of each item's index is provided along with the benchmark index for each item to be considered valid and reliable.

Table 1. Validity and Reliability Index of Test Item

Logical Reasoning Test Items	Validity (Pearson Correlation, $\alpha \geq 0.05$)	Reliability (Alpha Cronbach, $\alpha \geq 0.05$)	Verbal Reasoning Test Items	Validity (Pearson Correlation, $\alpha \geq 0.05$)	Reliability (Alpha Cronbach, $\alpha \geq 0.05$)
Item 1	0.74	1.26 (reliable)	Item 1	0.67 (valid)	2.27 (reliable)
Item 2	0.79		Item 2	0.73 (valid)	
Item 3	0.92		Item 3	0.78 (valid)	
Item 4	0.72		Item 4	0.69 (valid)	
Item 5	0.83		Item 5	0.83 (valid)	
Item 6	0.78		Item 6	0.81 (valid)	
Item 7	0.84		Item 7	0.97 (valid)	
Item 8	0.97		Item 8	0.75 (valid)	
Item 9	0.82		Item 9	0.69 (valid)	

Item 10	0.91		Item 10	0.88 (valid)	

Source: Data Analysis, 2021

3). Data Collection

The pretest was conducted on September 3rd, 2021. The test was carried out online via ZOOM meeting where the students can see it in the screen. Later, they answered each question and individually sent the answers via WhatsApp. As the pretest data were collected, there were 4 meetings in between to teach students with modeled reading strategy. The texts used for all four meetings were TOEFL texts in Reading Section sourced from Longman TOEFL Preparation by Deborah Philip which was published in 2004. Through the treatment meetings, the researcher taught the students by using modeled reading strategy. The treatment meetings were September 7th, 10th, and 14th, 2021. Finally, the post-test was carried out again following the procedures as those in the pretest on September 16th, 2021.

RESULTS AND DISCUSSION

Based on the data analysis, the following results were found. First, as the requirement to proceed to t-test, the data distribution needs to be ensured to be normal. Hence, the normality test was conducted and the result is as shown in the table below.

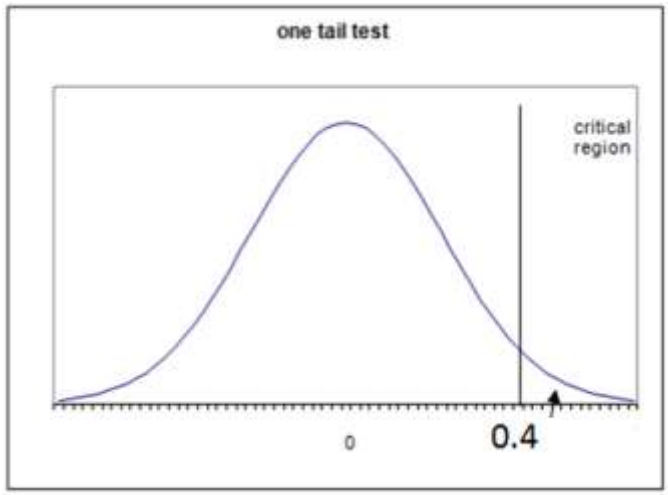
Table 2. Normality of Pretest

Normality test	Kolomogorov-Smirnov	Shapiro-Wilk	Data Distributon
Logical reasoning	0.203	0.888	Normal
Verbal reasoning	0.204	0.878	Normal

Source: Data Analysis, 2021

The table above shows that the pretest value of Kolmogorov-Smirnov is 0.203, which is higher than α=0.05. This means that the data distribution from the logical reasoning pretest is normal. Similarly, the Kolmogorov-Smirnov value of the verbal reasoning pretest is also normal as shown by 0.204—which is also higher than α=0.05. Later, as this study employed one-tailed hypothesis (right tail), the critical area needs to be determined regarding the df=n-2 or 23-2= 21. The r_{table} for df=21 and α=0.05 is ≥0.4. The bell curve is as below.

Figure 1. Critical area for df=21, α=0.05, right tailed.



