Analysis of student learning attitudes in cad system pattern making learning at SMKN 1 Wonosari

Nadya Kamilia Safitri[1*], Sugiyem[2], Shyevita Ines Arviana[3]

[1,2]UniversitasNegeri Yogyakarta, Indonesia
[3]Hochschule Zittau/Görlitz, Germany
Email: nadyakamilia.2017@student.uny.ac.id*
*Corresponding author

ABSTRACT

A learning attitude is a person's willingness and readiness to learn and develop in the learning process. Learning attitude is essential in the learning process because a positive learning attitude will help students to more easily understand and master the material of the study, be more enthusiastic and motivated to learn and be more able to apply what they have learned in everyday life. This study aims to determine student learning attitudes in learning CAD system pattern-making in grade XII at SMKN 1 Wonosari. This research used quantitative methods with descriptive analysis. The population in this study consisted of 66 students of grade XII. The research samples were determined randomly using Harry King's Nomogram calculation formula with 43 students. The data collection instrument used a questionnaire. The validity test was used as the tool with the Pearson product-moment and reliability test using the Cronbach alpha formula. Descriptive statistics uses data analysis techniques. The results showed that the learning attitude of students in class XII Fashion Design at SMKN 1 Wonosari in learning the CAD system skirt pattern was good. Based on the results of the data analysis, 2% was in "the excellent" category, and 98% was in the "good" category. Therefore, students' learning attitudes can be categorized as good when making basic patterns of skirts from the cognitive components, while the affective and the conative component also belongs to a good category.

Keywords: Learning Attitudes, Digital Patterns, CAD System

INTRODUCTION

Education is a tool used to advance the nation's life by improving the quality of the learning process (Dwi et al., 2020). In the 21st century, they are learning with technology-based demands to balance the millennial era, so that later students can have the intelligence and skills according to developments (Rohiji, 2022). Education aims to help humans apply their knowledge for a better quality of life (Chen & Chen, 2021). Vocational high schools aim to obtain a competent workforce following the demands of the labor market, who can develop their potential and adapt to knowledge, technology, and art. It plays an essential role in producing a quality

workforce; learning in vocational schools is also required to meet the demands of the industrial world, and market needs that continue to grow (Dwi et al., 2020). Fashion design is one of several expertise programs in the tourism fields at Vocational High Schools (SMK). The Fashion Design Expertise Program is also one of the programs at SMKN 1 Wonosari, located on Jl. Madusari, Madusari, Wonosari, Wonosari District, Gunung Kidul Regency, Special Region of Yogyakarta. SMKN 1 Wonosari uses the revised 2013 curriculum in 2022/2023, which is adjusted based on input from DU/DI. The curriculum provides new challenges with efforts to increase learning capabilities. It was not only for competency in preparing the graduates to be ready for getting the job but also for creating a workforce that has quality according to the needs of DU/DI (Edi et al., 2019). The fashion industry contributes 18 percent of state revenue, and to survive at a stable rate can increase economic growth, and face future competition, master of technology in industrial development (Hartanto, 2020). One of the technologies that can be used for industrial development, including in the manufacturing industry, product design, architecture, and also in the field of clothing is CAD (Computer-Aided Design) technology. CAD technology is emerging as an important tool for businesses looking to increase their innovation, product creation, and competitiveness (Miyauchi et al., 2018). Computer Aided Design (CAD) is a digital design tool used in many different domains for the visualization and communication of technological artifacts and solutions, and today CAD is often part of technology education (Brink et al., 2022). Computer-aided design (CAD) is a technology used to assist in the process of designing and depicting a product or object with the help of a computer. Computer-aided modeling (CAD) systems can make structural design drawings such as clothing accurate and fast (Zhang & Yang, 2022). CAD (Computer-Aided Design) technology is very important in the field of clothing because it can simplify and speed up the design process, including making patterns and clothing designs. Mastery of CAD is very important because having this skill will make it possible to develop technological knowledge and digital competence in the fashion sector (Carretero et al., 2017).

