

LAY PERSON PERCEPTIONS ON TEACHING BASIC LIFE SUPPORT  
USING ANDROID SMARTPHONES ON SOUTH BORNEO INDONESIA

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## ABSTRACT

**Background:** Cases of victims who experienced stop the heart and stop breathing the more increase the end \_of this with various because temporary ability Basic Life Support Public lay still low.

**Purpose:** This study develops a Basic Life Support tutorial application on an Android Smartphone that can be used by Lay Persons to help survivors' hearts and stop breathing.

**Method:** This study used an experiment on Lay Persons in Banjarmasin and Banjar Regency which was taken using the Simple Random Sampling technique.

**Conclusions:** Lay Person is enthusiastic and happy with the Basic Life Tutorial using an Android Smartphone and provides an excellent quantitative and qualitative assessment of the community.

**Keywords:** Android Smartphone, Teaching, Lay Person.

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**Received:** 04/15/2024

**Accepted:** 06/14/2024

**DOI:** <https://doi.org/10.55908/sdgs.v12i8.3872>

## PERCEPÇÕES DE LEIGOS SOBRE O ENSINO DE SUPORTE BÁSICO À VIDA USANDO SMARTPHONES ANDROID EM SOUTH BORNEO INDONÉSIA

### RESUMO

**Fundo:** Os casos de vítimas que experimentaram pararam o coração e pararam de respirar, quanto mais aumentam o fim deste com vários porque a capacidade temporária Suporte Básico à Vida Público ainda estava baixa.

**Objetivo:** Este estudo desenvolve um aplicativo tutorial de Suporte Básico à Vida em um Smartphone Android que pode ser usado por Pessoas Leigas para ajudar os corações dos sobreviventes e parar de respirar.

**Método:** Este estudo usou uma experiência sobre Pessoas Leigas em Banjarmasin e Regência de Banjar, que foi realizada usando a técnica de amostragem aleatória simples.

**Conclusões:** Lay Person está entusiasmado e feliz com o Tutorial Básico da Vida usando um Smartphone Android e fornece uma excelente avaliação quantitativa e qualitativa da comunidade.

**Palavras-chave:** Smartphone Android, Ensino, Leigo.

## PERCEPCIONES DE PERSONAS LAICAS SOBRE ENSEÑAR SOPORTE VITAL BÁSICO USANDO TELÉFONOS INTELIGENTES ANDROID EN EL SUR DE BORNEO, INDONESIA

### RESUMEN

**Antecedentes:** Los casos de víctimas que experimentaron paro cardíaco y paro respiratorio cuanto más aumentan el final de esta con varias capacidades temporales porque el Soporte Vital Básico Público seguía siendo bajo.

**Propósito:** Este estudio desarrolla una aplicación tutorial de soporte vital básico en un teléfono inteligente Android que puede ser utilizado por personas laicas para ayudar a los corazones de los sobrevivientes y dejar de respirar.

**Método:** Este estudio utilizó un experimento en laicos en Banjarmasin y Banjar Regency que se tomó utilizando la técnica de muestreo aleatorio simple.

**Conclusiones:** Lay Person es entusiasta y feliz con el Tutorial de Vida Básica usando un Smartphone Android y proporciona una excelente evaluación cuantitativa y cualitativa de la comunidad.

**Palabras clave:** Smartphone Android, Enseñanza, Laico.



## 1 INTRODUCTION

The cardiac and pulmonary arrest is death that occurs as a result of a sudden loss of heart and lung function. This situation includes an emergency and pathetic health problem because it can strike suddenly and occurs at both young and old age. This condition can occur in someone with or without previous heart or lung disease (Baru, Sultan, and Beza 2022; Cash et al. 2022; Jung et al. 2022; Song et al. 2022) . Happening stop heart or stop breath this often happens outside \_ house sick so the usual victim no helped because usually no there is helper able public \_ give resuscitation heart lungs with true and correct (Borkowska et al. 2021; F. Gnesin, EHA Mills, AL Moeller, B. Jensen, N. Zylyftari<sup>4</sup>, KB Ringgren, H. Boeggild, HC Christensen, SNF Blomberg, F. Lippert, F. Folke 2021; Herlianto 2017; Jellestad et al. 2021; Munot et al. 2022; Ohashi-Fukuda, Fukuda, and Doi 2022) .

