



Design of Resilience Test Website Development Through Arcs Motivation Design Model Approach to Assess the Mental Health of Students at SMA Negeri 1 Sape



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Abstract

This study is a literature review about the exposure of resilience test website development design through the ARCS Motivation Design model approach to assess the mental health of SMA Negeri 1 Sape students. The aim of this study is to provide an overview of how to design a resilience test website through the ARCS Motivation Design model approach to assess students' mental health. The design of the resilience test website development through the arcs motivation design model approach so that the material presented was more easily accepted by students. Therefore, more in-depth information is needed to describe how students have difficulty solving problems in learning activities in terms of student resilience. ARCS Motivation Model is a motivational model that emphasizes the motivational aspects consisting of attention, relevance, confidence, satisfaction. In the learning and learning process, the four motivational conditions of students must be maintained during the learning and learning process. Through the resilience test with the ARCS motivation model approach, it is expected that the success of individuals in adapting to unpleasant/bad conditions in overcoming, going through, and returning to their original conditions to maintain psychological stability in the face of stress, especially in the era of online learning.

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1 Introduction

The World Health Organization (WHO) revealed that the COVID-19 pandemic will also be followed by mental health problems, one of which is that returning to school may reflect unbearable mental fatigue. UNESCO noted that until the end of May 2020, 1.19 billion children worldwide were affected by school closures due to the COVID-19 pandemic (UNESCO, 2020). This number is 67.7% of the world's student population. In Indonesia, the impact of the pandemic can be seen in the results of a survey conducted by the Ministry of Education and Culture which shows that 97.6% of schools have been carrying out learning activities at home since mid-March (Kemendikbud, 2020b) which it affects in the closure of educational institutions, one of the steps to prevent the spread of Covid-19. Besides, the results of a survey conducted by KPAI, for example; distance learning during school closures has led to 'failure of the learning process'. This is partly due to the limitations of tools/devices, internet networks and applications/learning media, readiness of teachers and students, inadequate teacher-student interactions related to learning materials, and also various assignments that do not consider the condition of students (Molae & Dortaj, 2015).

Dealing with a survey conducted by U-report PEKA (mental health care) asserted that the results of the volume 1 trail between UNICEF Indonesia and CIMS Indonesia on 13-16 August 2020, which involved 638 respondents in 32 provinces, stated that 38% of children aged 15-19 years were depressed. by parents; 14% pressured by teachers; 13% pressured by friends; and 5% depressed by relatives. Meanwhile, in the PEKA 2 U-report, held from August 28 to September 4 involving 535 respondents in 30 provinces, 38% of students were afraid of being left behind in understanding the lesson; 36% was fear the uncertainty of future study results; and 10% had difficulty managing a study schedule.

Besides, Timmers et al. (2019), demonstrated an association between parental inflexibility and adolescent reported stresses, such as pain and functional disability. Mental health in students ensures the continuity of learning activities and provides direction, so that learning objectives can be achieved.

Globally, regarding the mental health challenges faced by adolescents, experts recommend that a population health approach including the promotion of mental health. Recently, it may be limited to effectively promote and protect youth mental health locally and globally (Jenkins et al., 2018). It focuses on mental health in school-aged adolescents highlighting the difficulties in developing effective school-based prevention programs for mental health problems in adolescents. Evaluating the effectiveness of schools targeting resilience protection factors in reducing mental health problems in adolescents and carrying out implementations that focus on strengthening student resilience (Dray et al., 2017).

Factors related to students' mental health are a separate concern that must be addressed by both teachers and parents. Especially the attitude of behavior in responding to and facing challenges and difficulties. In the world of psychology a process, capacity, or result of successful adaptation despite challenging or threatening circumstances is called resilience.

The concept of resilience in the COVID-19 pandemic provides the best opportunity to reopen long discussions about resilience. There is no standard definition of resilience, Janet Ledesma (Andrews University, Michigan) defines resilience as 'the ability to bounce back from adversity, frustration and adversity...' Ann S Masten (University of Minnesota) defines it as 'the capacity of a dynamic system to adapt well' (in Catherine Moore, 2020). Continuing from the situation which experienced by students, and the possibility of school stress with a very high risk. The stress level of students will affect psychology in the form of mental health and academic achievement of students themselves, as an educator should pay attention to the other side of the psychological condition of students, namely the extent to which resilience is carried out by students (Snyder, 2019; Kitchenham et al., 2009).

