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# Critical Thinking Implied to Fashion Research Competencies

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Abstract: Critical thinking skills are one of the demands that a learner must have which is expected to have an impact on skills (psychomotor). However, the critical thinking aspect is often an ability that is sometimes difficult for learners to achieve, especially if it is related to psychomotor tasks in learning fashion research during a pandemic. This study was conducted to improve thinking skills that can be used to increase competence in conducting student fashion research in the form of students' abilities in conducting design research to identify clearly and concretely. The stages of the process that must be passed cognitively in learning are the first; information as an initial stage of acquiring knowledge, second; transformation to understand, digest and analyze knowledge to be transformed into a new form, third; evaluation to find out the truth of the transformation results that have been carried out. The method used is Research and Development by adapting the stages of the Four D Model. The ten stages are simplified into 4 stages, Define, Design, Development and Dissemination. Implementation and Evaluation statistical tests, measuring the critical thinking competence of students found an increase in the Gain Score of 16.18%. The psychomotor aspect, the student performance competence in the Fashion Research project assignment has increased by 12.00%. This research conducts on student learning outcomes which apply critical thinking and psychomotor tests in the fashion research class. Critical thinking skills use mind map strategies (spider diagrams) in formulating problems that lead to students' ideas. The research instrument employ various tests implementing the principles of critical thinking and psychomotor learning outcomes. Material of Fashion Research Learning use E-book. The result of this study is an evaluation to measure the critical thinking skills of learners to elaborate problems, discover solutions, and generate ideas leading fashion design concepts.

Keywords: Cognitive skill; Critical thinking; Fashion research; Psychomotor

## Introduction

The ongoing and current COVID-19 pandemic has had an impact on various sectors of life such as economy, social, including education (Kumar et al., 2021). The United Nations Educational, Scientific and Cultural Organization (UNESCO) stated that the corona virus outbreak had an impact on the education sector (Irawan, 2020). In general, the world of education in Indonesia also feels the impact. This is experienced by not only students, but also educational service providers, at all levels, from non-formal educational institutions to tertiary institutions.

The call for learning from home by distance learning by the minister of education is carried out online (Kusumaningrum & Noviyanti, 2023). Despite studying from home, the Minister of Education and Culture emphasized that online/long distance learning is carried out while still providing meaningful learning experiences for students. Meaningful learning is meant by continuing to interact with students even though it is done with distance learning (Yerusalem et al., 2015). Difficulties in doing distance learning are especially felt

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when providing learning experiences related to mastery of student competencies in the psychomotor aspect (Ofoha, 2015). Therefore, in learning, students are asked to be able to respond to their critical thinking skills (Co, 2024; Persky et al., 2019). Cognitive tasks such as analyzing and creating must be accomplished clearly when performing psychomotor tasks (Wechsler et al., 2018).

One of the efforts made to be able to develop knowledge (rote learning) in distance learning by students is by implementing critical thinking strategies to improve students' thinking skills and competence in learning Fashion Research (Anggraeni et al., 2023). Distance learning provides opportunities for students to demonstrate their critical thinking skills, especially in conducting research, data collection, analysis and evaluation and synthesis. Students who use critical thinking as a thinking skill will have increased competence and will generate interest in learning so that the willingness to study independently will also increase (Liu et al., 2014). The use of critical thinking strategies in online distance learning for fashion research learning is important because it considers learning activities related to the research process. It is hoped that critical thinking can be used by students to describe fashion research material, which will display a lot of critical thinking schemes using mind mapping in the idea process. This is done in an effort to strengthen critical thinking to create excellent graduates in the fashion industry.

