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ASQ: SE-3 Application as an Innovation in Helping Stimulate Children's Growth and Development for Paediatric Physiotherapy Teaching Materials

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Abstract

Background: Mobile applications are now a solution to the challenges of monitoring children's growth and development, helping in understanding the emotional and behavioural aspects of children. However, a mobile application-based questionnaire management system for physiotherapy is still not available, therefore, the development of the "ASQ: SE-3" application is needed. This application is expected to help physiotherapy students screen children's growth and development and identify problems early. Methodology: The community service carried out by the service team was carried out through several stages, namely the observation stage, to the evaluation stage using the function test technique with an assessment in descriptive form. This technique is carried out to determine whether there is a difference between the product and its function so that an evaluation can be made. The population of this community service is physiotherapy students of Universitas Muhammadiyah Surakarta. Results: In the evaluation results provided by the student service team revealed that the ASQ: SE-3 Application is good enough, maybe a little more promoted so that the tool can be known by many people and is useful in addition to physiotherapy teaching materials. Conclusion: The ASQ:SE-3 application proved to be useful as a tool to monitor children's growth and development as an innovative physiotherapy teaching material. However, challenges faced in its use include the possibility of technical errors and limited features that need to be improved to make it easier to use.

1. Introduction

The development of technology at this time is very rapid, especially in the era of globalisation which has provided various benefits in the advancement of social aspects. So that the use of technology in humans can help complete work easily (Putri et al., 2024). This technological development must also be followed by developments in Human Resources

(HR). In human life, every innovation created provides positive benefits. Technology brings many conveniences and also new ways to do human activities. Humans have also enjoyed many benefits brought by technological innovations that have been produced in the last decade (Balya Al, 2023).

Therefore, to be easily carried by everyone and make it into a more compact device as a concept of innovation into something very potential. In the current world of health, the development of mobile application technology has provided possible solutions (Chandran et al., 2022). Where this technology can overcome and answer several challenges in the application of child growth and development. To find out about emotional and behavioural development in children, a mobile application is designed that can provide various benefits. The root of the problem is where Physiotherapy itself does not have a mobile application-based questionnaire management system. To avoid a decrease in quality in physiotherapy services and learning, it is necessary to develop and innovate an application based on scientific evidence and application testing.

One of the renewal innovations in the field of Physiotherapy itself is the creation of the "ASQ: SE-3" application into a mobile application to see a child's development. The early childhood development period is often referred to as the golden age where the child's age range is 0 - 6 years, and the child's potential passes through a sensitive period to grow and develop rapidly and is irreplaceable in the future (Uce, 2017).

Early childhood social emotional development is a process where children develop through interactions with the environment with parents, peers and adults (Nurul, 2024). The development of children's sensitivity to social conditions occurs through listening, observing, imitating and can be stimulated by existing reinforcement. With the application "ASQ: SE-3" physiotherapist students areexpected to be able to screen children's growth and development which is veryimportant and necessary for help and identifying problems or deviations in aspects of child growth and development, especially in the early years of life, if deviations are found, it is necessary to take early action to correct them by utilising the plasticity of the brain so that the deviations do not become more severe or even return to normal. In lectures, learning materials used are still textbooks that need to be brought during

learning. To save space and costs, students need the development of teaching materials. Based on the need analysis conducted, innovation is needed to improve the quality of learning (Lufthansa et al., 2022).

2. Methods of Implementation

The method of this activity is carried out by training how to use the application as a solution to problems that exist among physiotherapy students. The solution starts from the observation stage, counseling on the ASQ: SE-3 application, training on the use of the ASQ; SE-3 application, to the evaluation stage.

2.1 Observation

The service team conducted classroom observations in the physiotherapy study programme at Universitas Muhammadiyah Surakarta. This observation was conducted to find out the problems in learning methods about child development.

2.2 ASQ Application Counselling; SE-3

The service team conducted counselling on the use of the ASQ: SE- 3 Application which is a screening application to detect child development problems.

2.3 Training on the use of ASQ: SE-3 Application

After the counselling was conducted, the team conducted training on the use of the ASQ; SE-3 application which was carried out on physiotherapy students at Universitas Muhammadiyah Surakarta.

2.4 Evaluation

At the evaluation stage, the service team distributed a satisfaction survey form using Application ASQ: SE- 3.so that the service team can evaluate the shortcomings of using the ASQ: SE-3 Application.

