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The Effectiveness of Visual Literacy in Learning to Improve Critical Thinking in Vocational Education (Case study in the Bun Arrangement course)

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Abstract

The purpose of this study is to measure the effectiveness of the use of visual media in improving critical thinking skills in bun arrangement learning in vocational education. The method used in this study is a quasi- experimental method with a one-group pre-test and post-test design. The subjects in this study were beauty management students consisting of 200 students who took the bun arrangement course. The data collection technique in this study used questionnaires. This questionnaire is used to obtain data on students' critical thinking skills in learning bun arrangement. The results showed that there was an effectiveness of visual media in improving critical thinking in learning bun arrangement with an influence of 0.295 < 0.3. Overall the results obtained from 200 respondents of pretest data were the lowest value of 36 and the highest score of 80, an average of 54.58 while on the posttest data the lowest value was 44 and the highest value was 96, an average of 67.96. The results obtained indicate the need to increase the use of visual media in learning bun arrangements. This will improve the quality of skilled labor in Indonesia, especially in hairdressing.

Keywords: *Visual media, Critical thinking, Vocational skill, Beauty course*

Introduction

Critical thinking is a higher-order thinking ability that describes a number of complex cognitive processes and is articulated by Bloom (1956) in his well-known taxonomy, which has a structure of thinking from the easiest to the most difficult, namely: knowledge, understanding, application, analysis, synthesis, evaluation (Snider, 2017). Critical thinking involves several steps namely identifying problems, setting goals, brainstorming solutions, thinking about possible outcomes, trying one of the solutions, and evaluating the results (Innis ,2015, Chuka,2019). Critical thinkingis the mental process of analyzing or evaluating information obtained through observation, experience, communication and reading. This is shown by the ability to critically analyze problems,be able to show changes in detail, find solutions to problems, provide ideas or arguments. Critical thinking skills are important in developing learners' skills in understanding what they are learning,as we know that the purpose of education is to provide meaningful understanding and learning tolearners.

By having the ability to think critically, a person will be able to find appropriate solutionsto all forms of consideration of every existing problem (Bengi Birgili 2015). Critical thinking is alsoa thought process to get an in-depth explanation of the things that arouse one's curiosity about aproblem by using one's thinking potential optimally. The ability to think critically is closely related to the level of intelligence and level of knowledge of learners. This is in line with technological developments, everyone is expected to be able to respond to changes quickly, sorting out the good and bad of changes effectively.

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So it requires the skill of analyzing information, integrating every information to solve problems. Critical thinking skills are part of the demands in 21st century skills that are also needed in the world of work, namely: critical thinking, communication, collaboration and creativity. Therefore, in learning, students must be prepared to face the demands of the times by having applicable skills both verbal and written, teamwork, professionalism at work, critical thinking and responsiveness in solving problems.

A person who thinks critically can be seen from how and what results are obtained when he solves a problem and not only seen from the skills cognitively, for which creative skills are needed. Critical thinking is a critical assessment of the truth of phenomena or facts, while creativity has to do with the ability to interpret phenomena or facts. According to Shubina & Kulakli (2019), critical thinking plays an important role in the field of innovation, when individuals create new product ideas and establish the right strategies that are not only new but also valuable.

Critical skills such as assessment, evaluation of alternatives, selection of information, assessing reliability, etc., are inevitably involved in the creative process. Hence in reality it is impossible to separate critical thinking and creativity. Basically, learning is the process of conveying information or adding new abilities to students, so learning must have a series of activities that make students actively learn and one of the useful means for the development of creativity and critical thinking skills proposed is a problem-based learningenvironment in the classroom supported by the use of visual literacy.

Visual learning can be done by displaying symbols or images to clarify verbal meanings. Visual literacy is based on the sense of sight and in the process of seeing, the human being thinks, learns and tries to interpret what he sees in order to better establish the meaning of the ideas and concepts contained in the images seen. As Güney (2019) reveals, visual literacy is defined as the ability to understand (read) and use (write) images including the ability to think, learn and express oneself in the form of images. Thus, it is hoped that it can make it easier to capture messages delivered in verbal form.

The other side of visual learning is that it can facilitate comprehension and also strengthen memory. Visual allows complex information to be presented in the form of images, information mining as well as the development of cognitive abilities to communicate data and concepts. Teachers/educators have an important function in supporting the improvement of literacy and cognitive skills in students. Because in today's global era, visuals have become an important part of people's lives.

The culture of literacy that has been integrated in learning is expected to be able to improve critical thinking skills so that creative abilities also increase. The creative abilities possessed by students are not only obtained from teachers / educators, but must go through efforts to find and actively interact in the learning process. The way that can be done is by training learners to search, find and analyze problems, make hypotheses, collect data, and determine alternative solutions.

Visual allows complex information to be presented in the form of images, information mining as well as the development of cognitive abilities to communicate data and concepts. Teachers/educators have an important function in supporting the improvement of literacy and cognitive skills in students. Because in today's global era, visuals have become an importantpart of people's lives. The culture of literacy that has been integrated in learning is expected to be able to improve critical thinking skills so that creative abilities also increase. The creative abilities possessed by students are not only obtained from teachers / educators, but must go through

efforts to find and actively interact in the learning process.

The way that can be done is by training learners to search, find and analyze problems, make hypotheses, collect data, and determine alternative solutions. Visual literacy needs to be developed in the learning of bun arrangement so that the learner through the sense of sight, can think, learn, as well as try to interpret what he sees to better establish the meaning of the ideas and concepts contained in the images he sees.

