

## The Effectiveness of the Android-Based Try-Out Application for Competency Test of Midwife Students

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### ABSTRACT

This study aims to develop an Android-based application for midwife competency tests that effectively enhance the graduation rate of midwifery students and validate the Android-based Midwifery Try-Out (BINIUS) application. Test the effectiveness of the Android-based Try-Out (BINIUS) application for a midwifery competency test. The method used in this study was a combination of R & D research and intervention, involving 68 respondents of Associate Degree D-III midwifery students in the final semester: 32 respondents from STIKES Salewangang – Maros and 36 respondents from STIKES Mega Rezky – Makassar, who were going through the One Group Pretest-Posttest results showed that before using the BINIUS application, 4.6% (29 students) passed, and 55.4% (39 students) did not pass the try-out competency test. Meanwhile, after using the BINIUS application, passed students increased to 90.8% (59 of 65 students), and 9.2% (9 students) was failed. Statistically, we revealed ( $P < 0.005$ ). the results of the normality test carried out using SPSS analysis obtained a Sig 2-tailed value on the Kolmogorov Smirnov test (K-S test) of 0.000 which means the Sig value  $< 0.05$  which indicates that the is normally distributed. in the results of the try-out competition test at the two research institutions and an increase in the graduation rate, which means that there was a significant difference before and after using the BINIUS application, indicates the effectiveness of this android-based midwifery try-out application.

**Keywords:** Product development, competence Android-based try-out, Technology Acceptance Model (TAM).

### Introduction

The high number of midwifery schools with the low quality of midwifery education accreditation in Indonesia adds to the reason for implementing the midwife competency test to maintain the quality of health service standards in midwifery. The midwife competency test in Indonesia has only been implemented since 2013, and the average result is that 30% of

participants do not pass the midwife competency test with a pass limit value of 40.14% (Fitria et al., 2019).

The list of participants for the midwife competency test from the 2017 to 2018 period decreased as follows: 33,792 participants in the IX/2017 period, 19,957 in the X/2018 period, and 13,146 participants in the XI/2018 period. The average graduation rate for the period is still low, about 55% graduation rate (Ristekdikti 2018), and the low graduation rate is very visible in the midwife competency test period when the cracker participates as an exam participant, namely period VIII/2017 is 22.89% and period X/2018 was 27.95% (Werni et al., 2020). Based on data from the ministry of research, in 2019, the number of applicants for the competency test was 46,084, and only 23,627 (51.26%) passed.

The pass rate for the midwifery competency test on the Mega Rezky University for the Midwifery Study Program is still relatively low; in the case study data obtained in 2019, the number of students who took the competency exam was 440 students, students who were declared competent were 127 (28.86%) students and those who were incompetent were: 313 (71.14%) students. Those were divided into three implementation waves: period 08 - 09 March, 206 students took the competency exam, 38 students were competent (12.42%), and incompetent were 168 students (81.55%); period 26 – 27 July, 110 students took the competency exam, 38 competent students (34.55%) and 72 incompetent students (65.45%); period 25 – 26 October, 124 students took the competency exam, with 51 competent students (41.13%) and 73 incompetent students (58.87%). In 2020, the number of students who took the competency exam was 229, the number of students who were declared competent was 75 (32.75%), and the number of incompetent students was 154 (67.25%) students. Those were divided into two implementation waves; period 18 – 20 July, 189 students took the competency exam with 50 (26.46%) competent students and 139 incompetent students (73.54%); period 07 – 09 November, 40 students took the competency exam with 25 (62.50%) competent students and 15 (37.50%) incompetent students.

The passing rate of the midwife competency test on the Salewangang Maros University: period 27 July – 27 October of 2019, the number of students was 150 people with the number of competent students about 76 (30.43%) and incompetent students about 74 (59.62%); Period 19 July – 9 November of 2020, the number of students enrolled took 122 competency exams and about 70 competent students (6.184%) and 52 incompetent students (48%).

Thus, It means the need for media to support midwifery students is crucial. This study aims to develop an Android-based application for midwife competency tests that effectively

enhance the graduation rate of midwifery students and validate the Android-based Midwifery Try-Out application.