Source: Sudijono, 2011[19]

As the data distribution is normal and the critical area had been set, it is now allowed to be proceeded to hypothesis testing. In this study, the t-test was used. The result is as shown in the following table.

Table 3. Hypothesis Testing

No	Testing	Mean	T_{value}	T_{table} (*df*=21, α=0.05, right tailed)
1	Pretest-Posttest Logical Reasoning	65.6	1.27	≥ 0.4
		83.4		
2	Pretest-Posttest Verbal Reasoning	34.7	3.07	
		76.9		

Source: Data Analysis, 2021

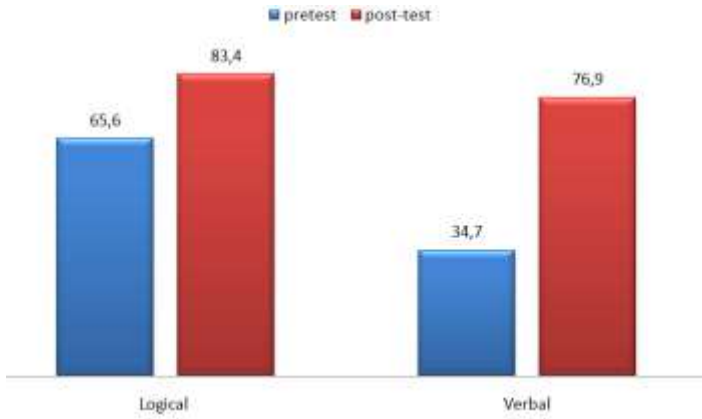
The table above shows that, first, in the logical reasoning pretest result was 65.6 and this increased to 83.4 in the post-test. The t_{value} found for the logical reasoning test was 1.27 which is higher than 0.4. Hence, since it lies under the critical area, the null hypothesis is rejected and the alternate hypothesis is accepted. In other words, there is an increase in students' performance regarding their logical reasoning performance. Second, in the verbal reasoning pretest result, the score inclined from 34.7 to 76.9 in the post-test. The t_{value} was 3.07 which is higher than the t_{table}. Thus, it is concluded that the null hypothesis is rejected and the alternate hypothesis is accepted. Similar to the former reasoning, there is also an increase in verbal reasoning ability performed by the students after they were treated with the Modeled-Reading strategy.

This is similar to which was found by Gandimathi and Zarei that the use of critical thinking can enhance the process of learning as a whole. In their study, the respondents stated the

when the critical thinking model was implemented in their classroom, there were more readings assigned because reading is a precise way to get the students think, evaluate, analyse, and reconstruct the information[20]. Besides, the reconstruction process also involved the existing information that they already knew and the information they had not known before (which they just obtained from their reading). This information consolidation leads to knowledge expansion and better yet, improves the thinking skills.

When these two reasoning skills are compared, the result is as portrayed in the following figure.

Figure 2. Results comparison between logicalm and verbal reasoning



Source: Data Analysis, 2021

The graph above shows comparison between the result of logical reasoning tests and verbal reasoning tests. The blue bar represents the pretest, which is before the treatment with Modeled reading, and the red one refers to post-test. In the pretest, verbal reasoning scored much lower ($\bar{x}$=34.7) than logical reasoning ($\bar{x}$=65.6). This means that even from the beginning, verbal reasoning is not an easy process for the students. In the post-test, despite the increasing score in both types of thinking, the raise in logical thinking ($\bar{x}$=83.4) is still higher than that of verbal thinking ($\bar{x}$=76.9). This highlights that working with ideas alone is much easier than working with ideas and words at the same time. This is the cognitive reason of why students are still struggling with reading. Even worse, overlapping problems appear when they are required to [4]read in the foreign language where they need to be informed about the target language culture and background as well[21].

As a result, it is suggested that teachers should focus first on students' ability in reasoning, both logical and verbal reasoning before they proceed the students to reading activity. This is because the reasoning capacity determines the students' comprehension in reading. High-performing students are normally good at solving problems logically and verbally; yet struggling readers face problems in even determining the context meaning of a phrase or chunk. The result

[22]S. J. Pape, Middle school children's problem-solving behavior: A cognitive analysis from a reading comprehension perspective. *Journal for Research in Mathematics Education,* 35, 2004, p. 187–219.

of this study indicates that being able to perform cognitively is the step one for students to be able to comprehend reading texts.