In addition, visual literacy can also be interpreted as a person's ability to use or create an appropriate image in expressing himself. Understanding the images or photos he sees and this critical ability is needed in the world of work, especially in the field of beauty. Through the application of visualliteracy in bun arrangement learning, it is hoped that students can improve their critical thinking skills and creative abilities. The use of visual media in the form of photos or images so thatstudents are active in learning, especially in analyzing, making hypotheses, collecting data and determining the pattern of arrangement, type of arrangement and placement of the right bundecoration for the type of face and opportunity that is manifested in the creativity of the creation of bun attachment. Through this visual literacy strategy, it is also hoped that bun structuring learning will be more active and interactive, making it easier for students to understand what must be identified and analyzed. Based on this background, efforts need tobe made to examine in more depth, namely "how effective is the use of visual literacy in improving critical thinking skills in vocational education, especially in bun management learning?"

Literature Review

The Importance of Social Media

In general literacy is associated with a set of abilities and skills that individuals have in readingand expressing both verbally and visually to solve problems in everyday life. Along with the times, visual literacy can be understood as a person's ability to respond to phenomena relatedto visual aspects. Stokes, Ali Bazs (2020) defines visual literacy as a group of competencies to interpret what individuals find visually in their environment.

Visual literacy is included in the list of skills of the 21st century, namely that a learner must have the ability to interpret, recognize, appreciate and understand the information presented through visible, natural or man-made actions, objects and symbols. How to create meaningful images and the ability toread images became one of the standards of the century.

Lazard, Bock, Mackert (2020) states visual literacy is essentially the ability to interpret (read) and create (write) visual messages. Through visual literacy, the learner will acquire skills and engage in the critical interpretation of images by applying previous knowledge and experience. Visual literacy not only helps a person capture the message conveyed through the surrounding visual objects, but also helps a person to be able to convey a visual message better. Visual literacy is seen as an ability that should be possessed by a person, because in general there is a possibility that a person will be able to interpret or interpret the objects he sees.

Visuals have become a medium in the process of human communication. Visuals as a modality that dominates learning resources need to be further deepened on how they are used in the learning process. Visual is one of the languages that can stimulate various kinds of learning abilities. Asa means of giving or giving concrete reflections on an idea, words cannot represent and voice objects. Visuals are iconic (without the word already indicating its meaning), therefore eachword bears a resemblance to the displayed object.

Visual literacy as an approach in the arrangement of buns is aimed not only at learning, but also for planning and creation. Through visual literacy, it is hoped that it can foster communicative ideas, and new studies to produce the right work and increase creativity. This is in accordance with the opinion of Joanna Kędra & Rasa akevičiūtė (2019) the benefits derived from learning using visual literacy are that it helps in the acquisition of knowledge and helps to understand the material better.

Visual learning helps to develop the creativity of learners and opens up the possibility of learning new things. Photos or images improve memory which is beneficial to the learning process. Visual-based learning helps in expressing thoughts and opinions, often evoking and inspiring. Although learning has been supported by visual media, it does not mean that students can easily understand the meaning, express and implement it in the task of structuring the bun.

Beauty Education in general and Indonesia (Use of Visual Media)

Beauty or cosmetology education is one of the vocational education that allows graduates to work directly. When a person chooses to make a career in cosmetology, he must be responsible for performing services such as skin care, makeup application and hairdressing. If the main focus is to become a hairdresser then as a hairdresser requires more education, dedication, and education. Hairdressing is a career with jobs that provide a variety of hair services, such as shampooing, cutting, dyeing, and styling with advice from female male clients on how to take care of or their hair at home. Hairdressers can perform many tasks in the salon such as coloring specialists, assistant sampho, or hairdressers such as buns for special occasions. This job is as rewarding as any other career, and its time for others to start seeing it as a true profession. (Fernbach: 2016).

Hairdressers are required to have comprehensive information processing capabilities, as hairdressers are also required to know and apply new hair trends and techniques in their work as well as perform appropriate procedures and treatments for the condition of each customer's hair. Hair designers create beauty through hair and need to understand not only information such as customer tastes, personality, and work, but also hair conditions to create suitable hairstyles through accurate hair care procedures and methods. In modern society where changes in social and cultural trends are very fast, appearance as a means of expressing beauty is very easy to obtain through social media, generally in the form of photos or images. Images or photos as a visual message conveyer involve various interests related to society.

Creating beauty through hair requires not only information such as customer wishes, personality, and type of work but also understanding the condition of the hair, to create appropriate hairstyles through correct hair care procedures and methods (Jang &Jin, 2016; Jeon, 2010; Sumin Koo, 2020). According to the Vocational Training Charitable Trust (VTCT) in India, beauty and cosmetology education has become one of the most sought-after job-oriented vocational education these days. The only reason for the popularity of beauty and cosmetology courses in India is that they make it easy to gain jobs in just a few months or even a few weeks. The beauty and healthcare industry has a high income and a person with minimal education in India cannot match the income of a beauty professional with the same level of educational background. Being a skilled beautician, it takes a variety of skills that are not limited to cosmetics. In addition to knowing the hairstyle, cut, coloring, facial, makeup, and massage, it is also necessary to have dynamic social skills and administrative abilities. Mastering all these skills takes time, effort and a good beauty school. In beauty learning in beauty or cosmetology vocational education, participants follow theoretical and practical learning. In-depth knowledge is imparted during theory classes that make learners insightful about their area of expertise.

Meanwhile, in practical classes, students gain direct skills through demonstration activities, tutorials and the use ofvisual media. This is done on beauty learning that focuses on skin and hair beauty. In hair bun styling, it is necessary to understand about the design of the arrangement, hair design is a series of processes of collecting points and lines to create various face shapes byutilizing lines and also creating harmony, balance, proportion and emphasis and radiance ofindividual personalities according to the current style or fashion trend. Hair design as a visual art consists of design elements namely points, lines and shapes. Hair design components include shape, texture, and color (Soon Park 2020).