The industrial clothing-making course is a product subject to raise students' awareness and improve their cognitive, affective, and motor skills performance. Cognitive abilities aim for students to have knowledge of essential competencies and mastery of subject matter for making industrial clothing, and affective skills objective for students to develop work attitudes and behavior (Afiffah, 2015). It demands learning in vocational schools to improve the quality of graduates so that they can have a good mood and develop a good work attitude. Based on observations in the subject of making industrial clothing at SMKN 1 Wonosari, students learn how the process of making clothes in the industry starts from preparation, pattern making and

layouts, and producing clothes to calculating the selling price of the clothing products. The fashion patterns that will be practiced are made manually by students. Students should pay attention intensively to every direction from the teacher, but the tendency of students to manage time in carrying out assignments is still low. It can be seen in 8 out of 25 students paying little attention to the teacher's explanation during classroom activities. Due to the demand for the revised 2013 curriculum in the learning objective of making industrial clothing, it is hoped that students can make tunic patterns digitally with a grading system. Based on interviews related to how to make clothes with subject teachers and heads of fashion departments at SMKN 1 Wonosari, there are obstacles in the implementation of the post-pandemic learning style, especially practical learning which still needs to be adjusted. There is an impact on students' learning attitudes who pay less attention during the learning process because they previously carried out learning at school quickly. Once, online learning in schools reduced the quality of cognitive knowledge, and vocational and social skills students possess.

Thus, the leading tools can not cause learning loss for the students because the process of delivering of material needs to become more flexible. When the internet is disrupted, it becomes difficult to ask questions or consult with teachers in smooth ways. Learning loss can occur due to ineffective learning activities; this might occur during the school holiday season, which has an impact on reducing students' ability to learn intensively (Azmi, 2021). This adaptation period affects students' learning attitudes, namely losing enthusiasm for learning, discipline, interactions with teachers, and responsibility in schoolwork (Ramadhan et al., 2022). The teacher provides information related to learning attitudes when making industrial clothing that students pay less attention, to and lack behavior. The teacher also informs that students' learning attitudes need to be better in terms of discipline in the learning activities. It has an important role in the learning process to achieve learning goals (Sunarti et al., 2021). Attitudes influence a person's behavior, mood, and learning (Getie, 2020). A positive learning attitude is the foundation for optimal learning (Lu et al., 2018). Lu also notes that a negative or passive learning attitude will harm learning effectiveness. Learning attitude is a major aspect of students' willingness to learn effectively. Attitude is one of the factors that influence learning and has a significant influence on the learning outcomes that will be taught by the teacher (Habayahan et al., 2021). Based on the condition of grade XII students since the digital pattern material has not been studied before, students' personal views have not yet been known to review the learning success.

There are three components to form an attitude, namely the cognitive, the affective, and the conative component (Azwar, 2013). Students who have a positive learning attitude towards a lesson will try to learn lessons that they find fun (Muslichah et al., 2022). Su and Lin believe that

one's attitude is the most important aspect of motivation and learning efficacy to direct behavior (Su & Lin, 2018). Therefore, a person's behavior can be predicted or changed by measuring their attitude. In other words, a person's learning efficacy and performance can be predicted in several ways by observing and evaluating their attitude toward the learning capabilities.

Based on the problems described above, research is needed to analyze students' learning attitudes in learning to make CAD system dress patterns in class XII at SMKN 1 Wonosari. By conducting this research, we expect to find out students' learning attitudes in making fashion patterns digitally and become input for related parties to improve the quality of understanding about industrial clothing, especially in the material for making CAD systems patterns.

METHOD

This study used a type of quantitative descriptive research to determine the learning attitudes of students in class XII Fashion Design in learning to make fashion patterns using the CAD system at SMKN 1 Wonosari. The population of this research was all students of class XII Fashion Design in the odd semester of the 2022/2023 school year with a total population of 66 people. Determination of the sample used a random sampling technique by using Harry King's Nomogam calculation with a sample of 43 students—the data collection technique was used in this study by distributing questionnaires in the form of a Google form. The validity in this study was used to construct the validity of the data. The questionnaire was tested on respondents and then analyzed using the SPSS version 22 application with the Pearson product-moment formula. Reliability testing with an internal consistency test using Alfa Cronbach (Syamsuryadin & Wahyuniati, 2017). The data analysis technique in this study used descriptive statistics to analyze data by describing the data that had been collected as it was without intending to make general conclusions or generalizations.

RESULTS AND DISCUSSION

Learning to make fashion patterns digitally, carried out at SMKN 1 Wonosari, was studied with 14 hours of lessons. In particular, the material presented in this lesson was making skirt patterns with a CAD system. The learning was divided on 15 and 17 November 2022, every 7 hours of lessons. Class activities started at 8 a.m to 2 p.m with 1 hour break time. The teaching was carried out in a computer laboratory with complete computer equipment that would be downloaded by the Richpeace application with 32 computers, one projector, and one LCD unit. The teacher used the job sheet-assisted demonstration method as a medium in learning activities

to make the basic pattern of the CAD system skirt at SMKN 1 Wonosari. Based on the questionnaire results on students' learning attitudes the study results will be described as follows. Students' learning attitudes in implementing CAD system pattern learning at SMKN 1 Wonosari were collected using a questionnaire. Attitude is a response or individual assessment of objects, people, groups, and thoughts about cognition and emotion (Bohner & Dickel, 2011). The questionnaire on student learning attitudes in learning CAD system pattern-making consisted of 19 statement items. Each statement in the questionnaire had an answer scale of 1 (Strongly Disagree), 2 (Disagree), 3 (Agree), and 4 (Strongly Agree); it can be seen that students' learning attitudes in learning to make fashion patterns digitally as a whole score minimum score = 19, and for the maximum score = 76. Based on the minimum score and top score, the ideal average is 47.5, and the perfect standard deviation is 9.5. The results of students' learning attitudes in learning to make basic patterns of skirts digitally which as a whole are based on a questionnaire, will be presented in tabular form as follows:

