







ORIGINAL

Developing an integrated internship application for vocational schools: aligning user-centered design with technological innovation to enhance internship experiences

Desarrollo de una aplicación integrada de pasantías para escuelas vocacionales: alineando el diseño centrado en el usuario con la innovación tecnológica para mejorar las experiencias de pasantías

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ABSTRACT

This research intends to present an integrated vocational school internship application that will improve vocational school internships through a user-centered design approach and the use of technology. The application is also expected to help meet the demands of vocational students and industry market demands where students are expected to have practical experience in alignment with their academic and career interests. The research design of the study involves both qualitative and quantitative data collection techniques such as interviews with key informants of the industry and self-developed questionnaires administered to students and educators. This approach helps the application provide information regarding the functionality to cater to the needs of all users; this includes information regarding the matching of job vacancies, feedback, and the progress made in the process. The study also focuses on the possibilities of utilizing recent technologies like artificial intelligence and data analysis to improve the strategies of internship delivery so that it becomes more responsive to individual student needs. Consequently, the study demonstrates that applying the user-centered design strategy with technology improvement increases students' and employers' satisfaction with the application besides improving the usability of the application. The application ensures better matching of the skills imparted in vocational schools with the workforce needs hence improving the competitiveness of the graduates.

Keywords: Integrated Internship; User Design; Technology; Vocational School; Satisfaction; Education; Professional.

RESUMEN

Esta investigación tiene como objetivo presentar una aplicación integrada de pasantías en escuelas vocacionales que mejorará las pasantías en escuelas vocacionales a través de un enfoque de diseño centrado en el usuario y el uso de la tecnología. También se espera que la aplicación ayude a satisfacer las demandas de los estudiantes vocacionales y las demandas del mercado de la industria donde se espera que los estudiantes tengan experiencia práctica en línea con sus intereses académicos y profesionales. El diseño de investigación del estudio involucra técnicas de recopilación de datos tanto cualitativos como cuantitativos, como entrevistas con informantes clave de la industria y cuestionarios desarrollados por ellos mismos administrados a estudiantes y educadores. Este enfoque ayuda a la aplicación a brindar información sobre la funcionalidad para satisfacer las necesidades de todos los usuarios; esto incluye información sobre la

coincidencia de vacantes laborales, retroalimentación y el progreso logrado en el proceso. El estudio también se centra en las posibilidades de utilizar tecnologías recientes como la inteligencia artificial y el análisis de datos para mejorar las estrategias de entrega de pasantías para que respondan mejor a las necesidades individuales de los estudiantes. En consecuencia, el estudio demuestra que la aplicación de la estrategia de diseño centrado en el usuario con la mejora de la tecnología aumenta la satisfacción de los estudiantes y los empleadores con la aplicación, además de mejorar la usabilidad de la aplicación. La aplicación garantiza una mejor correspondencia entre las habilidades impartidas en las escuelas vocacionales y las necesidades de la fuerza laboral, mejorando así la competitividad de los graduados.

Palabras clave: Prácticas Integradas; Diseño de Usuarios; Tecnología; Escuela Vocacional; Satisfacción; Educación; Profesional.

INTRODUCTION

Vocational education in Indonesia has the significance of the preparation of human resources which are ready to work and able to compete in the industrial world. In this regard, the role of internship programs is felt more, which enables students to translate what they have learned in the classroom to practice in the workplace. Internships are the means that exist between the theoretical environment of a student's education and real life, sharing valuable informational and experiential advantages. Nonetheless, despite the universality of the adoption of internships as a valuable embodiment of student training, they are implemented in practice with numerous challenges which in a way affect their efficiency. Another challenge that has been observed in the administration of internship programs in vocational schools is the poor match between the students and the available internship places.^(1,2)