Shape is an ability that must be possessed by hairdressers because it is a basic element that is directly related to the creativity of the hair design creation process. While shape (proportion) refers to the material visible to the eye consisting of visual elements, namely the plane and volume as the overall visual appearance of the hair design, in other words, the shape in question is a perceptual object in the form of a photo or an image of a bun arrangement in accordancewith the original object. Through visuals, students are expected to understand the components in the arrangement of the bun. Texture has a strong influence on the image in proportion toshape and color (rhythm). Textures are classified in actual touches visible to the eye such ashaircuts, hair waves, bun styling that can express texture (balance) through changes in the direction of the hair and can change textures through harmonious changes. Thus the texturein the bun arrangement is the direction of the hair that is formed according to the visual understanding by the learners.

Thus, one of the objectives of learning visual literacy is to make learners able to combine visualand verbal elements to convey messages more powerfully. Through this visual literacy strategy,it is also hoped that learning to arrange buns will be more active and interactive, so as to improve critical thinking skills that can improve their creative abilities. With visual literacy, students have cognitive abilities in understanding structuring patterns, types of arrangementand placement of accessories and can apply them by realizing according to real conditions,namely implementing bun arrangements for various face shapes.

Cheunga and Jhaverib (2016), based on the results of their research on curriculum developmentin secondary schools in Hong Kong, stated that it is very important that visual literacy is integrated as part of the new curriculum, this is related to contemporary Hong Kong culture which increasingly relies on the visual environment, developing visual literacy to enhance student learning can be an important step in the future towards implementation and more successful development of the High School Curriculum. Visual literacy can be integrated as an important aspect that is more flexible to help students think critically and creatively in a Hong Kong environment. Education systems can provide invaluable opportunities to develop students' critical thinking skills through the planned introduction of visual literacy into the curriculum.

Fine Arts is placed as one of 20 elective courses. Learning fine arts is expected to be able to develop and nurture the aesthetic potential of the younger generation and in the process of teaching and learning fine arts, the cultivation of visual literacy is very important because mostof the information absorbed by a person is actually collected through the sense of sight. Thus, it is an important component of today's education system is developing visual literacy as a life skill which becomes an important step in a more successful future as contemporary culture increasingly relies on visuals. The educational demands of today's form of visual communication will encourage students to be truly literate in the sense of the whole in today's world because to be an effective communicator, a student must be able to interpret, select, and create images to convey various information.

Vocational Education in Indonesia

Vocational education is the implementation of formal education pathways held in universities, such as: polytechnics, diploma programs, or the like. Vocational education is an educational model that carries the advantages of 60% - 70% practice and 30% - 40% theory in the hope that it can be one of the answers in the problem of preparing college graduates with the applied skills needed by the job market. The ultimate goal of developing vocational education is the absorption of vocational education graduates in strategic industries. This is in accordance with Article 15 of Law Number 20 of 2003 concerning the National Education System, it is stated that vocational education is higher education that prepares students to have jobs with certain applied skills that are maximally equivalent to undergraduate programs.

Vocational education is skills education that prepares learners to enter the workforce after completing their studies. Related to this, in the implementation of vocational education, the vocational education curriculum must be prepared in accordance with the reality needed to work, methods in theteaching and learning process are also adapted to conditions such as work, and have expected results in accordance with demands. of the job market. This is a vocational education revitalization program, namely strengthening vocational education with strategies to improve the quality and access to education carried out by the government. It is contained in the Strategic Plan of the Ministry of Education and Culture, namely the alignment of the vocational curriculum with the business world and the industrial world, internship programs, and the development of teaching factories (Director General of Vocational Education 2020).

The vocational education revitalization program specifically aims to improve the implementation of vocational programs / skills in schools, improve the competence of teachers in the field of skills in organizing a quality learning process and improve the competence of students in the field of skills according to their interests and talents (Panggabean,2019). In the revitalization of vocational education, students both SMK / courses / training / vocational universities follow the learning process (learning patterns, curriculum development, provision of facilities and infrastructure, as well as the development of HR competencies (Teachers / Instructors / Lecturers) must follow the needs of the industrial world, then must take competency tests that have been accredited and certified by related industry partners (DUDI), so that because the competence has received a certificate / recognition from its industry partners, students and teachers / instructors / lecturers can do internships and for graduates to work directly accepted in the industry (DUDI).

The government is also evaluating the absorption of vocational education graduates in the industrial world who get a job one year after graduation. Strengtheningcooperation between vocational education and industry (DUDI) is carried out through the strategic plan for 2020-2024 and is derived through the implementation of partnership and alignment programs. Inthe partnership program, there are four targets to be achieved, namely: 1) the use of industry as a training center (TC); 2) the joining of industry players in vocational steering forums; 3) the industrial side with vocational education; and 4) make institutional standard instruments and accreditation based on industry needs (Strategic Plan of the Directorate General of Vocational Education 2020-2024). One of the vocational education is beauty education.

Critical Thinking for Learners

Critical thinking is one of the important abilities to prepare students to become a qualified workforce in accordance with 21st century competencies. Critical thinking is the most important skill in the work environment, therefore critical thinking is a much-needed skill to be taught to students in accordance with the demands of the world of work, especially in

vocational education. These skills, are important not only in the workplace, where problem solving is central, but also in a social life where decision making is also necessary (Dwyer and Walsh 2020). Critical thinking skills are inseparable from the level of intelligence and level of knowledge of learners. Intelligence and knowledge are generated from how much knowledge is gained, while knowledge is obtained from information obtained both orally and in writing. Information obtained through writing can be obtained from reading activities through reading skills which are expected to help students in understanding various concepts easily.

