

Student Character Development in Javanese Language Learning Based on The Combination of Google Classroom and Whatsapp Group Using the Discussion Method

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ABSTRACT

Stochastic model checking is the extension and generalization of the classical model checking. Compared with classical model checking, stochastic model checking faces more severe state explosion problem, because it combines classical model checking algorithms and numerical methods for calculating probabilities. For dealing with this, we first apply symmetric assume-guarantee rule symmetric (SYM) for two-component systems and symmetric assume-guarantee rule for n-component systems into stochastic model checking in this paper, and propose a compositional stochastic model checking framework of probabilistic automata based on the NL* algorithm. It optimizes the existed compositional stochastic model checking process to draw a conclusion quickly, in cases the system model does not satisfy the quantitative properties. We implement the framework based on the PRISM tool, and several large cases are used to demonstrate the performance of it. **Keywords:** *Stochastic model checking, assume-guarantee reasoning, symmetric assume-guarantee rule,*

learning algorithm, probabilistic automata

1. INTRODUCTION

School as formal educational institutions are not only places to learn, but also to instill character in students. Character is a value inherent in a person through experience, education, sacrifice and environmental influences, as well as being the basis in attitudes and behavior. Character education is very important to instill because people without knowledge are the source of disaster and damage in this country. Therefore, an educator needs to design a learning system that is oriented to the development of character education. The aim is to produce graduates who are not only smart, but also have high integrity, are loyal, care for others, respect, obey the rules, and are responsible (Zubaedi, 2012: 13).

One of the learning methods that can make students more active, characterized, and technologically literate is the discussion method. The discussion method is one of the most valuable tools in the teacher strategy list (Zaini, et al., 2008). The discussion method applied in learning provides real effectiveness in the sense of the word reliable as a good learning method (Sadiyah, 2010). Rahman, et al (2011) stated that teachers can choose a more effective discussion method than the lecture method. The discussion method is also effective for improving learning outcomes (Khumaidah, 2011). Therefore the discussion method can

be used during learning with the hope that it can arouse student interest, motivation and character.

ICT-based learning that utilizes the internet as a source of information can encourage students to think critically, educate students to work together with their group friends and students will get used to finding various information from various sources for learning. The internet as a learning resource also makes it easier for students to increase knowledge and discourse by accessing literature and reference knowledge they need quickly and anywhere.

Learning materials from various sources that are easily accessible will help educators plan and implement learning in the classroom. Information technology, especially the internet, has penetrated everyday life, especially in the world of education (Mukhtar and Iskandar, 2012). Information technology which is increasingly advanced in this era of globalization is not only able to provide several conveniences and comforts of life for modern humans but also invites some problems and worries. For example, television shows which are dominated by shows that do not meet the requirements have an impact on decreasing morale. This can be seen from the soap operas that indirectly teach and exemplify the younger generation to fight, oppose their parents, wear inappropriate clothes, disrespect their parents, and many more. The declining morale condition needs to be addressed so that this nation

has a good character, becomes a nation capable of technology and morals so that this nation can keep up with the times well.

One of the ways to improve character that is increasingly deteriorating is to include character education in learning. The world of education is the most systematic and effective medium to strengthen character. Character building is one of the goals of national education as stated in Article I of the 2003 National Education System Law (Kurniawan, 2013), which states that one of the goals of national education is to develop the potential of students who have a noble character, personality, and personality. and noble character. Ngainun, (2012) states that character building can be one measure of the success of education. Therefore character education needs to be applied in school education.

The inclusion of character values into education in schools is very important because this is one way to correct the decline in character and schools have a very urgent role in character education for students (Kurniawan, 2013). Syekh and Abbasa (2007) state that education is one of the most powerful instruments of change and can achieve national goals by producing young minds imbued with knowledge, attitudes, skills, and competencies to shape the fate of the nation in the future. Setiawan (2013) states that character education design functions as a systemic vehicle for the development of moral intelligence that equips students with intelligence competencies coupled with character values that can be included in the syllabus and lesson plans.

In addition to incorporating character values in education, teachers can also strengthen character by using e-learning based on virtual classes with google classrooms. Google Classroom is a Learning Management System offered by Google for educators. This application provides a central location for communicating with students, asking questions, and creating assignments (Sudarsana, Putra, Astawa, & Yogantara, 2019). Google classroom can overcome space and time limitations and makes it easier for educators to evaluate every activity that has been carried out by students. Besides, google classrooms can also help monitor activities to solve problems and make learning more effective and efficient.

