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The Effect of Quick on The Draw Model Assisted by The Physics Learning Book Integrated Pancasila Values on Critical Thinking Skill

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Abstract

This research aimed to determine the effect of Quick on The Draw Model assisted by the physics learning book integrated Pancasila values on critical thinking skills. This research is quasi-experimental with one group pretest-posttest design. The subject in this research is 27 students of class XI MIA 2 MAN 1 Yogyakarta. Data collection used a test question to obtain data on students' critical thinking skills. Data analysis increased critical thinking skills using n-gain. The results show the n-gain value on each indicator of critical thinking as follows: focusing questions of 0.75 (high), answering clarification questions of 0.82 (high), analyzing arguments of 0.68 (moderate), reviewing consideration values of 0.75 (high), and decide on an action of 0.53 (moderate). Therefore, Quick on The Draw Model assisted by the physics learning book integrated Pancasila values can improve critical thinking skills.

Keywords: critical thinking skill, Pancasila, physics learning book, quick on the draw

INTRODUCTION

The 21st Century Industrial Revolution 4.0 awakened the education sector to develop students' thinking skills. In the 21st century students need higher-order thinking skills that don't just write, read and count (Borstner & Gartner 2014). Critical thinking, creativity, collaboration, and communication are abilities that students must have in the 21st century (Erdogan 2019). Therefore, the learning process in the 21st century must facilitate higher-order thinking skills, one of which is critical thinking skills.

The meaningful learning process is a teaching and learning process that applies thinking skills. Learning is organized to trigger students to develop skills in managing concepts, solving problems, and making decisions. Problem solving and decision making in daily life really require students' critical thinking skills (Retnawati et al. 2018). However, based on the 2015 Survey of the Program for International Student Assessment (PISA) and The Trends in International Mathematics and Science Study (TIMSS) in 2015, students' critical thinking skills in Indonesia are still relatively low (Syahmel & Jumadi 2019). This is also in line with research that shows the urgency to develop students' critical thinking skills (Sumarni et al. 2019).

Critical thinking is beneficial for students to gain knowledge and make decisions (Fuad et al. 2017). Indicators of critical thinking include identifying problems, solving problems, and making conclusions (Zaenudin & Pambudi 2019). People who think critically have the ability to ask questions correctly, manage information, think logically, and make conclusions (Puspitasari 2020). In this study to assess students' critical thinking skills the following indicators are used: focusing questions, answering clarifying questions, analyzing arguments, reviewing the values of consideration, and deciding an action (concluding).

Several studies have shown that the learning process is still teacher-centered (Sumarni & Kadarwati 2020; Puspitasari et al. 2020). Student-centered learning will cause students to understand concepts and critical skills low. This is because students are always accustomed to being given facts, concepts, and theories without being accustomed to practicing the science process and critical thinking skills (Firdaus & Wilujeng 2018). Therefore good learning is student-centered learning so students can explore facts, concepts and principles independently to get used to practicing critical thinking.

The cooperative learning model facilitates students to be actively involved in learning (Karacob & Doymus 2013). Cooperative learning is a learning model where students work together to solve problems and share ideas to solve problems (Putri et al. 2019). Cooperative learning has a positive impact on student academic achievement (Gull & Shehzed 2015) and if applied well in learning can improve academic performance (Foldnes 2016).

The cooperative learning model has many sub-methods and techniques in practice (Ozdilek et al. 2018). Quick on the Draw is a type of cooperative learning to facilitate teamwork and competition that can encourage group work. Ginnis (2008: 163) states that Quick on The Draw learning can be done in 9 steps, namely: (1) Prepare a set of problem problems according to the topic being discussed; (2) Divide the class into groups; (3) Each student in each group is given material; (4) In the word "start" one student as a representative of each group takes one question card according to the group color that has been determined; (5) Discussion groups answer the questions on the question card; (6) After finishing the answers given to the Teacher to be examined. If the answer is correct, a second question card can be taken. If the answer is incorrect the teacher asks to discuss the problem again; (7) When group representatives return answers, other students mark the source and familiarize themselves with the contents, so they can answer the next question more effectively; (8) the group that has solved a set of problem problems is the winner; (9) The teacher and students answer all problem problems and make conclusions.

Model Quick on The Draw was chosen because it has several advantages. This learning model facilitates students to solve problems in groups. Critical thinking skills are needed in solving problems so they are expected to improve after students try to solve problems in learning. Some research also shows the quick on the draw model can improve creative thinking skills (Suryadinata 2015), learning achievement (Wahyuni 2015), and motivation to learn (Huriyanti 2017).

