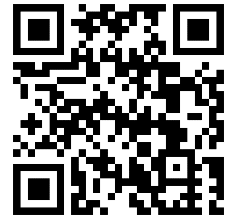


Development of an Online-Based Hamilton Anxiety Rating Scale Anxiety Test Model for Field Work Practice Students at Muhammadiyah Lumajang Vocational High School



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ABSTRACT: The research objectives are: (1) to analyze the implementation of anxiety tests on students who will carry out PKL; (2) developing an online-based Hamilton Anxiety Rating Scale anxiety test model; and (3) analyzing the effectiveness of the online-based Hamilton Anxiety Rating Scale anxiety test at SMK Muhammadiyah Lumajang. This research uses a research and development model, where the development consists of five stages, namely analysis, design, development, implementation and evaluation. The validity test of the research instrument was carried out by experts in their field (expert judgment), namely material experts and media experts. The research reliability test used the Cronbach's Alpha formula. The data analysis technique used the SPSS 22 program. The population was carried out at Muhammadiyah Vocational School Lumajang and the sample of class XII Nursing Assistant students was 95 students. The results of the research show (1) the implementation of anxiety tests at SMK Muhammadiyah Lumajang is currently still conventional, namely using paper questionnaires; The development of the online-based HARS anxiety test model began to be developed with a simple image feature when starting to fill in the questions and at the end of filling in the questions there will be an image that can represent the respondent's feelings, namely the emotion of the image; sad, happy, laughing, disappointed, surprised. Online applications are distributed to students in the form of [http://harstest.smkmulu.sch.id](http://harstest.smkmulu.sch.id;); and (3) the effectiveness of the online-based HARS anxiety test developed at SMK Muhammadiyah Lumajang is very feasible to be implemented based on the assessment of media and material experts with a value range of 80-85%. The application of the HARS anxiety test model can be used for other skill competencies, and can be used by schools in provision (consolidation of material and vocationally appropriate practice) before visits to industry and street vendors.

KEYWORDS: HARS anxiety test model, online, street vendors, vocational schools

I. INTRODUCTION

The aim of vocational education is to prepare students to be ready to enter the world of work, considering the increasingly complex demands of the modern world of work. Vocational education specifically refers to teaching that equips students with a range of knowledge, abilities, and attitudes to enable them to perform specific tasks necessary for their own well-being as well as the progress of the country and workplace (Ngadi, 2014).

Hadi (2021) stated that secondary education focuses on preparing students for careers in certain sectors known as vocational education which emphasizes students' skills, abilities and competencies. The vocational education system emphasizes the formation of skills and mindsets that will contribute to students facing real types of work environments. This also helps students become more able to work in one area according to their competence compared to other areas of competence. A talented and competitive workforce is the result of high-quality vocational education tailored to the needs of the ever-evolving workplace. If students are trained in an atmosphere that is almost identical to the workplace, then vocational education will be effective.

Secondary education also prepares students for careers in enhancing students' transition to more opportunities after school. Malik & Hasanah (2015) argue that education for students provides the benefits of scientific knowledge and the formation of skills whose process efforts can obtain attitudes, knowledge, competencies related to work in any sector or according to their field, so that students have a useful and productive basis.

Field Work Practices (PKL) are intended to provide opportunities for students to internalize and apply character and work culture skills (soft skills) as well as apply, improve and develop mastery of technical competencies (hard skills) in accordance with

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the concentration of their expertise and the needs of the world of work, as well as entrepreneurial independence. This subject is the final alignment or culmination of all subjects. The learning is carried out based on business processes and follows Standard Operating Procedures (POS) that apply in the world of work through the stages of observing, understanding, imitating actions, working with assistance and supervision, working independently, as well as actualization and exploration. Planning, implementation, assessment and evaluation activities must be oriented towards achieving the learning objectives of this subject (Kemendikbudristek, 2023).

The problem felt by SMKs is related to street vendors, namely the management problem of street vendors. Based on the findings of interviews conducted with the PKL coordinator at SMK Muhammadiyah Lumajang, the problem lies in PKL planning. In particular, every time street vendors are to be carried out, the agreement must be submitted to DUDIKA (World of Industrial Business and the World of Work). After that, we have to wait for an answer from DUDIKA regarding the guidelines for implementing PKL activities. In addition, the location where students attend PKL is often far from their homes, requiring them to live close to the PKL. Apart from that, teachers also failed to supervise the operations of street vendors at DUDIKA. There are students who experience problems in implementing PKL, one of which is that students are unable to adapt to the PKL environment, students lack discipline and students always feel tired when carrying out work. As for other problems, students have to do work outside their area of expertise in Mechanical Engineering, there is an uneven distribution of PKL places, so that skill improvement is uneven (skills gap), the material obtained during PKL does not match the students' skills (Pratama & Purnomo, 2019) .

DUDIKA's opinion regarding students not being given jobs according to their skills is because vocational school students are still considered low-level workers or are not yet competent, so the industrial world does not entrust job responsibilities to PKL students (Umma et al., 2017). There are several problems faced by students regarding the implementation of PKL which can have an impact on the effectiveness of PKL. These problems include infrequent visits by supervising teachers to the workplace, lack of supervision of students during PKL, which causes a lack of assessment of their performance and behavior, and the inability of students to choose the desired PKL location. This results in students feeling that their PKL placement does not match their skills, causing difficulties in adapting to the work environment and difficulty adjusting to the work climate (Umma et al., 2017).

The long distance from DUDIKA is also an obstacle for students, causing them to look for accommodation such as boarding houses. If students choose to rent and are looking for a place to eat close by, they will need transportation to the seller's location at a significant cost. and potential travel-related hazards that are not yet fully known. It is not only problems that arise from students that create obstacles to the implementation of PKL, but also from teachers, namely the unpreparedness of teachers to apply the 2013 curriculum in managing PKL is also a problem at SMK Batik 2 Surakarta. Teachers rarely carry out monitoring at internship sites, they fail to provide proper guidance regarding the tasks given in the company, and this is considered to be a result of limited funding from schools and infrequent meetings between supervising teachers and industrial instructors. Some people view internships as mere routine, resulting in a lack of responsibility towards students. Apart from that, obstacles also arise due to the lack of facilities and infrastructure in vocational schools, including inappropriate management of theory and practice space, which causes teachers to be negligent in implementing practices that are commonly carried out in companies (Widiarta & Gozali, 2021).