3. Results and Discussion

The service team has carried out several activities as previously planned. The results that can be obtained are as follows:

3.1 Observation

Observations were made to physiotherapy study programme students at Universitas Muhammadiyah Surakarta to find out the problems in learning methods about child growth and development. After that, the service team conducted socialisation to physiotherapy study program students of Universitas Muhammadiyah Surakarta regarding the growth and development system that will be implemented.

a) The team managed to gather students of physiotherapy study programme of Universitas Muhammadiyah Surakarta.
b) The team managed to gather a place as a location for socialisation.
c) Students of physiotherapy study programme of Universitas Muhammadiyah Surakarta actively participated as participants.

3.2 ASQ:SE-3 Application Counselling

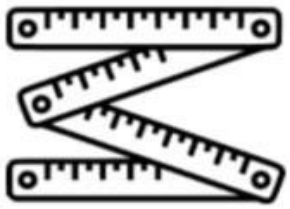
The ASQ:SE-3 application counselling was conducted by the service team and explained about the socialisation of the use of the ASQ:SE-3 application to physiotherapists at Universitas Muhammadiyah Surakarta.

a) Physiotherapy students of Universitas Muhammadiyah Surakarta know and can use the ASQ:SE-3 application
b) Physiotherapy students of Universitas Muhammadiyah Surakarta know the growth and development system model in children by using the ASQ:SE-3 application.

Figure 1. Counselling on ASQ:SE-3 Application.

3.3 Training on the use of ASQ;SE-3 Application

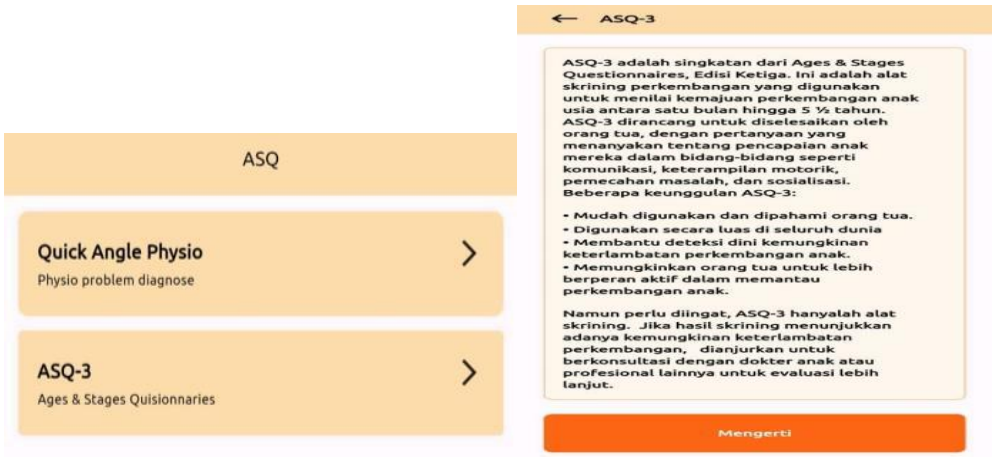
The team trained physiotherapy students of Universitas Muhammadiyah Surakarta to use the ASQ:SE-3 Growth and Development Application. Then the installation of the growth and development system was carried out on each mobile phone of physiotherapy students of Universitas Muhammadiyah Surakarta. Figure 1 to 13 below is an image of the initial display of the application, the main page display menu, the short description display, the age list display, the biodata input display, the question category display, the communcation questionnaire category display, the gross motor questionnaire category display, the fine motor questionnaire category display, the problem solving questionnaire category display, the personal social questionnaire category display, the questionnaire results display and the final results display.



Quick Angle Physio

Figure 2. Initial view of the app.

On the initial display there is a ruler logo which has a meaning or meaning, namely accuracy, measurement and accuracy.



(a) *(b)*

Figure 3. (a) Main page display menu. (b) Short Description.

In this application has 2 features where there are features of measuring posture and child development. For the next description display where there is an explanation of the meaning and benefits of using ASQ: SE-3.