Pancasila is the noble identity and value of the Indonesian people. Pancasila is very relevant to be used to face the various threats faced by the Indonesian people today (Setiyawan 2017) and also relevant to the community in facing globalization (Ardi 2018). Understanding the values of Pancasila must be passed on to the younger generation which is carried out through formal education (Susanto 2016). Education by applying the values of Pancasila in everyday life produces quality education in the formation of life skills (Sulianti 2018). The young generation is expected to be able to develop life skills that have a sense of responsibility, problem solving, and analyze the problems they face. However, not all teachers are able to integrate the values of Pancasila in learning (Murdiono et al. 2017)

Understanding of the values of Pancasila in the present degenerate. Not only understanding, but the sound of the precepts of Pancasila also there are those who do not memorize. This is evidenced by the results of a survey by the Presidential Work Unit for the Development of the Ideology of Pancasila which showed that out of 100 people there were 24 people who did not memorize every sound of the Pancasila principles (JPNN 2018). Integration of Pancasila values in physics learning books is expected to provide understanding related to Pancasila values and also develop problem-solving skills with students' critical thinking.

Based on the explanation above, the application of the Quick on The Draw type of cooperative learning model assisted by the integrated physics textbook of Pancasila values has a good opportunity. Therefore, the purpose of this study was to determine the effect of Quick on The Draw aided by integrated physics textbooks of Pancasila values on students' critical thinking skills.

METHODS

This research is a quasi experiment. One group pretest-posttest is the research design used. This design uses one group to be given treatment. Pretest is given before treatment to get the initial data. After treatment, posttest was carried out to measure the final ability. The design of one group pretest-posttest can be explained through TABLE 1 (Sugiono 2011).

TABLE 1. One Group Pretest-Posttest Design

Pretest	Treatment	Posttest
O_1	X	O_2

explanation:
O_1 : pretest
X : treatment
O_2 : posttest

The initial step in this research is to start by observing. Observations were made to determine the need to use the Quick on The Draw Cooperative learning model which is assisted by physics learning books that are integrated with Pancasila values in MAN 1 Yogyakarta. The observations show that learning lacks the active role and critical thinking skills of students. Learning also does not yet integrate character values in students. Then the analysis is carried out on Optical materials to be integrated with Pancasila values. Pancasila values used in this study can be seen in TABLE 2.

TABLE 2. Pancasila Values

Sila Pancasila	Pancasila Values
Belief in the one and only God	The Indonesian people believe in and fear of God Almighty.
	Fostering harmony among fellow religious communities and belief in God Almighty.
Just and civilized humanity	Likes to do humanitarian activities.
The unity of Indonesia	Promote association for the unity and integrity of the nation.
The people who are led by wisdom in consultation/ representation	As citizens and citizens, every Indonesian person has the same position, rights and obligations.
	Deliberations to reach consensus are covered by the spirit of kinship.
Social justice for all the people of Indonesia	Likes to give help to others so they can stand on their own.

The data needed in this study is the critical thinking ability of students before and after treatment is given. Data collection uses test questions critical thinking. Test questions are used to collect students' critical thinking skills data before and after treatment is given. Critical thinking test questions are a matter of description consisting of 9 items. As for the indicators of critical thinking questions used, namely focusing questions, answering clarifying questions, analyzing arguments, making and studying the values of the results of consideration, and deciding on an action.

Data analysis technique used is the n-gain. This analysis is used to determine the criteria for increasing students' critical thinking skills. The equation used to calculate the magnitude of the standard gain (g) to find out the increase in students' critical thinking skills is EQUATION (1) (Meltzer 2002).

$$(g) = \frac{\overline{X}_{posttest} - \overline{X}_{pretest}}{x - \overline{X}_{pretest}} \quad (1)$$

with the criteria in TABLE 3 (Meltzer 2002).

TABLE 3. Criteria for Gain Value

Pretest	Criteria
$g < 0{,}3$	Low
$0{,}3 \leq g \leq 0{,}7$	Medium
$0{,}7 \leq g$	High

RESULT AND DISCUSSION

This research applies the cooperative learning model type Quick on The Draw. Learning is assisted with Optical material physics book that integrates Pancasila values. This book is designed according to the syntax of the Quick on The Draw learning model. As for the syntax of Quick on The Draw learning that is used according to Ginnis (2008: 163) which has been described in the introduction. TABLE 4 shows the Optical material that is integrated with Pancasila values.