The problems faced by students when going to PKL, such as what happened at SMKN 4 Pekanbaru, are because of the many challenges and pressures experienced by students when carrying out practical field work, this burden becomes very real. Setiawan (2014) revealed that in the same situation at SMKN 4 Pekanbaru, there was a school that only prepared practical skills without paying attention to the mental and psychological problems of its students and the supervising teacher from the school had never provided services or provision to students in overcoming their anxiety and did not know their rights to receive services before facing street vendors.

Students who have entered class XII begin to need to prepare physically and mentally before they face practical field work activities, this makes students feel anxious because they will face real situations or experiences. According to (Adjarwati et al, 2020) street vendors are things that make students anxious. This anxiety arises because they are hysterical and think the problems they are facing are too important for them to deal with. This anxiety will of course affect a person's attention when facing the business world. The cause of excessive anxiety can be due to sudden conditions and situations at that time, even though the clinical practice skills carried out at the PKL location have been mastered.

Students' anxiety when connected to street vendors is a feeling of discomfort and anxiety about being in a new environment, students are deemed unable to master the skills material as a whole, both the material and the practice provided. Depiani et al. (2014) explains that anxiety is a person's emotional tendency to cause stress and sometimes anxiety comes without reason. Mortensen (2014) stated that anxiety sometimes brings feelings of dissatisfaction with what has been done and creates a tendency

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for high anxiety, so that when it is related to PKL, students who already have competent skills will experience a lack of confidence and feel pessimistic about what they will do. In managing anxiety, students who experience mild anxiety will have the intention and efforts to manage anxiety better. But on the other hand, anxiety can change a person's thinking to be divided between good and bad thoughts, for example, someone who has not tried is afraid of failure and feels pessimistic.

There are two factors that cause anxiety in students, including internal factors that originate from the students themselves. This shows that an individual changes from feeling uncomfortable about something until anxiety rises and starts to make them feel bad thoughts. On the other hand, external factors originate from environments that are new or have never been encountered before, for example, street vendors for internship students. This makes students often feel anxious and feel nervous and have difficulty adapting to situations and conditions in new environments. This external anxiety is almost the same as reality anxiety where the signs can be seen from physical changes; 1) cold sweat; 2) tremors or shaking when providing services and even lack of concentration when given a task load; 3) increased heart rate, associated with feelings of anxiety ranging from mild to panic (Depiani et al., 2014).

Anxiety can happen to anyone and anywhere, including school children. There are many things that make students anxious at school. This anxiety could be triggered by the student's own factors. Usually students experience anxiety related to learning because the curriculum is related to minimum competencies which are targeted for high scores, the learning environment is not conducive, there are many assignments given to students, the assessment system is not well understood by students and teachers in providing guidance are still not clear to students. Likewise, teacher behavior and treatment that is unpleasant, annoying and less professional in dealing with students is also a source of student anxiety. The school prioritizes a disciplinary climate, complete learning support facilities and infrastructure. The above can be fostered with a high self-concept because it brings confidence and motivation, is able to solve the problems faced, and becomes a person who is ready to face challenges (Sumiyati et al., 2017).

Students' courage in facing real experiences has been proven by pre-field work practice tests, however, if they face real experiences of actual field work practices, students begin to feel nervous or anxious, the mental shock they experience is a cause of anxiety that must be anticipated because it can break them. enthusiasm in carrying out practical field work assignments. When dealing with street vendors, students who experience anxiety will have a disturbing impact on the school, so the support given to supervising teachers can overcome this problem. The supervising teacher's role is to direct students in an ongoing, continuous, systematic, planned and directed manner towards certain goals so that students can understand in more detail the implementation of PKL. Having a supervising teacher is a movement that is carried out not just by chance, unexpectedly, at any time, unintentionally or haphazardly, making it a step that brings success to students (Baiti & Munadi, 2014).

Based on the results of research when facing UNBK, the level of.. anxiety tested on 40 respondents of vocational school students for the 2017/2018 school year, it was found that 3 students had very high anxiety, 15 students had high anxiety, 18 students..had moderate anxiety and 4 students had anxiety. low (Apriliana, 2018).

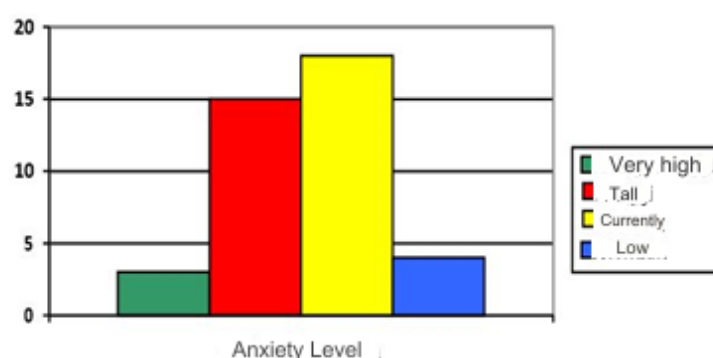


Figure 1. Anxiety level in vocational school students

Source: Apriliana (2018).

The solution for overcoming the problem of student anxiety disorders is to ensure that they can be detected as early as possible. From previous research, there are several methods for dealing with a person's anxiety, including progressive muscle relaxation, which can suppress empathic nerves and suppress feelings of tension (Hidayat, 2017). Anxiety that occurs can have a physical and mental impact on a person, so there is a method for Muslims, namely Murottal therapy, this therapy is carried out by listening to the chanting of the holy verses of the Koran, the anxiety experienced will be reduced (Fitri and Pratama, 2020). There is another method according to health, namely the method of measuring a person's anxiety using the Hamilton Anxiety Rating Scale (HARS), which measures anxiety based on the symptoms felt by the individual (Chrisnawati & Aldino, 2019).

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The method for testing anxiety levels is almost the same as psychological tests, where the version is far behind in terms of content and standardization and many of the test questions from the original version have not been updated, either in terms of content or standardization. Suwartono (2016) believes that another effort that can be made is to create your own test equipment that is adapted to the conditions and needs of the field, in order to provide reliable and valid tests that last a long time. Nasution (2019) stated that in this research a method for testing anxiety levels will be developed using an online application which has the effectiveness of making it easier to use than filling out a questionnaire in the form of a sheet and requiring calculation of the results. Chrisnawati & Aldino (2019) also stated that the selection of the HARS anxiety test using this online application had been previously researched using Android technology, but this anxiety test generally measures the level of anxiety in patients who are still being treated at the hospital.

