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Development of a self-determined learning-based digital guide in the practicum subject of psychological assessment testing techniques

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Abstract

This study aims to develop a practicum guide in the form of a digital guide based on self-determined learning in the practical subject of psychological assessment of testing techniques for Guidance and Counseling department students. This study used the research and development method with the planning, production, and evaluation (PPE) module. The planning stage is the stage of conducting a needs analysis for making digital guides. The production stage is the stage of determining the material content of the module, making flowcharts, and storyboards, and making digital modules based on self-determined learning. Making the module starts with compiling the module material in Microsoft Word software, then the file is designed in the form of a digital guide. The digital module was completed and then carried out in the evaluation stage, thus, assessing the feasibility of the digital module by material experts and media experts. Digital modules are declared very feasible and can be used in practical lectures by material experts and media experts. It was concluded that the digital guide based on self-determined learning in the psychological assessment practicum course of testing techniques is declared very feasible to use.

Keywords: Digital guide; psychological assessment; self-determined learning

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1. Introduction

The development of technology, information, and communication is growing rapidly (Guzman et al., 2021). This has an impact on many things both in the life and education sectors (Purnamawati et al., 2019; Roztocki et al., 2019). Technological developments in the field of education affect more modern learning systems by implementing blended learning, hybrid learning, and so on (Muhimatunnafingah et al., 2018).

The State University of Malang is one of five tertiary institutions under the Ministry of Research, Technology, and Higher Education which effectively organizes online lectures. However, this achievement still needs to be improved in several aspects of lecture implementation, both at the university level, faculty level, and department level (Hediansah & Surjono, 2020; Nashir & Laili, 2021; Rorimpandey & Midun, 2021; Thamrin et al., 2022). The Guidance and Counseling Department has implemented a hybrid learning system in all courses, both university, facultative, and specialist courses. The psychological assessment course is a guidance and counseling skills course (MKBK), which is divided into two courses, namely psychological assessment of testing techniques and psychological assessment of non-testing techniques. This study focused on the subject of psychological assessment testing techniques.

The testing technique psychological assessment course has three-course outcomes (CPMK), namely being able to examine the basic concepts of testing technique assessment, being skilled at administering testing instruments, and having skills in compiling reports and informing psychological test results. The three CPMKs, the second and third learning outcomes which cover a wide range of material, focus on the psychomotor domain. The available learning resources are only in the form of ppt material or voiced ppt, so that not all lecture participants can understand the material to the fullest. The time for synchronous meetings is limited and the concentration of students is mostly distracted (Fabriz et al., 2021; Mairing et al., 2021; Zhang & Wu, 2022). So, a practical guide is needed for the psychological assessment of testing techniques that can support independent learning. The practicum guide is a technical guideline that is used as a basis for carrying out the practicum. The digital guide is intended as a guideline for students who program testing technique practicum courses to be able to study independently, so they can manage their study time and understand the learning material independently (Bukit et al., 2017; Shalawati & Hadijah, 2018; Alamri et al., 2020).

Digital guide as a learning resource that can support the implementation of self-determined learning (Nugraha et al., 2022; Raley et al., 2018; Schumacher & Ifenthaler 2021). Self-determined learning allows students to carry out the learning process without face-to-face meetings with lecturers in a very conducive environment (Glassner, 2022). Self-determined learning emphasizes independent learning in students (Wehmeyer & Abery, 2016). The principle emphasized in this learning model is that students become a source of learning for themselves, and the learning process is carried out independently (Blaschke, 2012; Theobald, 2021). This is by the hybrid learning system, where face-to-face time with lecturers is limited. This requires a good level of digital literacy by the students (Senkbeil, 2023; Chiu et al., 2022).

Several previous studies have examined the development of digital guides in hybrid learning using several platforms, including platforms e-book (E-PUB) (Assidiqi & Sumarni, 2020; Farhana et al., 2021), Mobile Augmented Reality (MAR) (Usada, 2014), Flipbook (Prisila et al., 2021; Roemintoyo & Budiarto, 2021), page-flip (Dari et al., 2021; Sastria et al., 2020), smartphone application based PHYPOX (Novitasari et al., 2021), smartphone (Ghofur, 2022) and radio and television systems (Mayasari & Ismayati, 2019).