Table 1. Results of the Student's Learning Attitudes Questionnaire

Score	Frequency	Percentage	Category
> 61,75 s.d 76	1	2%	Very Good
> 47,5 s.d 61,75	42	98%	Good
> 33,25 s.d 47,5	0	0%	Pretty Good
19 s.d 33,25	0	0%	Not Good

Based on Table 1, it can be seen that students' learning attitudes in learning to make CAD system patterns at SMKN 1 Wonosari as a whole has a frequency of 1 with the total scores > 61.75 to 76 and a percentage of 2% while in the excellent category has a frequency of 42 with the total scores > 47.5 to 61.75 and a percentage of 98%. The good category has a frequency of 0 with a total score > 33.25 to 47.5 and a percentage of 0%. Besides the pretty good category has a frequency of 0 with a total score of 19 - 33.25 and a percentage of 0%, so belongs to the category of unfavorable. Based on this description, it can be concluded that the students' learning attitude, when they learned to make the basic pattern of the CAD system skirt at SMKN 1 Wonosari was overall good.
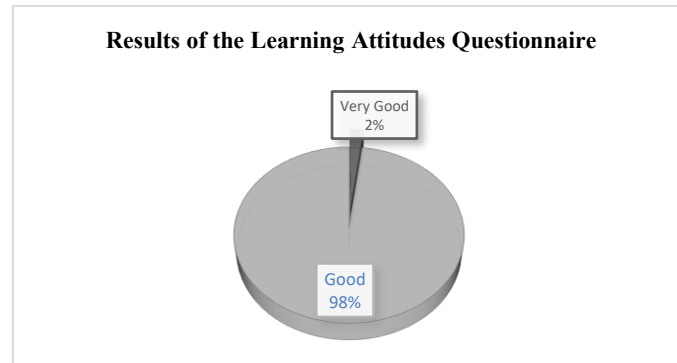
Figure 1. Results of the Learning Attitudes Questionnaire

Figure 1 is the result of a questionnaire showing that students' learning attitudes during learning to make basic patterns of CAD system skirts are in the good and very good categories. Next, data from the results of a questionnaire on student learning attitudes will be presented based on each attitude component, namely the cognitive, affective, and conative components in Figure 2 as follows:
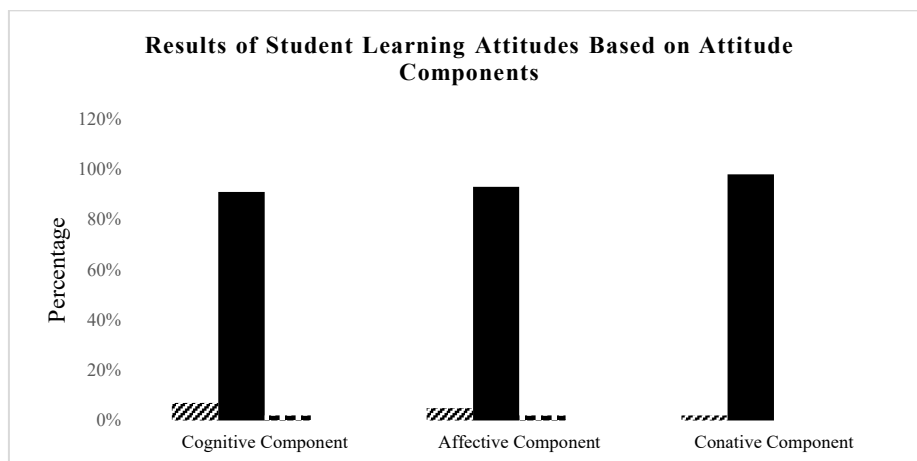

Figure 2. Results of Student Learning Attitudes Based on Attitude Components

The cognitive component of student learning attitudes is related to students' thoughts, experiences, processing, and beliefs in learning to make digital fashion patterns in the subject of making industrial clothing. The cognitive component in student learning attitudes has a percentage of 91% in the good category. Based on these results, shows that students' thoughts, experiences, processing, and beliefs in learning to make fashion patterns digitally were good. This means that students have a good interest in learning to make basic patterns of skirts digitally in their minds according to their experience and were able to convince themselves to follow this lesson.