II. LITERATURE REVIEW

A. General Concept of Anxiety

Anxiety is an ambiguous and pervasive feeling of worry, which originates from a lack of clarity and vulnerability, often associated with uncertainty and feelings of helplessness or weakness as well as changing emotional states (Rianjani et al., 2016). Anxiety is a form of emotional response that does not cause anxiety symptoms and is usually experienced subjectively. Anxiety arises in situations that can cause stress, but the intensity of each individual is different, the level of anxiety is divided into mild, moderate, severe, to panic and if not resolved, it can cause obstacles in doing work (Anggraini, 2018).

Anxiety as a general response to the inability to face problems or feelings of insecurity, anxiety conditions are characterized by subjective feelings in the form of mental anxiety that become more severe. The sensation of weakness can change a person's physical and mental condition from pleasant to unpleasant (Sari, 2020)

Anxiety indicators are almost the same as anxiety symptoms according to Hanifah Muyasarroh in Sari 2020, explaining that anxiety indicators are divided into 4 categories including; a) General anxiety includes symptoms that often appear in daily life, namely symptoms of shaking and shivering, muscle stiffness, dizziness, irritability, decreased appetite, urination disorders, difficulty sleeping, chest pain, stomach ache, fatigue easily. , decreased appetite, and difficulty concentrating on one thing, b) Behavioral anxiety includes anxiety with panic disorders, palpitations, sweating, shivering, fast heartbeat, pale face, fear, and other symptoms, c) Social anxiety, which is characterized by fear or worry about the social environment or interactions with other people, this anxiety can also be caused by childhood trauma or also caused by heredity, because it is carried by old perceptions, afraid to interact with other people, d) Obsessive anxiety, characterized by thoughts bad thoughts that cause restlessness, fear, and worry. This anxiety disorder can cause a person to be mentally disturbed and often perform repetitive actions, for example washing their hands repeatedly when eating because they are afraid of getting sick.

B. HARS Anxiety Test Scale

First developed by Hamilton in 1956, he developed the Hamilton Anxiety Rating Scale (HARS), which was created as an instrument to measure the presence of signs and symptoms of anxiety, both physical and mental. The HARS Test Model consists of 14 groups and question items covering signs and symptoms in children and adults.

Hawari (2008) also stated that according to the HARS anxiety test model there are 14 question items accompanied by specific symptoms including;

1. Feelings, there are feelings anxiety, confused thoughts, worry about yourself and easy emotion.
2. Tension includes muscles tense, not excited, I don't get enough rest, my body feels tired, I often startle, sometimes crying for no reason, shaking And nervous.
3. Fears include fear of the dark, fear of meeting strangers, fear of being left behind alone, afraid of large animals, afraid of crowds passing on the highway and afraid of being in large crowds.
4. Disturbance Sleep can be characterized by difficulty falling asleep, frequent awakening in the middle at night, not sleeping well, waking up tired, often dreaming bad or scary.
5. Disturbance intelligence includes difficulty concentrating, memory loss.
6. Disturbance depression (gloomy) is loss interest in something, reduced enjoyment of hobbies, suddenly feeling sad, often waking up in the middle of the night and feeling changes throughout the day.
7. Somatic or physical (muscle) symptoms are aches and pains in the muscles, stiffness, muscle twitching and voice unstable.
8. Symptom hearing, marked with ear ringing, sight blurry, red face or center, feeling weakness and feeling stabbed.
9. Symptom cardiovascular, including heart rate fast, pounding, painful chest, pulse hardens, feeling lethargic or weak like fainting and heartbeat disappears stop a moment.

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10. Symptom respiratory (breathing), including a feeling of pressure or tightness in the chest, a feeling of suffocation, frequent breathing and short/short breaths.
11. Gastrointestinal symptoms, including difficulty. swallowing, stomach twisting, indigestion, pain before and after eating, feeling burnt in stomach feeling full or bloated, nausea, vomiting, diarrhea and difficulty defecating.
12. Urogenital symptoms include frequent urination, inability to hold urine, no menstruation (no menstruation), excessive menstrual blood, prolonged menstrual period, short menstrual period, menstruation several times a month, premature ejaculation and weak erections.
13. Immune autonomic symptoms..include dry mouth, face red, sweats easily, dizzy, heavy head, headache and hair standing on end.
14. Behavior includes restlessness, restlessness, trembling, dry skin, tense face, muscle cramps, shortness of breath short or fast and red face.

C. Use of Online Applications for HARS Measurements

The Internet is a web that has a collection of millions of PCs. Utilizing the web allows us to obtain data from a PC in a meeting with the hope that the PC owner will provide access approval. To obtain data, a set of conventions is used, specifically a set of decisions that decide how data can be sent or obtained (Saraswati & Putra, 2015).

Saraswati & Putra (2015) state that web applications are data frameworks that promote client collaboration through online interaction points. Web applications mostly include information stability, exchange support, and stable and dynamic organization of web pages which can be viewed as a hybridization (a series of merging processes), between hypermedia and data frameworks. Web applications are client-side parts that can be controlled by an internet browser. The client side has responsibility regarding the implementation of business processes. Web collaboration is divided into three stages including; 1) request; 2) processing; 3) answer. The way a website works is by receiving a request from the client to the server, then the server or computer will process it into a web page, and then send the results; to the client computer.

III. RESEARCH METHODS

A. Method

This study uses the research and development (R&D) method, with the ADDIE model, consisting of five stages: analysis is the input for the system, design, development, implementation is the process, and evaluation is the result (Branch, 2009).

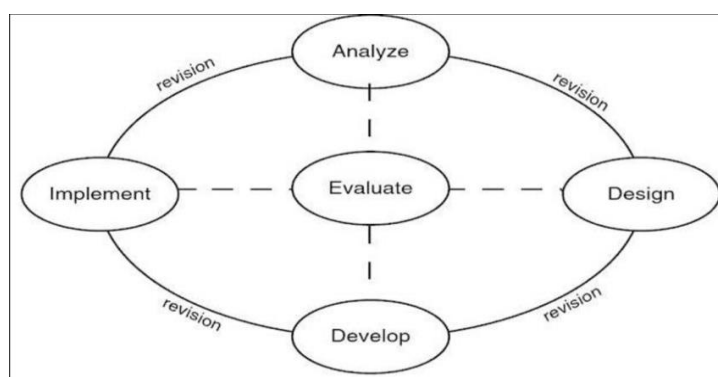


Figure 2. ADDIE Model

Source: Branch (2009)

The focus of this research and development is the development of an online-based Hamilton Anxiety Rating Scale anxiety test model for Field Work Practice (PKL) students at SMK Muhammadiyah Lumajang.