However, the use of pure Google Classroom in learning also results in students needing too large a quota, so there is a need for other quiet friendly media to support Google Classroom which functions as a virtual class, namely WhatsApp. One of the WhatsApp features is a group that allows including several students into one group, besides that there are group settings that can be maximized to help the learning process.

The formulation of the problem in this study is how the character of students who appear in learning Javanese based on Google Classroom and WhatsApp using the discussion method of Javanese life cycle traditional ceremonies in vocational students? The purpose of this study was to determine the character of students who appeared in information technology-based chemistry learning by using the Javanese traditional life cycle ceremonial competition discussion method for vocational students.

2. METHOD

The research was conducted at SMK Negeri Malang from June to July 2020. The sample of this study was one class (one group design) with a total sample of 29 students. The material raised is the Javanese life cycle ceremony.

The sampling technique uses a saturated sampling technique or census. Saturated sampling technique is a sampling technique in which all members of the population are sampled and the population is relatively small, which is less than 30 people (Darmadi, 2013). This technique is used because researchers only want to focus on conducting experiments in one class at SMKN 3 Malang. The data collection method is done by using the observation method. The instruments used were discussion observation sheets, psychomotor observation sheets, and character observation sheets.

3. RESULT AND DISCUSSION

3.1. Google Classroom View

In the Virtual class, researchers take advantage of the topic features to organize some of the features offered in the virtual classroom. The first feature developed is the Learning Support Administration. In this feature, the teacher presents the basic things in learning, namely: Javanese Language Learning Guide Profile, Student Brief Biodata, Study Hours, Javanese Learning Guidelines, Javanese Subject Syllabus, Class Attendance List, Guidelines for Group Division and Task Explanation, Assessment Guidelines Javanese Language Language Lessons, Guidelines for Being a Moderator in Learning.

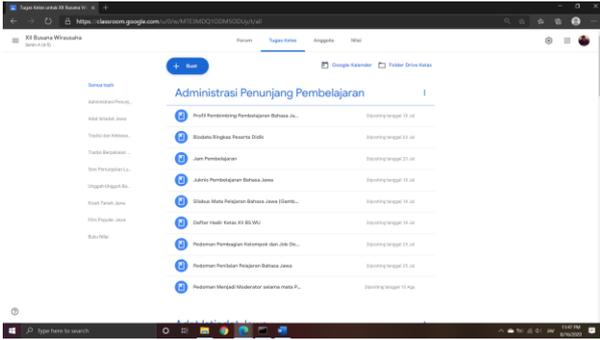


Figure 1 Views Google Classroom A

The second feature offered is the themes in Javanese language learning. In each Javanese language learning theme, the teacher then presents several supporting features, namely: Learning Objectives, Supporting Book Materials, Supporting PowerPoints, Supporting Videos, and Learning Evaluation. The learning objectives are used to provide students with an overview of the things that will be learned in the discussion session in the WhatsApp group. Supporting Books, Supporting PowerPoints, and Supporting Videos are used as material enrichment, it is hoped that students will be able to use the literacy media that has been provided as a basis for understanding the material to be discussed. Learning Evaluation is used to receive input, criticism, and suggestions about the learning that has been done. Learning evaluation can be used by the teacher as material for reflection.

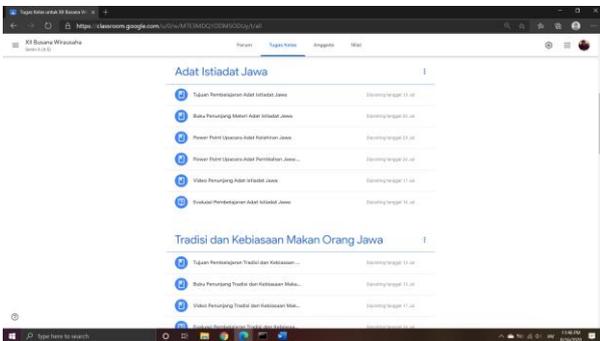


Figure 2 Views Google Classroom B

The next feature is the Javanese language learning value book. Students are directed and taught independently to report every activity in class that has been carried out to get reward points from the teacher which will be used at the end of the lesson as a guide for giving final grades to students. Gradebook contains: Being a Group Head, Group Designer, Group Editor, Group Librarian, Using the phrase "Krama" during lessons, Asking questions during a presentation session, and being a Moderator during Lessons.

