

Analysis of Students Interests, Styles, and Collaboration Abilities in The Implementation of The Searching Information, Communication, and Modelling Learning Model

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Abstract. Implementing the searching information, communication, and modeling (SICOMO) learning model in the learning process can develop 21st-century skills for students. This study aimed to analyze students' learning styles, interests, and collaboration abilities in implementing the SICOMO learning model. This is a quantitative study with data collected through questionnaires filled out by 40 students. The results of this study show that students' learning interests include drawing/designing 35%, making videos and role-playing 31%, and writing and speaking 24%. Students' learning styles are visual type 43%, kinesthetic type 27%, and auditory type 30%. Collaboration skills with indicators of active contribution 94%, productive work 92%, flexibility and compromise 89%, responsibility 88%, and respectful attitude 92%. These findings suggest that the SICOMO learning model not only enhances student engagement but also fosters diverse skills, demonstrating its effectiveness in serving different learning preferences and promoting teamwork among students.

Keywords: Learning Interest, Learning Style, Students' Collaboration Ability, and SICOMO Learning Model.

Introduction

The Merdeka curriculum is a curriculum that emphasizes the development of students' character and competencies, allowing teachers the freedom to choose learning materials adapted to the students' learning needs and interests. One way to support these learning needs is by applying differentiated learning strategies (Gibbs & Beamish, 2020). This strategy allows teachers to tailor teaching methods and materials according to different levels of students' abilities, learning styles, and interests, thereby creating a more inclusive and effective learning environment (Celik, 2017). These strategies can be integrated in diverse learning models, such as project-based or collaborative learning, that encourage students to actively engage and work together in achieving their learning goals. Thus, the application of differentiated learning strategies not only increases student engagement, but also helps them develop critical and creative thinking skills that are so important in this modern era.

The results of previous studies have shown that the application of differentiated learning integrated with project-based learning models can result in significant improvements in students' understanding of concepts and practical skills, as well as facilitate more in-depth and meaningful learning (Gibbs & Beamish, 2020). Project-based learning (PJBL) has the potential to facilitate a more tangible learning experience, where students can apply their knowledge in real-world contexts and solve complex problems collaboratively (Belwal et al., 2020). However, this learning model has weaknesses, namely long stages or syntaxes so that its implementation requires more time and preparation from the teacher.

To overcome this challenge, teachers call for a learning model that is simple, easy to implement and does not take long to implement. One approach that can be considered is the use of problem-based learning models, which allow students to learn through real problem solving with a more flexible and time efficient structure (Gonzalez, 2019). This model not only encourages the active engagement of students, but also develops critical and collaborative thinking skills that are critical in dealing with real-world challenges. In addition to the PBL model, the searching information, communication, and modeling (SICOMO) learning model can be an effective alternative, as it integrates technology in the learning process and facilitates students to search and analyze information in a more interactive way.

The SICOMO learning model is one of the student-centered learning models. This learning model has three stages: information seeking, communication, and modeling. The first stage is searching for information, which is an activity where students search for answers to questions from various sources. This activity helps students hone their skills in researching and evaluating relevant information while building a solid foundation of knowledge before moving on to the next stage. (Baldwin et al., 2010). The second stage is communication which is the process of conveying concepts or ideas from one person to another in order to achieve a message effectively and efficiently through learning. This activity helps students to develop speaking and listening skills, as well as improve their ability to cooperate and collaborate with classmates (Cadena, 2017). The third stage is Modeling which is a student activity that involves the creation of a work or imitation based on a specific reference. This activity helps students to apply the knowledge they have acquired, while stimulating creativity and innovation in the learning process, so that they can understand the concepts more deeply and practically (Lu & Kaiser, 2021).

To facilitate the improvement of the character and competence of students, it is essential to apply a pedagogical approach known as the information search, communication, and modeling learning model. The SICOMO model is designed to encourage students to be active in the learning process so that they can develop critical and creative thinking skills that are crucial in today's digital age. This model not only focuses on mastering the material but also invites students to collaborate and communicate effectively, which is a key skill in the modern world of work. By applying the SICOMO model, it is hoped that students will be better prepared for future challenges and contribute positively to society.