B. Location, Subjects and Research Objects

1. Research sites

The research location is at Lumajang Muhammadiyah Vocational School which is located at Jalan Letkol Slamet Wardoyo no.103 Labruk Lor, Lumajang, East Java.

2. Research subject

The research subjects were class XII students. In terms of competency skills, nursing assistants consisted of 95 students.

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Table 1.List of Number of Class XII Students for Nursing Assistant Skills

Class	The number of students
XII.K1	32
XII.K2	32
XII.K3	31

3. Object of research

The research objects were students of the Lumajang Muhammadiyah Vocational School who were going to practice field work to carry out the HARS anxiety test.

C. Data Collection Instrument

Data collection instruments in this research using quantitative methods. Quantitative methods were used to measure the level of anxiety and the effectiveness of the online application-based anxiety test model. The instrument in this research uses a questionnaire or questionnaire which are given to others to get response according to the user's choice.

Study This uses a Likert scale and is classified into five answer choices. Scale likert used to measure respondents' opinions, so that quantitative data can be used as a benchmark when preparing instruments which generally take the form of questions. The grouping of assessment instruments related to the HARS anxiety test is presented in the following table.

Table 2.HARS Anxiety Test Scoring Scale

No	Variable	Category	Size	Measure Results	Measuring Scale
1	HARS Anxiety Test	Anxiety assessment was carried out using the HARS anxiety test model questionnaire. By category according to HARS: less than 14 = no anxiety a. 14 – 20 = mild anxiety b. 21 – 27 = moderate anxiety c. 28 – 41 = severe anxiety d. 42 – 56 = Very severe anxiety/panic	Scoring	0=no symptoms 1=mild symptoms 2= moderate symptoms 3 = severe symptoms 4= very severe symptoms/panic	Likert

Source:Hamilton (1959)

Table 3.HARS Anxiety Test Model Instrument Grid for PKL students

No	Component	Indicator	Question Score	Form
1	Feelings of Anxiety	Anxious, bad feeling, afraid of one's own thoughts, irritable	4	Questionnaire
2	Tension	Tense, lethargic, unable to rest calmly, easily startled, cry easily, trembling, restless	4	
3	Afraid	Fear of the dark, fear of strangers, fear of being left alone, fear of large animals, fear of traffic, fear of large crowds	4	
4	Sleep Disorders	difficulty sleeping, waking up at night, not sleeping soundly, after waking up feeling lethargic, lots of dreams, nightmares, scary dreams	4	
5	Intelligence Disorders	Difficulty concentrating, poor memory	4	
6	Feelings of Depression	Loss of interest, reduced enjoyment of hobbies, sad, often target up early in the morning, mood swings throughout the day	4	
7	Somatic (Muscle) Symptoms	Muscle aches and pains, stiff muscles, twitching muscles, grinding teeth, unstable voice	4	
8	Somatic (Sensory) Symptoms	Symptoms of tinnitus/ringing in the ears, blurred vision, red or pale face, body weakness, prickling feeling, dizziness	4	

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No	Component	Indicator	Question Score	Form
9	Cardiovascular Symptoms	Tachycardia, palpitations, chest pain, hardened pulse, feeling lethargic/weak as if you are going to faint, heartbeat disappears	4	
10	Respiratory Symptoms	Feeling of pressure or tightness in the chest, feeling of suffocation, frequent breathing, shortness of breath	4	
11	Gastrointestinal Symptoms	Difficulty swallowing, stomach pain, digestive disorders such as obstipation, stomach pain before and after eating, burning feeling in the stomach, feeling full or bloated, nausea, vomiting, loose stools, weight loss, difficulty defecating (constipation)	4	
12	Urogenital Symptoms	Frequent urination, inability to hold urine, amenorrhea, menorrhagia, becoming cold (frigid)	4	
13	Autonomic Symptoms	Dry mouth, red face, sweating easily, dizziness, headaches, skin hairs standing up	4	
14	Behavior at Interviews	Restlessness, restlessness, trembling fingers, frowning, tense face, increased muscle tone, shortness of breath	4	
Total Score			56	

D. Data analysis

The data analysis technique used in this research is quantitative descriptive analysis. This data processing analysis was used to determine the suitability of the material and media for the online-based HARS anxiety test model being developed. This data was obtained from questionnaire data at the research stage from expert/expert validation. The results of the expert validation questionnaire used a Likert scale, the variables measured were translated into indicator variables. The average expert validation percentage of each component is calculated using the formula:

$$P = \frac{\sum x}{N} \times 100\%$$

Information:

P: Acquisitionpercentagevalidator (results are rounded until they reach an integer number)

$\sum x$: The total score for each selected criterion

N: Total ideal score

E. Paired Sample T-test

Paired sample t test is used to determine whether there is a difference in the average of two paired samples and the data is normally distributed. Paired sample t test The test in this research is used to answer the problem formulation "Is there" The effectiveness of the HARS anxiety test based on paper questionnaires and online applications developed at SMK Muhammadiyah Lumajang."To answer the problem formulation, test Paired sample t test was carried out on the results of satisfaction with the effectiveness of using the questionnaire and application.

IV. DISCUSSION

A. Implementation of the anxiety test at Muhammadiyah Vocational School Lumajang

The anxiety test at Lumajang Muhammadiyah Vocational School is carried out before students carry out PKL in the Business World, Industrial World and World of Work (DUDIKA). PKL is a place to apply skills, theory and practice, as well as carry out experiments or experiences in the real world. There are many factors causing the relationship between street vendors and anxiety, including students facing new situations, lack of self-confidence, lack of soft skills, and lack of practical experience that has been previously trained. This causes anxiety to arise in students where students feel fear that is unclear and not supported by the situation, stress due to being confused about facing the real world of work, so it is difficult to concentrate (Rahayuningsih & Dermawan, 2023).