Following the observations of learning activities, students' learning attitudes matched with the cognitive component. Some students have high curiosity to try various application tools independently, as well as students who dare to ask the teacher if there were stuck and do not understand with certain difficulties.

Furthermore, in the affective component, the emotional aspects of students' feelings towards learning to make fashion patterns digitally have a total percentage of 93% in the good category. Following this percentage shows the attitude of student learning related to the emotional level of students in good learning. This has a relationship with the opinion of Slameto (2015) regarding learning strategies that the emotional and social state of students influences the learning process, and if students feel pressured in their learning process and feel afraid of failure, then these students can be disrupted by the learning process and concentration.

Buttressing further, the conative component found that in the student behavior towards learning to make fashion patterns digitally was obtained 98% in the good category. Based on these results, it can be concluded that the behavior of students in participating in the learning process to make fashion patterns digitally was good. This is evidenced in the results of the researcher's observation during the learning activities, and students have a good responsibility to complete each stage of making the basic pattern of the skirt well and being able to do the tasks given by the teacher.

Furthermore, learning attitudes were also reviewed based on students' attitudes toward the materials, media, methods, and infrastructure that support the learning activities. The following are student questionnaire answers to materials, media, methods, and infrastructure in learning which will be presented in the form of a histogram to provide a clearer picture below:
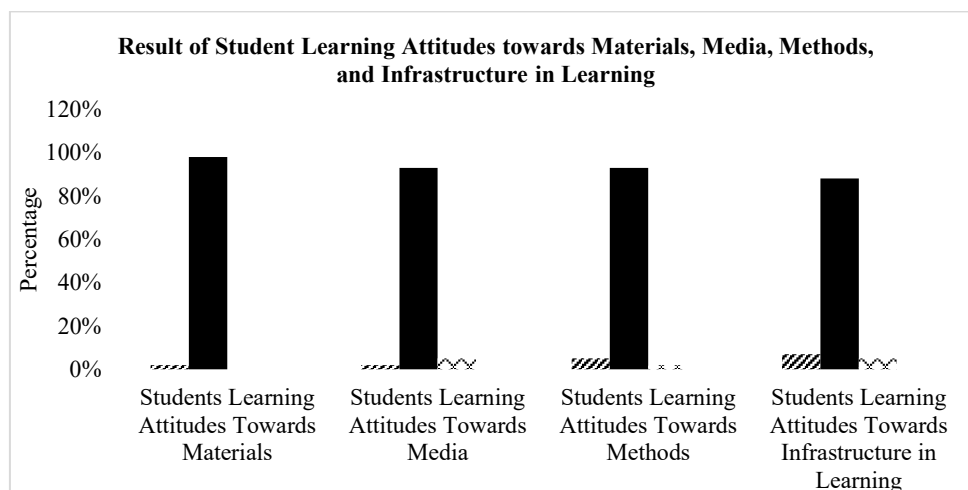

Figure 3. Result of Student Learning Attitudes towards Materials, Media, Methods, and Infrastructure in Learning

In this study, students' learning attitudes are also reviewed based on learning attitudes towards materials, media, methods, and market facilities in learning. The students' learning attitude towards the CAD system pattern-making material at SMKN 1 Wonosari was good. Although this is the new material to make basic skirt patterns digitally, students were enthusiastic to participate in the learning process and give their full attention which can be categorized as good ones.

Based on the observations, students' learning attitude using good material has a great impact on student learning activities. Through this good material, they will have the enthusiasm to know what material and the objectives are being taught, and what they have to achieve after doing this learning process. Students learning attitudes towards the material can also be considered based on the attitude components, namely cognitive, affective, and conative components. The results of a questionnaire that contains statements that support finding out students' learning attitudes towards learning material for making fashion patterns digitally can be described as follows.

The cognitive component which is the representation of students' trust and confidence in the material provided has a score of 83% in the very good category. Following the observations during the learning process, students pay attention to the teacher's explanation regarding the intent and purpose of the material they will learn, namely making basic skirt patterns digitally. The affective component is the representation of students' feelings towards the material for making skirt patterns digitally. The results of the study show that the percentages of 95% and 97% for each statement item were in the very good category. This shows that students have a very good emotional response to this material when making these patterns. The conative component is an aspect of the tendency towards student behavior in learning to make fashion patterns digitally with a percentage of 100% in the very good category. This shows that students' learning attitudes in following the material taught were very good. Based on the observations, the behavior or actions of students during learning attitudes presented the results of the data, where most students follow and pay attention to every direction given by the teacher so that they can carry out all stages properly to complete the assigned task.