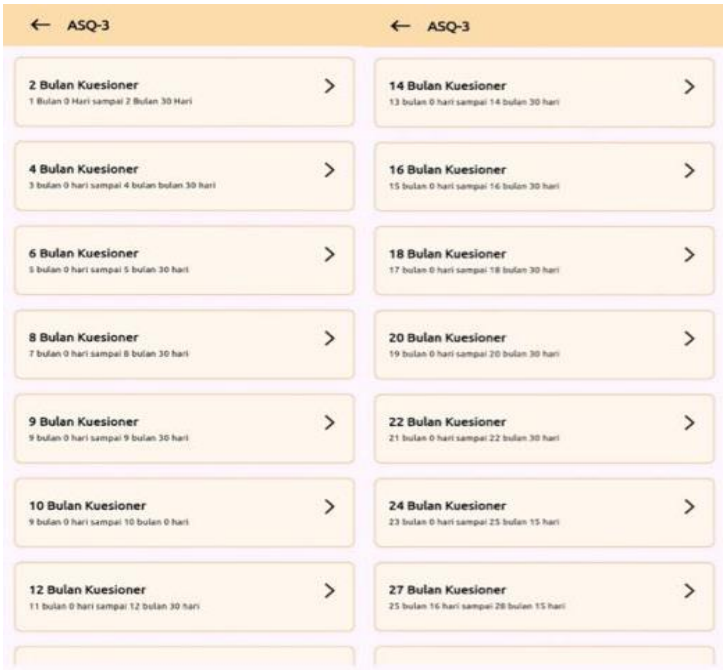
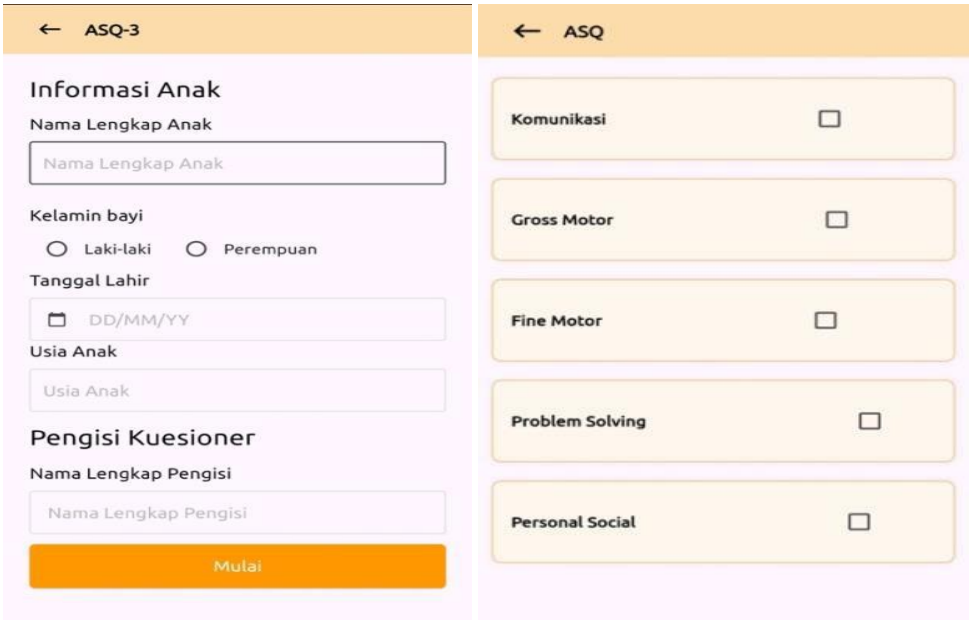


Figure 4. Age List View.

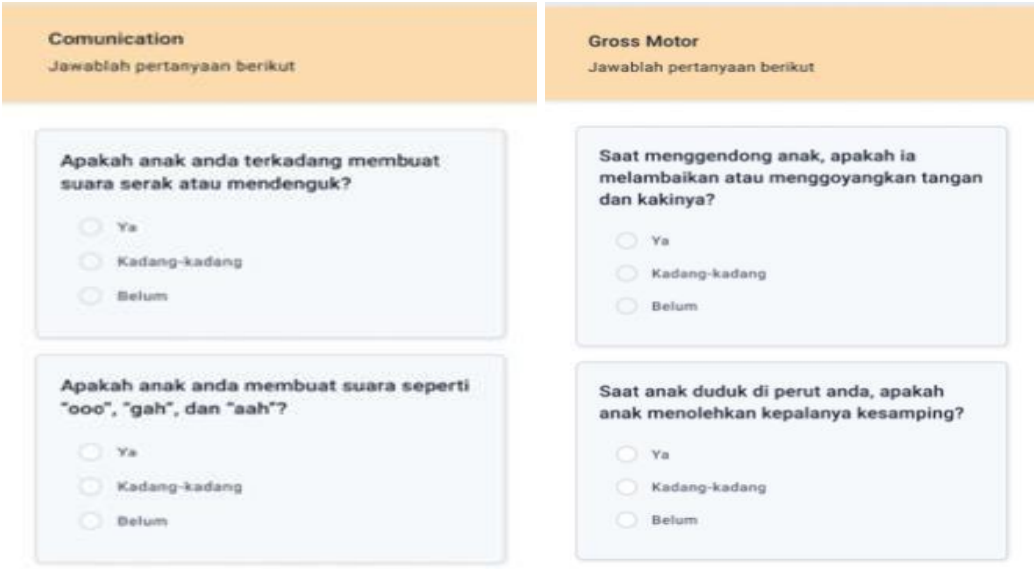
There is an age list display and here the screeners can select the required age according to the age of the child.