In dealing with student anxiety problems, researchers studied anxiety using the HARS anxiety test model, this model is a measurement of anxiety that is based on the appearance of symptoms in individuals who experience anxiety (Hamilton, 1959). The implementation of the anxiety test at Lumajang Muhammadiyah Vocational School has never been carried out before, and

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only now will it be carried out on class worked on 14 question items and chose several items that he felt matched his feelings. It was found that after the paper-based HARS anxiety test model was implemented, paper questionnaires were collected for manual calculations so that the results could detect the level of anxiety. Then students are asked to fill out a satisfaction or effectiveness sheet using a paper questionnaire which consists of 12 question items. From the monitoring results, the implementation of filling out the paper questionnaire proceeded in an orderly manner, however the researcher needed some time to calculate the scores obtained and determine the anxiety level category as well as the score for the effectiveness of its use.

Rahayu (2021) stated that the anxiety experienced by vocational school students during field work practice will have an impact on their performance and they also tend to withdraw, close themselves off and be awkward in all situations. The results of the anxiety level assessment, if anxiety ranges from low to high anxiety, must be addressed immediately so that students are able to carry out their PKL smoothly and achieve their goals well. One effort that can be done is to detect the level of anxiety using the HARS scale test model.

Other symptoms related to anxiety include increased perception and attention, being alert to be careful, being aware of internal and external stimuli or stimuli, being able to overcome problems and being willing to try to be ready to face complicated situations. Physiological changes are assumed to include anxiety, difficulty sleeping, hypersensitivity to noise, normal vital signs and eye pupils, so that in this case students who have mild anxiety are still able to think positively and with strong will and are able to face meaningful situations through sharing and follow-up, students will be ready to face practical field work at DUDIKA. Meanwhile, students who do not experience anxiety as a result of anxiety are guaranteed to be ready to face street vendors, because without anxiety, students are able to act calm, think positively and can read the situation.

Anxiety in facing the world of work can be caused by cognitive factors, emotional factors and social guidance factors. Cognitive factors are factors related to students' thinking, such as concerns about being unable to face the world of work, thinking badly and not being able to overcome problems in the world of work. Emotional factors are factors related to emotions, such as students being afraid, tense when entering a new situation, as well as social guidance factors such as being less prepared to face the world of work or street vendors and not interacting enough with people they have just met (Egbert, 2019).

B. Development of an online-based HARS anxiety test model for PKL students at SMK Muhammadiyah Lumajang

The HARS anxiety test model is an anxiety measurement based on the appearance of symptoms in individuals who experience anxiety (Chrisnawati & Aldino, 2019). The development of the online-based HARS anxiety test model can provide benefits in providing information quickly, and makes it easy for students to detect anxiety early and can be accessed wherever they are (Syaripudin & Cahyana, 2015). The online-based HARS anxiety test model has the same application content as the paper questionnaire instrument with 14 anxiety items and each item contains an additional description of street vendors. The novelty of this application aims to detect student anxiety in facing street vendors.

The HARS anxiety test model application is equipped with an attractive simple image feature and at the end of the problem solving there is an image that can represent the respondent's feelings such as emotional emoticons such as images of sadness, happiness, laughter, disappointment, surprise. Emoticon comes from the words emotion, aka emotion and icon. It is intended to describe a person's facial expression or posture.

Ansori (2020) explained that along with the development of information technology, both hardware and software in the form of applications, emoticons previously used SMS, now the Android application WhatsApp has emerged for social media, so emotions are symbolized into expressions that are interesting and easy to understand by users.

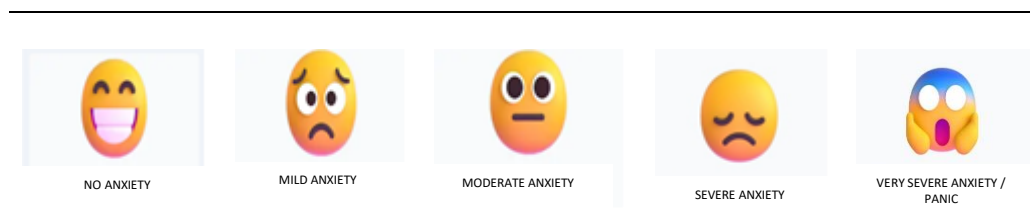


Figure 3. Emotion Feelings

The emoticon description above can be interpreted as; 1) an expression of no anxiety, an emoji that can be interpreted as joy, or depicting a positive mood, atmosphere, cheerfulness, and full of enthusiasm, 2) an expression of mild anxiety, an emoji that shows disinterest or disapproval and is not enthusiastic about something, 3) an expression of moderate anxiety, the emoji looks anxious because of a complicated situation or important event, feels anxious, insecure, and uncomfortable, 4) an expression of

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severe anxiety, the emoji looking down and needing time to think is an expression of melancholy, dissatisfaction, and frustration, 5) an expression of anxiety heavy, the emoji depicts expressions of sadness and regret, very sad and frustrated and gives the impression of disappointment (Ansori, 2020).

The online-based HARS anxiety test model is in the form of a link <http://harstest.smkmlu.sch.id>, which is distributed to students via Android cellphones and has been implemented on June 15 2023, with this online model the use is more flexible, and you can work on the application anytime, anywhere Of course, without having to be bound by a strict schedule, this gives students the opportunity to get to know increasingly advanced technology and students can learn to use various electronic devices such as laptops, tablets and smartphones. Online applications use website media whose contents contain data, image text, sound, information, and others that can be accessed online (Yadnya et al., 2022).

The test results show that during the implementation of the online-based HARS anxiety test, students can immediately know the results of their anxiety level and there are also some students who still have problems not knowing the results of their anxiety level, an error or not found appears written, this can be resolved by students trying to fill in again. the application after the network connection has no trouble.

C. Effectiveness of the online application-based HARS anxiety test developed at SMK Muhammadiyah Lumajang

The effectiveness of the online application-based HARS anxiety test developed at the Lumajang Muhammadiyah Vocational School is based on an assessment of satisfaction questionnaires on the effectiveness of use in the form of paper questionnaires and applications, both of which can be used as a reference in assessing differences in anxiety test models.

Suyuti et al. (2023) stated that technology can be an effective means of enriching learning and providing a more interactive and enjoyable learning experience for students. Noormiyanto (2020) explains that one of the advantages of using online technology is the ability to provide more flexible and personalized learning access and students can access questionnaires or materials anytime and anywhere according to student needs, so that students who are busy outside of school or live in remote areas to still be able to access easily (Affandi et al., 2020)

Ratings from users regarding the effectiveness or satisfaction regarding the online-based HARS anxiety test model are very useful for detecting anxiety in students early, speeding up the results process so that students' anxiety scores and anxiety level categories can be directly known, as well as making it easier to work without having to do it. in just one place because it uses an Android cellphone as support, this is new in the world of education (Purnomo, 2020).