*Cardiac arrest* is a normal cessation of blood circulation due to failure of the heart to contract effectively, and if this is unexpected it can be called a sudden cardiac arrest and can also be explained by a medical emergency with no or inadequate contraction of the left ventricle of the heart which immediately causes cardiac arrest. circulation failure. This condition can occur inside or outside the hospital and requires immediate assistance with cardiopulmonary resuscitation which requires prompt and appropriate treatment ( (Borkowska et al. 2021; Doctor et al. 2017; Herlianto 2017; Jellestad et al. 2021; Munot). et al. 2022; Ohashi-Fukuda, Fukuda, and Doi 2022; Setiaka 2017; Wang et al. 2022) .

Cardiopulmonary resuscitation (CPR) is or *Cardiopulmonary Resuscitation* (CPR ) is an action that needs to be taken by health workers in dealing with emergency cases in the cardiovascular and respiratory system (American Red Cross, 2016) as a life-saving by restoring respiratory and circulation functions by giving external heart massage and or concurrently with artificial respiration to patients due to the function of the heart and lungs. experienced a total failure due to a sudden cause, so with the help of resuscitation, it is hoped that both heart and lung functions will work again. (AHA 2020; Buist et al. 2002; Cash et al. 2022; Doctor et al. 2017; F. Gnesin, EHA Mills, AL Moeller, B. Jensen, N. Zylyftari<sup>4</sup>, KB Ringgren, H. Boeggild, HC Christensen, SNF Blomberg, F. Lippert, F. Folke 2021) .

Resuscitation is given and when it occurs, oxygen is given to vital organs, especially the brain and heart. Cardiopulmonary resuscitation in patients with cardiac and



pulmonary emergencies is a critical action that must be carried out by trained and competent nurses. Nurses must be able to make the right decisions at critical and emergency times. This ability requires mastering unique nursing knowledge and skills in critical situations and being able to apply them to meet the needs of critical patients (Baru, Sultan, and Beza 2022; Cash et al. 2022; Lau et al. 2022; Munot et al. 2022; Rafiei et al. 2022; Rzońca et al. 2019; Song et al. 2022) .

Actions in cardiopulmonary resuscitation effectively are to use external cardiac compression by pressing the chest appropriately and precisely and followed by ventilation, namely giving artificial respiration either with a device or not with a device. This action can be carried out by a layman (Lay Rescuer) correctly if the layman is given basic life support training on how to do help appropriately if he finds a patient who is unconscious and experiencing cardiac and/or pulmonary arrest. (AHA 2020; Boyle 2017; Herlianto 2017; Hong et al. 2020; Jainurakhma et al. 2020; Ngirarung 2017; Rzońca et al. 2019; Schluep et al. 2021; WHO 2017) .

The research objective is try out Android apps about steps to help *Basic Life Support* for taught to Public lay or *Lay* people so that they have the ability base in help victims with conditions stop the heart or stop breathing .

## 2 METHOD

This study conducted a trial with the use of Android smartphones that have been installed on the smartphone. *Lay Person* requested to download Application *Basic Life Support* Tutorial based 2015 American Heart Association Guidelines from the Play Store Application. If already downloaded so *Lay Person* then requested follow instruction steps help for victims who experience stop the heart and stop lung. *Lay Person* then requested an opinion about utility Application *Basic Life Support* tutorial that has been use.

The research subject is *Lay Person* in the area Banjar Regency and Banjarmasin City were taken using the *Simple Random Sampling technique* as many as 40 people with the criteria of having an Android smartphone that had to have Play Store app in it. The time of study was carried out from January to March 2018. Final will rate *Usability* Application *Basic Life Support* according to opinion *Lay Person* based on tools from Green and Pearson (2008).



All prospective participants will be given a thorough explanation of the survey's goals, data collection techniques, and participant rights prior to taking it. Each participant will provide informed permission, guaranteeing that they understand their voluntary involvement in the study and their ability to discontinue it at any moment without repercussions. The Polytechnic Banjarmasin Ethical Board Health has approved this study's ethical conduct.