Critical thinking is the process of effectively using thinking skills to explain and solve certain phenomena with a logical thinking foundation. Critical thinking is closely related to critical theories related to everyday life. Critical thinking includes the ability to identify assumptions and key elements of existing relationships and arguments, as well as draw conclusions based on available information, evaluate evidence, and correct yourself. It is seen as a process of self-regulation derived from the development of skills such as interpretation, analysis, evaluationand explanation; and improving technical skills. It can therefore be considered a metacognitive process (Nussbaum et al, 2020).

Critical thinking is defined as intellectuals who are disciplined, active and skilled in conceptualizing, applying, analyzing, synthesizing, and/or evaluating information collected from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action (The National Council for Excellence in Critical Thinking (NCECT) 2017; Chuka 2019). Critical thinking involves several steps, including identifying problems, thinking about goals, brainstorming possible solutions, thinking about possible outcomes, trying out any of the solutions, and evaluatingthe results. Critical thinking skills are also very important for students to be able to solve problems faced in an ever-changing world. The application of critical thinking strategies can also prepare learners for the rigors of university life, as well as help them develop the skills necessary to compete economically in a global environment. According to Shubina & Kulakli (2019), critical thinking can be developed when solving tasks or problems in a particular domain when learners need to apply analytical, selective, evaluative, and rule-based abilities. Creative thinking usually transcends a specific context or domain, being imaginative, generative, spontaneous, inventive and non-evaluative. Critical thinking plays an important role in the field of innovation, as individuals create new product ideas and establish the right strategy that is not only new but also valuable. Skills such as critical assessment, alternative evaluation, information selection, reliability assessment, etc .(Khrema et al,.2022).

Critical thinking skills do not occur randomly or without effort; It takes structured, deliberate, and repetitive exposure and practice for learners to develop insightful thinking. The conception of critical thinking depends on context, interpretation, and science – and has academic freedom to engage in this interpretation. Nonetheless, learners are expected to develop critical thinking as a desirable outcome of higher education, and those expectations lead us to the problem of a formal model of desired learning outcomes (Erikson and Erikson, 2019).

This critical thinking ability must also be grown in students in learning bun arrangements because in its development it requires innovation or creativity so that it requires analyzing, evaluating, interpreting and can improve skills. Through visual literacy in bun structuring learning, it is hoped that students understand conceptually, analyze, evaluate, interpret and can improve their skills based on critical thinking skills. The results of Leggette's (2020) research on visualizing analysis: Using infographics to strengthen critical thinking skills states that critical thinking is a learned skill that requires intentionality as someone navigating the process of creating new knowledge, Leggette designed critical thinking tasks to improve analytical and critical thinking skills student Soares (Costa et al,.2022).

The task is on the concept of journalism with five learning outcomes: "identifying, discussing and analyzing all industry issues and concerns; discuss the importance of consuming news; explain the roleof communication professionals in the agricultural industry; designing a portfolio of work that includes examples of work; and create effective internship application materials". To discuss the components of critical thinking and research.

First, students learn about critical thinking processes, including interpretation, analysis, evaluation, inference, explanation, and self- regulation, and about finding and analyzing credible information. Second, students attend interactive lectures on critical thinking, transdisciplinary problems using critical thinking components. Third, students use the scaffold process to develop ideas and solutions including drawing and discussing their ideas in small groups.

Students discuss and reflect on critical thinking and direct critical thinking processes. For the critical thinking component students read journals, research results and popular press articles discussing at least one strategy Leggett commissioned a problem analysis and randomly placed students into groups. As well as teaching students how to analyze and identify, analyze, and discuss scientific issues, but students complete those tasks outside the classroom using the knowledge they gain in lectures.

In groups outside the classroom, students identify current issues unrelated to classroom practice issues. After the analysis, students present their infographic in front of the class and develop three to five critical thinking questions to begin a discussion about their presentation. students use their critical thinking skills to interpret, analyze, and evaluate information; make conclusions based on facts and evidence to support or refute their issues and creatively design infographics that provide graphics and text related to their issues. Students can use a variety of software to create high-resolution info graphics. The analysis should include interpretation of the problem (categorizing, clarifying and decoding significance); analysis (testing ideas, analyzing arguments, and analyzing assumptions); evaluation (assessing claims, assessing arguments, and assigning values); and inference (finding alternatives, drawing conclusions, and making recommendations.

The results of research O'Halloran, Sabine Tan &; Marissa KL E (2015) Multimodal analysis for critical thinking (Multimodal analysis for critical thinking) about pedagogical approaches to teaching and learning Multimodal analysis is to develop students' analytical and critical thinking skills, to enable them to be informed contributors, confident, responsible and active for the consumption, creation and dissemination of knowledge and information in the present.

In particular, the MACT approach encourages guided and independent group and individual learning, with the aim to develop an understanding of the different types/genres of texts that students may encounter in everyday contexts; systematically identify key features, structures, and ideas in functional texts from printed and nonprint sources; plan, organize, summarize, and synthesize related information; develop a critical understanding and appreciation of how visual, verbal and aural elements work together to create impact and achieve their respective communicative goals.

The MACT approach emerged through the design, development and use of interactive software for multimodal analysis in the Multimodal Analysis Lab at the Institute of Interactive and Digital Media, National University of Singapore. In an age marked by rapid advances in media technology, students need to be taught the skills necessary to utilize media literacy, students need to be able to read, see, understand and think critically about the various meanings and messages generated by (multi)media texts in order to function in this fast- changing and complex world.