### **Methods**

The research has two stages: developing an Android-based Competency trial application using the Borg and Gall Research and Development (R&D) model and assessing the effectiveness of the application using the pre-experimental method with one group of pre-test and post-test design. The R&D method (Baso & Agussalim, 2021) began with analysis through a preliminary study involving midwifery lecturers and students. Then do the design development, materials, questions, and instruments. After the initial draft of the application was completed, validation was carried out by 2 media experts, 2 material experts, and 15 midwifery students to assess the application's feasibility. Furthermore, an assessment of the effectiveness of the use of the application was carried out involving 35 midwifery students using the purposive sampling technique. User satisfaction was measured before and after utilizing a trial of the Android-Based Competency trial application. Data analysis used the Kolmogorov Smirnov normality test and statistics (K-S test) of 0.200, which means the Sig value  $> 0.05$ , indicates that the data was normally distributed. This research was conducted at Megarezky University - Makassar and Stikes Salewangang - Maros, South Sulawesi, during November 2021.

### **Result**

#### **Product analysis developed**

The product analysis developed was based on field studies and literature reviews conducted by researchers. The results of the product analysis were a reference in product development. The following are the features developed on the android-based online try-out media, called BINIUS:

#### **Product development**

In the initial product development, applications consisted of designs, competency questions, discussions, answer keys, scientific journals, midwifery guidelines, and research instruments, then we added a menu of teaching materials (Figure 1).

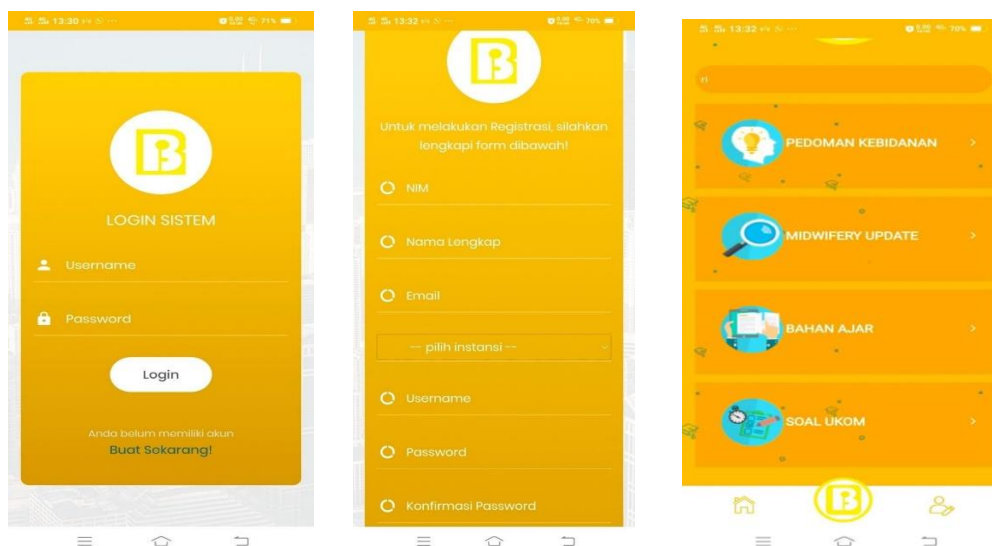


Figure 1. The design and menu of the midwifery competency application

### Media Expert Validation Test

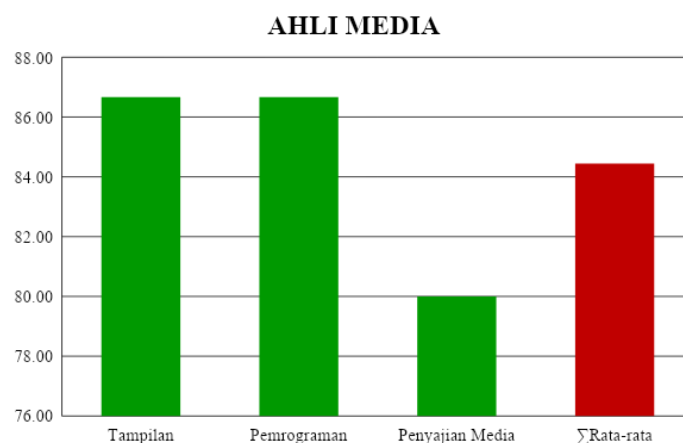


Figure 2 Media expert validation results

Figure 2 shows the percentage of the feasibility of display aspects reached 86.67%; the programming aspects was 86.67%; media presentation aspects with a percentage of 80.00%; meanwhile, the total percentage of all aspects obtained from media experts was 84.44%. Then, it was concluded that the development of a mobile/android-based try-out Online (BINIUS) product was categorized as feasible to use.

