

Review Article: Narrative Review

MEASURING USABILITY TESTING BY THE ONLINE APPLICATION START EBNP QUESTIONNAIRE

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Abstract

Background: Evidence-Based Nurse Practice (EBNP) is used to enhance the quality of nursing by considering internal evidence, external evidence, and patient assessment. In reality, applying EBNP has many problems such as knowledge level, lack of time, facilities, and management support such as training and seminar. The development of technology gives chances for the massive promotion of EBNP.

Objective: This application is newly made and its pilot study aims at finding the answer to the usability and accessibility of online application START EBP.

Design: This study used a cross-sectional study method. The target population in this study was 112 clinical nurses. The sampling technique used was purposive sampling. The sample size in the pilot study was 12 respondents. This research is a kind of research and development study. The new application is Online START EBP that uses seven levels of applying EBP. The data analysis carried out was usability test.

Results: The results of 12 respondents selected from 112 populations by purposive sampling shows that the users are easier to learn and memorize the interface of the application START EBP in total averaged scored 3.24 point. The reliability results show an alpha value of 0.920, so the reliability is in the perfect category.

Conclusion: The START EBP online application is easy to use because it is easy to understand by users.

Keywords: Usability testing, technology, online START EBP.

INTRODUCTION

Technology expansion and escalation of nursing education in Indonesia trigger the enhancement in nurse's competency in research. (Casman, Ahadi Pradana, Edianto, & Abdul Rahman, 2020). The escalation of nursing education escalates the skill and

competence in applying evidence-based nursing. (Dame Elysbeth, Gita Libranty, 2015)

The evidence-based nursing practice applies the best evidence including research, experts, and patient assessment. (Butler, 2011). Many problems are found in applying evidence-based practice such as education level, knowledge about research, lack of time,

article analysis skills, and also facilities. (Ligita, 2012)(Setyawati, Harun, Herliani, & Gerrish, 2017)

The development of technology becomes an inevitability that must be faced and followed by nurses. (Staggers & Thompson, 2002). The process of changes from manual to automatic in many things guides the nurses to adapt and adopt the technology in nursing service.

A form of technology development in research is the usage of digital data records instead of manually writing the notes. The usage of digital data can be seen in the applications such as online websites that can be accessed by using an internet connection. (Tambuwun, Sengkey, Rindengan, Sam, & Manado, 2017). The web-based application can be used to make digital transaction notes that will be saved inside a database connected by the internet. (Hasugian, 2018). The existence of those technologies has become an opportunity for promoting EBNP to clinic nurses.

The usage of technology to promote EBNP can be done by developing a digital electronic application named Online START EBP (Evidence-Based Practice), which uses 7 steps of finding evidence. (Melnyk & Fineout-Overholt, 2015). Online application START EBP is developed in both website and application version that makes it accessible from any devices that are connected to the internet.

Online application START is a new application in nursing practice that never be used in any agency. Because of that, this application needs to be evaluated first, one of the tests is usability testing by involving the user who interacts with the program. (Supriyatna, 2018). This test is done to understand the convenience level of the interface that can be used by users and accepted in the operational environment.

According to Jacob Nielsen, the definition of a good interface is easy to understand (learnability), efficient (efficiency), easy to memorize (memorability), safe to use or lower the level of errors (error), and has satisfaction level (satisfaction). , (Jakob Nielsen, 1993)

Those five criteria will be discussed by using question and answer. The asked question is a term of a web to fulfill certain usability criteria, which makes the answer is a benchmark of online application STAR EBP mentioned usability criteria.

METHODS

Methodology

The steps that this research takes starts from identifying feature and function, continued by literature study/library study that have a connection with usability testing, and also field study to the tested object, in this case online START EBP.

This research is part of a pilot study aimed at seeing the effect of using a website-based application on the implementation of evidence-based nursing practice. The measurement of usability testing does not require ethical clearance because it has not become an actual research but has received approval from the relevant agencies.

Samples/ Participants

A population is a group or research object with a certain standard according to a set of characteristics. (Asmaul Husna & Budi Suryana, 2017). The first research place is a type-B private hospital in Semarang. The target population to be studied by the researcher is 112 people, so the usability testing sample required is at least 10% of the population. The sample respondents are 12 clinic nurses.