Furthermore, students' learning attitudes towards the media were used in a good category with a percentage of 93%. The learning media used a job sheet. It was a practical procedure for a job in the form of a sheet that included practical objectives and assignments so that they could study independently with or without teacher guidance (Hutria et al., 2021). The job sheets form as a reference for making clothing patterns digitally has a good response for students. The results of this study were further observed during the implementation of learning. Through the job sheets as the media, they show that they have a good learning attitude, where they can complete the basic skirt pattern independently. However, there were a few students who had difficulties

understanding the job sheet because of the constraints of accuracy and diligence from within the students themselves in reading and understanding the job sheet given. Moreover, students' learning attitudes towards learning media were including the attitude components, namely the cognitive, affective, and conative components, represented as follows:

The cognitive component, which is an aspect of the tendency towards trust and belief, has a percentage of 92% and 91% for each cognitive statement item. This shows that students' trust and confidence in the job sheet media was very good based on the observations, where students always pay attention to the job sheet and carry out the steps in it before asking the teacher about the difficulties they have experienced after carrying out these stages. The affective component is the emotional aspect or feelings of students towards the job sheet media, which has 89% and 86% percentage data in very good categories. This answers that the job sheet media has a very good response from students so that they can take part in learning to make fashion patterns digitally well. The conative component, which is a form of behavior from students' learning attitudes towards the job sheet media has data results with a percentage of 90% in very good categories.

This shows that the job sheet media provided can help the students learn the material for making fashion patterns digitally very well. Following the observations, where students always use the job sheet as a guide in carrying out each stage, they will work on completing the assignments given by the teacher. This proves that the job sheet helps students more easily understand the material provided by the teacher, and students are more independent in doing assignments because the job sheet already contains the stages of making patterns to worksheets that students must work on later (Butar-Butar, 2018).

Other research has also proven that the use of e-job sheets is effective for the practical learning of machine control systems (Mindarta et al., 2018). This indicates that the use of job sheets in practical learning makes it easier for students to understand the material, and job sheet media is effectively used for practical learning. Apart from making it easier for students to understand the job sheet, it also helps them learn independently (Hutria et al., 2021).

As for the student's learning attitude towards the teacher's teaching methods in making the basic pattern of the CAD system skirt at SMKN 1 Wonosari, the total percentage of 86% was in the good category based on the research questionnaire results data. Meanwhile, the teaching method that the teacher used in learning to make fashion patterns digitally has a good response among them. The results of this study were on the observations conducted by the researcher during the implementation of the learning process, where students show a good learning attitude when the teacher gives an explanation in front of the class regarding the aims and objectives of learning and important things that must be considered when making fashion patterns digitally. This proves

that students' learning attitudes can be influenced by good relations between the teachers and the students. If students like the teacher's teaching methods, students will like the teacher and, at the same time, be interested in the material to be studied (Daniati et al., 2020).

Based on observations made by researchers, the teaching method used by the teacher was a demonstration method. The teacher uses the demonstration teaching method where students use job sheets as learning media, and the teacher gives directions at each stage carried out in front of the class according to the steps given in the job sheet. Demonstration methods provide examples and suggestions for a process so that students can observe each stage (Adenan & A.H., 2015). Based on researchers' observations, students' learning attitudes were good because students paid attention to and followed each step with the teacher. This resulted in students not experiencing difficulties when doing assignments. Furthermore, it will explain student learning attitudes towards teacher teaching methods by the attitude components, namely the cognitive, affective, and conative components, as follows:

The cognitive component, related to students' beliefs about the teacher's teaching methods in learning with scores of 92% and 91% for each cognitive statements item with an excellent category. These results indicated that the teaching method used by the teacher was beneficial for students in understanding the material in learning to make fashion patterns digitally. This follows Thahir's findings, where the demonstration method which involves students directly in learning will also impact increasing the student understanding (Thahir et al., 2019).

The affective component related to students' feelings while learning activities for making digital fashion patterns with the teaching method that the teacher uses. The results of the questionnaire on the affective component show with of the total percentage was around 91% and 93% in the excellent category. This indicates that students have a very positive response to the teaching methods used by the teacher and can increase the enthusiasm of students to participate in the learning process.

According to the observations, students were very enthusiastic and fully paying attention to each stage that the teacher explained and was always excited about asking if they found any difficulties in carrying out assignments. Thornberg's research demonstrates that based on the perspectives of students, teachers, and the classroom environment can influence their affective engagement and behavior at school (Thornberg et al., 2022). Other findings also state that students' attitudes and behavior are influenced by the teacher's emotional support and class organization (Blazar & Kraft, 2017).