TABLE 4. Learning Materials That are Integrated with Pancasila Values

Pancasila Values	Learning Materials
The Indonesian people believe in and fear of God Almighty.	**A. Mata dan Bagian-bagiannya** *(Bangsa Indonesia percaya dan taqwa terhadap Tuhan Yang Maha Esa)* Ilham adalah seorang anak yang dilahirkan dari sebuah keluarga yang taat agama. Orang tuanya pernah berkata kepadanya bahwa seluruh kekayaan alam yang ada di Indonesia adalah ciptaan Tuhan Yang Maha Esa dan kita wajib mempercayai kehadiran-Nya. Tuhan telah memberikan anugerah berupa dua buah mata untuk melihat, sehingga kita dapat menikmati alam Indonesia yang sangat indah. Oleh karena itu, kedua mata harus dijaga dengan sebaik-baiknya. Mata kita memiliki beberapa bagian, yaitu:
Likes to do humanitarian activities.	**C. Cacat Mata dan Kacamata** *(Gemar melakukan kegiatan kemanusiaan)* Ilham sering membantu orang tuanya dalam melakukan aktivitas karena mata kedua orang tua sudah tidak berfungsi normal. Mata kedua orang tuanya tidak dapat melihat dengan jelas pada jarak yang jauh maupun jarak baca mata normal. Hal ini karena daya akomodasinya sudah lemah akibat bertambahnya usia atau biasa disebut cacat mata presbiopi (mata tua). Oleh karena itu, kedua orang tua Ilham menggunakan kacamata bifokal (kacamata berfokus dua, yaitu positif dan negatif) sebagai alat bantu penglihatan. Kacamata bifocal terdiri dari lensa cekung pada bagian atas untuk melihat benda jauh dan lensa cembung pada bagian bawah untuk melihat benda-benda dekat. Ilham juga memiliki teman sekolah bernama Thomas yang juga menggunakan kacamata. Dulu, Thomas mengeluh karena tidak bisa melihat dengan jelas pada jarak jauh. Oleh karena itu, Ilham selalu siap sedia membantu Thomas ketika dia kesulitan membaca tulisan di papan tulis.

Promote association for the unity and integrity of the nation. As citizens and citizens, every Indonesian person has the same position, rights and obligations.	*(Memajukan pergaulan demi persatuan dan kesatuan bangsa)* *(Sebagai warga negara dan warga masyarakat, setiap manusia Indonesia mempunyai kedudukan, hak, dan kewajiban yang sama)* Thomas kemudian memeriksakan matanya pada Dokter Dadan. Beliau adalah seorang dokter mata yang profesional. Beliau tidak pernah membeda-bedakan pasien, walaupun para pasiennya berbeda agama maupun suku. Bagi Dokter Dadan, setiap pasiennya mempunyai hak yang sama. Dokter Dadan memeriksa terlebih dahulu keadaan mata Thomas sebelum merekomendasikan kacamata yang cocok bagi Thomas.
Deliberations to reach consensus are covered by the spirit of kinship.	*(Musyawarah untuk mencapai mufakat diliputi oleh semangat kekeluargaan)* Pada kegiatan diskusi tersebut, rina dan thomas juga diminta untuk mendiskusikan suatu permasalahan terkait perbedaan perbesaran lup yang dihasilkan oleh mata tak berakomodasi dan mata berakomodasi maksimum. Setelah berdiskusi dengan baik, rina dan thomas akhirnya sepakat bahwa terdapat perbedaan perbesaran lup yang dihasilkan oleh mata tak berakomodasi dengan mata berakomodasi maksimum. Perbedaan tersebut dijelaskan sebagai berikut.
Likes to give help to others so they can stand on their own.	*(Suka memberi pertolongan kepada orang lain agar dapat berdiri sendiri)* Hasil pemeriksaan menunjukkan Thomas menderita cacat mata rabun jauh atau disebut juga miopi. Mata miopi atau mata minus hanya dapat memfokuskan benda pada jarak dekat. Titik jauh mata (PR) tidak berada pada tak berhingga tetapi jarak yang lebih dekat, sehingga benda jauh tidak terlihat jelas. Rabun jauh atau miopi biasanya disebabkan oleh lensa mata yang terlalu cembung, sehingga bayangan benda yang jauh terfokus (jatuh) di depan retina. Oleh karena itu, Dokter Dadan merekomendasikan agar Thomas menggunakan kacamata lensa cekung (divergen) yang dapat menyebabkan berkas sinar sejajar menyebar, sehingga memungkinkan berkas-berkas sinar biasnya terfokus pada retina.

Learning books are arranged with problems that can be found in everyday life. For example, the material shown in TABLE 3, the fifth line, tells the story of a doctor who helps patients determine the glasses to be used. In accordance with the material students are invited to identify problems in the form of eye disorders. Once identified students are directed to analyze the causes of eye disorders that are experienced. At the end of the story students are directed to determine the action according to the problem. Therefore students are trained to identify problems, analyze causes, and determine actions which are all indicators of critical thinking. This is in line with Sulianti's research (2018) which states that integrated learning of Pancasila values results in quality education in shaping life skills.

