Mikailalsys Journal of Advanced Engineering International

e-ISSN : 3046-9694
p-ISSN : 3046-8914

Index : Harvard, Boston, Sydney University, Dimensions, Lens, Scilit, Semantic, Google, etc

https://doi.org/10.58578/MJAEI.v1i3.3847

E-Counseling : Mobile-Based Specialization System in Vocational Schools

Agus Aan Jiwa Permana[1], Made Sudarma[2], Ngakan Nyoman Darmayasa[3]
[1,3]Ganesha University of Education, Indonesia; [2]Udayana University, Indonesia
agus.aan@undiksha.ac.id

Article Info:

Submitted:	Revised:	Accepted:	Published:
Sep 1, 2024	Sep 12, 2024	Sep 15, 2024	Sep 18, 2024

Abstract

Many students who will continue their studies to the high school level are confused about choosing a major. This is because most students do not understand the majors at the vocational level, making it difficult for students to enter majors according to the talents and interests of each student. This research is a continuation of previous research that has developed web-based applications. With a majors specialization system using the Inventory Personal Survey Test model system which was built as a majors selection system at the SMK level, mobile access is needed to make it easier for students to access this service via an application on a smartphone.This system is designed using Android Studio and the database creation using MYSQL. The results of the specialization that has been carried out show that the system can be used to conduct online counseling and makes it easier for counselors to collect and analyze counseling results.

Keywords: Counseling, E-Counseling, Inventory Personal Survey, Specialization, Majors

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INTRODUCTION

Every year 1.5 million students pass national exams at the junior high school level and equivalent. The Minister of Education and Culture stated that the passing rate for the national junior high school and equivalent exams 2017 reached 99.48% or around 1,573,036. Graduates who plan to continue their education at vocational high schools or vocational schools must determine their major. This major is a decision that is quite difficult for most junior high school students, especially for students who do not have knowledge or references or have difficulty finding information regarding the selection of majors at vocational schools, one of which is SM N 3 Singaraja which has many majors or other school like in SMKN Bali Mandara (Jiwa Permana et al., 2021; Permana et al., 2021).

The current trend is that many prospective new students want to study there but still need clarification about which major to choose after receiving the exam results later. This situation is typical of today's children because they are not educated to make their own decisions, usually choosing a school just for fun or joining friends without knowing their potential. Based on this, it causes students to be lazy to learn and also reluctant to learn. So that the school, especially the guidance and counseling teacher as a counselor, has quite a lot of difficulty in dealing with prospective new students because they need to learn the interests and competencies of these students.

The current majoring process is usually still done manually, namely by giving a test to these students to find out the results, so it is less efficient and also requires much paper. Therefore, the development of a web-based survey inventory test is a solution implemented to process of majoring in vocational high schools. Because the system already exists on the web, which can be accessed via this link http://simajuganesha.com/.

However, the specialization system built previously needs to be updated because the system is quite complex. When accessed using a smartphone, the appearance is less than optimal and not dynamic, so it needs to be repaired again. Then when taking questionnaires and testing, it is necessary to develop a unique system to handle this so that the system has a responsive display, can be accessed quickly, and has a display according to a smartphone. The existing solution is to develop an Android application.

From the explanation above, an idea emerged to build a system for developing access to mobile-based majors specialization systems. Its application uses the Java programming language for Android in building mobile applications. Currently, Android supports Java

technology. For this reason, designing a mobile update client application with full features can run on Android devices. This program will facilitate access to smartphone applications owned by students at home. Students get information from test results and alternative majors that are suitable for new students. (Aan et al., 2018; Jiwa Permana et al., 2018; Permana et al., 2021).

Literature Riview

Inventory Personal Survey (IPS)

An inventory test is a self-report questionnaire or self-report, to determine characteristics, personality, interests (Interest), attitudes (attitudes), values , or values [5]. Modern inventory tests have stages of development that begin with personal interviews and then develop into personal information.