The process of searching for internships and doing the placements is not very systematic and an organized one resulting into a mismatch between the competency level of the student and the organization that offers the internship. This condition not only helps lessen the effectiveness of the learning process during an internship, but it can also contribute to the decrease in students' desire to go through the program. Besides, there are few instruments to control and assess students' performance during their internship as well it is a main challenge often met by educational institutions. When experiencing these challenges, technology has the probability of providing optimistic remedies for enhancing the quality and effectiveness of implementing internships. Information technology in this case can be employed in the creation of a comprehensive online environment for the interconnection of all the interconnected stakeholders of the internship program, including students, schools, and companies.⁽³⁾ It is with this kind of platform that it is believed that the processes of searching, placing, and evaluating internships can be done efficiently, effectively, and more with the benefit of an open process. But, simply using the technology is not adequate; A perspective rooted in user experience (User-Centred Design) as the application developed will suit all the participants in question. According to and for user experience, user-centered design is a process that considers the user needs, desires, and constraints among the essential factors in designing a product or a system. In integrated internship application development, this approach implies that all the features and functionalities of the application must be developed taking into consideration the user needs of the students, teachers, and companies.⁽⁴⁾ For instance, students require clear avenues to search or apply for internships; teachers require tools to assess student performance; firms require proper structures to manage interns and interns' applications. In this approach, the users have to be involved and listened to from the initial stage of development until the final stage, hence improving the performance of the application.⁽⁵⁾

In addition, innovation in this area in creating those applications includes consideration of enhancement in functionality and its usability. There is one major aspect that I noticed, the recommendation system using the artificial intelligence algorithms. This can assist learners in securing internships that are most favourable to them while on the other end it will assist companies or institutions especially when it comes to internships to recruit the most suitable candidates for the internship opportunities available in all the necessary fields. Therefore, this system is more effective in matching students and companies and, at the same time, gives each student the most beneficial internship for their future carrier path. In addition to that, this application is also developed to provide real time exercise and performance tracking of the students. This feature is useful in helping teachers and schools to keep track of intern students' progress while on their internship, to be able to advise them appropriately and where necessary correct their work. Since the data is obtained in real-time, student performance assessments can be done more effectively and the data used is real evidence. This is suppose to enhance the quality of learning during the internship since the feedback received is relevant and direct.⁽⁶⁾

We also need to have a good communication technology as one of our component in this application. Effective cross sector communication between students, teachers and the supervisors of the company is the essence of designing an efficient structures internship program.⁽⁷⁾ This application will have features that include, messaging, notifications and performance alerts which will enhance communication between everybody thus improving interaction. When there is a grumble in this area, it will be equally easy to identify those hitches that may occur during the period of the internship and effectively fix them hence leading to a positive internship experience. Besides that, this application is also believed to enhance accountability on the internship program as well as monitor the interns and their job performances. When the tracking and reporting system is well developed, each step that is followed in the process of looking for an internship place, the process of selection, to the final assessment can be documented keenly. This accountability is crucial for students, schools and companies so that such internship programmes can reveal genuine benefits to all the stakeholders.⁽⁸⁾

However, the development of this integrated internship application also has the following problems. One of the biggest issues is to make the applications accessible and usable for all the users regardless their technological literacy. This needs an atmosphere of ease and functionality in the interface design and appropriate technical help to enable the users to make the most of the features that are provided. In addition to that, there is always the issue of data security, especially given the fact that this application will be dealing with students' information, school data and even sensitive company information. In order to address this problem, this research will have the stakeholder engagement from the initial stage of the development. They will be interviewed in person, by filling out a questionnaire or focus group in order to guarantee their need is met by each of the developed features. Furthermore, the application prototype will be used in normal operations to obtain users' direct feedback so as to constantly refine it before the wide release of the application.^(9,10)

However, it can be aspired that current research can develop an adequate and compounds internship application that can make the internship easier to search and place, and qualify the internship as well. Through the user-oriented design and technological advancement, it is expected that this application could be an integrated intervention solution for achieving optimal outcomes for the vocational schools' internships; furthermore, make the student more work-ready once they exit the academic setting. In conclusion, this research intends to present an integrated vocational school internship application that will improve vocational school internships through a user-cantered design approach and the use of technology

METHOD

This research seeks to utilize the R & D method to come up with and test a Vocational Schools Integrated Internship Application.⁽¹¹⁾ R & D method was used because it is a procedure-oriented method for new product development from need identification to final evaluation. This research process involves several major phases that include: needs assessment, planning, designing and developing the product, validation, revision, and limited testing.⁽¹²⁾

Needs Analysis

The first one is a needs analysis, the purpose of which is to assess the major issues and special requirements the students, teachers, and companies may face when managing an internship program. Primary sources of data were administered in this research methodology through questionnaires, interviews, and focus group discussions with different individuals. Questionnaires will gather information on the user requirements and current issues; interviews and focus group discussion sessions will complement the information on expectations or issues encountered. As we derive the following results of this analysis, it will be possible to design the main features and functions of the integrated internship application.