The online application developed can be used not only in nursing assistant competencies but can also be used in other skill competencies. This is because the HARS anxiety test model is made in general and is a medium that is able to make it easy for individuals and groups to detect anxiety with fast results, as well as providing follow-up for schools in providing debriefing (consolidation of material and vocational appropriate practice) to students who will facing street vendors so that students are ready for street vendors.

This online application can be said to be easy and comfortable, depending on the user, therefore it is important to pay attention to things in the process of designing an application that is attractive and easy to use. From the results of satisfaction with using the application, 95 respondents think that the HARS anxiety test model has an attractive appearance, so that the online-based anxiety test application can be categorized as "very good and feasible, does not need to be revised", so it can be concluded that the HARS development model received a positive response which was categorized as good, this has met the provisions, where the assessment results are declared good if > 80% of students (subjects trial) and student responses show figures above 80%, so that the HARS anxiety test model can be tested in the field, the average calculation result is between 94-100%. The overall qualification for the online application is very good and feasible, no need for revision.

The results of the effectiveness of using paper questionnaires and the HARS anxiety test application or user satisfaction were tested using the Paired Sample t Test using the SPSS 22 program (SPSS, 2000).

Table 4. Pretest and Posttest Results for Effectiveness of Using the HARS Anxiety Test in the form of paper questionnaires and applications

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	85.39	95	2,165	,222
	Posttest	98.67	95	1,716	,176

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The data in table 4 is interpreted as a summary of the descriptive statistical results of the two samples analyzed, especially the pretest and posttest results (initial and final results) of the effectiveness of using anxiety tests in the form of paper questionnaires and applications. The average pretest value obtained from the results of the effectiveness of paper questionnaire users, the mean value is 85.39. Meanwhile, the average posttest score was obtained from the results of the effectiveness of application users, the mean value was 98.67. The number of respondents or students used as research samples was 95 students. For Std values. Deviation (standard deviation) on the pretest was 2.165 and posttest was 1.716. Lastly is the Std value. Mean error for the pretest was 0.222 and for the posttest was 0.176.

The calculation of the average results of the effectiveness of using paper questionnaires and applications in the pretest was $85.39 < 98.67$, so this means that descriptively there is a difference in the average effectiveness of using paper questionnaires and applications between the pretest results and the posttest results. Next, to prove whether the difference is really real (significant) or not, we need to interpret the results of the Paired Sample t Test which are below;

Table 5. Correlation Test Output

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pretest & Posttest	95	,295	,004

The results of table 5 above show the consequences of the correlation test or relationship between the two data or the relationship between pretest variables and variable Posttest, so that the results can be seen as a correlation coefficient value of 0.295 with a significance value (Sig.) of 0.004. Based on the calculation of the Sig. $0.295 > \text{probability } 0.05$, so it can be said that there is no relationship between the pretest variables and the posttest variables.

Table 6. Paired Sample t Test Results

Paired Samples Test

		Paired Differences						Q	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Mean Error	95% Confidence Interval of the Difference					
					Lower	Upper				
Pair 1	Pretest Posttest	–	-13,284	2,332	,239	-13,759	-12,809	-55,515	94	,000

Based on Table 6, we can answer whether or not there is an influence on the effectiveness of using the HARS anxiety test in the form of paper and applications, the formulation of research hypotheses and decision making guidelines must be known earlier in the Paired Sample t Test. Based on the formulation of the research hypothesis, it can be concluded that whether there is an average difference between the effectiveness of using the HARS anxiety test can be assumed, namely;

Ho = there is no average difference between the effectiveness or user satisfaction results of the pretest and posttest, which means there is no influence on the effectiveness of using the HARS anxiety test in the form of paper questionnaires and applications for class XII Nursing students at SMK Muhammadiyah Lumajang.

Ha = There is an average difference between the effectiveness or satisfaction results of pretest and posttest users, which means there is an influence on the effectiveness of using the HARS anxiety test in the form of paper questionnaires and applications for class XII Nursing students at SMK Muhammadiyah Lumajang.

Guidelines for making decisions on the Paired Sample T-test based on the significance value (Sig.) of the SPSS output results can be summarized as follows: If Sig. (2-tailed) is less than 0.05, then the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted. On the other hand, if Sig. (2-tailed) is greater than 0.05 then it is better to accept the null hypothesis (Ho) and reject the alternative hypothesis (Ha)

Based on the Paired Sample T Test output table, the Sig value is produced. (2-tailed) is $0.000 < 0.05$, where the Ho data interpretation is rejected and Ha is accepted. It can be concluded that there is an average difference between the effectiveness of using the HARS anxiety test in the form of a paper questionnaire and an application for class XII Nursing students at SMK Muhammadiyah Lumajang.

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The above also provides information about the value of "Mean Paired Differences" with a value of -13.284. This shows the difference between the average effectiveness of using the HARS anxiety test in the form of a paper questionnaire or pretest and the average effectiveness of using the HARS anxiety test in the form of an application or posttest, with results of $85.39 - 98.67 = -13.284$. From the results of these differences, there are also differences between -13,759 to -12,809 (95% Confidence Interval of the Difference Lower and Upper). The results above show an idea of how accurate the estimation of population parameter values is. Confidence Interval or confidence interval is a statistical method used to estimate or estimate population parameter values by taking random samples from the existing population. The level of confidence is expressed in percentage form 90%, 95% or 99%, then the higher the level of trust, the wider it is confidence interval Resulting from And getting bigger Probability of an interval containing a value Actual population parameters.