## Distance Learning

Distance Learning is an organized educational process that bridges the separation between students and educators and is mediated by the use of technology, and minimal face-to-face meetings (Borba et al., 2018; Weidlich & Bastiaens, 2018). Distance education is offered across time and space so that students gain the flexibility to study in different times and places, and use a variety of learning resources (Pannen, 2019). The characteristics of distance learning are the existence of an organization that regulates independent learning, learning material is conveyed through the media, and there is no direct contact between the teacher and the learner. Mackenzie, Christensen, and Rigby said distance education is a learning method that uses correspondence as a tool to communicate between learners and teachers (Langegård et al., 2021). To support Distance learning, a strategy is needed that can improve learning, especially if the subject demands psychomotor competence. Using section and subsection commands to organize your document.

#### Critical Thinking

The term of critical thinking is always placed as the highest position in the learning process, but it has not been fully practiced in a systematic way. Critical thinking is difficult to do, because it demands to think systematically, openly and invites curiosity. To understand critical thinking, it can be started by defining what critical thinking looks like and how to do it. Critical thinking is a directional and clear process that is used in mental activities such as solving problems, making decisions, persuading, analyzing assumptions, and conducting scientific research (Buckley et al., 2015). The ability to think critically is to apply ratios, high thinking activities, which include analyzing, synthesizing, recognizing problems, and solving them, concluding, and evaluating. Indicators of critical thinking used as the focus of research are analyzing arguments; being able to ask; being able to answer questions; solving problems; making conclusions; and skills in evaluating and assessing the results of observations Critical thinking is important and is a very important brain skill (Andrews, 2015). This is because the brain deals with everyday problems. Thinking activities are influenced by culture, environment, knowledge, our views about the world and intuition. The accumulation of all this forms a pattern mindset.

#### Fashion Research, Critical Thinking and Psychomotor

The process fashion design research activity whose final result is a concise design (obtained from documenting sources such as observations from interviews, surveys of people in an environment). The summary is recorded in a portfolio that specifically has objective conceptual goals. This is because the process of working on a design project fashion demands high creativity and challenges in realizing a collection for garment production or a limited one.

Critical thinking activities, encourage students to be able to do fashion design. It begins with fashion research which has a creative design process substance related to the application of skills fashion through several stages, including: inspiration, investigation, identification, conceptual, thinking, interpretation, creativity, experimentation, and innovation. At this stage student are given a case to develop into a problem to find a solution (Sasson et al., 2018). The subject matter given is related to investigative activities, namely conducting research related to ideas, research on trends, and the market (Butler, 2012). Students are directed to conduct research using structured methods such as the research stages, data grouping and analysis. This stage is an important part of the critical thinking stage which can have implications for student skills (psychomotor aspect).

The application of critical thinking to fashion research when carried out using directional and measured stages will provide a good starting point for

the final collection (Almulla & Al-Rahmi, 2023; Ennis, 1993). In principle it will not be the best design, but it will be different if the entire design and project is always preceded by identification of needs accompanied by relevant information. Fashion research supports the creative process and every concept of fashion. Designing a collection is not just researching the latest fashion trends and styles and making it a sketch of fashionable clothing. However, designing is more of an embodiment of broader ideas referring to the context of ideas from all fields of art and design, architecture, music, cultural history, social and political issues, even nature and lifestyle. Overall, this is a reference that can later be used as a useful source for extracting relevant information. In the end, critical thinking can be used as a method of coherent thinking as problem solving and decision making regarding the importance of inspiration for creativity and innovation to create new concepts or design themes for collections.

## Method

Method used in this research is Research and Development by adapting the stages of 4D model. The four stages are, namely Define, Design, Development and Dissemination (Almulla & Al-Rahmi, 2023). Class effectiveness testing is limited to design research classes to see product deficiencies for later revisions for improvement. Statistical analysis is in the form of information data obtained from respondents to see the distribution trend of the data based on population or sample. The following is a description of the stages of implementing the method,

Define, from the needs analysis obtained information from lecturers, students, and industry related to the importance of fashion research materials. From this stage, the relevance of the fashion research concept used in the learning process and its needs in the industry is known. Design, at this stage the fashion research concept plan is planned in the form of a learning approach in the form of critical thinking and its technical implementation using the Problem Base Learning model. Development, is a validation process of the critical thinking aspect which is used as an approach and topic of fashion research material. FGD and Validation are carried out on each instrument, both critical thinking approaches and then continued with validation of fashion research learning materials (Tobón & Luna-Nemecio, 2021). Effectiveness is carried out with small and large scale trials. Dissemination, learning products can be disseminated if the effectiveness shows a positive tendency (Rivas et al., 2022).