Planning

Planning: As a result of needs analysis it is necessary to develop technical requirements and the first outline of application. As part of planning, there is identification of key characteristics, user interfaces, and technology architecture. End users will therefore inform the development process through a UCD approach in application design. A cross-functional development team including information technology experts, interface designers, and vocational education experts will be involved in this stage to do the planning.⁽¹³⁾

Product Development

At the product development stage, applications are built based on specifications that have been formulated. Development is carried out iteratively with an Agile approach, allowing for continuous improvements and adjustments based on user feedback. This process includes coding, functionality testing, and integration of advanced features such as recommendation systems, real-time performance monitoring, as well as tracking

student progress throughout the internship. Each iteration will be tested to ensure that the features function properly and the application can meet the identified needs.^(14,15)

Product Validation, Revision, and Limited Testing

After the application is developed, the product validation stage is carried out to ensure the application meets the specified standards. Validation data was obtained from experts (expert judgment) who provided input to improve the application-based internship program model developed and its tools. In this validation analysis, a Likert scale was used. The construct validation analysis of the PLI program model uses the SPSS program, while the product content validation analysis. The scale was as follows: 1 = not good/not feasible/not happy, 2 = quite good/quite feasible/quite happy, 3 = good/feasible/happy, and 4 = very good/very feasible/very happy. A quantitative analysis was used to determine the feasibility of the developed application. The formula is based on the scores given by experts and is analysed quantitatively

$V = \sum s / [n(c-1)]$ when $n =$ Total of experts $s = r - lo$ $Lo =$ lowest validity assessment number (for example 1) $c =$ highest validity assessment number (e.g. 5) $r =$ figures given by the appraiser. The level of validity can be determined by measuring the V value range, which ranges from 0 to 1,00. If the range of values obtained is $\geq 0,667$, then this can be interpreted as a fairly high coefficient, so that its validity can be categorized as valid.⁽¹⁶⁾

RESULT AND DISCUSSION

Need Analysis

The results of the needs analysis conducted for this research highlighted several fundamental problems and needs concerning the implementation of the internship programs in the vocational schools which must be taken into consideration while designing the integrated internship applications. Basic research findings are derived from online and face-to-face questionnaires, individual oral interviews, and focus group discussions conducted with students, teachers, and partner companies revealing the perceived essential needs of each of the stakeholders.

First, the problem of searching for internships, their relevance, and availability of information is complicated and, according to the students, the current application process is inconvenient. They require an application which offers internship information in one platform and simplifies the application process with the inclusion of options such as uploading CVs and letters of application. Also, students need real-time tools to track achievements of the internship progress including tasks completed and feedback received from employers to make the course and the overall experience fulfilling.

From the teacher's perspective, school needs include the equipment that may be used to assess and supervise the interns during their internship. This means that teachers require a systematic way of overseeing completed works, employer's feedback, and rate of overall learning among students. Moreover, communication with partner companies is very significant for teachers, therefore, they should have the necessary system to communicate as well as receive reports about students' performance. There are also reporting and analysis features which will help the teachers in assessing the internship programs and consider changing the curriculum if needed. Employees' content analysis revealed that partner companies would benefit from a system that would facilitate evaluation of student performance and also would help them better organize internships.⁽¹⁷⁾

They desire features for grading assignments in particular, in order to schedule the assignments as well as tracking the students' progress. Such relations include the ability to report issues with the vocational schools, to give feedback towards the curriculum, and to work together in establishing more internship programs. As a general principle, there is a desire among all the actors involved for an effective integrated and efficient application that can coordinate different aspects of the internship program and has a user friendly interface. Data security and privacy is paramount with the intent that the application should not allow other people to access students' personal data and other sensitive information. Thus, these outcomes contribute to the need for constructing coherent and efficient applications for implementing internships providing for the features that would be relevant and beneficial for students, teachers, and partner companies as well as contributing to the enhancement of internship quality in vocational schools.⁽¹⁸⁾