Based on the description above, it is necessary to develop a digital guide for the practical assessment course on psychological testing techniques that can be used by students in carrying out practicums based on the principle of independent learning.

1.1. Purpose of the research

The purpose of this study was to produce a digital guide model based on self-determined learning in the psychological assessment practicum course on testing techniques which is ready to be tested for its acceptability.

2. Methods and Material

2.1. Research Method

This research method uses a research and development approach. The R and D model used in this research is planning, production, and evaluation (PPE) (Gall et al., 2003). Participants in this study consisted of two parts, namely preliminary study participants and expert judgment. Participants in the preliminary study were guidance and counseling teachers. Meanwhile, the participants in the expert judgment stage were four experts, namely two material experts and two digital learning media experts. The location of this research was conducted by the Guidance and Counseling Department, Faculty of Education, State University of Malang. The research instruments used in this study were focus group discussion (FGD) guidelines and expert judgment rating scales.

2.2. Participants

The research subjects were product research and development test subjects consisting of material expert subjects, media expert subjects, and prospective product users. Subject matter experts consist of 2 experts who are experts in the field of guidance and counseling with a minimum education qualification of S3 Guidance and Counseling and have more than 5 years' experience. The media expert subject consists of 2 experts who are experts in the field of educational technology with a minimum education qualification of S3 TEP and have more than 5 years of experience. Subjects of prospective product users are guidance and counseling students with a total of 10 people.

2.3. Data collection tools

The instrument used in the research is an instrument for assessing the acceptability of the product by material experts, media experts, and potential product users. The assessment instruments for material experts and media experts are in the form of rating scales to assess aspects, accuracy, usability, convenience, and attractiveness. The user test instrument measures the legibility and ease of use of the developed digital guide. This rating scale, in addition to accumulating information numerically, is also equipped with a comment column that provides space for experts to provide suggestions and qualitative information that is useful for improving the resulting instrument.

2.4. Procedure

The steps of this research procedure consist of three stages, namely the preparation stage, the implementation stage, and the evaluation stage (fig 1).

Figure 1

PPE Model Development Steps

Source: Parent & Lovelace (2018)

2.4.1. Preparation Stage

At this stage, the researcher conducted a need assessment in the implementation of the psychological assessment technique testing course.

2.4.2. Implementation stage

This implementation stage consists of three stages, namely (a) planning, namely planning that begins with an exploration of the need for developing digital guides using the focus group discussion method, which is carried out for students majoring in Guidance and Counseling who teach the psychological assessment testing technique course. The second is (b) production, namely compiling a guide design, starting with designing the material content and components contained in the learning implementation plan. At this stage, the researcher also made flowcharts and storyboards as a reference in making digital guides. The development of this digital guide uses the 4STMD (four steps teaching material development) method which consists of four stages, namely selection, structuring, characterization, and diactive reduction (Cohen et al., 2018). This stage produces a draft of a digital guide for psychological assessment practicum testing techniques which is ready to be validated. The third, namely (c) evaluation, is the next step after the product design is compiled, namely validating digital guidelines to material experts and media experts. In addition, a user readability/understanding test was also carried out.

2.4.3. Reporting stage

This stage is the completion stage. The data collected is then analyzed, for improvement of the product being developed.

2.5. Data Analysis

Analysis of the data used to process the results of the assessment using the Inter-rater Agreement Model test or the agreement model. The Inter-rater Agreement Model is described in Figure 2 as follows (Gall et al., 2003).

Figure 2

Expert Opinion 1. Inter-rater Agreement Model

		Low Relevance (1-2)	High Relevance (3-4)
Expert Opinion 2	Low Relevance (1-2)	A	C
	High Relevance (3-4)	B	D

Based on the Inter-rater Agreement Model or the agreement model shown in Figure 2, the researcher can determine the index of expert validation results using the following formula:

$$\text{Expert test Index} = \frac{D}{A + B + C + D}$$

Description:

A: Low Relevance from Experts 1 and 2
B: High Relevance from Expert 1 and low relevance from Expert 2
C: Low relevance from expert 1 and high relevance from expert 2
D: High Relevance from experts 1 dan 2
The results of the analysis and interpretation are categorized as follows (table 1).