## **Results and Discussion**

Starting from the 4D model stage as a research method, the description of the Define stage regarding the analysis of the needs of students, lecturers and industry shows the analysis of needs regarding the urgency of using the concept of creative research in developing fashion collections. In this case, students want clear competence in understanding the design concept related to concept development. For lecturers, at this stage, it requires a unique competence that is absolutely owned by students so that they can be absorbed in the world of work. For industry, based on the needs analysis, it is known that currently the local fashion industry needs human resources who have specific skills in developing design concepts. The following needs analysis data is presented in the histogram of Figure 1.





The results of the pretest in the limited trial class obtained from the total population or sample of students, the average value of the total students has a different range of scores in the pretest results. From the frequency distribution, it shows that students' critical thinking skills are good at the pretest score.



The description of the abilities of each student based on the stages of the tests carried out, such as pretest, mid-test and the following is the average increase in learning outcomes from each of these test results in the Fashion Research.

Table 1. Result of (C	Cognitive)	Critical	Thinking T	[est]
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Value	Average	Gain Score
Pre Test	45.36	14.18
Mid Test	59.55	
Final Test	71.55	12.00

Table 1 shows the pre-test average value on the learning Fashion Research is 45.36. As for the mid test with an average of 59.55 and an average score of 71.55 for the Final Test. The increase in learning is 12.00%.

The results of the extended Effectiveness test (Product Implementation) both in the control and experimental classes with pretest, mid test, posttest data. Assessment of learning outcomes of Fashion research to measure competence is carried out by means of a series of assessments of both portfolio work processes and 2-dimensional prototype engineering. Based on the psychomotor learning outcomes in the table 1, and the histogram display, it can be seen the increase in learning outcomes from the experimental class. The increase in the score of learning outcomes from 16.47 with an average percentage increase of 5.56%.





#### Discussion

Although the Problems of Critical Thinking have been repeatedly discussed as literature used in the learning process (Ranggi et al., 2021; Sururuddin et al., 2024). However, critical thinking remains a question for lecturers regarding its implementation in measuring the critical level of students in understanding learning material, especially contributions to work performance (Lai, 2011; Teng & Yue, 2023). Critical thinking is closely related to a student's decision to do learning tasks. For Instance, it can determine the design concept that has the 'opportunity' to be developed into a spectacular idea. Elaborating by combining certain unusual elements into something that was never thought of or imagined by thinking divergently to find design concepts (Bean & Melzer, 2021; Tiong & Bakar, 2022).

## Conclusions

Critical thinking could be a learning habit for students. Lecturers can prepare learning tasks in a clear and concrete manner related to critical thinking in a more operational manner in the form of assessments that measure reason and logic. During a pandemic Critical thinking is used as a learning strategy, which is implemented in solving learning problems in fashion research so that students can plan and execute problems, then reconstruct arguments related to problems by elaborating, analyzing possible problems similar, assuming/predicting possible challenges and exploring possibilities alternatives to be obtain. Critical thinking contribute the psychomotor aspects of student learning for discovering the character of the concept, detail and a clear orientation for the product being produced. Furthermore, creative thinking is not limited to theory but to be practiced by both lecturers and students together in the classroom in order that there is a dynamic intellectual synergy, not only reflected in psychomotor abilities but also accountable and logical.

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#### **Author Contributions**

Article writing was done by N. T. Data collection and data analysis were done by J. Direction, guidance, review of ideas, concepts, methodology, analysis were done by D. W. N.

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#### **Conflicts of Interest**

The authors declare no conflict of interest.

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