(b) *(b)*

Figure 5. (a) Biodata Input Display; (b) Question Category Display.

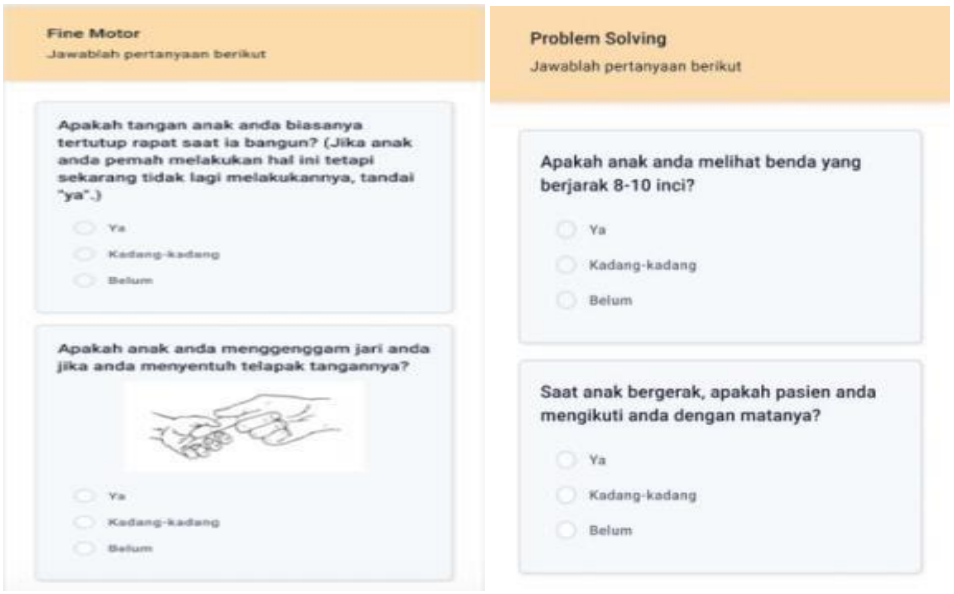
In this biodata entry, you are required to fill in the name, age and gender of the child. Followed by the Question Category Display. This application has 5 categories of questions, namely Communication, Gross Motor, Fine Motor, Problem Solving and Personal Social.



(a) *(b)*

Figure 6. (a) Communcation Questionnaire Category; (b) Questionnaire Category.

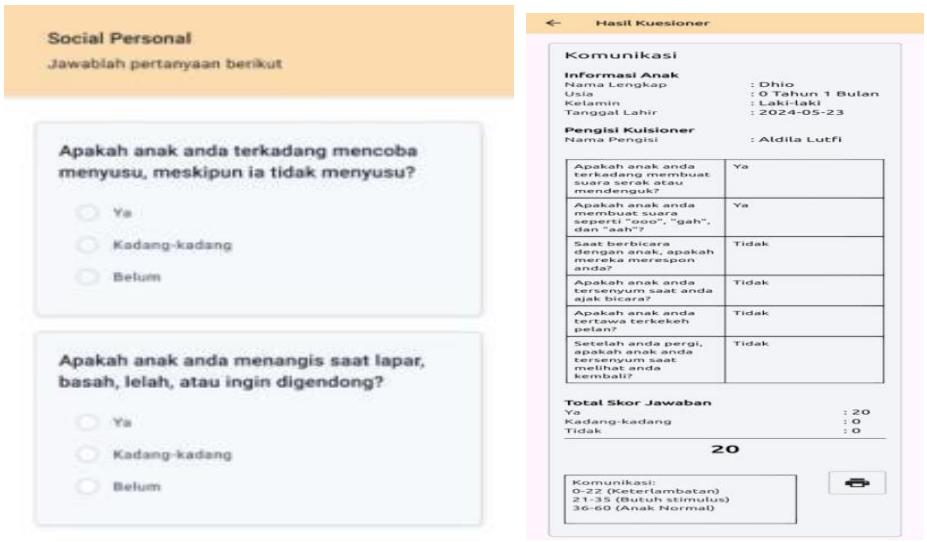
In this Communication Questionnaire Display, there are questionnaire answers, namely 'Yes', 'Sometimes' and 'Not yet'. At the end of the question there are suggestions that can be filled in by the therapist for the child's condition. Gross motor questionnaire display there are answers to the questionnaire, namely there are 'Yes', 'Sometimes' and 'Not yet' and at the end of the question there are Suggestions that can be filled in by the therapist for the child's condition.