The benefits of incorporating a systematic pedagogical approach to student learning in a media-rich environment have also been documented in research involving the use of multimodal analytics software in combination with social media platforms,with a view to developing web-based software applications to annotate, analyze, and interpret text, images, and videos for collaborative learning and problem solving in project work (Markiewicz et al,.2017).

Thepilot study, conducted over several months in early 2013 at the Multimodal Analysis Lab at the National University of Singapore, involved students (ages 9–18) of varying levels and abilities,from three public schools in Singapore. Large multimodal analytical data sets provide a solid empirical basis for gaining insights into how students understand, analyze, interpret, infer, evaluate, explain, and self-organize in the digital age. Such an approach holds great promise for understanding and enhancing students' critical facilities – a facility that is critical in the dynamic, fluid, and fast-changing digital world of the 21st century.

Research Methods

This research is a descriptive statistical quantitative research with an experimental research design with a group of pre-test and post-test designs that use methods or procedures in making observations on a study structured similar to experiments (Privitera & Delzell, 2019).

The experimental method is a research method that tests hypotheses in the form of cause-and- effect relationships through the manipulation of independent variables and tests changes caused by these manipulations. This experimental method is suitable for the research that is being carried out, namely, the effectiveness of visual literacy in improving critical thinking skills in bun arrangement learning in vocational education.

Research Design

The research design used in this study is One-Group Pre-test – Post-test Design, which is an experiment carried out in one group only without a comparison group. Pretest posttest one group design is a study that is carried out twice, namely before the experiment (pretest) and after the experiment (posttest) with one group of subjects (Alnazly, 2018).

In One-Group Pretest-Posttest Design bound variables were measured on a group of research subjects taken from a specific population and pretest and posttest after a treatment was given to measure the development of visual literacy skills in that group. After a treatment is given to the group, the values before and after the treatment are compared. The difference between the pretest andpost-test results shows the results of the treatment or actions that have been given. The advantage of this experiment is that we can compare the values before and after treatment inthe same participants using the same measuring instrument (Fraenkel, Wallen, Hyun, 2012).

Research design is a method used to collect research data so that research results can be proven. It aims to obtain accurate data in accordance with the research objectives to determine the effectiveness of visual literacy in improving critical thinking skills in learning bun arrangements in vocational education.

The following is the design of the one group pretest-posttest design.

O1 X O2
O1 = Pretest value (before treatment)
X = Treatment
O2 = Post-test value (after treatment)

Population and Sample

The population is the overall subject of study. Population is a source of data and information for the benefit of research or a group of subjects, whether humans, values, tests, objects or events. Population is used to name all elements / members of an area that is the target of research or is the entire object of research. The population as well as the sample in this study were all cosmetology students who took the bun arrangement course totaling 200 students divided into 4 study groups or classes

Research Procedure

In One-Group Pretest-Posttest Design, bound variables were measured in groups before (pretest) and after (posttest) treatment of the use of visual literacy in learning bun arrangement. The advantage of this experiment is that we can compare values before and after treatment in the same participants using the same measuring instrument (Fraenkel, J, Wallen, N. E., & Hyun, H. H., 2012).

The subjects of this study were all cosmetology students who took the bun arrangement course totaling 200 students. This activity aims to determine the effectiveness of visual literacy in improving critical thinking skills in bun arrangement learning in vocational education. Each student will be given a pretest and posttest then the results are compared to obtain conclusions about the students' critical thinking skills. Pretest and posttest use the same questions in the form of multiple-choice tests to reveal students' metacognition skills based on indicators of ability for knowledge, understanding, application, analysis, synthesis and evaluating practical results in bun arrangement learning.

The test consists of 30 questions consisting of items that are answered by choosing one of the available alternative answers or filling in the correct answer. The type of objective test used in this study is a type of multiple- choice test with four answer choices, namely: a, b, c, d, with only one correct answer. The research design of this activity is shown in Table 1 as follows:

Table 1 One-Group Pretest-Posttest Research Design

Measurement (*PreTest)*	***Treatment***	**Measurement (posttest)**
Measuring the knowledge of the students related to knowledge, understanding, application, analysis, synthesis and evaluation of practical results. Questions consist of 30 Multiple Choice questions. Each correct answer gives 1 point, false does not deduct points, so the maximum total is 30 points	Learning using visual media during 3 days, 2 hours each	Measuring the knowledge of the students related to knowledge, understanding, application, analysis, synthesis and evaluation of practical results. Questions consist of 30 Multiple Choice questions. Each correct answer gives 1 point, false does not deduct points, so the maximum total is 30 points

This research activity was held for 3 days, each for 2 hours and was attended by 200 students. In accordance with the One-Group Pretest-Posttest research design before the treatment was carried out on students, a pretest was carried out first to find out the initial value of students' knowledge and understanding related to bun arrangement learning. Furthermore, treatment is carried out to students in the form of delivering bun arrangement material using visual literacy in the form of: pictures, photos.

Research Instruments

In accordance with the One-Group Pretest-Posttest research design before the treatment was carried out on students, a pretest was carried out first to find out the initial value of students' knowledge and understanding related to bun arrangement learning. Furthermore, treatment is carried out to students in the form of delivering material using visual literacy in the form of: pictures, photos.

The questions used for pretest and posttest consist of 30 multiple choice questions with 4 choices. Each question has the same weight, which is 1point for the correctanswer and there is no deduction of points if the answer is wrong. Thus, the maximum totalpoints for pretest and posttest is 30. The instruments used in this study are a series of questions or tests that are used to measure the skills, intelligence knowledge, abilities or talents possessedby students. A form of test that can be used is a multiple choice test.