Research suggests that there is a strong relationship between reading comprehension and word problem solving or mathematics performance. Accordingly, Pape further supported that students who are proven to be good in working with words, have problems with mathematical o logical problems, and vice versa[22]. Seeing that there is apparently correlation between reading (verbal reasoning) and mathematical ability (logical reasoning), it is also suggested that interdisciplinary research in the future can be conducted in a more meticulous examination. It is expected that advancement of research in this topic can promote students to problems-solving contribution in the future.

CONCLUSION

It can be concluded that by the implementation of modeled reading strategy, the students' ability in logical reasoning and verbal reasoning can increase. This can also advance their ability to perform critical thinking as a whole. However, this study is not without limitation. Regarding the time spent to conduct the treatment, it was probably short. Besides, the process was carried out via ZOOM meeting as by that time, it was still in COVID-19 pandemic where classes are only allowed online. The teaching process might not be in its maximum set-ups. Future research with non-online treatments is expected.

What underlie the implication of this result are two key concepts of memory processing, which are accommodation and assimilation. Reframing the world and new experiences within existing mental structures is known as accommodation. In this study, this answers why logical reasoning is easier for students. It is beacuse the visual provision is provided. So that there is only one step processing: from visual to memory processing. Assimilation involves the incorporation of new experiences into old experiences and this helps an individual to develop new outlooks, rethink and evaluate what is important. In this reseasrch, this step involves more background knwoledge. Hnece, this is considered to be more enganged in verbal reasoning. The words shown in verbal reasoning tests may be meaningless to students who have no background about it at all, but they appear meanigful to those wiht background knowledge.

The premise of this theory is that people process information rather than just react to stimuli. Many cognitive processes, such as perception, reasoning, problem-solving, and conceptualization, are included in the theory. In order to complete difficult tasks like problem-solving and critical thinking, people process information with incredible efficiency. Students misunderstood the non-technical terms associated with language learning. According to the study, it's possible that when used in a different context, words that are normally understood in English sometimes change their meaning.This what leads students to having problem with verbal reasoning or reading skill in a more general sense.

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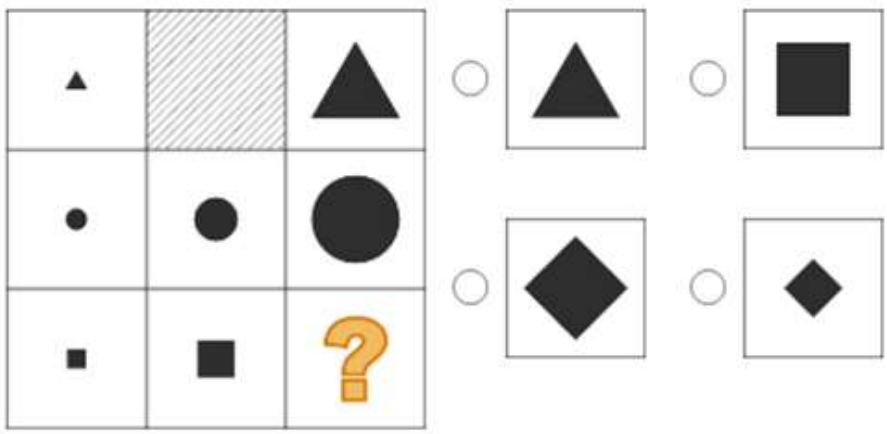
Appendix

Example of logical reasoning



Example of verbal reasoning

Semua donor harus berbadan sehat. Sebagian donor darah memiliki golongan darah O, jadi ...

a. Sebagian orang yang bergolongan darah O dan menjadi donor darah berbadan sehat.

b. Semua donor harus memiliki golongan darah O dan berbadan sehat.

c. Semua donor darah yang memiliki golongan darah O harus berbadan sehat.

d. Yang berbadan sehat adalah yang memiliki golongan darah O dan menjadi donor darah.