D. Research Limitations

StudyThis has limitations that can affect research results, including; This research is limited to measuring the effectiveness of the online application-based HARS anxiety test model instrument on PKL students, it does not specifically measure the media that will be displayed in detail and very interestingly. This study only used respondents from nursing assistant skill competency students to carry out the online-based HARS anxiety test, so it cannot measure the effectiveness of the HARS Anxiety Test application on other skill competencies. In the HARS anxiety test model instrument, each question item is related to the symptoms felt by students related to anxiety so that students can know the category of anxiety level, however there are still some students who still do not understand the terms in the HARS anxiety test and there are students' cellphones that lack support. so it's difficult to open the application. Therefore, for the next HARS anxiety test model, it still needs development and updating according to validation suggestions from material and media experts. Media experts provide suggestions regarding the HARS anxiety test application that cannot be implemented, namely improvements to features developed in the application such as the need for additional music in the HARS anxiety test application, a special page that reviews important terms in the HARS test and suggestions appear after knowing the score results. and anxiety levels. The results of the HARS anxiety test using a questionnaire can be known. The results require a lot of time because you need to calculate manually and for the HARS anxiety test using the online application, the results can be immediately known by students. So that student concerns are immediately recorded and addressed.

V. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusion

From the results of the presentation described previously, the author can conclude regarding this research, including: Implementation of the anxiety test At Muhammadiyah Vocational School, Lumajang, it is currently carried out in conventional form in the form of a paper questionnaire consisting of 14 items on the HARS anxiety test model with additions related to the description of PKL, and this test is carried out in class XII Nursing with a total of 95 students who will face PKL, the test results must be completed. collected because the results are not immediately known so it takes manual calculation time to be able to find out the results of the anxiety level.

The development of an online-based HARS anxiety test model for PKL students at SMK Muhammadiyah Lumajang has simple image features and has images that can represent respondents' feelings such as emotions, feelings such as images of sadness, happiness, laughter, disappointment, surprise. The online application distributed to students is in the form of <http://harstest.smkmulu.sch.id>, Resultstesting shows that during the implementation of the online-based HARS anxiety test on students, the results of their anxiety levels can be immediately known.

Effectiveness of the online application-based HARS anxiety test developed at SMK Muhammadiyah Lumajang. The online application for the HARS anxiety test is effective and can be useful for students in implementing PKL and can be developed not only in nursing assistant competencies but can also be used in other skill competencies. This is because the HARS anxiety test model is made generally and is a medium that is capable of providing it makes it easier for individuals and groups to detect anxiety with fast results, as well as providing follow-up for schools in providing provision (consolidation of material and vocational practice) so that students are ready for PKL. Once done difference test in the same group, it is stated that the significance value (2-tailed) is $p < 0.05$. The different test shows that there is a significant difference regarding the effectiveness of using paper questionnaires with the HARS Anxiety Test application.

B. Implications

Theoretical Implications. The online-based HARS anxiety test model which is applied to students who will face PKL can have an effect in detecting more quickly the level of anxiety ranging from no anxiety, mild anxiety, moderate anxiety, severe anxiety to

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panic. This is a development that can provide school follow-up to add sustainable programs to handle student problems, so that they can be ready to implement PKL.

Practical Implications. The results of the research are online-based HARS anxiety test products, which can be used by other vocational students to overcome their worries and become a product development that is very interesting, effective and easy to use, although the HARS anxiety test application for PKL students still has some things that need to be updated in terms of media, such as the terms used, there needs to be music in the application, as well as the best advice if you experience anxiety.

C. Suggestion

Based on the research results and conclusions previously explained, the researcher provides several suggestions, including the following: For students, students can use the HARS Anxiety Test application to detect early anxiety when facing street vendors and after the results of their anxiety level are known, students need to prepare yourself to face new situations and real HUDIKA.

For teachers, teachers are advised to use the HARS anxiety test application to support the preparation needs of PKL students. Teachers need to provide PKL debriefing after the HARS anxiety test so that students are ready for PKL, and teachers are advised to provide support, encourage and influence students not to worry. And ready to face street vendors.

For schools, schools are expected to be able to develop existing anxiety test applications, to be used for wider targets or other skill competencies. Using the HARS Anxiety Test Application can help schools to support development to be programmed as PKL readiness.

For further research, the researcher hopes that future researchers will develop a HARS anxiety test application that is more detailed and can measure student anxiety and has interesting features. The researcher hopes that future researchers will optimize the development of the HARS anxiety test model by providing guidance and counseling services in schools to prevent and overcome student anxiety.

REFERENCES

- 1) Adjarwati, C. A., Mayangsari, M. D., & Ekaputri, F. K. (2020). Hubungan antara efikasi diri dengan kecemasan menghadapi dunia kerja pada siswa SMKN 1 Gambut. *Jurnal Kognisia*, 3(1), 94-100.
- 2) Affandi, M. R., Widyawati, M., & Bhakti, Y. B. (2020). Analisis efektivitas media pembelajaran e-learning dalam meningkatkan hasil belajar siswa sma pada pelajaran fisika. *Jurnal Pendidikan Fisika*, 8(2), 150-157.
- 3) Ansori, A. (2020). Kepribadian dan emosi. *Jurnal literasi pendidikan nusantara*, 1(1), 41-54.
- 4) Apriliana, I. P. A. (2018). Tingkat kecemasan siswa SMK menghadapi ujian nasional berbasis komputer tahun 2018. *Counsellia: Jurnal Bimbingan dan Konseling*, 8(1), 37-44.
- 5) Baiti, A. A., & Munadi, S. (2014). Pengaruh pengalaman praktik, prestasi belajar dasar kejuruan dan dukungan orang tua terhadap kesiapan kerja siswa SMK. *Jurnal Pendidikan Vokasi*, 4(2), 164-180. doi:https://doi.org/10.21831/jpv.v4i2.2543
- 6) Branch, R. M. (2009). *Instructional design: The ADDIE approach* (Vol. 722): Springer Science & Business Media.
- 7) Chrisnawati, G., & Aldino, T. (2019). Aplikasi pengukuran tingkat kecemasan berdasarkan skala hars berbasis android. *Jurnal teknik komputer*, 5(2), 277-282.
- 8) Depiani, K. M., Suarni, N. K., & Putri, D. A. W. M. (2014). Efektivitas konseling behavior dengan teknik desensitisasi sistematis dan modeling untuk meminimalisasi kecemasan dalam menghadapi prakerin siswa kelas XI tata boga di SMK Negeri 2 Singaraja tahun Pelajaran 2013/2014 *Jurnal Ilmiah Bimbingan Konseling Undiksha*, 2(1), 34-38.
- 9) Egbert, N., & Wright, K. B. . (2019). Social support and health in the digital age. Lanham. 70-97.
- 10) Fitri, A., & Pratama, M. (2020). Pengaruh mendengarkan murottal Al-Quran terhadap kecemasan public speaking pada mahasiswa jurusan psikologi Universitas Negeri Padang. *Jurnal Riset Psikologi*, 2020(3), 1-12.
- 11) Hadi, B. (2021). Fenomena learning loss pada pendidikan sekolah menengah kejuruan di Indonesia: learning loss. *Edudikara: Jurnal Pendidikan Dan Pembelajaran*, 6(4), 290-296.
- 12) Hamilton, M. (1959). The assessment of anxiety states by rating. *British journal of medical psychology*, 32, 50-55.
- 13) Hamilton, M. (1959). Hamilton anxiety scale. *Group*, 1(4), 10-1037.
- 14) Hawari, D. (2008). *Manajemen stres cemas dan depresi*. Jakarta: Universitas Indonesia.
- 15) Hidayat, E. (2017). Pengaruh terapi relaksasi progresif terhadap penurunan tingkat kecemasan dalam menghadapi uji kompetensi mahasiswa tingkat III Akper Muhammadiyah Cirebon. *Jurnal Keperawatan Soedirman*, 12(2), 93-101.
- 16) Kemendikbudristek. (2023). *Panduan praktik kerja lapangan sebagai mata pelajaran dalam implementasi kurikulum merdeka* (Revisi ed.). Jakarta: Direktorat Jenderal Pendidikan Vokasi Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi.