Table 1
Category expert validity test index

Expert Validity Index	Category
$0,80 < r_{xy} \leq 1,00$	Very high
$0,60 < r_{xy} \leq 0,80$	High
$0,40 < r_{xy} \leq 0,60$	Low
$0,00 < r_{xy} \leq 0,20$	Very low
$r_{xy} \leq 0,00$	Not valid

3. Results

3.1. Planning

This planning stage begins with an exploration of the need for the development of a digital guide using the focus group discussion method, which is carried out for students majoring in Guidance and Counseling who teach the test technique psychological assessment course. The FGD was conducted with 20 students participating in the testing technique practicum course in 2021. The FGD was carried out, first exploring the need for the development of practicum guidelines in the subject of psychological assessment of testing techniques (Van Eeuwijk & Angehrn, 2017; Nyumba et al., 2018; Zacharia et al., 2021). Secondly, the forms and platforms used in developing digital practicum guides. Third, the media used in the practicum guide was revealed.

Researchers conducted interviews and documentation studies to analyze the need for digital module development. The documentation study activity aims to obtain data regarding the availability of learning resources and what kind of learning resources are needed according to the times that support lecture activities. The learning resources available in the guidance and counseling department are modules and PowerPoints provided by the team of lecturers for the psychological assessment technique testing course, while the existing module books are still not standardized.

PowerPoints and modules are learning resources used by lecturers in every lecture activity. PowerPoint and lecture modules available in the department are still not broad in scope of material, only some material is included in the module or PowerPoint. The existing psychological assessment course module is still limited to theory, while the psychological assessment of testing techniques is not just theory but is also integrated with the testing technique practicum course so that variations in delivery between lecturers are still diverse.

The available course modules have not kept up with ICT progress because the available test technique psychological assessment course modules are still paper-based. As for PowerPoint, the material displayed is incomplete and not equipped with other supporting materials such as video and audio which can increase students' understanding of learning material.

The next needs analysis was obtained from the results of interviews conducted with lecturers on the psychological assessment subject of testing techniques. The scope of the interview with the lecturer for the psychological assessment course includes which basic competencies from the Semester Lecture Plan the module is made of, then regarding the learning resources used and their

effectiveness in the lecture process, then regarding the use of digital modules in the course process psychological assessment testing techniques include supporting facilities for using modules digital as well as any content needed in the digital module.

The results of the interviews illustrate that of the 7 sub-CPMK that students must learn in one semester, the CPMK Sub carries out rapport in psychological assessments of testing techniques and carries out psychological tests (intelligence test-CFIT scale 3, DAT aptitude test, and interest test) are the subjects that have quite a lot of coverage and require several lecture media such as videos that can add to students' understanding in exploring the subject matter.

Based on the analysis that has been carried out through documentation study activities and interviews. It can be concluded that the psychological assessment course, especially the CPMK sub-group for rapport-building skills and psychological test-taking skills, does not yet have a digital module for learning activities. Students can access digital modules through devices or laptops that are connected to the internet. The availability of computer labs and Wi-Fi can support learning activities through digital modules. Learning activities carried out still use PowerPoint as teaching material and do not insert video or audio as a support for learning activities. Likewise, the available learning modules are still paper-based so they cannot insert video or audio to support their learning activities. Based on these conclusions, can be used as a consideration for researchers in developing digital-based learning resources in the form of modules as a source of student-independent learning, both used in lecture classrooms and when studying independently outside the lecture room.

3.2. Production

In this step namely compiling a guide design, starting with designing the material content and components contained in the lesson plan. At this stage, the researcher also made flowcharts and storyboards as a reference in making digital guides. The development of this digital guide uses the 4STMD (four steps teaching material development) method which consists of four stages, namely selection, structuring, characterization, and deductive reduction (Cohen et al., 2018). This stage produces a draft of a digital guide for psychological assessment practicum testing techniques which is ready to be validated. The design results consist of a digital guide model that is ready to be developed into software.