Based on this background, measurements are needed to evaluate the effectiveness of applying the SICOMO model in improving students' skills, both individually and in groups. These measurements will help educators understand the extent to which this approach successfully achieves learning goals and provide feedback for future improvements. The aim of this study was to analyze how students' learning styles, learning interests, and collaboration abilities are influenced by the SICOMO learning model in schools.

Methods

This research method uses data analysis with quantitative descriptive analysis techniques (Hikmawati, 2017), by changing the data obtained from the study into a descriptive form of numbers such as percentage data. The sampling technique is cluster sampling, where the entire population is divided into clusters or groups. Furthermore, random samples are taken from these clusters and used in the final sample (Firmansyah & Dede, 2022). This study's subjects were students of class X IPA MAS Nurul Hidayah Bojonegara, which consisted of 30 students, 18 females and 12 males. The researcher will describe students' learning interests, learning styles, and collaboration abilities when the learning process is carried out using the SICOMO learning model. The instrument used in this study was a questionnaire to measure students' learning interests, learning styles, and collaboration abilities. In addition, interviews were conducted with respondents, namely five students and one teacher. Data collection techniques using observation, questionnaires, and interviews. Observation is a research activity by seeing and observing the actual situation (Prawiyogi et al., 2021). A questionnaire is a data collection method that gives respondents a set of written statements or questions to answer (Sugiyono, 2017; Rahman, 2019). Interviews are data collection techniques through face-to-face and direct questions and answers between researchers and sources or respondents (Darihadi & Pia, 2024). Quantitative data analysis techniques generally use mathematical models, statistical models, and others (Priadana & Denok, 2021). The quantitative data analysis technique in this study uses a simple mathematical formula: the score obtained is divided by the maximum score.

Results and Discussion

Learning interest is a disciplined attitude towards learning activities, including preparing a study schedule and taking the initiative to carry it out sincerely (Nurhasanah & Sobandi, 2016; Achru, 2019; Friantini & Rahmat, 2019). Learning interest can be measured by four indicators: interest in learning, attention to learning, learning motivation, and knowledge (Nurhasanah & Sobandi, 2016). In this study, students' interest in learning, attention to learning, learning motivation, and knowledge are shown by students' behavior while learning, such as students doing drawing activities or making designs for something, students enjoy making videos and role-playing, and students enjoy making presentations (writing and speaking). The results of observations on students regarding their learning interests can be seen in Figure 1.