Development of an Online-Based Hamilton Anxiety Rating Scale Anxiety Test Model for Field Work Practice Students at Muhammadiyah Lumajang Vocational High School

- 17) Malik, M. N., & Hasanah, H. (2015). Evaluasi praktik kerja industri sekolah menengah kejuruan. *Jurnal Penelitian Pendidikan INSANI*, 18(2), 82-91.
- 18) Mortensen, R. (2014). Anxiety, work, and coping. *The Psychologist-Manager Journal*, 17(3), 178-181.
- 19) Nasution, Y. R. (2019). Penerapan aplikasi online angket persepsi mahasiswa terhadap kinerja dosen Uin Sumatera Utara Medan. *JISTech (Journal of Islamic Science and Technology)*, 3(2), 20-35.
- 20) Ngadi. (2014). Relevansi pendidikan kejuruan terhadap pasar kerja di Kota Salatiga. *Jurnal Kependudukan Indonesia*, 9(1), 59-70.
- 21) Noormiyanto, F. (2020). Efektifitas penggunaan perangkat multimedia terhadap peningkatan prestasi belajar peserta didik berkesulitan belajar. *Elementary School: Jurnal Pendidikan Dan Pembelajaran Ke-SD-An*, 7(2).
- 22) Pratama, E. A., & Purnomo, E. (2019). Evaluasi program praktik kerja lapangan tahun ajaran 2017/2018 bidang keahlian teknik pemesinan SMKN 1 Nanggulan. *Jurnal Pendidikan Vokasional Teknik Mesin*, 7(4), 261-266.
- 23) Purnomo, E. P. (2020). Laman web sebagai HWO (Home Work Online) dalam E-Learning. *Jurnal Dimensi Pendidikan dan Pembelajaran*, 8(2), 81-90.
- 24) Rahayu, D. S. (2021). Penerapan teknik desensitisasi sistematis untuk mereduksi kecemasan siswa menghadapi praktik kerja lapangan *Academic Journal of Psychology and Counseling*, 2(2), 213-236.
- 25) Rahayuningsih, T., & Dermawan, D. (2023). Gambaran psikologis kecemasan mahasiswa dalam pelaksanaan praktik klinik keperawatan masa pandemi covid-19 di RSUD Karanganyar. *Jurnal Kesehatan Karya Husada*, 11(2, Juni), 101-111.
- 26) Saraswati, N. W. S., & Putra, D. M. D. U. (2015). Sistem ujian online berbasis website. *S@ CIES*, 6(1), 21-29.
- 27) Sari, I. (2020). Analisis dampak pandemi COVID-19 terhadap kecemasan masyarakat: Literature review. *Bina Generasi: Jurnal Kesehatan*, 12(1), 69-76.
- 28) Setiawan, A., Qomariah, N., & Hermawan, H. (2019). Pengaruh kualitas pelayanan terhadap kepuasan konsumen. *Jurnal Sains Manajemen dan Bisnis Indonesia*, 9(2), 114-126.
- 29) Setiawan, D. (2014). *Peran guru pembimbing mengatasi kecemasan siswa menghadapi praktik kerja lapangan (studi kasus di kelas XI Desain Produksi Kria Kayu (DPKK) Sekolah Menengah Kejuruan Negeri 4 Pekanbaru)* Universitas Islam Negeri Sultan Syarif Kasim Riau.
- 30) Sumiyati, T., Amri, B., & Sukayasa, S. (2017). Pengaruh perhatian orang tua, konsep diri dan motivasi belajar terhadap hasil belajar siswa tentang matematika kelas Viii SMP Negeri di kecamatan Sausu Kabupaten Parigi Moutong. *Mitra Sains*, 5(2), 84-94.
- 31) Suwartono, C. (2016). Alat tes psikologi konteks indonesia: Tantangan psikologi di era MEA. *Jurnal Psikologi Ulayat*, 3(1), 1-6.
- 32) Suyuti, S., Wahyuningrum, P. M. E., Jamil, M. A., Nawawi, M. L., Aditia, D., & Rusmayani, N. G. A. L. (2023). Analisis efektivitas penggunaan teknologi dalam pendidikan terhadap peningkatan hasil belajar. *Journal on Education*, 6(1), 1-11.
- 33) Syaripudin, G. A., & Cahyana, R. (2015). Pengembangan aplikasi web untuk pengajuan cuti pegawai secara online. *Jurnal Algoritma*, 12(2), 526-533.
- 34) Umma, Z. K., Suswanto, H., & Nyoto, A. (2017). Kontribusi pengalaman belajar dan sikap vokasi terhadap prestasi PKL siswa kompetensi keahlian multimedia. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, 2(11), 1543-1549.
- 35) Yadnya, I. N. S. D., Putri, D. A. W. M., & Suranata, K. (2022). Pengembangan media website konseling cognitive behavioral untuk mengatasi kecemasan belajar siswa. *Jurnal Bimbingan dan Konseling Indonesia*, 7(3), 381-388.
- 36) Yoto, Y. (2015). Meningkatkan mutu pendidikan kejuruan melalui program SMK Unggulan *Jurnal Pendidikan Profesional*, 2(1), 47-50



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