### Material expert validation

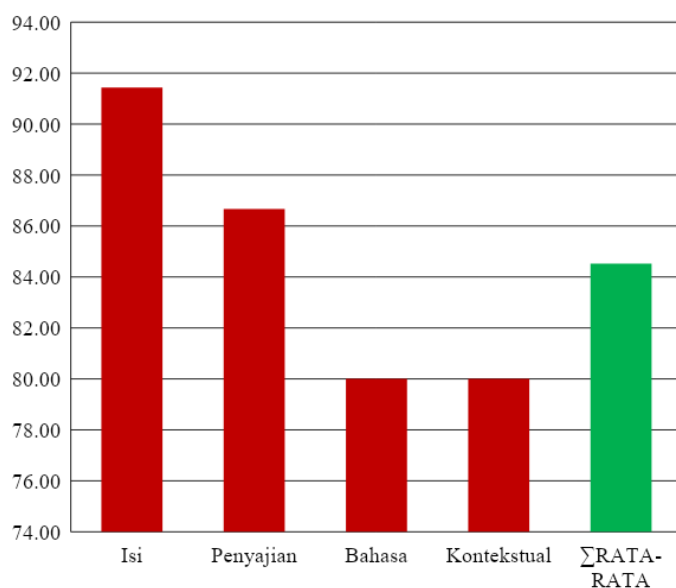


Figure 3 Material expert validation results

Figure 3 shows that eligibility of the content aspect obtained value of 91.43%; based on the presentation aspect, the assessment percentage was 86.67%; the language aspect was valued at 80.00%; contextual aspects was 80.00%; meanwhile, for the total percentage of all aspects obtained from material experts was 84.52%. It means that the android-based online try-out product development (BINIUS) was categorized as feasible to use.

### Small group category results

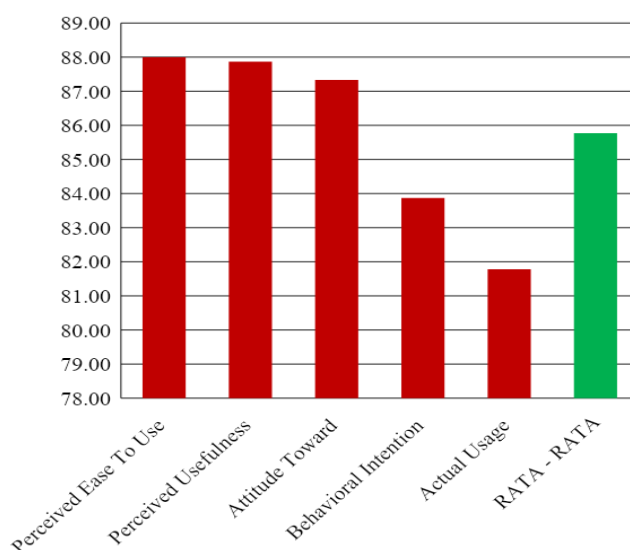


Figure 4 Results of small group validation

Figure 4 shows the percentage of feasibility in terms of the ease to use aspect with an assessment percentage of 88.00%; the Perceived Usefulness aspect was valued at 87.87%; the Attitude Toward was 87.33%; the Behavioral Intention aspect about 83.87%, Actual Usage of 81.78%; meanwhile the total percentage of all aspects obtained by small group trials was 85.77%. Thus, the development of mobile-based online try-out products (BINIUS) was categorized as very feasible to use.