Many theories are directly related to Inventory, one of which is the John Holland concept; this concept is related to careers. In the world of education, many students, particularly prospective new students who wish to continue in Vocational High School, need clarification about choosing a major because they need to know what skills they want to learn. Many also come with their friends and follow the orders of their parents. They have yet to think that liking will impact their career in the future.

This situation results in little information about careers and education that supports these careers; the concept from John Holland tries to explain and assess how a person or individual chooses a career based on the circumstances, personality traits, and characteristics of the type of environment, namely (reality environment, intellectual environment, social environment, conventional environment, business environment, and artistic environment).

The compatibility between personality types and the environment will make it easier for students or individuals to obtain psychological satisfaction and pursue careers in their lives. So the Inventory Personal Survey (IPS) test can help prospective new students to go to vocational schools according to their interests and talents.

Inventory Section Structure

According to the concept of John Holland is the result of heredity and environmental influences. Inventory is also related to personality, so this inventory section consists of six

components (Aan et al., 2018):

a. Realistic (R)

A realistic is a person with a realistic type who has a practical way of thinking. In conveying information, your style is more candid, honest, and straight to the point. You also try to be as detailed as possible in conveying information, such as an example giving a realistic picture of the explanation. You prefer to learn new things or by trying directly what you learn. Most people with this personality also prefer to work outdoors.

b. Investigative (I)

An Investigative is a person with a suitable observer type and likes to find solutions to problems. Abstract-theoretical concepts and complex problems are something that excites . You are full of curiosity and critical of various information. Although critical, you are willing to accept all input because you like to learn something.

c. Artistic (A)

Artistic is a person with creative activities, such as art creation, writing, film production, and role-playing. If there is an opportunity to express yourself through something creative, then you will be interested. Aesthetics is what interests you. You also like to imagine. Someone can see you as original because you have creative and unique thoughts.

d. Social (S)

For someone with the Social type, other people are valuable to you. In doing work, you are more interested in working together with group members. Inter-group issues and social activities are critical to you. People with this personality are primarily friendly, appreciative, and total. You pay attention to social issues. Thus, it is fun for you to participate in social activities and solve interpersonal problems.

e. Enterprising (E)

A person with an enterprising type tends to like the activity of influencing others to achieve goals. You can say what you want to talk about in the right way. You can encourage and convince others so they can complete the tasks that have been given. At work, you tend to be ambitious, bold, and confident. Most people with this type are aiming for positions or roles as superiors. You also like a job that has opportunities after, such as money, power, and status. Therefore, a competitive work environment filled with willing people will make you more active in doing your work. A related competency that you can

develop is doing business.

f. Conventional(C)

People with the conventional type like organized activities. You are a neat and systematic person who likes to work on creating things. You try to keep your work orderly. Accuracy and detail are essential to you. Therefore you can be trusted in administrative, organizational, and work related to numbers. In work, you prefer work that can develop talents in organizing something and has a clear flow of instructions.

Specialization Test and its Benefits

The specialization test is the same as the major's or placement test conducted at school; only the name differs because it is adjusted to the curriculum. According to (Gani, 1986), a significant test is a process of placement and selecting majors for students. Majoring is a process that will determine students' success while studying at SMK and after graduating from tertiary institutions. So it requires exceptional guidance, such as guidance on majoring interests in this regard, so according to Williamson that in this major, there is a clear link between majors' interests and career is a process that is free, broad, and sequential.

Counselors can direct students to choose majors that are very suitable for students. Counseling guidance teachers are also expected to pay attention to the personality traits of students and the influence of the environment on the students concerned. The personality in question is intelligence, talent, and interest. Meanwhile, environmental factors are the role of parents and educators. The educational aspect includes academic achievement, selection of majors, class conditions, and so on.

The specialization test is one part of the psychological test that is often carried out by educational institutions, which is mentioned in the attachment to the Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 64 of 2014 article 4 paragraph 1 that the selection of specialization groups is carried out since students enter SMK according to their interests and talents (Permendikbud, 2014).