3.3. Evaluation

This is the next step after the product design has been prepared, namely validating the digital guide to material experts and media experts. In addition, a user readability/understanding test was also carried out. The stage of research that has been done is the stage of analysis. At this stage, a literature review is carried out related to the needs and structure of digital guide designs based on self-determined learning in the Testing Technique Psychological Assessment Course. Next, identify needs by using interview techniques and documentation studies.

3.4. Test Result Data

Product trial implementation has two types of data, namely quantitative data and qualitative data. Quantitative data is obtained from the results of the examiner's assessment which has been listed in the instrument column, while qualitative data is obtained from the results of the assessment or input on the suggestion sheet.

3.4.1. Test Result Data of Material Expert

The product of the results of the research on the development of a Digital Guide based on self-determined learning in the practicum course of psychological assessment of the testing technique

was first assessed by the material expert. The selected expert has work experience as a lecturer in the Guidance and Counseling department for 10 years and has the last education as a Doctor of Guidance and Counseling.

3.4.1.1. Quantitative Data

Table 2

Result of Material Expert

Aspect	Aspect assessed	Score
Accuracy	The accuracy of the material in the lecture objective guide	4
	The accuracy of the guide material with course achievements	4
	Accuracy of the guide material with the theory	4
	The accuracy of the order in which material is delivered in the guide	4
Utility	Use of the introduction as the initial information in the guide	4
	The usefulness of the description of the test material in the guide	4
	The usefulness of practical implementation instructions in the guide	4
	The use of images displayed in the guide as supporting material	3
Convenience	Ease of description of the material in the guide	4
	Ease of understanding the language used in the guide	4
	Ease of steps shown in the guide	4
Attractiveness	The attractiveness of the combination of explanations in text and images used	3
	The attractiveness of the guide design	3
	The attractiveness of the combination of colors and images used	4
	Interesting look at the guidebook	3
	The overall attractiveness of the guide display	3

Based on Table 2 the feasibility assessment given by the material expert, shows the numerical data provided by the expert, namely with a score of 1 = 0, score 2 = 0, score 3 = 5, and score 4 = 12. Then calculate the material expert test index using the formula as follows:

$$R=\frac{(1x0)+(2x0)+(3x5)+(4x12)}{17} = 3.7$$

The overall analysis of the results of the material expert's assessment provides an assessment in the form of a feasibility presentation of 3.7 which is included in the very feasible category. The results of the assessment of material experts as a whole can be interpreted as digital guide products in improving students' abilities and skills in psychological assessment testing techniques. This shows that the guide has high acceptability.

3.4.1.2. Qualitative Data

Table 3

Material Expert Criticism and Suggestions

No	Criticism and suggestions

1	The guide is quite interesting and quite informative, it's just that it needs to be added examples of scoring that can be applied by students without direct assistance from the lecturer.
2	Look again at the grammar, spacing between sub-topics, topics, or sections

Based on Table 3, qualitative data is obtained from expert tests in the form of criticism and suggestions regarding digital guide products. The results of the first qualitative data analysis are that it would be nice if the guide included pictures or photos of examples of testing and the results of test interpretation. Second, regarding the cover image in the guidebook, it would be nice to replace it with an image showing practicum testing activities. Next, it is necessary to pay attention to the correct procedure for writing scientific papers and finally, the suggestion is to change the typeface (font) to make it more attractive.

3.5. Media Test Expert Result Data

Products from the results of research on the development of digital guides based on self-determined learning in the practical course of psychological assessment of testing techniques are assessed by media expert tests, who have work experience as educational technology lecturers for 20 years. In addition, he has the last education Master's in educational technology.