Planning and Design

As for the specification of the products that were created for this integrated internship application, it is important to stress that these products were designed in accordance with the requirements of the students, teachers and the partnering companies. This application lies on the web application model where it may be accessed using personal computers, laptop, tablets or even smart phones. Using PHP language with the Laravel framework, backend was created; this framework is special because of its reliability, scalability, and flexibility regarding development. On the other hand, the front end utilizes HTML 5, CSS 3 and Java scrips and

frameworks including Vue.js or React with the aim in mind of making the layout responsive and the interface interactive. For the purpose of data management MySQL or PostgreSQL databases are employed which are highly reliable and able to handle large transaction rates while maintaining high levels of data availability.

There are several features in this app that is specifically meant to address challenges that may be met in the course of the internship. These features include an internship recommendation system with the algorithms that offer recommendations regarding students' profiles such as the study course preferences, interests, and geographical location according to the Simple Additive Weighting (SAW) algorithm. Furthermore, there exists an internship application feature, which enables a learner to submit as well as organize documents such as CVs, and application letters besides providing the application status. In addition, the application also offers the student progress tracking option through the dashboard where the real-time data for the assignments' completion and the feedback received from the company can be seen. The online communication system including the possibility of the chat and e-mail ensures the effective collaboration between students, teachers as well as the partner companies. Reporting and analysis tools can also be employed by teachers to generate performance reports of students in the most simplified graphical form.

The most important objectives when creating this application are the issues of security and confidentiality. Generally, the product is protected with multi-factor authentication (MFA) method, and uses SSL/TLS for data encryption both while transferring and while storing the information. This system also has backup of data on a daily basis and mechanism to recover data at a faster pace in case the data can be lost or damaged. The application allows some integration with other systems using open API, which makes it possible to synchronize with school academic informational systems or other portals, which are focused on education. Also, if the application is connected to the email service or/and mobile numbers through an SMS gateway kind of thing, one can easily send out quick notifications like status of the application or even reminder for the schedule of the internship or something like that.⁽¹⁹⁾

The form of the application tends to be user friendly, especially in the aspect of the user interface and the navigation. It is supposed to make changes depending on whether the used device is a large screen one such as a desktop or a small screen based gadget such as a smartphone. In order to improve the accessibility of this application, it is multilingual, which will enable users from different regions speaking different languages to have an ease of time interacting with this application.⁽²⁰⁾

Both testing and validation are done very well so that the quality of applications can be achieved. Functional test checks whether different components or elements of the application achieved the intended function as designed while validity and practicality test engage users and therefore checks their efficiency in using the application. Penetration is among the security testing types that help in finding the security problems and fixing them. The solutions to problems faced by users are solved through provision of a comprehensive manual that contains instructions, frequently asked questions and solutions. Further, there are options for customer service, which can be reached by email, phone or through the live chat to help the users in case of difficulties faced when using the application.⁽²¹⁾

The following product specification is developed comprehensively in order that the internship application integrated can be the solutions for all the needs of the stakeholders and it will help to develop the quality of the internship programs in vocation schools.

Development

Under the development section, the emphasis is laid on the process of developing application that is made of different stages such as design, implementation and testing. This application is being designed by considering extensive user requirements analysis so that every aspect of this application and interface elements serve the purpose of enhancing the overall user experience in the best possible manner. Here, the technologies of the modern world and efficient ways of development methods are used to develop applications that do not only work but are also flexible and easy to manage for a longer term. This section will also describe how each of the application components is designed to be integrated as well as point out how the iterative process and user feedback will be incorporated into the ongoing development of this application.⁽²²⁾

Login page

If it is a login user authentication then the image depicts an interface which asks the user for the UID or email and password in the boxes shown below. This lends a help section where users who have forgotten their password can reset it by click on the 'Forgot Password' button To assist registered users who would wish to be treated as being logged in on the same device, there is a checkbox marked 'Remember me on this device'. Once the information is entered, users can click the blue sign in button on bottom to proceed to account.