The sampling method in this research is a purposive sampling that chooses a limited sample from a certain element with some consideration. (Denise, F. Polit and Cheryl, Tatano, 2013). The considerations for the respondents are twelve clinical nurses as an end-user with NERS diploma, assuming the respondents are the end-users who will understand how to use the START EBP application.

Instrument

Primary data are collected by using a questionnaire shared via survey media to get the data by using the Likert Scale to measure the attitude, opinion, and perception of an

individual or a group of people about something. (Thurstone, Gutman, 2018) Likert Scale was designed to convince the respondents to answer every question in the questionnaire. This questionnaire was modified from the number of answers which originally amounted to 5 categories to 4 categories, this was done by researchers to avoid biased answers in the neutral category. Data about dimension and variables that analyzed in this research aim to the respondents by using 1-4 scale to get ordinal data that shown as follows:

Table 1. Usability Testimony Table

PK	STS	TS	S	SS
Question	1	2	3	4

STS: Totally Disagree, TS: Disagree, S: Agree, SS: Strongly Agree.

This research is a kind of research and development. Research and development are a research method to make a new product. (Rabiah, 2018). The development processes are:

- 1) Identification of the Problems
The problem in this research is the lack of optimization in evidence-based nursing practice
- 2) Product Design
The product is designed by planning the application interface, application menu, and step of filling the application.
- 3) Users Validation
The prototype is tested directly to see the response and benefits from the users.

Data collection is carried out as follows:

- 1) Researchers took samples from existing clinical nurses there with the criteria of nurses serving in the inpatient unit.
- 2) To measure usability, questions are used to: Explore the opinion of respondents or users of the five components following:
 - a. Learnability, describes the level of ease of users to fulfill basic tasks when they first see/use the design results.

- b. Efficiency, describes the level of speed of users in completing tasks after they study the design results.
- c. Memorability, describes the level of ease of users in using the design well, after a period of not using it.
- d. Errors, describes the number of errors made by users, the level of boredom with errors and how to fix errors.
- e. Satisfaction, describes the level of user satisfaction in using the design

After the questionnaire data has been collected, then data analysis is carried out, followed by the following stages of data processing:

- 1) Inspection and weeding of data will be carried out, at this stage a questionnaire/questionnaire will be examined to determine how much data is missing and how much data cannot be used due to incorrect data entry.
- 2) After the clean data is obtained and the amount of clean data has been obtained to determine the frequency (f) of the data to be processed and a validity and reliability analysis process is carried out in order to obtain five components in usability that affect web usability.
- 3) Test the reliability and validity of the data
- 4) Calculate the percentage of respondents' answers in the form of a single table through the distribution of frequency and percentage. By using the formula:

$$P = f/N \times 100\%$$

P: Percentage
 f: Data frequency
 N: Number of samples processed

The results of the above data processing will be in the form of usability degrees of the Android-based arithmetic software application based on five parameters as well as recommendations for improving this application.

The development of this questionnaire is used specifically to measure the usefulness of

the Online START application for clinical nurses.

Ethical Consideration

The pilot study has received approval from Department of Nursing, Faculty of Medicine, Universitas Diponegoro.

RESULT

The usage of technology in nurseries can be used for many purposes. Asiri & Househ, 2017). One of the uses is applying EBP by adopting seven-step models EBP in online application START EBP.

Online application START (Seeking Treatment, Argument, & Research Truth) EBP is a software of development to apply evidence-based practice with a guide of 7 levels of finding evidence. This software can be used on many digital platforms. The guide using online application software is expected to help the nurses to apply the actions based on valid evidence that beneficial for the patient.

The initial step of the usability testing is giving several tasks for the users while using the tested system. Those tasks were given to 12 respondents from clinic nurses who suitable for sampling criteria. Those tasks will be used as a medium to measure usability.