Resilience in education quoted from Media Indonesia stated that in the study of education there are two interrelated things, namely academic resilience and educational resilience. Educational resilience is related to three things, one of which is socio-emotional ability and student involvement in learning related to positive academic attitudes, learning motivation and achievement, feeling comfortable or happy in class/learning process, social and communication skills used to build relationships effectively with peers and seniors (Media Indonesia, 2019).

Keller (2010), in his book argues that motivational design is a process of organizing resources and procedures to bring about change in motivating people. During the COVID-19 pandemic, it can be asserted that the overall driving force in students is motivation, so that there is resilience in students which ensures the continuity of learning activities and provides direction to learning activities, so that the desired goals can be achieved. The ARCS model has been applied in various educational settings, such as K-12 education, higher education, and technical schools, in various fields of study and in many countries by incorporating strategies from the four factors namely affective, cognitive, behavioral and psychological.

Research on the use of the ARCS model has occurred in a variety of settings and contexts (e.g., email or message courses, face-to-face instruction, instructional texts, course video lectures, entire courses, types of software, or educational games) (Keller, 2016). The ARCS model contains an instructional design process to help guide teachers how to take into account motivation when designing learning. Ease of use and changes in student motivation and attitudes towards subjects are the advantages of this model so that it can be used in elective subjects (Daugherty, 2019). This learning model that helps, it can increase student motivation during the COVID-19 pandemic is the appropriate way for learning activities that are carried out indirectly or online at this time. Students with highly resilient can see the negative effects of distance learning through a more positive lens. They can think of alternatives and ways out of the discomfort that they are facing (Leichenko, 2011; Souri & Hasanirad, 2011).

Teenagers with high resilience will change from anxiety caused by uncertain things. They prefer to focus on positive activities and the things they can control. It can be argued as the overall driving force in teenagers who keep trying to stay in learning during the COVID-19 pandemic, causing resilience in them as students at school. Mental health is one that must be assessed during online learning because educators or teachers do not rely solely on student learning outcomes. How students can stay motivated in learning is one of the important indicators during the online learning process due to the COVID-19 pandemic. In addition to teachers, schools are also expected to pay attention to the psychological and mental health of students during the COVID-19 pandemic by providing facilities for students to increase motivation and not be stressed (Jacob et al., 2020; Hunt & Eisenberg, 2010).

Thus, the resilience test that will be developed in this study can assess students' mental health by increasing students' resilience, persistence and constancy in facing learning during the COVID-19 pandemic by applying a motivational learning model. The use of websites that are more directed at learning conducted by students online during the COVID-19 pandemic which is the goal of developing resilience tests.

2 Materials and Methods

This study is a literature review about the exposure of resilience test website development design through the ARCS Motivation Design model approach to assess the mental health on students of SMA Negeri 1 Sape. The aim of this study was to provide an overview of how to design a resilience test website through the ARCS Motivation Design model approach to assess students' mental health. This study was conducted on students of SMAN 1 Sape, West Nusa Tenggara (NTB).

3 Results and Discussions

Development in educational technology

Educational technology according to Januszewski & Molenda (2013), "Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources". performance by creating, using, and managing rapid processes and resources and technology). Referring to this definition, the development of teaching materials is included in the creating area. For more details, see the image below:

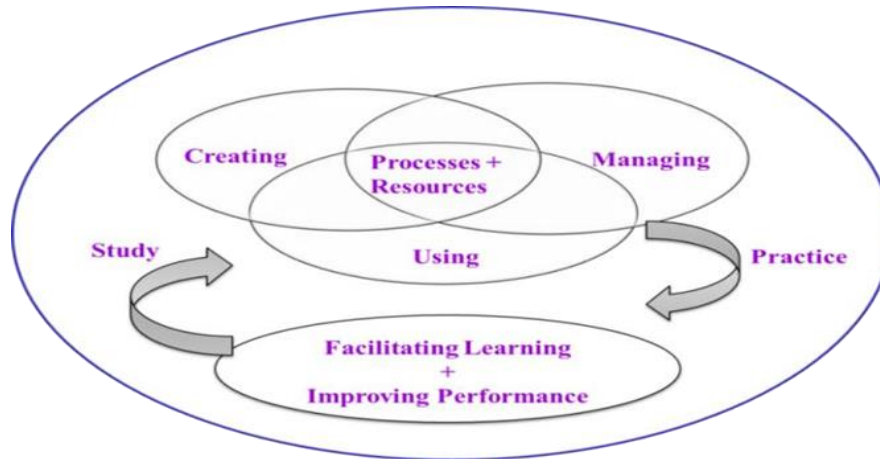


Figure 1. Position of Development in Educational Technology

The existence of educational technology in the world of education is generally intended to facilitate learning. The main purpose of educational technology is to identify and solve problems related to learning problems. Therefore, the main principle of educational technology is to pay attention to the interests of students, while the main principle of education is to help improve the efficiency of the learning process (Etuk et al., 2022). The efficiency of the learning process can be achieved if the learning interaction refers to learning activities, and the learning situation is in accordance with the abilities of students (Miarso, 1987).

In the perspective of educational technology, learning resources are recognized as the most important component in learning. Learning resources consist of six components, namely: messages, people, teaching materials, equipment, techniques, and the environment (Miarso, 1987). Among the six components of learning resources, the most dominant are teaching materials for students. In the rules of educational technology, the development of teaching materials is an attempt to fulfill the function of developing learning resources, so that learning problems can be overcome.

Mental Health of Teenager

Definition of mental health

Mental health is closely related to the individual's ability to adapt. Scott (in Yustinus Semiun 1961) stated as follows "The mental health is the key to adjust". Mental health is the key to individual adjustment. Mental health is individual's ability to adjust to himself with full satisfaction. Pieper & Uden (2012), argued as follows "Mental health is a state of a person from unhealthy to healthy mentally that has the ability to adjust, the ability to evaluate themselves, the ability to utilize all the potential and ability to achieve happiness together and soul harmony achieved in life". Mental health is a condition of a person from unhealthy to healthy who has the ability to adapt, the ability to evaluate himself, the ability to take advantage of all existing potential and the ability to achieve shared happiness and achieve mental harmony in life.

According to the World Health Organization (WHO), mental health is "a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community". According to the World Health Organization (WHO), mental health is a state in which individuals are aware of their own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and are able to make a contribution to their community. Regarding to some of the opinions above, mental health is a condition that enables individuals to use their abilities in accordance with the values in society.

Adolescence is a period of onset (onset) for various behaviors and conditions that affect health and can also cause disorders in adulthood. The existence of puberty is one of the challenges for teenagers. Puberty refers to a developmental transition period characterized by biological changes that result in physical and sexual maturity (Santrock, 2011). Awareness of the importance of mental health has always been instilled by WHO. The WHO Child and Adolescent Mental Health Atlas was one of the first systematic attempts to collect data and objectively document

the global services and training available worldwide for the mental health of children and adolescents (WHO, 2001c). This initiative focuses on three main areas, namely awareness, prevention and treatment.

Understanding mental health in children and adolescents means it is necessary to understand what factors can endanger mental health (risk factors) and what factors can protect children's mental health (protective factors). Risk factors raise the possibility of vulnerability in children, while protective factors create possible strengths in children. Mental health in children and adolescents also involves their capacity to develop in various areas such as biological, cognitive and socio-emotional (Remschmidt et al., 2007). Therefore, it is important for us to understand the stages of development as an effort to see any indications of problems in the development of children and adolescents. Children who have mental health have characteristics that we can observe from the development process.

Adolescent mental health is described as a roller coaster in emotional and psychological aspects which are sometimes very high and sometimes very low (Whitlock & Schantz, 2008). On the other hand, students who face mental health problems will exhibit negative behaviors such as truancy, difficulty in doing schoolwork, and have more conflicts with peers or older people (Skalski & Smith, 2006). According to Arnett (in Rice & Dolgin, 2002), in adolescence individuals tend to focus on getting emotional freedom from parents and take responsibility for their own actions.

During senior high school, the effect of peers becomes stronger than the effect of parents (Story & Stang, 2005). Teenagers begin to want freedom and autonomy which some parents regard as a rebellion. Parents begin to see that teenagers are starting to get out of control (Santrock, 2011). The emotional instability faced by adolescents can cause problems during adolescence (Gunarsa, 2008). Emotional function becomes an inseparable part of mental health. Both are closely related to adolescent mental health (Roeser et al., 1998).