UID / Email

Password

[Lupa Password](#)

Ingat saya di perangkat ini


Masuk

Figure 1. Login Page

User profile

The picture depicts the user interface of an app or a website and present profile picture, the name of the user as 'Jimmy Febio', the role as 'Administrator', the WhatsApp contacts and the Email Id. Subscribers are also able to modify details within their account through the "Update Profile" button, in which subscribers are able to upload a different picture that is in jpg or png format and a maximum size of 200kBB and complete their name, phone number on the WA and email address. Users can edit the information displayed on the home page and upon changes, they have to click on the blue button present at the bottom of the home page which says "Save Changes".

Profile
Home / Profile



Jimmy Febio
Administrator

👤 jimapp
📞 +6285805511315 📧 jimmyf@gmail.com

[Perbaharui Profil](#) [Ganti Password](#)

Foto Profil **Opsional** No file chosen

- Biarkan kosong jika tidak ada perubahan
- Hanya menerima gambar dengan ekstensi file .jpg / .jpeg
- Hanya menerima gambar dengan ukuran maksimal 200KB

Nama

Whatsapp **Opsional**

Email

Simpan Perubahan

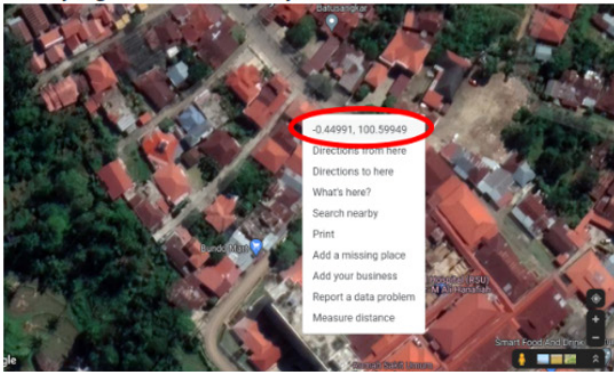
Figure 2. User profile

Administrator Page

This image explains how to get location coordinates using Google Maps from PC and cellphone. For PC, users are requested to launch the Google Maps and search for the required roof or schoolyard, after which users right click on it to obtain the coordinates that are shown. As for the cellphones, the users have to go to Google Maps, then they must select Satellite view and click on the roof or school yard and the users have to hold the place until a red dot appears and the latitude and longitude appears on the top of the map and these could be copied. Both the devices can get the coordinates made easy by this guide.

Cara Mendapatkan Koordinat (dari PC)

1. Buka [Google Maps](#) dan temukan atap/halaman sekolah.
2. Klik kanan atap/halaman sekolah dan klik kode koordinat pada menu yang muncul untuk menyalin.



Cara Mendapatkan Koordinat (dari HP)

1. Buka [Google Maps](#) dan temukan atap/halaman sekolah.
2. Ubah ke type Satellite (jika citra rumah tidak muncul), klik tahan atap/halaman sekolah hingga muncul pin merah dan salin koordinat yang muncul di bagian atas.

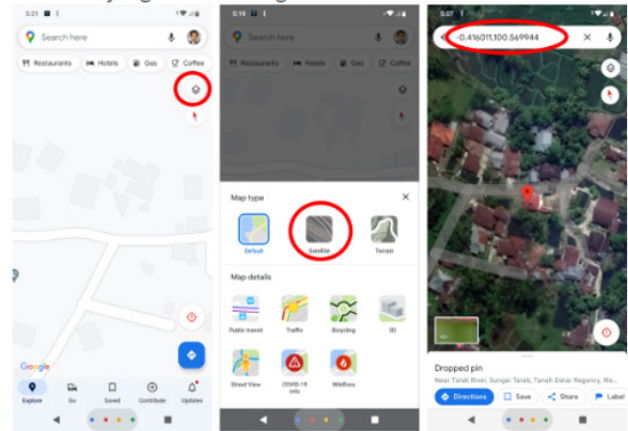


Figure 3. Administrator Page

Internship journal

The figure explains the process of creating and reading of comment in the daily activity management system for field work practices. As revealed in the first image, users have an opportunity to make comments using the “Comments” button with reference to the activities indicated. Next, as it is illustrated in the second picture, a new window appears on the screen where user can write a comment and send it by clicking on the “Send” tab. The last preview illustrates comments which have been attached together with the sender details and delivery time: all such comments are displayed beside the related activity, which in its turn aids the communication between the participants and the supervisors or administrators.