Based on these rules, placing individuals on specialization tests must be adjusted to the three main things mentioned in the Ministry of Culture's annex: Interests, talents, and academic abilities/competencies. The following will explain why the specialization test is critical for students to find a school:

a. Know your self (Understanding Self)

   Interest tests and aptitude tests support school students to understand themselves better. Often many school students need to understand better who they are, what their strengths are, what their weaknesses are, what their pleasures are, and what is extraordinary about them.

b. Help students get the right major.

   Giving a test will show that, in general, a student has a specific direction of specialization. With this explanation, it will be easier for the school section to classify student interests, such as whether students will be directed according to their competency department.

c. Recognizing & Developing Student Talents.

   In SMK, there are various significant programs. This program has the benefit of developing and honing the talents of every student in the school. However, the problem is that students often need clarification or know which major to follow. This application is where the primary function of the specialization test. Through this specialization test, a pattern of student aptitude tendencies will be seen. It can be used as material for consideration or recommendations for choosing the appropriate major for these students.

Appropriation of careers or specialization programs is no less critical in placing students according to their majors. Based on Holland's opinion in the career typology scheme regarding the character of majors, he argues that building a relationship or compatibility between individual personality types and career choices is very important.

Because the point of selection and career is a picture of one's character, Holland argues that an interest in an activity and occupation is the combined result of a person's life history and whole personality..

Base on holland theory (Aan et al., 2014) Several work environments attract multiple personalities. If the work environment is the same as the character of the person who chose it, this will gain success in pursuing a career. On the way, success and enthusiasm in an activity are caused by character suitability for a career or choices in specialization tests at school.

Implementation Plan

In implementing this application, several tools are needed to help, such as :

a. Mobile Applications

Pressman dan Brusce (2014:9 at (Triono, 2018)) It was said that mobile applications are one of the results of technological developments worldwide. It has been built specifically for mobile platforms (e.g., ios, android). In the case of a mobile application, it has a user interface with a unique method of interaction facilitated by the mobile platform, interoperability with web-based resources that facilitates access to various information associated with the application, and capabilities in local processes for gathering, analyzing, and formatting information in a way that best suited for mobile platforms. Additionally, the mobile application provides persistent backup capability within the platform.

b. Java Programming Language

Java is a high-level programming language popular on the internet and can work in most popular browsers such as internet explorer, firefox, and Netscape (Sunyoto, n.d.). Some things about Java, namely:

1) Java was created to add to the integrity of a web
2) Java scripting language
3) Java is an interpreter language (which means scripts are executed without compilation)

c. MySQL

MYSQL is an open-source relational database management (DBMS) with a client-server model. Meanwhile, DBMS is software for creating and managing databases based on a relational model.

d. XAMPP

is an open-source/free PHP and MySQL package that can be used as a tool to help develop PHP-based applications. XAMPP combines several different software packages into one package. Some bundled packages are Apache, HTTPD, mod_autoindex_color module, FileZilla, OpenSLL, MySQL, PHP, FTP Server, PEAR, and PHP My Admin [10]. (Unikom, 2021). Each web server has a different working directory structure (webroot or

document root). This directory serves to store all web application files, including PHP documents.

e. Android Studio

Android Studio is an Integrated Development Environment (IDE) specifically for the Android platform, built on the JetBrains IntelliJ IDEA software and designed for Android development. This IDE replaces Eclipse Android Development Tools (ADT), previously the primary IDE for Android application development.

METHODS

Methods should be described with sufficient details to allow others to replicate and build on the published results. This section explains the research design, the reasons for the design, the research procedures applied, the population and research samples or participants, research instruments, data collection techniques, and data analysis techniques. The description should be in the past tense.

RESULTS

In the product development process, several stages and methods are needed, both in data collection, application implementation, and testing.

Data Collection

The process of collecting data is carried out through direct observation of schools to provide training and provide questionnaires that training participants must fill out regarding suggestions for system development. From the distributed questionnaire, they said they wanted to access mobile-based applications. Through suggestions from users, a mobile-based counseling application design was developed by connecting the module to a pre-existing web-based application.