Factors affecting mental health

According to Notosoedirdjo Latipun (2007), it indicates that there are four factors related to mental health, namely (1) the biological dimension of mental health, (2) the psychological dimension of mental health, (3) the environmental dimension of mental health and (4) the socio-cultural dimension of mental health. The four dimensions can be explained as follows:

1) The biological dimension of mental health

To meet their needs, humans use the limbs they have. The body and all its elements cannot be separated from mental health. Notosoedirdjo Latipun (2007), have conducted many studies on the relationship between the biological dimension and mental health. Various studies that have contributed greatly to mental health. Therefore, human health, especially mental health, cannot be separated from this biological dimension.

In this section, several biological aspects that directly affect mental health include the brain, endocrine system, genetics, sensors, and the condition of the mother during pregnancy. The brain is the part that commands human activity. Good brain function will lead to mental health for us, otherwise if its function is disturbed it will result in mental health disorders. The endocrine system functions to secrete hormones. Abnormal hormone content results in unhealthy growth including influencing unexpected behavior, including: aggressiveness, emotional lability, low intelligence and anxiety. Genetics is a human biological element that affects health. Healthy genetics can produce healthy behavior, while genetic disorders can give rise to certain mental disorders. Maternal factors during pregnancy have a very significant influence on the mental health of children, a healthy womb allows it to produce mentally healthy children, on the other hand certain contents can cause disturbances to their offspring.

2) Psychological dimensions of mental health

Human psychological factors are basically an integral part of biological factors. As a subsystem of human existence, the psychic aspect always interacts with all aspects of humanity. Therefore, the psychic aspect cannot be separated from other aspects of seeing humans. There are several psychological aspects that also influence mental health, including: initial experience, learning process, and needs. In various studies conducted by Maslow (in Notosoedirdjo Latipun, 2007) it was found that people who experience mental disorders are caused by the inability to meet their needs.

3) Dimensions of the mental health environment

Human life cannot be separated from the environment because the environment is a place where humans live their lives. Factors that affect mental health are divided into physical environment, biological environment, and chemical environment. Some changes in natural conditions and directly or indirectly affect humans, among

others: social interaction, livelihoods, including the behavior of maintaining the cleanliness of the city environment.

4) Socio-cultural dimensions of mental health

Humans live and grow up in a certain social environment. Sociologically, the individual is a representation of the life of his social environment. Everything that happens in their social environment is observed, studied, and possibly integrated and internalized as part of their lives. Each individual has an identity according to his environment.

Research conducted by Holingshead and Redlich (in [Notosoedirdjo Latipun, 2007](#)) shows that social stratification in society is related to the type of mental disorder. In addition to the social stratification that exists in society, social interactions also affect the mental condition of individuals and similarly to social changes that occur in the environment also affect a person's mental health. Social changes that occur allow two things to happen, namely it can lead to satisfaction and can improve mental health. But on the the other hand, it can result in people's failure to adapt to changes and mental disorders.

Characteristic of healthy mental

Mentions several characteristics of a healthy mentality, including (1) avoiding mental disorders (2) being able to adapt (3) utilizing potential as much as possible (4) achieving personal and other happiness. Can be described as follows:

1) Avoid mental disorders

Individuals who are included in mental health are individuals who do not experience mental disorders or can be said to not experience the characteristics of individuals who have mental disorders. By avoiding individuals from mental disorders, the individual will think clearly and positively about himself and his environment.

2) Can adapt

In accordance with the understanding described by several experts, mentally healthy individuals are individuals who can adapt to the social environment in which they are located. Individuals can regulate the behavior and actions taken in social groups so that they do not get out of the values and norms that apply in their social groups.

3) Use the most of potential

The ability of each individual varies. Individuals who can accept themselves as they are, the individual is mentally healthy. A person who accepts himself as he is will realize the talent he has. By knowing the talents possessed, the individual will develop optimally and can develop his/her talents optimally.

4) Achieved personal happiness and others

Mental health is also concerned with the feelings felt by each individual. Individuals who can feel happiness within themselves are included in mentally healthy individuals. However, not only self-happiness is thought of, but mentally healthy individuals also think about the happiness of others. Individuals who are mentally healthy will be able to feel the feelings of happiness felt by other people around them.

Mental health indicators

Some indicators of mental health according to several expert opinions can be seen in the following table.