The conative component is an aspect of student behavior towards the teacher's teaching methods. Based on the research questionnaire, the results obtained on the conative component of the

teacher's teaching method were 94% and 88% in the excellent category. This shows that students can take part in learning to make fashion patterns digitally with the use of the teacher's teaching method. Furthermore, following researchers' observations, students always pay attention to directions from the teacher, and carry out activities related to learning when learning activities in class. According to (Hulan, 2017), he stated that this is a good result because, if the student's learning attitude toward the teacher is good, then students will respond to what the teacher conveys and be friendly to the teacher.

Furthermore, discussing the research results regarding students' learning attitudes towards facilities and infrastructure, it was known that students' learning attitudes towards facilities and infrastructure in making basic skirt patterns digitally have a good category with an overall percentage of 88%. This can be interpreted that students were very enthusiastic about learning due to adequate facilities and infrastructure availability. Furthermore, according to research observations, students can operate computer devices, and Richpeace applications well, even though these applications were new for most of them. Conversely, it was in line with Eastman's research, where the students who have a more positive attitude toward interactive technology were more satisfied with the effects of interactive technology (Eastman et al., 2011).

Furthermore, learning to digitally make fashion patterns for each attitude component, namely the cognitive, affective, and conative components will explain students' learning attitudes towards facilities and infrastructure. A cognitive component is an aspect related to beliefs in a person. In the cognitive component, students' learning attitudes towards facilities and infrastructure were obtained with a total percentage of 91% and 89% for each statement item with a very good category. This shows that students' learning attitudes towards facilities, and infrastructure in the learning process to make fashion patterns digitally can be categorized as excellent attitudes. The facilities and infrastructure provided have a positive influence on students because students can show excellent learning attitudes in learning to make fashion patterns digitally.

The affective component is an aspect with a tendency to feel or be emotional within the individual. The results of the research questionnaire on the affective component obtained 97%, which was a very good category. This shows that students' learning attitudes in the affective part of the facilities and infrastructure provided in learning were very good. Following the research observations, students can sit comfortably, and orderly in the computer laboratory room, then the students also feel happy because the existing computer equipment supports the smooth implementation during the learning activities.

The conative component is related to student behavior towards facilities and infrastructure in learning to make fashion patterns digitally. The results of the questionnaire on students' learning

attitudes towards teaching facilities, and infrastructure obtained a score of 89% in the very good category. This shows that student's attitude towards learning to make fashion patterns digitally in the aspect of behavior was very good. According to the observations of researchers, students can operate computer equipment properly because the computer equipment provided has the Richpeace application installed so that learning can be carried out. This also helps the students get to know the application that will be used easily because the application can be accessed at any time when students are in the school environment. This supports Horzum's opinion that regardless of how sophisticated or powerful the technology is, its practical application depends on whether the user has a positive attitude toward it (Horzum, 2015).

CONCLUSION

Learning attitude is a critical factor that influences learning outcomes. Teachers can bring teaching into their roles only if the teacher understands the attitude of learning, structuring and designing appropriate with the teaching materials, and ways of instruction, and allows students to produce double the results with half the effort in education. The results show that the learning attitudes of students in grade XII Fashion Design at SMKN 1 Wonosari in participating in CAD system pattern-making learning was in a good category, with total percentages of 98% and 2%, and can be categorized as very good. A good student learning attitude means that they positively respond to learning by making basic skirt patterns digitally.

With a good learning attitude, students can receive and understand learning material for making basic skirt patterns digitally. A good student-learning attitude means they feel happy learning the material for making basic skirt patterns digitally. A good learning attitude means that students can complete the assignments given by the teacher. Students learning attitudes in learning to make basic patterns of skirts were based on the attitude components, namely, the cognitive component can be categorized as good, the affective component can be categorized as good, and the conative component was in a good category.

In addition, students' learning attitudes were also viewed from the attitude towards learning material as a good category. Then, the student's learning attitude towards the learning media used with the job sheet was good. Student learning attitudes towards teacher teaching methods were in a good category. Furthermore, students' learning attitudes towards facilities and infrastructure were in a good category. A good learning attitude means that students can learn the material provided. A good student-learning attitude means that students have a good relationship with the teacher, and can accept learning material with the teaching method that the teacher applied. A good learning attitude means students can use the facilities, and infrastructure properly. As an

educator, the teacher must pay attention to individual differences, understand learning styles, and aim to promote good learning attitudes.

REFERENCES

Adenan, R., & A.H., B. (2015). Penerapan Metode Pembelajaran Demonstrasi Pada Kompetensi Menggerinda Pahat Siswa Kelas XI TPM 3 Di SMK Antartika 1 Sidoarjo. *Jurnal Pendidikan Teknik Mesin UNESA*, *3*(02), 49–55.