Data Collection Techniques

The data collection technique used in this study is in the form of multiple-choice test questions to reveal the metacognition skills of students based on indicators of ability to knowledge, understanding, application, analysis, synthesis and evaluation of practical results.

An objective test is a test that consists of items that are answered by choosing one of the available alternativeanswers or filling in the correct answer. The type of objective test used in this study is a typeof multiple choice test with four answer choices, namely: a, b, c, d, with only one answer beingthe most correct.

The initial test (pretest) is given before treatment (treatment), pretest is carriedout to find out the abilities possessed by students before using visual media while posttest isgiven after treatment (treatment) to find out the effectiveness of the use of visual literacy in learning bun arrangement.

Data Analysis Techniques

This study uses SPSS to analyze data based on aspects of critical thinking ability that have been determined by the researcher which includes knowledge, understanding, application, analysis, synthesis and evaluation using descriptive statistics, t-test for hypothesis and Gain test to determine the magnitude of influence. The collected data is in the form of pretest values and posttest values which are then compared. Comparing the two values by asking the question whether there is a difference between the value obtained between the pretest value and the Posttest value.

Results and Discussion

1. Results

Descriptive Statistical Data Analysis is statistics used to analyze data by describing or describingdata that has been collected during the research process and is quantitative. The steps in the preparation through this analysis are as follows:

a) Average (Mean)

Descriptive statistical tests are carried out to find out an overview of the condition of research data without intending to draw conclusions from the research results, descriptive statistical tests used include tests to find the lowest value, highest value, average value and standard deviation.

Table 2. Descriptive statistical test

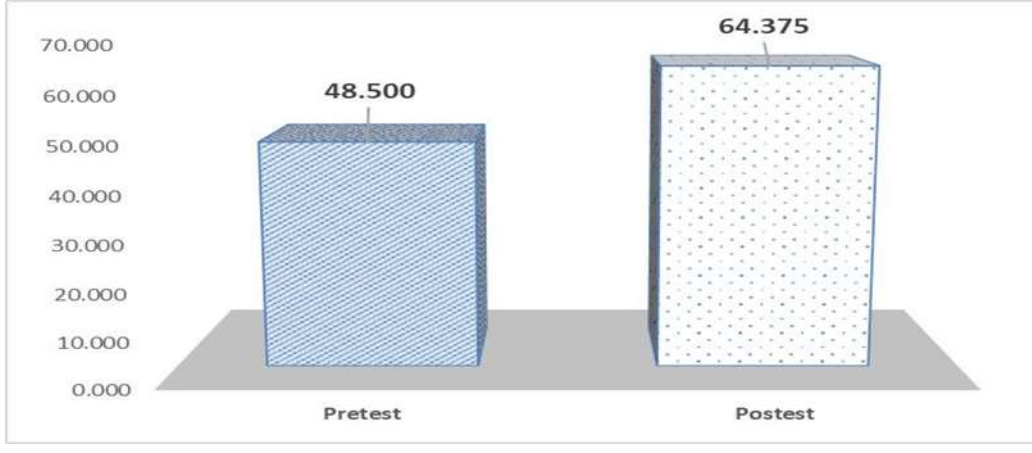
Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Pretest	200	36.00	80.00	54.5800	9.08163
Posttest	200	44.00	96.00	67.9600	10.66240
Valid N (list wise)	200				

Based on the data from the research results, the following findings can be known/obtained:

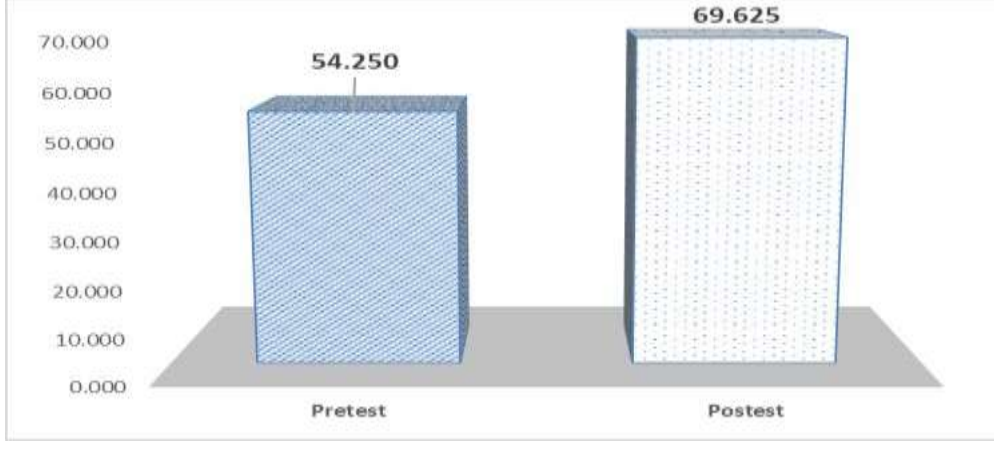
1. In the pretest group data, out of 200 respondents, the lowest score was obtained at 36, the highest value at 80, the average value at 54.58 and the standard deviation at 9.08.

2. In the Posttest group data, from 200 respondents, the lowest score was 44, the highest score was 96, the average value was 67.96, and the standard deviation was 10.66.