### 3 RESULTS

Characteristics of respondents from this study can be seen in Table 1 below:

**Table 1**

*Characteristics Respondent*

Variable	F	%
Age (years)		
17-25	30	75
26-35	4	10
36-45	6	15
Gender		
Man	20	50
Woman	20	50
Total	40	100

Table 1 shows that the majority of respondents are aged 17-25 years with a total of 30 people (75%) with a distribution of the ratio between the sexes of women and men of 50% each.

Evaluation Usability than Application Basic Life Support according to Public could look at the explanation following. Evaluation The " Easy of Use" indicator is shown in Table 2 below:

**Table 2**

*Rating “ Easy of Use” indicator*

<i>Easy of Use</i>	Category											
	Very good		Well		Enough		Not good		Very Good		Not	
	F	%	F	%	F	%	F	%	F	%	N	%
to easy _ accessed	27	67.5	13	32.5	0	0	0	0	0	0	40	100
Access frequency	8	20	20	50	3	7.5	9	22.5	0	0	40	100
menus and links on the web	24	60	14	35	2	5	0	0	0	0	40	100
information needed n _ _	21	52.5	16	40	3	7.5	0	0	0	0	40	100



Table 2 describes that the majority of people consider that this application prototype is very good and easy to use. Even in the assessment of ease of access, the score was very good (67.5% rating) .

Evaluation Lay Person against the " Customization " indicator can be seen from Table 2 which is presented as below :

**Table 3**

*Rating Public against the indicator " Customization "*

Customization	Category											
	Very good				Well		Enough		Not good		Very Good	Not
	F	%	F	%	F	%	F	%	F	%	N	%
Appearance application	2	0	1	8	45	2	5	0	0	0	40	100
Coloring technique	21	52.5	14	35	4	10	1	2.5	0	0	40	100
Sorting Information	19	47.5	1	8	45	3	7.5	0	0	0	40	100

The public judged this prototype to have a very good appearance and was appropriate in its preparation. Even the staining technique got the most appreciation on the very good score (52.5%).

As for indicator “ Download Delay” by Lay Person according to opinion Public could see in Table 4.3 below this :

**Table 3**

*Rating from terms of " Download Delay" by the community*

Download Delay	Category											
	Very good				Well		Enough		Not good		Very Good	Not
	F	%	F	%	F	%	F	%	F	%	N	%
Information easy downloaded	2	1	52.5	1	7	42.5	2	5	0	0	40	100
Download time	25	62.5	15	37.5	0	0	0	0	0	0	40	100
Speed appearance page	25	62.5	14	35	1	2.5	0	0	0	0	40	100
Information access to each page	20	40	20	40	0	0	0	0	0	0	40	100

In terms of application download delay, this also gets appreciation from the Public where the Public evaluates that indicator Download Delay is very good, especially on the item download time and display swap speed page responded Public with a very good rating (62.5%).

Evaluation from terms of " Content " by the community could be seen in Table 4 below this:





**Table 4**

*Evaluation from terms of " Content " by the community*

Customization	Category												
	Very good		Well		Enough		Not good		Very Good		Not		
	F	%	F	%	F	%	F	%	F	%	N	%	
information by needs	2	7	67.5	1	2	30	1	2.5	0	0	0	40	100
diversity information	13		32.5	25		62.5	2	5	0	0	0	40	100
displayed text _	19		47.5	21	5	2.5	0	0	0	0	0	40	100

It can be seen that the community's assessment in terms of content is also very enthusiastic and assesses it very well; seen especially in the assessment The information displayed is very appropriate to the needs of the community where more than half (67.5%) of the community consider this information to be very important and needed by the community.

Google Play Store is the official source of application search and download applications processed by Google for Android. Apart from that, the Google Play Store also hosts about one million apps, games, music, and videos. Users can search for the desired application by simply typing a keyword or searching for the application through categories in the Google Play library. Purchases made on the Google Play Store are made directly between the user and the associated application and can be downloaded directly on the user's Android phone or tablet (Montegriffo, 2018). Each transaction or purchase will be linked directly to the user's account. Play store is a place for various application developers to share and publish their creations and at the same time a medium to test the applications they have created. In addition, by uploading on the Play Store the whole community; not only in Indonesia, even the whole world can see, try and evaluate an application.