Afiffah, N. W. (2015). *Manfaat Hasil Belajar Pembuatan Busana Industri Sebagai Kesiapan Melaksanakan Praktek Kerja Industri (Prakerin)*. 1–6.

Azmi, F. F. (2021). *Learning Loss Akibat Pembelajaran Jarak Jauh?* ITS Online. https://www.its.ac.id/news/2021/10/04/learning-loss-akibat-pembelajaran-jarak-jauh/

Azwar, S. (2013). *Sikap Manusia Teori dan Pengukurannya* (D. K K (ed.); 2nd ed.). Pustaka Pelajar.

Blazar, D., & Kraft, M. A. (2017). Teacher and Teaching Effects on Students' Attitudes and Behaviors. *Educational Evaluation and Policy Analysis*, *39*(1), 146–170. https://doi.org/https://doi.org/10.3102/0162373716670260

Bohner, G., & Dickel, N. (2011). *Attitudes and attitude change. May 2014*. https://doi.org/10.1146/annurev.psych.121208.131609

Brink, H., Kilbrink, N., & Gericke, N. (2022). Teach to use CAD or through using CAD : An interview study with technology teachers. *International Journal of Technology and Design Education*, *0123456789*. https://doi.org/10.1007/s10798-022-09770-1

Butar-Butar, F. (2018). Pengaruh Penggunaan Media Pembelajaran Jobsheet Terhadap Hasil Belajar MYOB Siswa Kelas Xii Akuntansi SMK Negeri 1 Medan Tahun Pelajaran 2017/2018. *Jurnal Akuntansi Dan Pembelajaran*, *7*(2), 80.

Carretero, S., Vuorikari, R., & Punie, Y. (2017). *The digital competence framework for citizens: With eight proficiency levels and examples of use.* Publications Office of the European Union. https://doi.org/doi:10.2760/38842 (online),10.2760/836968 (print),10.2760/00963 (ePub)

Chen, K., & Chen, C. (2021). Effects of STEM Inquiry Method on Learning Attitude and Creativity. *Eurasia Journal of Mathematics, Science and Technology Education*, *17*(11), 1–6. https://doi.org/10.29333/EJMSTE/11254

Daniati, N., Nasution, L. Y., & Mashuri, K. (2020). Analisis Sikap Belajar Siswa Pada Mata Pelajaran IPS Terpadu SMP Negeri 01 Bandar. *Jurnal Ilmiah Mahasiswa Prodi Pendidikan IPS*, *1*(1), 11–20. https://doi.org/10.31932/jpe.v3i1.161

Dwi, M., Dan, A., & Sawitri, S. (2020). Pengembangan Media Pembelajaran Elektronik Pola Digital di SMK Negeri 6 Semarang. *Fashion and Fashion Educational Journal*, *9*(1), 19–27. https://journal.unnes.ac.id/sju/index.php/ffe

Eastman, J. K., Iyer, R., & Eastman, K. L. (2011). Business Students' Perceptions, Attitudes, and Satisfaction With Interactive Technology: An Exploratory Study. *Journal of Education for Business*, *86*(1), 36–43. https://doi.org/10.1080/08832321003774756

Edi, S., Suharno, & Widiastuti, I. (2019). Pengembangan Standar Pelaksanaan Praktik Kerja Industri (Prakerin) Siswa SMK Program Keahlian Teknik Pemesinan di Wilayah Surakarta. *Jurnal Ilmiah Pendidikan Teknik Kejuruan*, *101*(2), https://jurnal.uns.ac.id/jptk.

Getie, A. S. (2020). Factors affecting the attitudes of students towards learning English as a foreign language Factors affecting the attitudes of students towards learning English as a foreign language. *Cogent Education*, *7*(1). https://doi.org/10.1080/2331186X.2020.1738184

Habayahan, A. R., Ritonga, M. N., & Siregar, E. Y. (2021). Analisis Sikap Belajar Siswa Selama Pandemi Covid-19 Tingkat SMA di Kecamatan Barus. *JURNAL MathEdu (Mathematic Education Journal)*, *4*(1), 107–114. http://journal.ipts.ac.id/index.php/MathEdu/article/view/2240

Hartanto, S. (2020). Digitalisasi Pola Pakaian Melalui Clo3D. *Jurnal Da Moda*, *1*(2), 22–26. https://doi.org/10.35886/damoda.v1i2.71

Horzum, M. B. (2015). Interaction, Structure, Social Presence, and Satisfaction in Online Learning. *Eurasia Journal of Mathematics, Science & Technology Education*, *11*(3), 505–512. https://doi.org/10.12973/eurasia.2014.1324a

Hulan. (2017). Pengaruh Sikap Belajar Terhadap Hasil Belajar Ekonomi di SMA Kemala Bhayangkari. *Artikel Penelitian*.