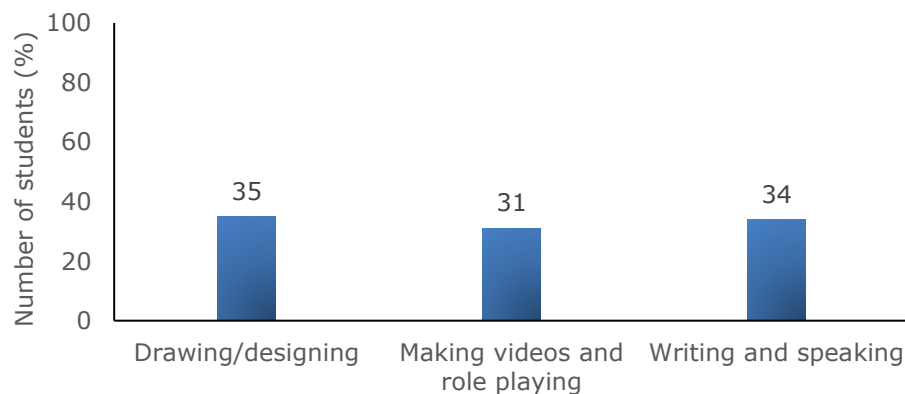


Figure 1. Distribution of students' learning interests

Based on the observations in the classroom, it can be seen that the grouping of students' learning interests includes students who enjoy drawing or designing virus structures, students who can play roles when discussing the process of virus reproduction, and students who work on LKPD seriously and enthusiastically. The learning interests of class X IPA students at MAS Nurul Hidayah Bojonegara consist of 35% of students who enjoy drawing/designing, 31% who enjoy making videos and playing roles, and 34% who enjoy writing and speaking. This shows that students' enjoyment of learning activities varies. Internal and external motivations usually influence differences in students' learning interests in students, so changes in behavior occur while learning (Achru, 2019). These differences in students' learning interests can be facilitated by applying the SICOMO learning model at the information search stage, where students are allowed to learn by searching for information from various learning sources such as videos, pictures, or textbooks. In addition, at the modeling stage, students can create a work from their learning outcomes in the form of pictures, videos, or narratives so that applying the SICOMO learning model can develop students' learning interests.

Based on the interview results, it was obtained that the students of class X IPA had a good interest in learning. Students argued that they did not experience boredom when studying virus material because they actively carried out learning activities such as drawing, watching videos, or preparing group presentations. Meanwhile, according to the teacher, students' interest in learning must always be maintained to understand the very abstract virus material easily. The teacher maintains students' interest in learning by implementing a student-centered learning model and using appropriate learning media. This is the opinion of Fernandez et al. (2021) that how teachers teach and deliver material greatly influences students' interest in learning. Learning media can help create a pleasant learning atmosphere so students can master the material more easily. By displaying learning media supported by concrete images, students can understand the material better, which ultimately increases their interest in learning (Khaerunnisa et al., 2018; Yuliansah, 2018; Ananda & Hayati, 2020). Meanwhile, according to Dewanti & Faninda (2024), implementing an interactive learning model can increase students' interest in learning and learning outcomes.

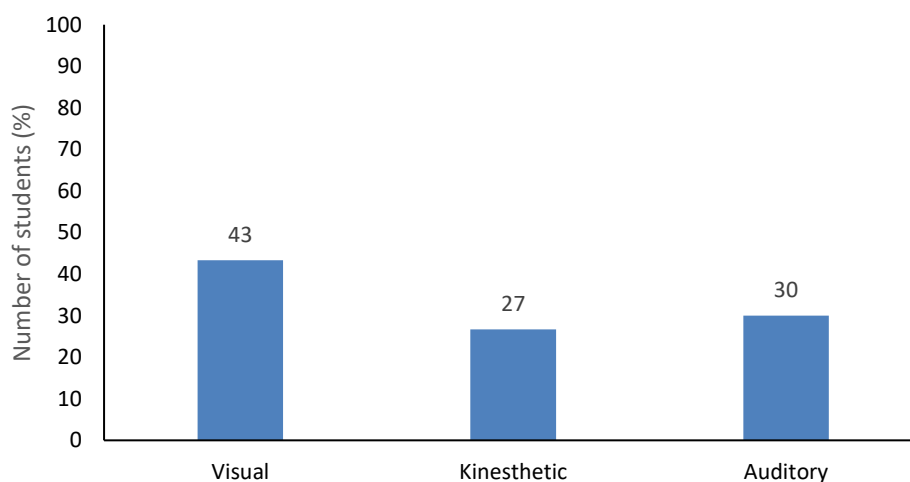


Figure 2. Distribution of student learning styles

Figure 2 shows the distribution of students' learning styles consisting of visual (43%), kinesthetic (27%), and auditory (30%). This is shown in the students' responses during the teaching and learning activities. Students were very enthusiastic when the teacher showed a video about the virus material, students showed good group work during the practicum, and students were able to listen well to the teacher's explanation or during group presentations. Supit (2023) stated that learning styles are related to how students learn and how they prefer to learn. The SICOMO learning model can facilitate students' diverse learning styles; for example, at the communication stage in the SICOMO learning model, students are allowed to convey information in various ways, namely role-playing, making presentations, and writing reports. In addition, at the communication stage, the teacher conveys information in various ways, namely by using videos and pictures or doing practicums. This is in line with the results of research by Rahmawati & Septi (2021), which stated that the delivery of diverse information in the learning process can be received and processed by students well and provides satisfaction and fairness for students because they feel that their learning style has been facilitated.