The data of students' critical thinking skills were taken with the description of the question instruments. This data is in the form of pretest and posttest. Pretest is the value of students' critical thinking before being given treatment. While posttest is the value of students' critical thinking after being given treatment. Then the pretest-posttest value is used to determine the increase in students' critical thinking skills in the N-gain score. FIGURE 1 shows the students' pretest-posttest scores.

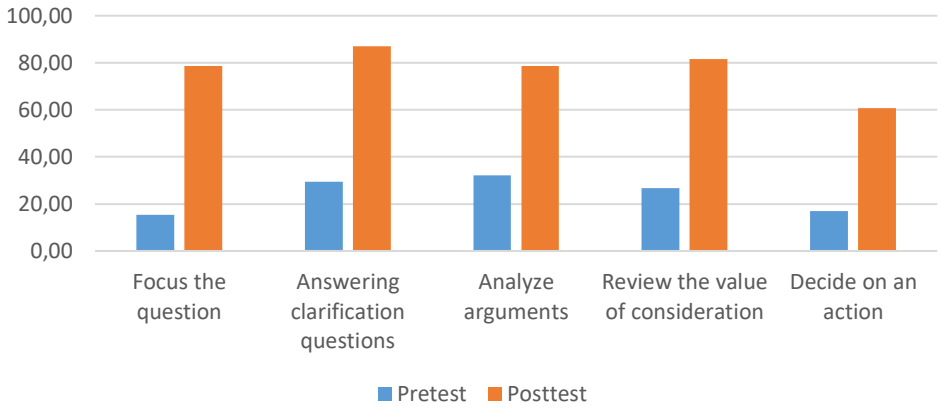

FIGURE 1. The value of pretest and posttest critical thinking skills.

Based on FIGURE 1, it can be seen that the posttest value has increased from the pretest value. This shows an increase in the value of students' critical thinking skills after learning with the Quick on The Draw model. To determine the category of increasing the pretest-posttest value, an N-gain analysis was performed.

Focusing Questions

Students' critical thinking skills increase on indicators focusing questions. The analysis results obtained an N-gain of 0.75. This increase is included in the high category. In this indicator there are 10 students in the medium improvement category and 17 students in the high category.

The Quick on The Draw learning model facilitates the problems displayed on the question card. Students in groups are asked to identify the problems contained in the problem. This helps students practice focusing questions. In line with Syahmel's research (2018) learning models that facilitate students in finding concepts in group work effectively improve the science process and critical thinking skills of students.

Answering Clarification Questions

The ability to answer students' clarifying questions increases. The analysis shows that the N-gain value of 0.82 is included in the high category. There are 15 students in the moderate improvement category and 12 students in the high category.

At the discussion stage students are asked to solve the problems on the question card. Quick on The Draw helps students understand problems and solve problems (Ariawan 2017). Then students are asked to answer on a piece of paper that has been provided. Therefore students are trained in answering clarifying questions.

Analyzing Arguments

The indicator analyzes the argument increases with an N-gain value of 0.68. This increase is included in the moderate category. There are 11 students included in the medium category and 16 students included in the high category.

In answering and solving problems students are asked to provide arguments. The discussion stage students are asked to analyze the arguments that match the problem. Students analyze various arguments that encourage critical thinking (Sumarni & Kadarwati 2020). Students exchange ideas and information to get the right arguments. Group discussions make students more confident in communicating arguments. This stage trains students to think critically on indicators analyzing arguments.

Reviewing Consideration Values

The indicator reviews the value of the consideration results increasing with an N-gain value of 0.75. This indicator increases with the high category. There are 11 students of moderate improvement and 16 students of height increase.

In the Quick on The Draw learning model, the teacher will not give the next question before the question is answered correctly. If the answers are not right then the group will be asked to review the answers. This trains students to think critically to study the values of the results of consideration.

Decide on an Action

Determine an action to increase with an N-gain of 0.53. This increase is included in the moderate category. In this indicator there are 5 students in the low increase category, 18 students in the medium increase category, and 4 students in the high increase category.

Some of the problems in learning Quick on The Draw that are applied there are problems regarding alternative solutions to a problem. Students in groups are asked to choose one solution by giving an argument. Decision making that is strengthened by evidence shows good critical thinking skills (Puspitasari 2020). Therefore students are trained to think critically to decide on an action. But there are still 5 students who are in low improvement. This is because students in groups are less active in the learning process.

CONCLUSION

This study aims to determine the effect of the Quick on The Draw model assisted by physics books that integrated Pancasila values on students' critical thinking skills. The results of the study address n-gain on each indicator of critical thinking as follows: focusing questions of 0.75 (high), answering clarification questions of 0.82 (high), analyzing arguments of 0.68 (moderate), reviewing consideration values of 0.75 (high), and deciding on an action of 0.53 (moderate). Based on the analysis and discussion it can be concluded that there is an influence in the form of an increase in students' critical thinking skills.

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