Application Development

The method used in developing the specialization system for this department is the waterfall method, a software development model that emphasizes sequential and systematic phases—starting from the specification of user requirements and progressing through several processes such as planning, modeling, construction, and deployment which end up

with complete software support. This model can be used for the needs of a problem that is well understood, while the model can also be used in situations where little effort is required to develop software. The waterfall development method generally has stages, as shown in Figure 1.

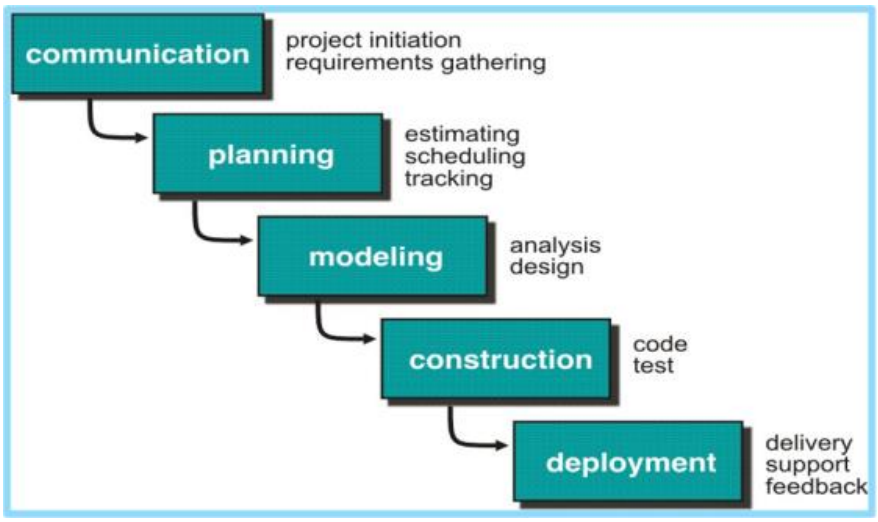


Figure : 1 Waterfall Model (Pressman & Maxim, 2014)

The first step begins with communicating with users or consumers. This step is significant because it gathers the information needed to design a specialization development system for this major.

After this communication process, then determine the plan for working on this system, including the techniques to be carried out, the risks that may occur, the resources needed, the results to be carried out, and the schedule that will be able to be completed.

In the modeling process, we translate the requirements needed while developing the estimated system before carrying out the coding stage. This process focuses on the design of data structures, system architectures, interface representations, and detailed procedural algorithms.

The development process at the coding stage is translating the design into a language recognized by the computer. A designer or programmer will translate the transactions that the user needs.

In the process of describing business processes using use cases. Use cases are described as ovals or circles, the system's functionality as units that exchange messages between units

or actors. Sukanto and Salahuddin (2013) in [12] state that "Use case is a model that functions to identify the behavior (behavior) of the information system to be made as shown in Figures 2 and 3.