(a) *(b)*

Figure 7. (a) Category View of Fine Motor Questionnaire; (b) Category View of Problem Solving Questionnaire.

Then for the Fine Motor questionnaire display, there are questionnaire answers, namely 'Yes', 'Sometimes' and 'Not yet'. And at the end of the question there are suggestions that can be filled in by the therapist for the child's condition. In this Problem solving Questionnaire Display, there are questionnaire answers, namely 'Yes', 'Sometimes' and 'Not yet'. And at the end of the question there are suggestions that can be filled in by the therapist for the child's condition.



(a) *(b)*

Figure 84. (a) Questionnaire Category View; (b) Display of Questionnaire Results.

In this Personal Social Questionnaire Display, there are questionnaire answers, namely 'Yes', 'Sometimes' and 'Not yet'. And at the end of the question there are suggestions that can be filled in by the therapist for the child's condition. After finishing answering all the questions, this display also provides a print button. With the print button, you can directly print the results of the child screening and for details containing the number of answers that have been answered and there are also interpretation results.

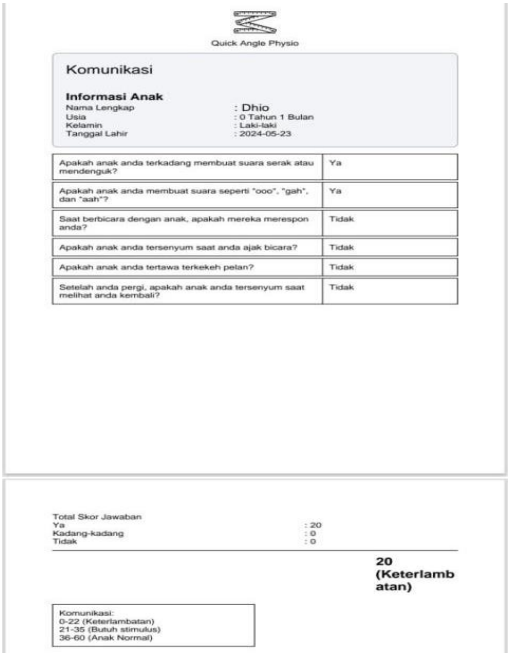


Figure 9. Final Result Display

The final result display, in this display the results of the questionnaire can be saved and then a pdf that can later be given to the patient.

Results:

- The ASQ:SE-3 child development system application is installed on the mobile phone of every physiotherapy student at Universitas Muhammadiyah Surakarta.
- Physiotherapy students of Universitas Muhammadiyah Surakarta can use the ASQ:SE-3 child growth and development system application to be applied in learning paediatric physiotherapy or in the health centre.

Figure 10. Training on the use of ASQ Application: SE-3.

3.4 Evaluation

Application evaluation is carried out using google form. The service team conducts discussions if problems are found. Results from the evaluation:

a) From the evaluation results using google form, the results were obtained:
b) For the development of measuring instruments, it is quite good, maybe a little more promoted so that the tools can be recognised by many people and are useful.
c) Pay more attention to the existing 'features' because sometimes there are still errors
d) For the future, more upgraded new additional features that make it easier to fill out the ASQ
e) Introduced to health partners so that this application is more useful for the community
f) Hopefully in the future it can be downloaded on ios not only on android

g) A discussion was held by the service team regarding the results of the evaluation using google form filled in by physiotherapy students of Universitas Muhammadiyah Surakarta.

4. Conclusion

From the student service activities that have been carried out by the service team to physiotherapy students at Muhammadiyah University of Surakarta, it can be concluded:

a) The service team has conducted observation, counselling, ASQ: SE-3 application training and evaluation activities for physiotherapy students at the University of Muhammadiyah Surakarta.
b) The activities carried out by the service team received a positive response from students, when counseling and training using the ASQ: SE-3 application took place, there was a fairly intensive communication interaction.
c) The ASQ:SE-3 growth and development application can be utilised by Muhammadiyah University Physiotherapy students as a means to help check child growth and development.
d) The challenges faced in using the ASQ: SE-3 Application are the possibility of errors during use and not many upgraded features that make it easier to use.

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