

INTRODUCTION TO DIGITAL LITERACY FOR PARENTS THROUGH THE "E.LIST" APPLICATION FOR STUNTING EDUCATION IN BOTUMOITO DISTRICT GORONTALO PROVINCE

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Abstract

The Indonesian Ministry of Health reports that until 2022, the prevalence of stunting in Gorontalo Province will still be higher than the standards set by WHO. Providing education to parents about stunting can contribute to stunting prevention. The novelty of this service article is that it introduces digital literacy to parents through the "E.LIST" application for stunting education. This community service activity aims to empower parents with an application-based digital literacy program called "E.LIST" for stunting education. According to the Indonesian Ministry of Communication and Information, the 2022 National Digital Literacy Index increased by 0.05 points compared to the 2021 index results. Therefore, smartphones and their applications can be used to facilitate the provision of health services and health education, including stunting prevention. The Waterfall System Development Life Cycle (SDLC) method is used to create applications, which consists of gathering information, designing software, implementing, testing, and operating and maintaining. For Gorontalo Province, Boalemo Regency has the second highest stunting prevalence, 29.9%, which is still above the WHO recommended figure. Furthermore, based on preliminary information from the Boalemo District Health Service, it is estimated that 62 children in Botumoito District are stunted. The results of activities through this application are that parents in Botumoito District can improve education about stunting and health services related to stunting. Conclusion: The "E.LIST" application provides a simple method for receiving healthcare and health education, monitoring the development of babies under five, and completing independent assessments. The applications were designed to meet the needs and characteristics of parents.

Keywords: Stunting; Digital literacy; Waterfall method; System usability scale.

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INTRODUCTION

The SDGs (Sustainable Development Goals) aim to eliminate all forms of malnutrition by 2030 and by 2035 to eliminate stunting, wasting, and other nutritional deficiencies in children under five and adolescent girls, pregnant women, and the elderly (1). In Indonesia, infant stunting is one of the most prevalent forms of malnutrition (2). Per World Health Organization (WHO) guidelines, stunting can be categorized as very low (2.5%), low (2.5 to <10%), medium (10 to <20%), high (20 to <30%), and very high ($\geq 30\%$) (3,4). According to Indonesia's Ministry of Health, the stunting rate in Indonesia remains higher than the WHO-set standard until 2022, with Gorontalo Province having a stunting prevalence of 23.8. Among the six districts and cities of Gorontalo Province, only Pohuwato District and Gorontalo City have stunting prevalences below WHO standards, which stand at 6.4 and 19.1 (5).

Stunting occurs when Those younger than five (toddlers) exhibit a shorter length or height than their actual age due to repeated or persistent malnutrition over many years, infection, and insufficient interaction with others (6). Stunting has severe consequences that endure for a lifetime and even

impact future generations because it may reduce the productivity of adults and result in stunted children (4,6). To prevent stunting among children, all parties must contribute to the cause, including parents.

The prevention of stunting can be accomplished by providing information about stunting, especially to parents. The "Industrial Revolution 4.0" era has witnessed rapid developments in information technology, resulting in more accessible access to information for all parties. The increase in the National Digital Literacy Index in 2022 is evidence of this, as it increased by 0.05 points to 3.54 from the index results in 2021 (7). In addition, Indonesia ranked fourth in the number of smartphone users, with approximately 187.7 (in millions), following China, India, and the United States (8). Therefore, smartphones and their applications can facilitate health care or health promotion, including preventing stunting.

The Boalemo Regency of Gorontalo is the second district in the province with the highest prevalence of stunting, with a prevalence of 29.9%, which is still above the WHO's recommended level (5). Furthermore, according to preliminary information from the Boalemo Regency Health

Service, 62 children in Botumoito District are stunted.

Based on the above data, this community service activity was conducted in Botumoito District, Boalemo Regency, Gorontalo Province. This service activity aimed to strengthen parents in the application-based digital literacy program called "E. LIST" for stunting education. A primary objective of this application is to improve the availability of education and health services related to stunting for parents in Botumoito District.

IMPLEMENTATION METHOD

The community service activities occurred in Botumoito District, Boalemo Regency, Gorontalo Province, from March 2023 to June 2023. A Waterfall System Development Life Cycle (SDLC) method created this Android-based "E. LIST" application.

The Waterfall model is the most seasoned SDLC and the most well-known since it is used to identify user needs when designing software and for building a system from scratch that collects system requirements (9–11). Hence, the Waterfall model was chosen to develop the "E.LIST" application. The model has five stages: Information Gathering, Software Design, Implementation, Testing, and Operation and Maintenance (9–11).