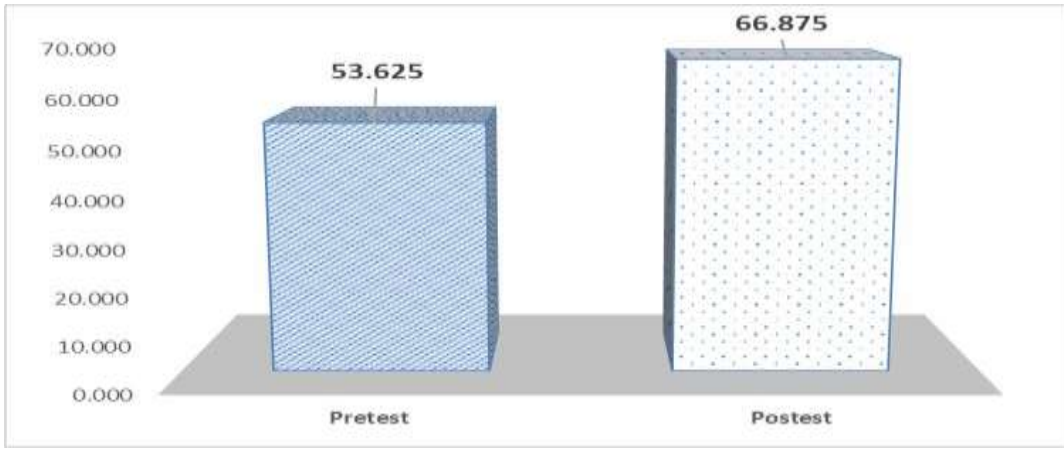
b) Graph of Differences in the Average value of pretest and posttest



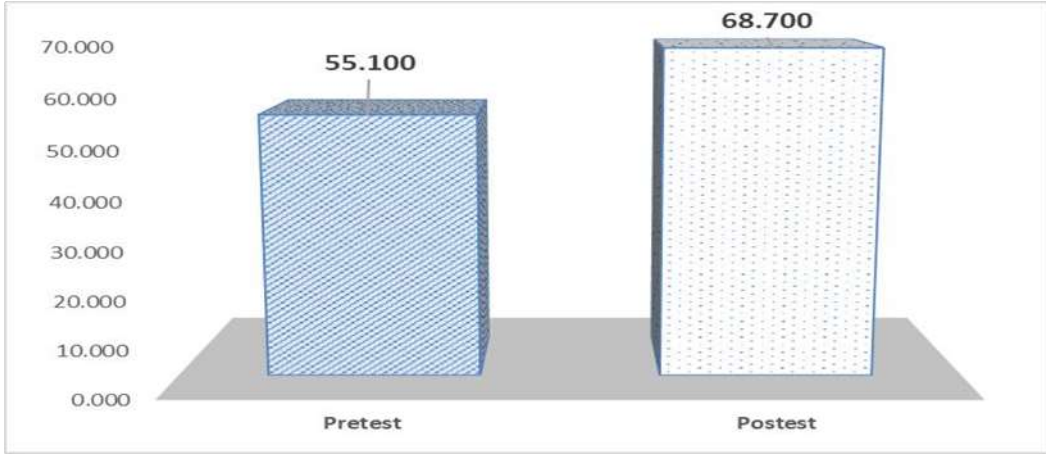
Picture 1. Graph of differences in the average value of the pretest and posttest dimensions of Knowledge



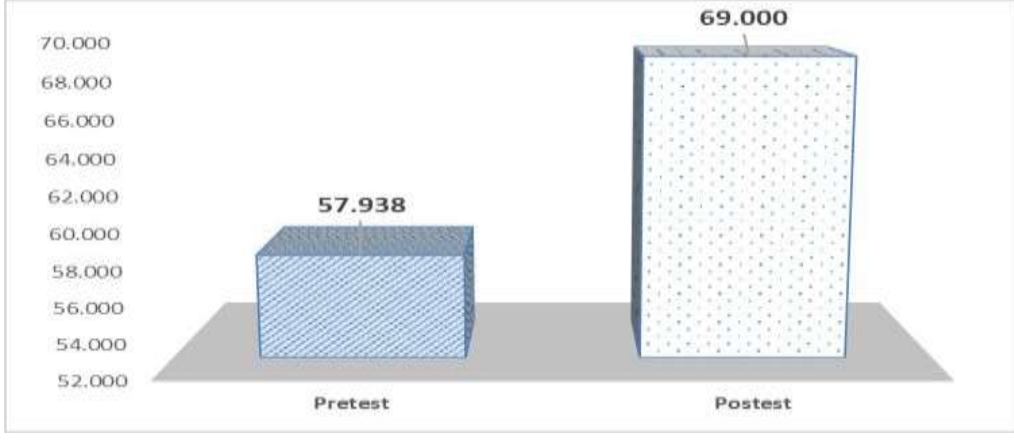
Picture 2. Graph of differences in the average values of the pretest and posttest dimensionsof Understanding



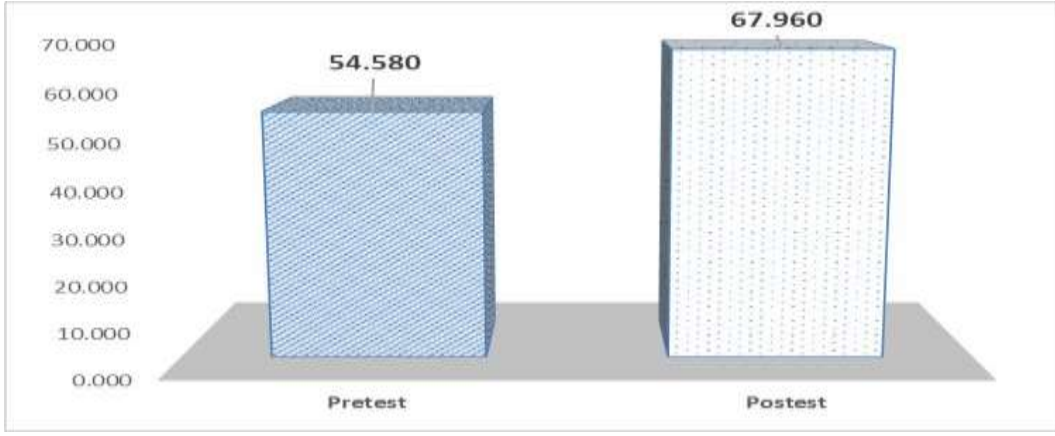
Picture 3. Graph of the difference in the average value of pretest and posttest dimensions of the Application