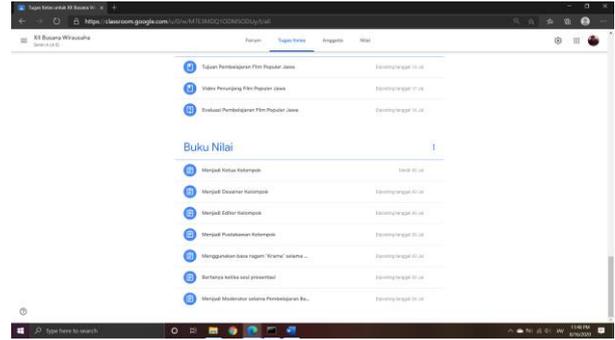


Figure 3 Views Google Classroom C

3.2. WhatsApp Group View

WhatsApp group contains all students in the class. The Whatsapp Group description contains the google class code, as well as a link that can be used for attendance, and there is also a teacher's email that can be used as a backup medium to collect assignments if an error occurs in Google Classroom.

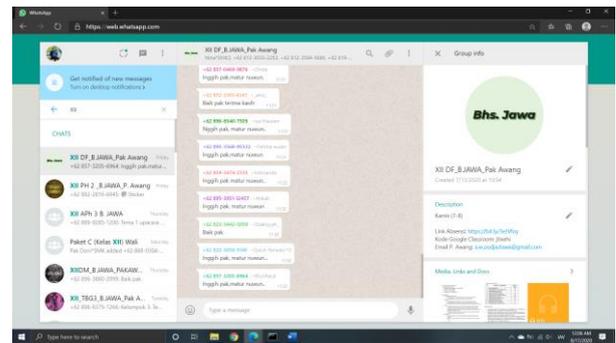


Figure 4 Display Whatsapp Group

3.3. Pre-class Task

The purpose of using pre-class is to strengthen student material in classroom learning. Pre Classes are neatly organized in the form of Google Classes based on Google Classes. Students get instructions to read the material first on Google Classroom while waiting for class time. The student in charge of the presentation received several guidelines on how to make a good presentation, the division of tasks for each group member which was divided into librarians (data search team), editors (grammar revision team), designers (PowerPoint mixing team to be presented), and chairperson (person in charge and the person presenting the group's hard work). This was after I learned that online-based study guides are vital in their function. Students who are not provided with proper guidance will usually be confused in the online era because of limited face-to-face meetings with teachers.

3.6. Student Character

Student characters were observed through the observation sheet. The student character values are presented in Table 1.

TABLE I. A SCORE OF EACH CHARACTER VALUE DURING THE DISCUSSION

Character Value	Total Score	Criteria
Active	55	Enough
Cooperate	60	Well
Curiosity	60	Well
Responsible	59	Well
Critical	63	Well
Confidence	55	Enough
Democracy	52	Enough
Skilled	52	Enough

Table 1 shows that there are eight character values observed during the learning process. The character values observed were active, cooperative, curious, responsible, critical, confident, democratic, and skilled. Based on observations of the eight observed characters, four-character values are included in the good category and four character values are included in the sufficient category.

TABLE II. CHARACTER OBSERVATION RUBRIC

Character Value	Aspects Observed
Active	Involvement of students in question and answer sessions during the discussion process.
Cooperate	Student participation in completing assignments and providing ideas/opinions during the discussion.
Curiosity	
Responsible	Include the number of sources of information.
Critical	
Confidence	Completion of individual and group tasks
Democracy	Number of questions asked during the discussion
Skilled	Express opinions.

	Receiving opinions, criticism, and suggestions from other discussion participants during the discussion.
	Understand the concepts/principles of the Javanese traditional cycle ceremony into the questions given appropriately.