### Large Group Category Results

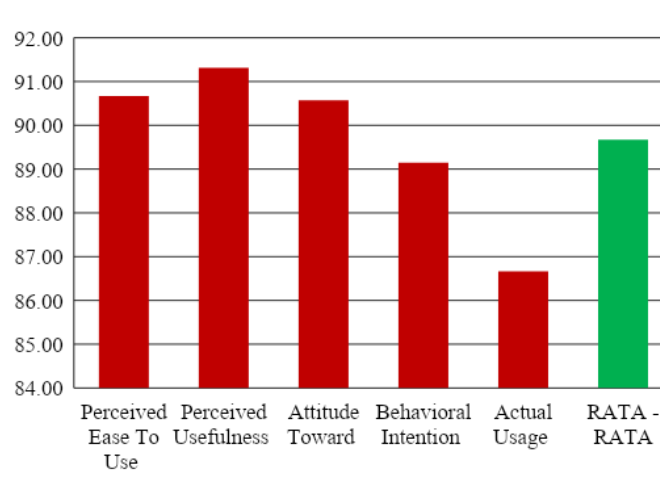


Figure 5 Large group trial results

Figure 5 shows the value of feasibility in using the android-based online try-out media (BINIUS) of large group trial users. The feasibility of the Ease To Use aspect was valued at 90.67%; the Perceived Usefulness aspect was 91.31%; the Attitude Toward aspect was valued at 90.57%; the Behavioral Intention hits 89.14%; the Actual Usage was 86.67%; meanwhile, the total percentage of all aspects obtained by large group trials was 89.67%. It can be concluded that the development of mobile/android-based online try-out products (BINIUS) was categorized as very feasible to use.

**Table 3.1. Midwifery student online try-out results of MegaRezki University**

	Mean	Minimum – Maximum	P-Value
Pretest (n=35)	53.08	40 – 87	0.000
Posttest n=35)	57.00	45 – 96	

The table above shows the mean pre-test value of 53.08 with a minimum-maximum value of 40 – 87. Meanwhile, post-test of 57.00 with a minimum-maximum value of 45 - 96.

The significance of the p-value of  $0.00 < 0.05$  shows differences in test results pre- and post-test on developing a mobile-based online try-out product (BINIUS).

**Table 3.2. Midwifery student online try-out results of STIKES Salewangeng**

	Mean	Minimum – Maksimum	P-Value
<b>Pretest (n=30)</b>	38.56	30 – 87	0.000
<b>Posttest n=30)</b>	69.46	44 – 95	

The table above shows the mean pre-test value of 38.56 with a minimum-maximum value of 30 – 87. The post-test of 69.46 with a minimum-maximum value of 44 - 95. The significance of the p-value of  $0.000 < 0.05$  shows differences in the pre- and post-test results on mobile-based online try-out product development (BINIUS).

**Table 3.3. Student Graduation Achievement Results in Online Tryout Trials**

Category	Pre Test		Post Test		p-Value
	f	%	f	%	
Graduated	29	44.6	59	90.8	0.000
Not pass	39	55.4	9	9.2	
<b>Total</b>	68	100	68	100	

The table above shows a total of 68 students who passed the competency test before using the BINIUS application with a percentage of 44.6% and 39 students who did not pass with a percentage of 55.4% while after using the BINIUS application the pass rate of participants increased to 59 from a total of 68 people with a percentage of 90.8% while the number of non-graduates was reduced to 9 people with a percentage of 9.2% with a P-Value value of 0.000 which means that there is a significant difference before and after using the BINIUS application in the results of the try out competition test at the two institutions where research and increase in graduation rates that show the effectiveness of the Android-based Try out online application (BINIUS).

## Discussion

Based on the expert validation, the Android-based competency trial application is considered very feasible and provides an attractive appearance to motivate and inspire students to learn and answer questions. It is very well understood that Android is software used on mobile devices running devices, including the operating system and core application

middleware. Android is an operating system for smartphones and tablets. Huda argues about Android; Android is a Linux-based operating system specifically for mobile devices such as smartphones or tablets (Muir et al., 2020). The use of technology in health education continues to grow and change. Technological skills significantly improve the learning environment, information and communication technology is an efficient supporting tool that enriches quality through various innovations made according to the era, psychology, and student learning needs. Many previous studies have made innovations in education, especially innovations in learning media design that have proven effective and can help improve student learning outcomes. One of which is research conducted by (Hafidz, M., Wardhono, WS, & Wicaksono, 2020) that student learning outcomes the pre-test has an average value of 45.6 and the post-test have an average value of 73.6. (Yektyastuti & Ikhsan, 2016) Advances in science and technology are expected to facilitate educators in learning media. Actualizing teacher abilities in the use of technology and media development of learning media can be carried out by teachers as the actualization of their abilities, as the standards for academic qualifications and teacher competencies are explained that teachers must utilize information and communication technology for the benefit of learning. Thus, teachers who can develop learning media should be more motivated to actualize their abilities into actual work in developing products. Research conducted by (Muyaroah & Fajartia, 2017) with the research title Development of Android-Based Learning Media using the Adobe Flash CS 6 Application in Biology Subjects found the t-test results stating an effective use of Android-based learning media with learning outcomes in can students.