The researcher in this case is testing whether this application can be used and at the same time wants to get feedback and input from the wider community throughout Indonesia. So that this application can be seen where errors and repairs are needed if they are found. In addition, the public can also provide feedback on the usability and appearance of the applications that have been made.

The results of the community's qualitative assessment show that almost all of them give a "5-star" rating, which means that the assessment of this application is very good and close to perfect. Various responses/comments indicate this application is 'very good,



very useful and some even express that they want to use this application for further research.

#### 4 DISCUSSION

Indonesia is an area prone to natural disasters that can result in various conditions in the field that result in emergency conditions of the cardiac and pulmonary arrest. This cardiac and pulmonary arrest condition requires immediate help in a very short time so that the community's independent ability can be needed so that deaths can be prevented without waiting for the arrival of health workers who are often late in arrival (National Disaster Management Agency 2020; National Disaster Management Agency 2019; Badriy 2020; Ministry of Health 2021; Ministry of Health of the Republic of Indonesia 2020; Utami 2022) .

The approach uses Artificial Intelligence (AI) or an Expert System is something breakthrough new to the world of health in handling and managing various problems to the patient including handling patients with condition Emergency (Atek et al. 2022; Grant et al. 2020; El Hechi et al. 2021) . The use of AI is approached up-to-date and up-to-date with the use of continuous technology \_ go ahead and make it easy to power health by giving help. With the development of very modern technology, then also developed a capable technology \_ adopt method think man that is technology Artificial Intelligence or intelligence artificial. AI is part of intelligence artificial combining \_ knowledge and the ability to search data that has been inserted got solution to the problem that requires field skill ( Bin et al. 2022; Grant et al. 2020; El Hechi et al. 2021; Liaw et al. 2022; Vearrier et al. 2022) . The purpose of a system expert is actually no for the replaceability of the brain or human skills, however in skeleton presents the ability to think human in form system operation, so could be used by humans alone. An expert system will give ability such a solution likeability an expert. The expert system is made based on knowledge in the field of certain approaching ability a person under specific conditions. ( Balamba , Lumenta, and Sugiarso 2017; Hendrata, Arifin, and Hikmah 2016; Jonsson et al. 2015; Santoso 2012) .

Now the millennium era, people were introduced to e-learning (electronic learning) which is a teaching and learning activity using electronic digital facilities both in the classroom and in certain courses by using a variety of today's sophisticated tools





such as smart phones (smartphones), tabs, and various other gadgets and can be used by interacting with people. others either alone or with many other people. There are many lessons about health and medical help but no one approaches CPR emergency assistance (Chai 2015; Kovic and Lulic 2011) . This approach with Artificial Intelligence (AI) systems is very important to be applied in medical / health action approaches such as surgical tutorials because this approach can even provide real tutorials by skipping the cognitive introduction step (Gebran et al. 2022; Park et al. 2022; Scheder-Bieschin et al. 2022; Suzuki et al. 2022; Vearrier et al. 2022; Zhu et al. 2022) .

Software Prototyping ( activity making prototype application device software ), is a ` version of device software that doesn't fully develop. \_ This is activities that can occur in the development of device soft and comparable with prototyping as it is known from field others, such as technique machine or manufacture (Indrasari and Kadarwati 2022; Rahagiyanto, Prakoso, and Adhyatma 2022; Saeed et al. 2022; Suryaningsih et al. 2022; Tuloli, Latief, and Rohandi 2021) . This prototype was made as a step crucial beginning in building an application especially related to humans who have complexity good by psychological, physical or intellectual. The prototype was made to get real app \_ \_ \_ effective and efficient and can be accepted by the community. Prototype an application designed to be known like what utility an application can obtain then applied and how 'familiar' interface and considered can make it easy in apply system complex and sophisticated expert. Especially related to soul or condition health a patient/human good for therapy nor for diagnosis (Indrasari and Kadarwati 2022; Rahagiyanto, Prakoso, and Adhyatma 2022; Seshadri et al. 2003; Spearman et al. 2014; Suryaningsih et al. 2022; Tuloli, Latief, and Rohandi 2021) .