Table 2. Task List Usability Testing

No.	Task
1	Register in to the system
2	Log in to the system
3	Edit the profile menu (upload photo)
4	Create new Searching Evidence
5	PICOT question input
6	Searching literatur jurnal
7	Fillin the PICOT table
8	Downloading the journal according to PICOT
9	Uploading the journal document (pdf)
10	Fill in the Critical Appraisal VIA
11	Clinical expert and participant review by sharing via email
12	Filling the monitoring and evaluation
13	Making the conclusion
14	Reviewing the resume
15	Downloading the resume

No.	Task
16	Log out from the sistem

Each task is shown as follows:

- Task 1. Register to the system, the user asked to open the online application START EBP and then register by filling the registration form
- Task 2. Log in to the system, next the user asked to log in to the system
- Task 3. Edit the profile menu, the user asked to add, change, and delete profile data and upload a profile picture.
- Task 4. Create new, the user asked to begin the searching of evidence by using the “create new” button and agree to the terms and condition
- Task 5. PICOT question, the user asked to make a PICOT question in the available column.
- Task 6 Searching Literature Journal, the user was asked to enter the PICOT search keyword into the available link journal column.
- Task 7. PICOT table, the user asked to fill the PICOT table according to the result of each keyword.
- Task 8. Downloading the journal, the user asked to download the journal according to the PICOT filter
- Task 9. Uploading the journal, the user asked to upload the previously downloaded journal file
- Task 10. Fill in the Critical Appraisal VIA, the user asked to analyze every journal that was uploaded to the system by using VIA question which then will be decided whether getting accepted or declined.
- Task 11. Clinical expert and participant review, the user asked to fill the email address of clinical exert and participant to do a review to decide whether it fits or not to continue.
- Task 12. Monitoring and evaluation, the user asked to fill the monitoring and evaluation column according to the implementation of fitted journal

- Task 13. Conclusion, the user was asked to write a conclusion from the journal implementation that fits for evidence-based practice.
- Task 14. Review resume, the user asked to do a review of the resume of finding evidence to avoid writing mistake.
- Task 15. Download the resume, the user asked to download the searching resume file in pdf format to be shared in the unit.
- Task 16. Log out, the user asked to log out from the application through the profile menu and “logout” icon.

After finishing all of the tasks, the user needs to answer the questionnaire that consists of 13 statements that represent the usability aspects. The questionnaire will be answered according to their experience (what they see and feel) while using the application. Each question is used to show the level of usability with a score scale of 4.

Validity test is using Bivariate Pearson correlation (Pearson Moment Product). If r count r table (2-sided test with sig. 0.05) then the instrument or question items have a significant correlation with the total score (declared valid).

Table 3. Validity Result

Question Number	r count	r table	Description
1	0.806	0.576	Valid
2	0.661	0.576	Valid
3	0.717	0.576	Valid
4	0.345	0.576	Not Valid
5	0.756	0.576	Valid
6	0.949	0.576	Valid
7	0.793	0.576	Valid
8	0.778	0.576	Valid
9	0.872	0.576	Valid
10	0.523	0.576	Not Valid
11	0.799	0.576	Valid
12	0.607	0.576	Valid
13	0.636	0.576	Valid

The reliability test was carried out using the Cronbach statistical test, as follows:

Table 4. Reliability Statistics

Cronbach's Alpha	N of Items
.920	13

If $\alpha > 0.90$ then the reliability is perfect. If the alpha is between 0.70 – 0.90 then the reliability is high. If the alpha is 0.50 – 0.70 then the reliability is moderate. If $\alpha < 0.50$ then the reliability is low. The test results show an alpha value of 0.920, so the reliability is in the perfect category.

The statements in the questionnaire can be seen in Table 5. According to Jacob Nielsen, usability testing includes five aspects: learnability. Efficiency. Memorability, errors, satisfaction. (Jacob Nielsen, 2017) The results of the questionnaire can be seen in the following Table 4.

Table 5. Usability Aspects Plot.

Number	Attribute	Learn	Efficacy	Memo	Error	Satisfacti
1	Application START EBP is recognizable from the starting interface	█				
2	The desired search result can be found	█				
3	START EBP is easy to understand	█				
4	Texts are easy to read		█			
5	Understandable language		█			
6	The columns in the application are easy to fill		█			
7	The information is accessible		█			
8	The menu is easy to recognize			█		

9	Memorable menu and interface	
10	The result can be stored in each page	
11	The icons in the application are functioned well	
12	Pleasant color and view in the application	
13	The menu can help in find it the information needed	

Information: **PK** = *Questionnaire Statement*; **STS** = *Totally Disagree*; **TS** = *Disagree*; **S** = *Agree*; **SS** = *Strongly Agree*.