RESULT AND DISCUSSION

The initial stage in developing the "E. LIST" application was information gathering. In this stage, information is obtained through literature reviews, observations, or discussions, which are analyzed to determine the need for the system (11,12). For this service activity, information was gathered at the Botumoito Health Center by discussing with the Head of the Health Center and a representative of the Health Center's analysis and reporting section. In the discussion, the results indicated that many parents already use smartphones, so they may need to be more active in reading manual information about stunting. Additionally, the Botumoito Health Center needs more digital literacy regarding stunting. Moreover, to ensure effective monitoring of stunting cases, it would be beneficial if the service process for recording stunting patient data were also integrated into the application.

The next stage involves software design, which entails creating a system design based on the previous discussion (9). Parents' needs and characteristics were considered when designing the application. Figure 1 illustrates the "E. LIST" application that has been developed. This application contains information about child growth

and development and educational videos regarding pregnancy care, child nutrition, and the first 1000 days after birth. Ideally, this application will enable

parents to monitor their child's development without taking them directly to the Integrated Healthcare Center (Posyandu).

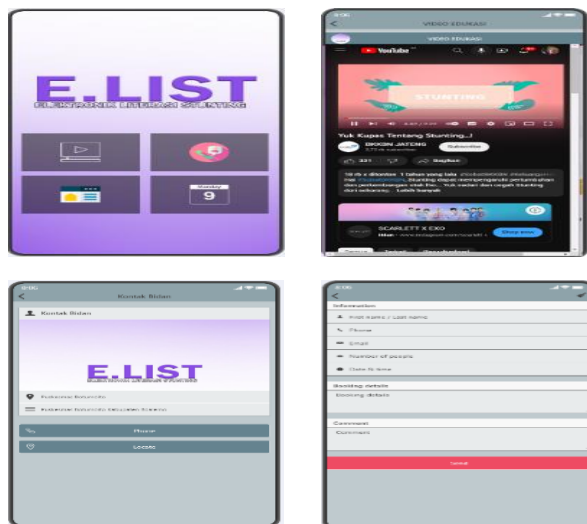


Figure 1. "E.LIST" application

The third and fourth stages involved implementation and testing. Users use the finished application to test for possible problems (9,10). Users were the community service's target audience, which is parents.

As part of the implementation stage, outreach to homes is conducted, in which 29 parents have been given information about the "E.LIST"

application and how to use it. Figure 2 illustrates the implementation stages with home visits. It is explained to the parents that this application is an innovative Android-based smartphone application for parents, and parents can log in directly without creating an account to gain information regarding stunting.



Figure 2. Home Visits

As part of the testing stage, a trial test is carried out to evaluate the

effectiveness of the application. The test considers the usability aspect that

is assessed using a questionnaire. This questionnaire refers to the System Usability Scale (SUS) questionnaire developed by John Brooke in 2013. SUS can conduct independent technology testing on various technologies, including software, hardware, websites, and mobile devices (13,14). According to (13–16), the SUS test consists of ten questions. The score contribution for items with odd numbers equals the scale position minus 1. In contrast, the score contribution for items with even

numbers equals the scale position minus 5. It was taking the sum of item scores and multiplying it by 2.5, which results in the overall SUS score between 0 and 100 (13–16).

Table 1 contains the SUS Score results of the "E.LIST" application. Generally, based on Bangor et al., there are three categories of acceptability ranges, namely Not Acceptable (which has a score of <50), Marginal (which has a score of 50-70), and Acceptable (which has a score >70) (15).

Table 1. SUS Score for "E.LIST" Application

Respondents	Results	Score	Acceptability
1	29 x 2.5	72.5	Acceptable
2	31 x 2.5	77.5	Acceptable
3	29 x 2.5	72.5	Acceptable
4	20 x 2.5	50	Marginal
5	31 x 2.5	77.5	Acceptable
6	30 x 2.5	75	Acceptable
7	20 x 2.5	50	Marginal
8	29 x 2.5	72.5	Acceptable
...
22	21 x 2.5	52.5	Marginal
23	32 x 2.5	80	Acceptable
24	31 x 2.5	77.5	Acceptable
25	29 x 2.5	72.5	Acceptable
26	30 x 2.5	75	Acceptable
27	29 x 2.5	72.5	Acceptable
28	33 x 2.5	82.5	Acceptable
29	30 x 2.5	75	Acceptable
Total Average		2105 72.59	Acceptable

Source: *Primary data, 2023*

As shown in Table 1, an average SUS score of 72.6 was obtained, which is considered acceptable. Consequently, this indicates that the application being developed can be

well received by end users in terms of usability.

CONCLUSIONS

The "E.LIST" application provides a simple method for receiving healthcare and health education,

monitoring the development of babies under five, and completing independent assessments. The applications were designed to meet the needs and characteristics of parents.

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