Other findings indicate that the level of knowledge, attitudes, and practices of e-learning is adequate. This proves the usefulness of this teaching method in a country with limited resources despite the technical and socio-economic challenges it faces. Medical students should provide extensive educational support, especially during the pandemic. We recommend adapting interactive online learning lectures using very advanced technology (Chandra Dhewy, 2020)

The statistical test of the Android-based competency trial from the tested data is determined by reading the Sig (P-Value) value contained in the SPSS output, provided that the data is normally distributed if the P-Value value is obtained from the calculation results is greater than the alpha 5 % or  $P\text{-Value} > 0.05$ . From the normality test results carried out using SPSS analysis, the Sig 2-tailed value in the Kolmogorov Smirnov test (K-S test) was 0.200, which means the Sig value  $> 0.05$ , indicates that the data was normally distributed. So, using the developed learning media influences students' academic performance. The expected



implication of this Android-based competency application trial is to make it easier for students and lecturers to carry out UKOM trials independently, flexibly, and efficiently. (Fitria et al., 2019)

### **Conclusion**

This Android-based Competency Trial Application is very feasible to use and can be effective. Based on statistical tests, there are differences in the level of effectiveness of midwifery students on the Competency trial with computer-based, web-based, and android-based tests.

### **Acknowledgment**

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### **References**

1. Baso, Y. S., & Agussalim, A. (2021). Computerization of Local Language Characters. *12(12)*, 76–84.
2. Chandra Dhewy, R. (2020). Pengaruh Pembelajaran Berbasis Daring Terhadap Hasil Belajar Statistika Pada Mahasiswa Stikes Anwar Medika Sidoarjo. *Open Journal Systems*, *14(11)*, 3555–3558.
3. Fitria, R., Serudji, J., & Evareny, L. (2019). Persiapan Uji Kompetensi Bidan sebagai Exit Exam. *Jurnal Ilmiah Universitas Batanghari Jambi*, *19(1)*, 195. <https://doi.org/10.33087/jiubj.v19i1.590>
4. Hafidz, M., Wardhono, W. S., & Wicaksono, S. A. (2020). Pengembangan Media Pembelajaran berbasis Android untuk Materi Pemrograman Dasar di SMK Negeri 5 Malang. *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer*, e-ISSN, *25(11)*, 964X.
5. Muir, F., Bruce, J., & McConville, K. (2020). Teaching, reflecting, and learning: The value of an intercalated medical education program. *Medical Teacher*, *42(5)*, 523–528. <https://doi.org/10.1080/0142159X.2019.1708290>
6. Muyaroah, S., & Fajartia, M. (2017). Pengembangan Media Pembelajaran Berbasis Android dengan Menggunakan Aplikasi Adobe Flash CS 6 pada Mata Pelajaran Biologi. *Innovative Journal of Curriculum and Educational Technology*, *6(2)*, 22–26. <https://doi.org/10.15294/ijcet.v6i2.19336>
7. Werni, S., Rosita, R., Prihartini, N., & Despitasi, M. (2020). Identifikasi Kompetensi Bidan: Data Riset Pendidikan Tenaga Kesehatan Tahun 2017. *Jurnal Penelitian Dan*

Pengembangan Pelayanan Kesehatan, 3(3), 142–151.  
<https://doi.org/10.22435/jpppk.v3i3.2458>

8. Yektyastuti, R., & Ikhsan, J. (2016). Pengembangan Media Pembelajaran Berbasis Android pada Materi Kelarutan untuk Meningkatkan Performa Akademik Peserta Didik SMA Developing Android-Based Instructional Media of Solubility to Improve Academic Performance of High School Students. *Jurnal Inovasi Pendidikan IPA*, 2(1), 88–99.