Table 1
Mental health indicators according to experts

Expert	Indicator
WHO	1) Free of tension and anxiety
	2) Accepting disappointment as a lesson in the future
	3) Capable of self adjustment constructively even though a fact is bitter
	4) Capable of helping each other
	5) Feeling more satisfied in giving than receiving
	6) Owning affection feeling and the need to be loved
	7) Owning spiritual or religion
Said Hawa (2013)	1) Conducting habl min Allah and habl min al-nas (keeping the relationship with Allah and human)

Expert	Indicator
Al- Ghazali (1923)	2) Not having heart disease and in the contrary with the oneness of Allah God Almighty
	3) The soul is holy, the heart becomes holy, and his point of view becomes clear
	4) All of his body parts always do something that is in line with What Allah God Almighty orders
	1) The continuous balance between physical and spiritual in human life
Zakiyah Daradjat (1985)	2) Having moral honor or owning faith and piety quality
	3) Owning strong faith (monotheism) towards Allah
	4) Always remember and close to his God
	1) Avoided from the symptom of mental disorder and mental disease
	2) Developing the potency as maximal as possible
	3) Achieve happiness of other people's personality

Resilience

The term resilience was first introduced in the 1950s by Blok under the name ego-resiliency (ER), which is defined as a general ability that involves high adaptability and flexibility when faced with internal and external pressures. Initially the concept was applied to children where it was known as "invulnerability" or "stress-resistance". ER and resilience are both treated as protective factors against adversity, they differ in many ways (Farkas & Orosz, 2015).

The word resilience comes from the Latin, namely "resilire", which means to rise again (Oxford dictionary, in Gillespie, 2007). Connor & Davidson (2003), define resilience as a personal quality that allows individuals and communities to grow and develop even in unpleasant situations. Bonano (2005), explains that resilience is the ability to maintain a normal and stable state in the face of an unfavorable extreme situation.

Resilience is also defined by Gilgun (in Bautista et al., 2007) as an individual's capacity to face various challenges in life, to recover from these experiences and continue living normally. Thus, resilience can also be seen as a way to measure one's emotional resilience and one's process of rising from an unpleasant situation.

From the opinions of these experts, it can be concluded that resilience is the success of individuals in adapting to unpleasant/bad conditions in overcoming, going through, and returning to their original conditions to maintain psychological stability in the face of stress.

Resilience is a concept that is still somewhat vague, thus, it is still difficult to identify resilience and increase resilience in individuals. Based on research conducted by Reivich & Shatte (2002), it has been formulated that there are seven resilience abilities, namely emotion regulation, impulse control, optimism, self-efficacy, causal analysis, empathy, and reaching out. Aspects of Resilience Grotberg (in Hendriani, 2018) calls the characteristics of resilience with the term source. According to him, there are three sources of individual resilience, namely; i have, i am and i can. The three interact with each other and determine how individual resilience then.

Based on the two figures above who explain aspects of resilience, it can be concluded that the dimensions of resilience contain the whole, namely based on the opinion of Reivich & Shatte (2002), seven aspects of resilience which include emotion regulation, impulse control, optimism, self-efficacy, analysis causality, empathy, and reaching out. The resilience dimension is used to determine success in adapting to maintain psychological stability in the face of stress in adolescents. Factors that influence a person's resilience (Dyer & McGuinness, 1996); 1) Positive relationship with others; 2) Self-efficacy; 3) Reintegration; 4) Positive views on life.

ARCS motivation model

ARCS Motivation Model is a motivational model that emphasizes motivational aspects consisting of attention, relevance, confidence, satisfaction. This model was developed by John M. Keller in 1987. Keller is a psychology graduate from Florida State University. According to Keller (1987), teachers need to motivate students. This is because the emergence of learning motivation in students is not only their responsibility, but also the responsibility of the teacher (Angkowo & Kosasih, 2007). In the learning and learning process, the four motivational conditions of students must be maintained during the learning and learning process.

Discussion

In the world of education, learning process, of course, happens. In addition to tools for conveying learning, there are also tools for assessing student learning. The purpose of the existence of aids so that the material presented is more easily accepted by students. Learning aids are often referred to as learning media and assessments can be made in several forms. One that affects students' ability to solve problems in learning activities is student resilience. Resilience has a significant relationship with students' ability to solve learning problems. Therefore, more in-depth information is needed to describe how students have difficulty solving problems in learning activities in terms of student resilience. This is because a concept or principle will be meaningful if it can be applied in problem solving.