Observations of the character values that appear are based on the rubric that has been made. The value of an active character is seen from the involvement of students during the discussion process, whether students involve themselves in the discussion or not. Active students will respond to any events that occur during the discussion, for example during a question and answer session. The value of a cooperative character is shown by the behavior of students during discussions with their respective groups, whether the students help solve a problem or just keep quiet and hang the final result on their other group of friends. The value of the democratic character is indicated by the openness of students in responding to opinions, suggestions, and criticism from group members and other groups. The value of a skilled character is shown whether students understand the concepts/principles of the Javanese traditional cycle ceremony obtained after the discussion takes place into the questions given by the teacher. The self-confident character value is shown by the embarrassment of students expressing opinions, suggestions, criticisms, and questions that are not understood. Besides, self-confidence also trains students' speaking skills. This is in line with Fani's (2011) research which states that discussion improves students' speaking skills which can be seen through question and answer sessions during the discussion. Marsiti (2008) states that the application of the discussion method in learning can make students better understand the material being taught, are trained to find references, solve problems, and gain broader experience. Based on Marsiti's opinion, it can be concluded that two-character values emerge, namely the critical character value indicated by the number of questions asked by students and the curiosity character value indicated by the number of speakers included in the discussion. report. The value of the character of responsibility is indicated by the completion of assignments given by the teacher, both individual assignments and group assignments.

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session. The value of a cooperative character is shown by the behavior of students during discussions with their respective groups, whether the students help solve a problem or just keep quiet and hang the final result on their other group of friends. The value of the democratic character is indicated by the openness of students in responding to opinions, suggestions, and criticism from group members and other groups. The value of a skilled character is shown whether students understand the concepts/principles of the Javanese traditional cycle ceremony obtained after the discussion takes place into the questions given by the teacher. The self-confident character value is shown by the embarrassment of students expressing opinions, suggestions, criticisms, and questions that are not understood. Besides, self-confidence also trains students' speaking skills. This is in line with Fani's (2011) research which states that discussion improves students' speaking skills which can be seen through question and answer sessions during the discussion. Marsiti (2008) states that the application of the discussion method in learning can make students better understand the material being taught, are trained to find references, solve problems, and gain broader experience. Based on Marsiti's opinion, it can be concluded that two-character values emerge, namely the critical character value indicated by the number of questions asked by students and the curiosity character value indicated by the number of speakers included in the discussion. report. The value of the character of responsibility is indicated by the completion of assignments given by the teacher, both individual assignments and group assignments.

TABLE III. CHARACTER THAT APPEAR IN THE DISCUSSION

Aspects of the Discussion Observed	Score	Category
1. Preparation of Material and Discussion Materials.	52,75	Enough
2. Cooperate.	63,75	Well
3. Concluding the Results of the Discussion.	57	Well
4. Communicating Discussion Results.	57,75	Well
5. Submission of Final Projects.	61,75	Well

Growing character values through the discussion method can be said to be successful in fostering student character values. This can be seen in Table 3 which shows that the character values that appear during learning are in a good category. This can be seen from the average results of the eight character values that appear, each of which is in the good category. Other than that,

Table 3 also shows that of the eight character values that emerged, the active character values, curiosity, confidence,

and skills were the character values that appeared very well during the discussion. This can be seen from the number of students with excellent character. The discussion method used can foster students' character values. This is in line with the research of Hasiyah, (2013) which states that the group discussion method has a high influence on student activities, especially in terms of physical, mental, and emotional activities of students so that it is expected to instill students' character values through discussion. The discussion method used in each meeting is intended so that the character values that emerge are truly attached to students. This is following Depiyanti's (2012) research which states that the habituation method and direct experience are the main methods of implementing character education. This is in line with Sumarno's (2013) research which states that character is the values instilled in a person. Whereas Winarni's (2013) research states that the Nested model can be used to integrate several learning skills, namely: thinking skills, social skills, and organizational skills, and soft skills (skills related to character behavior).

TABLE IV. SCORE OF DISCUSSION OF EACH ASPECT

Aspects of the Discussion Observed	Score	Category
1. Opening by suggesting the theme and purpose of the discussion	45	Very good
2. Allocate time.	43	Very good
3. Give everyone who wants to speak their mind the opportunity.	54	Very good
4. Make a short note at the end of the discussion.	48	Very good
5. Participate in discussions.	58	Very good
6. Speak after being greeted by the moderator with precise and firm delivery.	32	Well
7. Deliver politely and wisely.	40	Very good
8. Understand what other people think.	49	Very good
9. Maintain high interest from participants and conducive discussion.	31	Well

Table 4 shows that of the nine aspects of the discussion observed, seven aspects were included in the very good category and two aspects were included in the good category. This shows that the discussion is going very well. Also, students become more active, confident in expressing opinions, and respect the opinions, criticisms and suggestions of other students. The results of these observations are in line with Sadiyah's (2012) research which states that student participation in activating discussions, students' understanding of the material can be seen from the arguments used to defend opinions, defeating opinions that do not match their understanding, and their ability to answer questions or objections. from discussion participants.