Figure 4. Internship Journal


Industrial Advisor

A journal page that provides participants’ profile as well as their supervising teachers and companies where they practice and a structured system of assessment to capture disciplinary features and non-technical activities in Page. On the top, you can also observe the faces of students who come from Light Vehicle Engineering department. A tabulation of scores for the following aspects can be done: time and accuracy discipline, work ethic and work process, work responsibility, and attendance/absence; the number and/or letter grades that are assigned are an objective assessment of the participant’s performance. However, the Non-Technical Activities assessment system section also contains several standard parameters like Work Discipline/Time, Work Progress and Motivation, Work Quality, Initiative and Creativity and Behaviour and the Qualitative Grade which may be Very Good or Good is awarded Head of HRD on the specified date. This sort of assessment scale ranges from A to D with A being the highest value, and D as the lowest value. There is also what can be termed as “Save Assessment” button that enables the user to save the evaluation results at the end of the process after all the parameters have been evaluated as shown below.


Jurnal Prakerin
Beranda / Prakerin / Jurnal Prakerin



Neody Alam
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Kegiatan Laporan **Nilai**

Nilai Prakerin

PARAMETER	NILAI	
	ANGKA	HURUF
KEDISIPLINAN		
Ketepatan / Disiplin Waktu	90	B
Sikap Kerja / Prosedur Kerja	90	B
Tanggung Jawab Terhadap Kerja	94	B
Kehadiran / Absensi	95	B
PRESTASI KERJA		
Kemampuan Kerja	95	B
Keterampilan Kerja	95	B
Kwalitas Hasil Kerja	95	B
KEMAMPUAN ADAPTASI		
Kemampuan Berkomunikasi	80	C
Kerjasama	85	B
Kerajinan / Inisiatif	90	B
ASPEK LAIN		
Rasa Percaya Diri	80	C
Mematuhi Aturan dan Tata Tertib Prakerin	95	B
Penampilan / Kerapian	95	B
RATA-RATA NILAI	90.69	B

KEGIATAN NON-TEKNIS	NILAI
Disiplin Kerja / Waktu	Sangat Baik
Kemajuan Kerja dan Motivasi	Baik
Mutu Kerja	Sangat Baik
Inisiatif dan Kreatifitas	Sangat Baik
Perilaku	Sangat Baik

A : 99 - 100 **Nilai diberikan tanggal** : 27 July 2023
 B : 84 - 98 **Nilai diberikan oleh** : Panji JM
 C : 75 - 83 **Jabatan** : Pimpinan HRD
 D : 65 - 74

Simpan Penilaian

Figure 5. Industrial Advisor

Internship report

The image shows the print interface of the Journal on the website. This display shows a page containing the Score of a student Light Vehicle Engineering department. The information listed includes the name of the student, supervising teacher, and industrial supervisor. On this page, student assessment includes various parameters, such as Discipline, Work Skills, Creativity, Adaptation, and Attendance. Grades are given in the form of numbers and letters, for example, Discipline with a numerical value of 90 and a letter grade of B. This interface also displays the option to print documents with customizable settings, such as paper orientation, scale, and margins. This image reflects the process of documenting and archiving grades digitally, which can be printed and stored in physical form for school administration or student needs.