Picture 4. Graph of differences in the average values of pretest and posttest dimensions Analysis



Picture 5. Graph of the difference in the average value of the pretest and posttest dimensions of synthesis



Picture 6. Graph of differences in the average value of pretest and postest dimensions Evaluation

c) Inferential Statistical Data Analysis, in the use of this inferential statistics researchers using statistical techniques t (t test) for hypothesis testing. To find out whether there is a significant difference and before and after the threat ment is carried out, it is carried out with a paried sample t-test with the rule that if the sig coefficient is < 0.05 then there is a significant difference.

Table 3. Inferential Statistical Data Analysis

Paired Samples Test						
		Paired Differences		t	df	Sig. (2-tailed)
		Mean	Std. Deviation			
Pair 1	Postest - Pretest	13.38000	8.80016	21.502	199	.000

Based on the test results, it can be seen that there are significant differences before and afterthe threat ment is carried out, this finding is proven by the coefficient sig = 0.000 < 0.05.

d) To find out the magnitude of the influence, it is carried out using the n gain test with the following calculation results:

Table 4. results of the N Gain test

$$N-Gain \quad : \quad \frac{Skor\ Postest - Skor\ Pre\ Test}{Skor\ Ideal - Skor\ Pretest}$$

$$\frac{67.96 - 54.58}{100 - 54.58}$$

0.295

Based on the results of the N Gain test, research findings were obtained that the threats carried out had an influence as evidenced by the coefficient N gain = 0.295 < 0.3.

Discussion

The findings of this study show that there is an effectiveness of visual literacy in improving critical thinking in bun arrangements. Visual media in the form of images or photos of hair

styling is expected to improve critical thinking skills including: knowledge, understanding, analysis, synthesis & evaluation of arrangement results so as to improve the ability of students to understand the content of images, give examples to respond to something arrangement problem well. As stated by Shubina & Kulakli (2019), critical thinking plays an important role in the field of innovation, when individuals create new product ideas and establish the right strategies that are not only new but also valuable. Visual media is a medium that shows images or photos of various hair stylings based on patterns, types and types of styling for various occasions and according to the shape of the faceto students. In learning bun arrangement, visual media in the form of images or photos is needed to help students understand the material so that it can be applied in practical learning.In practical classes learners gain hands-on skills through demonstration activities, tutorials and the use of visual media. This is done on beauty learning that focuses on skin and hair beauty.

Visual media makes it easier for students to understand the material given, provides imaginative power and fantasy, and adds insight to various patterns, types and types of arrangements. Visual media for vocational education in the field of beauty management is important because in modern society where changes in social and cultural trends are very fast, making appearance a means to express beauty is very easy to obtain through social media, generally in the form of photos or images (Jang & Jin, 2016; Jeon, 2010; Sumin Koo, 2020). This makes the importanceof visual literacy in students in vocational higher education who have the ultimate goal of developing vocational education is the absorption of vocational education graduates in strategic industries. Based on this, the method used is an experimental method with a pre-experimental design form, One Group Pretest-postest Design. The results of the data obtained, show that the effectiveness of visual media in improving critical thinking in learning bun arrangement has an influence in the low category of 0.295 < 0.3, this can be seen from the results of the gain test obtained from the pretest score and posttest score. There is a possibility because the learning that is currently taking place is carried out online so that the mastery of the dimension of knowledge about bun arrangement has only increased by 15,875 obtained from the results of pretest 48,500 and posttest 64,375, an increase in the dimension of understanding 15,375 obtained from the results of pretest 54,250 and posttest 69,625, an increase in the application dimensions of 13,250 obtained from the results of pretest 53,625 and posttest 66,875, an increase in the analysis dimensions of 13,600 obtained from the results of pretest 55,100 and posttest 68,700, an increase in the synthesis dimension of 11,063 obtained from the results of pretest 57,938 and posttest 69,000 and an increase in the evaluation dimension of practice results obtained from pretest results of 54,580 and posttest 67,960.

Overall the results obtained from 200 respondents of pretest data were the lowest value of 36 and the highest score of 80,an average of 54.58 while on the posttest data the lowest value was 44 and the highest valuewas 96, an average of 67.96. The results obtained show the need for continuous practice, especially using visual media images or photos and supported by discussions, presentations, collaborations and demonstrations between students, students and teachers. This is intended to hone students' ability to master visual literacy because bun structuring learning is a practical lesson. This is also related to the curriculum that vocational education has is an educational model that carries the advantages of 60% - 70% practice and 30% - 40% theory in the hope that it can be one of theanswers in the problem of preparing college graduates with applied skills needed by the jobmarket.

Conclusion

Based on the results of the study, it can be concluded that there is an effectiveness of visual

media in improving critical thinking in learning bun arrangement has an influence of 0.295 < 0.3. Overall the results obtained from 200 respondents of pretest data were the lowest value of 36 and the highest score of 80, an average of 54.58 while on the posttest data the lowest value was 44 and the highest value was 96, an average of 67.96.

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