TABLE V. PSYCHOMOTOR SCORES DURING THE DISCUSSION

Aspects of the Discussion Observed	Score	Category
1. Preparation of Material and Discussion Materials.	52,75	Enough
2. Cooperate.	63,75	Well
3. Concluding the Results of the Discussion.	57	Well
4. Communicating Discussion Results.	57,75	Well
5. Submission of Final Projects.	61,75	Well

Table 5 shows that of the five psychomotor aspects of students observed during the discussion, there were four aspects in the good category and one aspect in the sufficient category. The first aspect to be assessed is the preparation of material and student discussion materials. Discussion materials and materials were obtained through the use of the internet as a source of information. Student character values can also be instilled through the use of the internet as a source of information search. Character values that emerge include curiosity, responsibility, criticality, and self-confidence. Curiosity is applied by giving the task of finding their discussion material at the end of each learning meeting as a task at home. This is in line with the opinion of Mukhtar and Iskandar, (2012) that learning using the internet as a learning resource is expected to educate students to think critically, increase student insight and knowledge, and educate students to learn self-taught. which results will improve student learning outcomes. Giving assignments to find material can train students' sense of responsibility for the assignment given. So that it will be seen which students are responsible or not based on the results of their assignments. The material obtained by students can make students more critical in responding to learning and more confident when the discussion takes place because they already have the information needed.

The expected result in using the internet as a source of the information search is an increase in student learning outcomes. Many studies have stated that the use of the internet as a learning resource can improve student learning outcomes, including Riyanto (2012) which states that the use of the internet and learning motivation together affect student achievement. The use of the internet also makes students more technologically proficient, but not only students are emphasized to be proficient in technology but a teacher must be smarter than their students. This is in line with the results of research by Surjono and Gafur (2010) which state that the use of the internet must also be balanced with high human resources from teachers. The second aspect that is observed is cooperation. Cooperation is included in the character value of cooperation. This can be seen from the involvement of students during the discussion. The third aspect that is observed is concluding the results of the discussion. The

character seen from this is cooperation, by working together students can exchange ideas so that it is easier to conclude the results of the discussion. The fourth aspect is communicating the results of the discussion. In this fourth aspect, the character that is seen is self-confidence. Students who have high self-confidence can communicate the results of the discussion well. The last aspect that was observed was the preparation of the final report. In this aspect, the observable character is responsible. Responsible students will submit reports on time.

Based on the data analysis, the appearance of student character at intervals of 20-25 with good categories, namely 14 students out of 22 students. This means that online-based learning with the discussion method can instill student character values. This can be seen from the number of indicators that are achieved from the character values that appear so that students become more character during learning with the information technology-based discussion method. This is in line with Mustaqim's (2013) research which states that the application of character education affects the development of students' academic behavior, namely becoming more character and the effect that occurs is a positive influence so that students' academic behavior becomes more characteristic. Sukirno (2013) states that the results of the assessment show that *pitutur luhur* affects student behavior to become more character. Benninga, et al., (2003) stated that schools pay attention to the educational character of their students, in a planned manner which tends to also have higher academic achievement values.

4. CONCLUSION

Based on the results of research and discussion, it can be concluded that eight characters appear during information technology-based learning using the discussion method. The average of the eight characters that appear is in good category with six characters in good category and two characters in good category. The character values that emerged during the discussion were active, cooperative, curious, responsible, critical, confident, democratic, and skilled.

ACKNOWLEDGMENT

His work is supported by SMK Negeri 3 Malang, to answer the design of effective learning methods during the Covid-19 pandemic. I would like to thank those who have supported the creation of this discussion learning model, namely: Jefrianto as the owner of *damel Ukara* who inspired this learning

model, Yudit Perdananto as the Malang culture expert as a resource during the learning discussion.

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