In classroom learning, many educators still think that the difficulties faced in learning are a burden of life, so that the burden is considered a threat and quickly experiences frustration. Students experience more anxiety, sadness, and anger when they cannot fully understand their abilities. If they experience disappointment and difficulties when facing learning, they will be trapped in disappointment and anxiety so that they cannot solve the problems given. In the problem solving process, a good resilience test media is needed to assess students' mental health so that they can support learning activities. Another factor that affects students in learning activities is the passion and enthusiasm for learning and the lack of self-confidence in students and this is related to students' mental health. Students feel stressed and anxious in the learning process when they do not understand and have no interest and desire when learning. In every student learning activity, both in-class and outside learning, or direct or indirect learning received from the teacher, it should have goals and results that have an impact on students. Learning that aims to give hope to students that makes students feel not pressured and able to carry out learning activities. The purpose of student learning is obtained both short-term and long-term so that it provides motivation for students. Learning activities will be more successful if students have interests, desires and goals from what they are learning. Learning should ideally provide motivation to students, one of which is to approach learning activities through the ARCS (Attention Relevance Confidence Satisfaction) model of motivational design in order to attract students to be able to learn independently without depending on the teacher.

As known from the objectives which achieved by students, learning assessment media is developed and it is as one effective way for teachers to assess the results of learning activities received by students. Therefore, the development of resilience test media through the ARCS (Attention Relevance Confidence Satisfaction) approach to assess students' mental health will be in the form of dynamic website media so that later learning media products will not only make it easier for teachers to understand students' conditions but also make it easier for students to understand their situation and obtain solutions. the problem from the situation they are doing because the media includes an element of motivation so that students feel they have the best solution in the learning activities they receive at school.

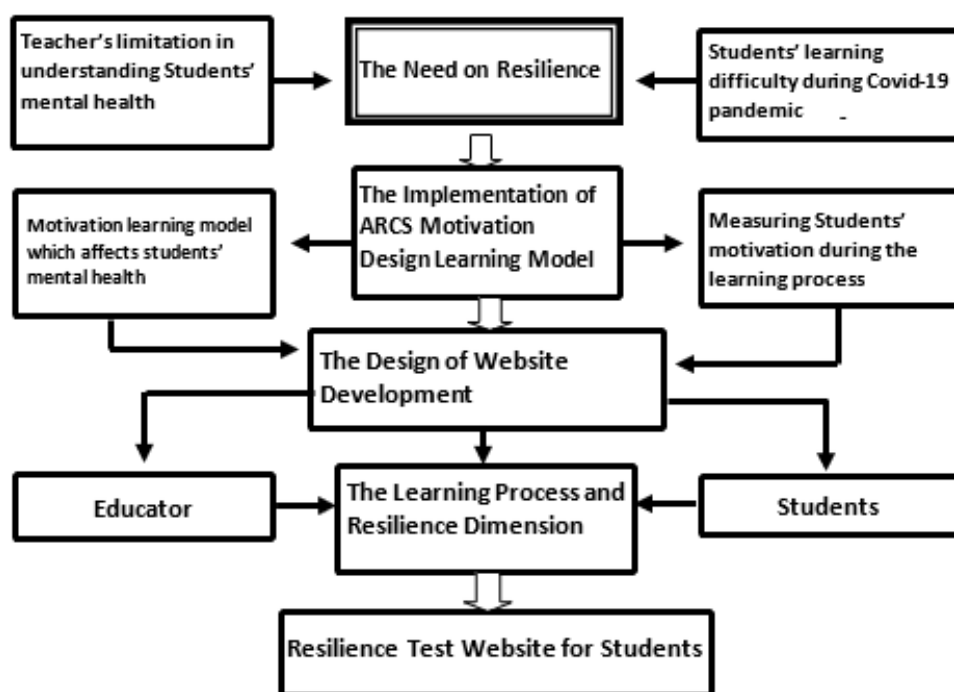


Figure 2. Flow of Resilience Test Website Design to assess students' mental health

4 Conclusion

The design of the resilience test website development through the arcs motivation design model approach so then the material presented is more easily accepted by students. Therefore, more in-depth information is needed to describe how students have difficulty solving problems in learning activities in terms of student resilience.

ARCS Motivation Model is a motivational model that emphasizes the motivational aspects consisting of attention, relevance, confidence, satisfaction. In the learning and learning process, the four motivational conditions of students must be maintained during the learning and teaching learning process. Through the resilience test with the ARCS motivation model approach, it is hoped that the success of individuals in adapting to unpleasant or bad conditions in overcoming, going through, and returning to their original conditions to maintain psychological stability in the face of stress, especially in the era of online learning.

Conflict of interest statement

The authors declared that they have no competing interests.

Statement of authorship

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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