Hutria, W., Syah, N., & Inra, A. (2021). *Jobsheet Learning Media Development of Stone and Concrete Working Practice Courses Building Engineering Education Program of Padang State University*. *4*(3), 375–386.

Lu, Q., Shi, V., & Huang, J. (2018). Who benefits from agency model: A strategic analysis of pricing models in distribution channels of physical books and e-books. *European Journal of Operational Research*, *264*(3), 1074–1091. https://doi.org/https://doi.org/10.1016/j.ejor.2017.07.002

Mindarta, E. K., Irdianto, W., Kusuma, F. I., & Nur, A. B. (2018). The Effectiveness of Using E-Jobsheet in Teaching Machine Control System Practice. *Erudio (Journal of Educational Innovation)*, *5*(July), 2014–2018.

Miyauchi, K., Kimura, T., Shimokawa, H., Daida, H., & Iimuro, S. (2018). *Rationale and Design*

of Randomized Evaluation of Aggressive or Moderate Lipid-Lowering Therapy with Pitavastatin in Coronary Artery Disease (REAL-CAD) Trial. 315–320. https://doi.org/10.1536/ihj.17-557

Muslichah, V. M., Atiqoh, & Waluyo, D. A. (2022). Pengembangan Screencast Software Cad Untuk Pembuatan Pola Busana. *JKTP: Jurnal Kajian Teknologi Pendidikan*, *5*(1), 100–110. https://doi.org/10.17977/um038v5i12022p100

Ramadhan, I., Manisah, A., Angraini, D. A., Maulida, D., Sana, S., & Hafiza, N. (2022). Proses Perubahan Pembelajaran Siswa dari Daring ke Luring pada Saat Pandemi Covid-19 di Madrasah Tsanawiyah. *Edukatif : Jurnal Ilmu Pendidikan*, *4*(2), 1783–1792. https://doi.org/10.31004/edukatif.v4i2.2200

Rohiji, M. (2022). Rancangan Pembelajaran Inovatif Abad 21 Pada Materi Desain Interior dan Eskterior dengan Model Pembelajaran Innovative Character Learning 21st Century in The Material of Student Career Independence with Problem-Based Learning Methods (DPbl) In Smk Neger. *Cakrawala Jurnal Pendidikan*, *9300*(17).

Slameto. (2015). *Belajar dan Faktor - Faktor yang Mempengaruhinya*. PT Rineka Cipta.

Su, J.-M., & Lin, T.-W. (2018). Building a Simulated Blockly-Arduino-Based Programming Learning Tool: A Preliminary Study. *2018 7th International Congress on Advanced Applied Informatics (IIAI-AAI)*, 378–381. https://doi.org/10.1109/IIAI-AAI.2018.00082

Sunarti, Salim, I., & Hidayah, R. Al. (2021). Analisis Sikap Siswa Dalam Proses Pembelajaran. *Jurnal Pendidikan Dan Pembelajaran Khatulistiwa*, 1–8.

Syamsuryadin, & Wahyuniati, F. S. C. (2017). Tingkat Pengetahuan Pelatih Bola Voli Tentang Program Latihan Mental Di Kabupaten Sleman Yogyakarta. *Jorpres (Jurnal Olahraga Prestasi)*, *13*, 53–59. https://doi.org/https://doi.org/10.21831/jorpres.v13i1.12884

Thahir, A., Islam, U., Raden, N., Mawarni, A., Islam, U., Raden, N., & Lampung, I. (2019). The Effectiveness of Demonstration Methods Assisting Multiplication Board Tools for Understanding Mathematical Concepts in Bandar Lampung The Effectiveness of Demonstration Methods Assisting Multiplication Board Tools for Understanding Mathematical Concept. *Journal for the Education of Gifted Young Scientists*, *June*. https://doi.org/10.17478/jegys.512260

Thornberg, R., Forsberg, C., Chiriac, E. H., Bjereld, Y., Thornberg, R., & Forsberg, C. (2022). Research Papers in Education Teacher – Student Relationship Quality and Student Engagement : A Sequential Explanatory Mixed-Method Study Teacher – Student Relationship Quality and Student Engagement : A Sequential Explanatory Mixed-Methods Study. *Research Papers in Education*, *37*(6), 840–859. https://doi.org/10.1080/02671522.2020.1864772

Zhang, X., & Yang, C. (2022). *Application of Multipopulation Genetic Algorithm in Industrial Special Clothing Design*. *2022*. https://doi.org/https://doi.org/10.1155/2022/1632063