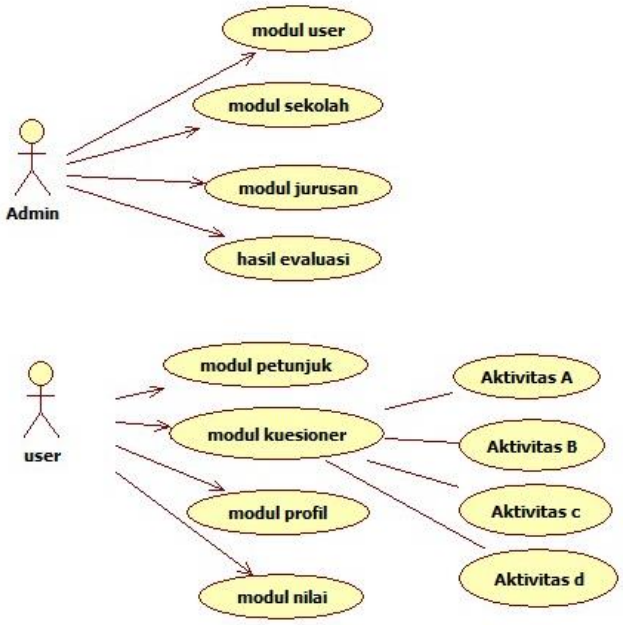


Figure 2: Website Use Case Image

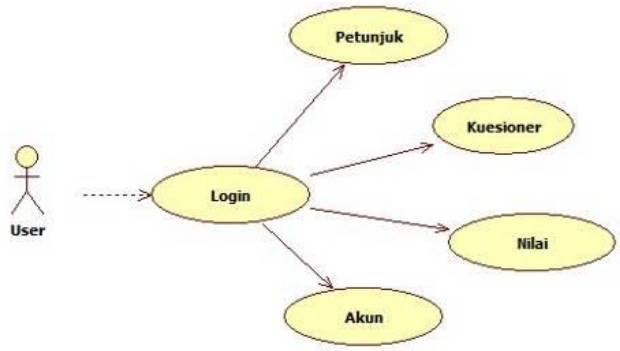


Figure 3: Mobile Use Case Image

DISCUSSION

In the application development process, several features have been developed to help users access the system, such as registration as shown in Figure 4, logging in, providing instructions as shown in Figure 5, and working on questionnaires as shown in Figure 6.

The developed features provided test results and information about student competency skills, as shown in Figure 7. If the competence leads to a specific major, it will be recommended for the study program. In general, the features developed have several bugs because integrating web and mobile takes quite a long time and a significant amount of time. The research focused on essential features that could run first while fixing some problems so that the system could work quickly and the data could be synchronized.

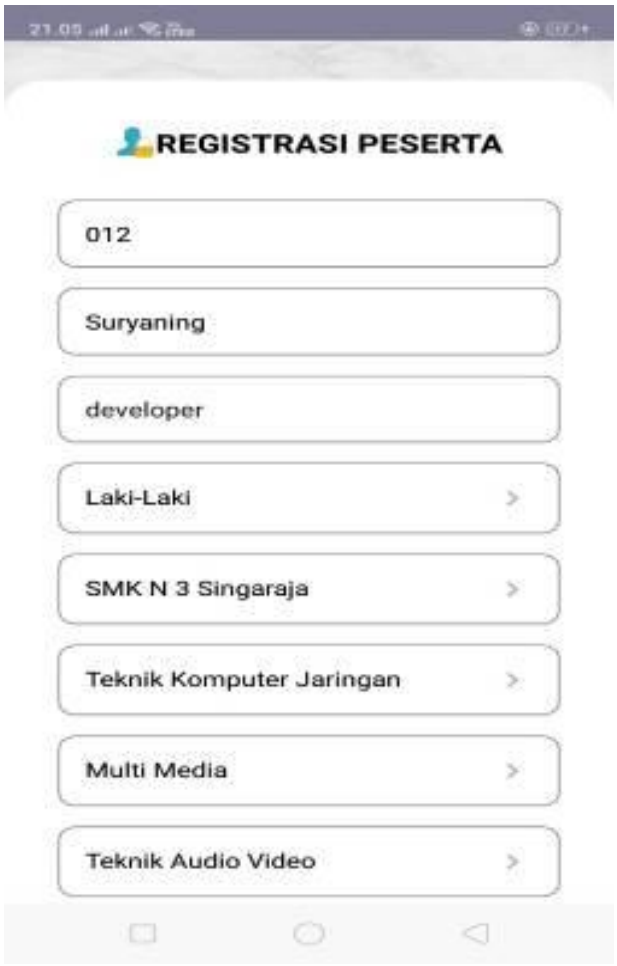


Figure 4: Registration Process



Figure 5: Test Instruction



Figure 6: Test Choice



Figure 7: Information of Test Result

CONCLUSION

At the end of this paper, the application developed is to complement the website developed in previous research to support the front and back end of the application so that it can be accessed widely by users. With broad access, users can carry out tests without using a laptop or computer in the lab. With broader access, it is hoped that more data will be collected, and it will facilitate the analysis of test results for counselors.

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