Based on the usability result in the previous table, a recap of the usability test that shows the user’s satisfaction can be made. The average number of those usability attributes is 3,24 (higher than 2 as the median) on a scale of 4. It means that the online application START EBP is acceptable and usable. The use of Online START as an EBNP learning medium is acceptable, it is supported that the use of technology as a learning medium has an effective effect.(Adnan, Prasetyo, & Nuriman, 2017).

According to the usability aspects, the result of table 4 is suitable with usability aspects: Learnability, Efficiency, Memorability. Errors, and Satisfaction with a good result. Below is the elaboration of those results with the usability aspects:

- a. The “clear interface” score is 3,19 which shows that online Application START EBP has the Learnability aspect.
- b. The “easy to understand” score is 3,35 which shows that the application fulfills the efficiency aspects
- c. The “convenience of memorizing the menu and interface” score is 3.17 which shows that the application fulfills the memorability aspect.
- d. The “convenience of entry recording and the symbol’s function is easy to understand” score is 3.33 that makes this application fulfill the aspect of the errors.
- e. The “easiness, conveniences, and, the speed in searching for information” score is 3.17 which shows the good satisfaction aspect in the application.

DISCUSSION

After giving the questionnaire to 12 respondents, the next step is to do the recap of the results. The results show that the average number of respondents agrees with the usability test of the START EBP application with a mean of 0,59. Meanwhile, the number of disagree result is 0,08 on average. If the product has a good function but does not have good usability, then the product cannot be used optimally and can be abandoned by the user. High usability will guarantee a product has a good function and is easy to use.(Pangetsu, 2014).

The percentage of the usability testing answer for 12 respondents can be seen in the following Table 6.

Table 6. Percentage of the Answer

PK	STS	TS	S	SS	Total
1	0.0	0.08	0.67	0.25	1.0
2	0.0	0.08	0.59	0.33	1.0
3	0.0	0.17	0.5	0.33	1.0
4	0.0	0.0	0.33	0.67	1.0
5	0.0	0.0	0.67	0.33	1.0
6	0.0	0.08	0.67	0.25	1.0
7	0.0	0.08	0.59	0.33	1.0
8	0.0	0.17	0.58	0.25	1.0
9	0.0	0.08	0.59	0.33	1.0
10	0.0	0.0	0.67	0.33	1.0
11	0.0	0.08	0.5	0.42	1.0
12	0.0	0.08	0.67	0.25	1.0
13	0.0	0.08	0.67	0.25	1.0
\bar{X}	0.0	0.08	0.59	0.33	1.0

Table 7. Value result Usability

No	Attribute	Value
<i>Learnability Average</i>		3.19
1	Application START EBP is recognizable from the starting interface	3.17
2	The desired search result can be found	3.25

No	Attribute	Value
3	START EBP is easy to understand	3.17
<i>Efficiency Average</i>		3.35
4	Texts are easy to read	3.67
5	Understandable language	3.33
6	The columns in the application are easy to fill	3.17
7	The information are accessible	3.25
<i>Memorability Average</i>		3.17
8	The menu is easy to recognize	3.08
9	Memorable menu and interface	3.25
<i>Errors Average</i>		3.33
10	The result can be stored in each page	3.33
11	The icons in the application are functioned well	3.33
<i>Satisfaction Average</i>		3.17
12	Pleasant color and view in the application	3.17
13	The menu can help in find it the information needed	3.17
<i>Total Average</i>		3.24

CONCLUSION

The result of the discussion above can be concluded that the online application START EBP is easy to use for searching the 7 steps of EBP because it is easy for the user to understand.

In order to achieve the maximum result of applying the online Application START EBP with a larger scale of the user in the nursery, the writer knows that more tests need to be done related to the available features in the application, also the experiment of the effects of using the application besides for promoting the EBNP.

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DECLARATION OF CONFLICTING INTEREST

In the implementation of testing the START EBP online application, there were

relatively no obstacles or resistance from respondents or the environment.

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AUTHOR CONTRIBUTION

Anggit Prasetyo Mituhu: Designed the study, collected and analysis the data, and contributed to completion of article.

Tri Nur Kristina: Contributed to completion of article.

Luky Dwiantoro: Contributed to completion of article.

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