3.5.1. Quantitative Data

Table 4

Media Test Expert

Aspect	Aspect Assessed	Score
Accuracy	The accuracy of using the digital guide with the characteristics of digital students	4
	Image selection accuracy	4
	The accuracy of using language with the characteristics of digital students	4
	The accuracy of the selection of letters (fonts) in the video	4
Utility	Use of the guide to help students improve their understanding and skills in psychological assessment test techniques	4
	The use of the guide is to help students understand the practice of psychological assessment techniques to help students know and understand the practice of psychological testing	4
	Use of digital guides to help students become skilled at taking psychological tests	4
Convenience	Ease of description of the material in the guide	3
	Ease of understanding the language used in the guide	4
	The overall ease of use of the guide	4
Attractiveness	An interesting combination of colors used	4
	The attractiveness of the images used	4
	The attractiveness of the combination of explanations, text, and images used	4

Based on Table 4, the feasibility assessment given by the learning media expert shows the numerical data given by the expert with a score of 1 = 0, score 2 = 0, score 3 = 1, and score 4 = 15. Then calculate the material expert test index using the formula as follows:

$$R = \frac{(1x0)+(2x0)+(3x1)+(4x15)}{16} = 3.93$$

The overall analysis of the results of the media expert's assessment provides an assessment in the form of a feasibility presentation of 3.93 which is included in the very feasible category. The results of the assessment of media experts as a whole can be interpreted that digital guide products based on self-determined learning in the psychological assessment practicum course on testing techniques are lecture media that are very acceptable, precise, and clear for use by lecturers teaching practicum testing engineering courses with a hybrid lecture model.

3.5.2. Qualitative Data

Table 5

Criticism and Advice from Media Experts

Criticism and Suggestion
In general, it's been good. Optimization can be done on test sample images, run tests, and psychological test tools that are taught

Based on Table 5, qualitative data is obtained from expert tests in the form of criticism and suggestions regarding digital guide media. The results of the first qualitative data analysis are that overall, the digital guide is quite good, but it needs to be maximized on supporting information, such as pictures and photographs that are relevant to psychological tests.

4. Conclusion

Based on the results of research and discussion of the developed module, it can be concluded as follows:

Development of a digital guidance model based on self-determined learning in the psychological assessment practicum course. This testing technique was developed using the research and development (R and D) model, using the planning, production, and evaluation (PPE) stage model.

At this planning stage, a needs analysis for digital guidance was carried out in the psychological assessment practicum course on testing techniques. The analysis was carried out based on three aspects, namely curriculum analysis, student characteristic analysis, and product development analysis. Curriculum analysis was carried out using a literature study including analysis of the material for the practicum course material, psychological assessment, testing techniques, course achievement standards, and indicators that must be achieved by course participants. An analysis of the characteristics of students participating in the psychological assessment course on testing techniques was carried out by conducting FGDs on students majoring in Guidance and Counseling class of 2020 and 2021. The FGD participants were students who took the hybrid learning course in that course. Based on the analysis of the results of the FGD, it was found that the course achievements showed that the ability of students in these courses was in the low category, especially in the skills domain, while in the cognitive and affective domains, it was in the medium category. The specialty of this practicum course is dominated by the skills domain as much as 60% while the remaining 40% is in the cognitive and affective domains. Product development analysis is carried out by analyzing existing teaching materials as comparison material or as basic materials for the preparation of modules to be developed. The previous use of teaching materials was not sufficient for the practicum course participants' needs because they were limited to textbooks. Therefore, the use of modules as independent learning resources is necessary, given the structure of the module which contains the most complete components compared to other teaching materials.

At this Production stage, the outline of the contents of the guide module is carried out,

collecting references, determining the layout of the module, and preparing the module valuation instrument. The self-determined learning-based digital guidance model in the psychological assessment technique testing course was developed with the following characteristics: (1) learning activity steps are designed using a self-determined learning approach, (2) teaching materials in the form of digital guides train students to be able to learn independently and hone their skills in carrying out testing techniques. (3) the guide module contains practical instructions. The next stage is the production of manuals in digital form (e-book).

This evaluation stage is the digital guide validation test stage to see its acceptability. The trial was carried out on lecturers in the testing technique practicum course.

5. Recommendation

Based on the weaknesses resulting from the development of this guide, it is necessary to follow up as follows:

1. Digital guides need to be supplemented with other interactive media, such as video graphics, etc.
2. To be used optimally in hybrid practicum learning, it is necessary to create an interactive web that students can use to study independently.

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