Based on the results of teacher interviews, information was obtained that the learning styles of class X IPA students vary, so teachers need to apply a differentiated learning model driven by effective teaching and learning principles and practices (Marlina, 2020). In this study, teachers carried out the learning process by applying the SICOMO learning model, which facilitated the learning needs of these students. This is in line with the results of research by Dariyani et al. (2022), which found that each student in one class has different learning style tendencies, namely visual, auditory, and kinesthetic, so that teachers have the opportunity to organize a learning process that can facilitate the needs of these diverse student learning styles. By incorporating various instructional strategies tailored to these learning styles, educators can enhance student engagement and improve overall academic performance.

This approach not only fosters a more inclusive classroom environment but also empowers students to take ownership of their learning, leading to greater motivation and success. Implementing such differentiated instruction requires careful planning and continuous assessment, allowing teachers to adapt their methods based on student feedback and performance (Ismajli & Imami-Morina, 2018). By regularly reflecting on their teaching practices and seeking input from students, educators can create a dynamic learning atmosphere that responds to the evolving needs of each learner. This commitment to adaptability not only benefits individual students but also cultivates a culture of collaboration and mutual respect within the classroom, ultimately preparing learners for diverse challenges beyond their academic journey (Li et al., 2023). This holistic approach fosters critical thinking and problem-solving skills, equipping students with the tools necessary to navigate an increasingly complex world while promoting lifelong learning.

Such an environment encourages students to take ownership of their learning, empowering them to become active participants in the educational process and instilling a sense of responsibility for their academic success (Wahbi, 2018). These prioritizing values, educators can create a dynamic learning experience that inspires creativity and innovation, allowing students to thrive both academically and personally. This commitment to fostering a supportive and engaging atmosphere not only enhances student engagement but also cultivates strong interpersonal skills, preparing them for collaborative efforts in their future careers (Moote et al., 2021). This holistic approach to education emphasizes the importance of adaptability and resilience, equipping students with the mindset needed to tackle challenges in their personal and professional lives. Such an environment encourages lifelong learning and empowers students to take initiative, ultimately shaping them into proactive leaders who can navigate the complexities of an ever-evolving world.

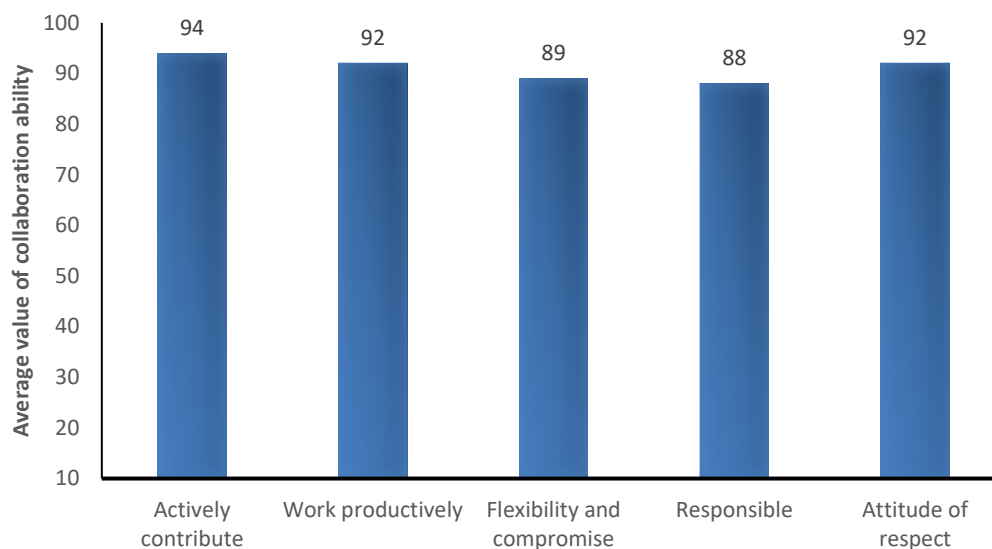


Figure 3. The average value of students' collaboration skills for each indicator

Based on observations, students' collaborative abilities are running well and smoothly. Each group is seen to work together to complete LKPD; there is a division of tasks between groups, and students can do group presentations well. Meanwhile, based on the results of the collaboration ability questionnaire, the results obtained are as in Figure 3, namely the indicator of active contribution of 94%, the indicator of productive work of 92%, the indicator of flexibility and compromise of 89%, the indicator of responsibility of 88%, and the indicator of respect (92%). This shows that collaborative work is a process of cooperation that is carried out, both between individuals and between groups, which is full of attention and appreciation between members to achieve common goals (Husein, 2020).