Expert System is something breakthrough new to the world of health in handling and managing various problems the patient including in handling patients with condition emergency. The use of AI is approached up-to-date and up-to-date with the use of continuous technology \_ go ahead and make it easy to power health by giving help. With the development of very modern technology, then also developed a capable technology adopt method think man that is technology Artificial Intelligence or intelligence artificial. AI is part of intelligence artificial combines \_ knowledge and the ability to search data that has been entered so that obtained solve problem that requires field skill certain (45,55–59)



Software Prototyping ( activity making prototype application device software ), is a ` version of device software that doesn't fully develop. \_ These are activities that can occur in the development of device soft and comparable with prototyping as it is known from field others, such as technique machine or manufacturing. Prototype this made as step very important and crucial beginning in build an application especially related with humans who have complexity good by psychological, physical nor by intellectual. The prototype was made to get real app \_ \_ \_ effective and efficient and can be accepted by society.

The importance of the prototyping step in this research is an action that needs to be taken by a researcher that a 'design of thought' or 'research design' either physically or non-physically may experience a "failure" or failure in deciphering the logic and flow of thinking that follows. the complex that must be poured into written, physical form or an expert system application. If this step is not taken, it may cause material or immaterial impacts or losses. If a tool can be a disaster or malfunction of the tool or endanger the maker or the user. In the case of tools or applications related to humans, it can be an accident or cause injury, illness or injury that causes material or immaterial losses. (Bella & Eloff, 2016; Ogata & Matsuura, 2013; Spearman et al., 2014).

The community's quantitative assessment of the Cardiopulmonary Resuscitation Application Prototype received a positive response. The assessment is based on the User Usability Variable according to the application assessment standard from Green & Pearson (2004); Stakeholders, in this case, ordinary people who have not received training or knowledge about BLS, enthusiastically respond to this application. The assessment of the Easy Of Use indicator gets a very good rating, even though the average community rating is above 3 (three) for this item. This shows that this prototype is very good and easy when used by the public in terms of self-taught BLS by using this BLS application prototype.

Assessment of the Customize indicator also received very good reviews from the community. This shows that the display, coloring, and sorting of information is rated well by the user. The average value also shows above 3 (three) which shows that almost all of them give very good scores.

The Download Delay indicator also received a positive assessment where the public considered that the ease of finding and downloading information, the speed of display, and access to information were very easy and there were no obstacles.



Finally, the Content assessment from the community shows that this prototype provides very valuable information and is needed by the community today so the enthusiasm and interest of the community is very high for this application. This is based on the community's need for independent abilities in the event of cardiac and pulmonary arrest problems that occur out of the hospital or in the field. This is following the incident where medical emergency services assessed that more than 420,000 Cardiac Arrests occurred outside hospitals in the United States (American Heart). Association, 2014) and the results of the Ministry Heart Consortium and Resuscitation Guidelines show that the incidence of cardiac arrest is still high in all countries in the world. A total of 359,400 cardiac arrest events occurred outside the hospital in 2013 in America. Meanwhile, in 2012, there were 382,800 cardiac arrests outside the hospital. The incidence of OHCA in several countries that are members of the Asia-Pacific, one of which is Indonesia in the last three years, amounted to 60,000 cases (Doctor et al., 2017; Hock et al., 2014).

Qualitative assessment when the application was tested and uploaded on the Play Store application online showed a very positive assessment. Sentences from random people stated "awesome, very useful, good" and almost all gave a "5-star" rating, aka perfect for this application. This response is very much in line with the quantitative assessment given by the community previously that this application is a useful and good application for the interests and needs of the community in helping victims of emergency conditions who experience cardiac and pulmonary arrest.

The purpose of the expert system is not actually to replace the ability of the brain and human skills but to present the human thinking ability in the form of an operating system so that it can be used by humans themselves. The expert system will provide solution capabilities that match the capabilities of an expert. Expert systems are made based on knowledge in a particular field that approximates a person's abilities in specific conditions (32,34,35,43,55–57,59–64)

## 5 CONCLUSION

This research shows Usability Application Basic Life Support used for educating Lay Person tutorial step by step help in Basic Life Support is very good. Application by qualitative Lay Person also rates that application This is very satisfying and useful. Use



Application this android based need spread expand with version use language area local  
so that could more large again reach society.

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