The highest student collaboration skills in the active contribution indicator proportion is 94%, and it is included in the high category. The high indicator of active contribution is because each group member plays a role according to their respective tasks during the discussion. During the discussion process, group discussions can run well and actively. This is in line with the results of research conducted by Susetyarini, et al. (2022) that in discussion activities, there are more than four very active students who put forward ideas to each other and work together to solve the problems given. Students who actively participate in discussion activities because they can understand the problems and how to solve them so that they will give each other their opinions. This is the result of an interview with one of the students. He wanted to find answers to the problem because he understood the problem given.

The lowest student collaboration ability is on the responsible indicator, with an average score of 88% in the high category. All students work on LKPD responsibly and submit assignments according to the agreed schedule. In addition, with the implementation of the SICOMO learning model, students work together in groups, which means there is a division of tasks and responsibilities to complete LKPD and create work on time. These results are based on the research of Susetyarini et al. (2019), who apply a project-based learning model that increases student responsibility in carrying out their duties and obligations. Students are responsible for completing projects because they are supported by good communication between group members who discuss actively.

The implementation of the SICOMO learning model is independent of three stages, namely information seeking, communication, and modeling. In the information seeking stage, student activities involve how students search for literature to complete LKPD. Student activities include searching for literature on the internet, textbooks, or articles provided by teachers. Information seeking focuses on developing the analytical and critical skills necessary to better understand the subject matter, as well as encouraging students to actively engage in their learning processes. This activity gives students time to develop a deeper understanding of the topic studied and improve their ability to apply that knowledge in a real context (Baldwin et al., 2010).

Student activities that demonstrate communication include student discussions, presentations, and question-and-answer sessions. These activities not only improve verbal communication skills but also build students' confidence in conveying their ideas and opinions in front of others. Students' involvement in these activities can also strengthen collaboration among classmates, creating a supportive and inclusive learning environment (Cadena, 2017). Additionally, these activities can assist teachers in identifying the needs and learning styles of each student, allowing them to tailor teaching approaches to meet those diverse needs. These skills are essential for preparing students for challenges in the real world, where the ability to communicate and cooperate with others is key to success.

Whereas modeling is a student activity in the form of imitating or replicating the process shown, this modeling not only helps students understand the concepts taught but also gives them the opportunity to develop practical skills through hands-on experience. Students who have a kinesthetic learning style tend to be more involved in physical activity and learn by doing, so modeling can be a very effective method for them (Lu & Kaiser, 2021). In addition, students can also train their creativity through various projects that allow the exploration of ideas and the practical application of concepts. These projects not only enhance academic understanding but also build confidence and problem-solving skills that are essential for facing future challenges. With this approach, students can better internalize knowledge and apply it in real contexts, which in turn prepares them to contribute effectively to society.

Conclusion

This study concludes that applying the SICOMO learning model to class X IPA students of MAS Nurul Hidayah Bojonegara has provided a good picture of students' learning interests, learning styles, and collaboration abilities. Students learning interests who like drawing/design are 35%, making videos and role-playing are 31% and writing and speaking are 24%. Students' learning styles are visual type 43%, kinesthetic type 27%, and auditory type 30%. While collaboration abilities with indicators of active contribution 94%, productive work 92%, flexibility and compromise 89%, responsible 88%, and respectful attitude 92%. These findings suggest that the SICOMO learning model not only enhances student engagement but also fosters diverse skills, demonstrating its effectiveness in serving different learning preferences and promoting teamwork among students.

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