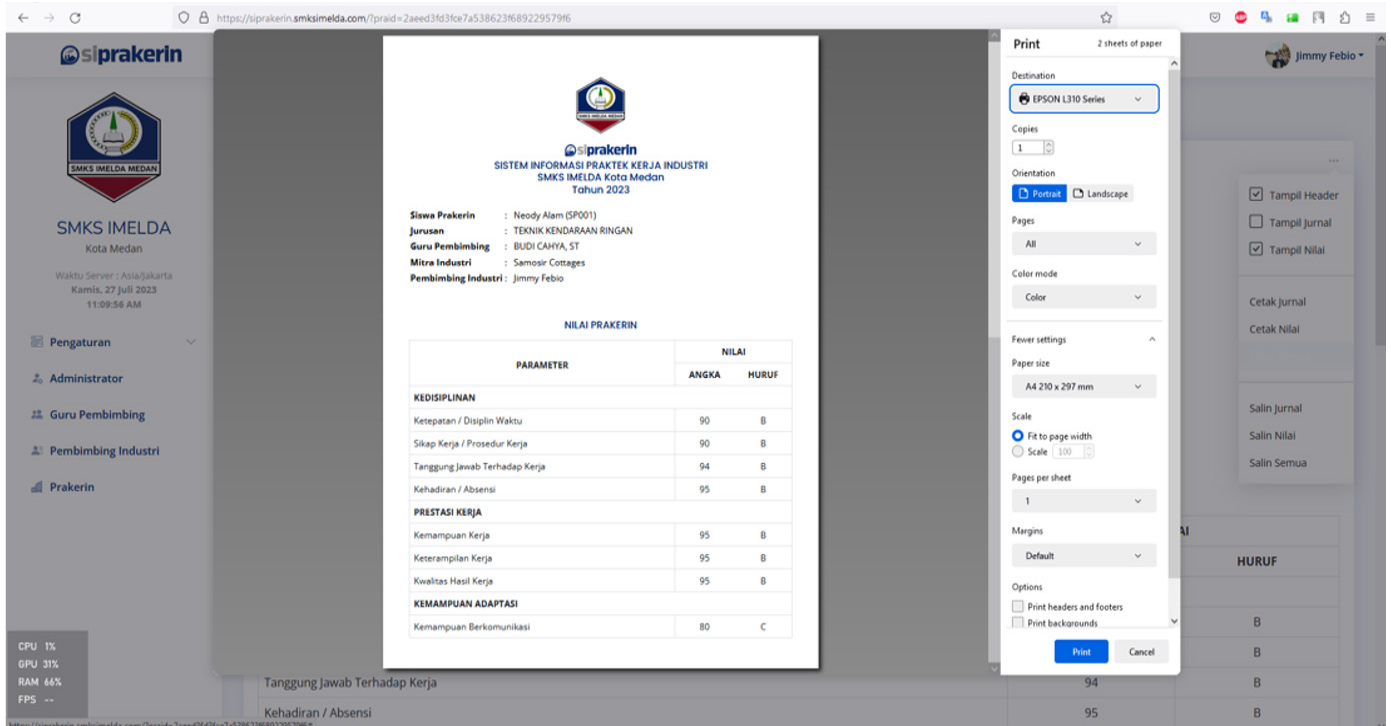


Figure 6. Internship report

Validation, Revision, and Limited Testing

Table 1. Validation, Revision, and Limited Testing process of the above study

Stage	Activity	Result
Validation	Prototype validation by experts in software development and vocational education.	The application overall meets the expected quality and functionality standards, with some recommendations for improving UX and data input.
Revision	Application refinement and improvement based on feedback from validation, including UX enhancements, bug fixes, and additional features.	The application becomes more responsive, bugs are fixed, additional features are implemented, and internal testing is conducted to ensure improvements.
Limited Testing	Trial of the application by a group of teachers, students, and school administrators to evaluate the application's performance in real-world scenarios.	The application received positive feedback from users, with minor suggestions for UI and user flow improvements, indicating readiness for broader implementation.

Table 1 outlines the evaluation and improvement process of the *Jurnal Prakerin* application to ensure the application is ready for effective use in the school environment.

Table 2. the results of the Aiken's V analysis

No	Item/Question	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total Score	Aiken's V
1	Ease of navigation within the application	4	5	4	5	4	22	0,88
2	Clarity of instructions and menus	5	5	4	4	5	23	0,92
3	Visual appeal of the user interface	4	4	4	5	4	21	0,84
4	Responsiveness of the application	5	4	5	5	4	23	0,92
5	Relevance of features to user needs	4	5	4	5	5	23	0,92
6	Accuracy of data input and output	5	4	5	4	4	22	0,88
7	Integration with existing school systems	4	4	5	5	4	22	0,88
8	Overall functionality and performance	5	5	4	5	5	24	0,96
9	Security and data protection measures	4	4	5	4	4	21	0,84
10	User satisfaction with the application	5	5	4	5	5	24	0,96
11	Application load time	4	5	5	4	4	22	0,88
12	Customizability of the application	5	4	5	5	4	23	0,92
13	Consistency of the user interface	4	5	4	5	5	23	0,92

Table 2. the results of the Aiken's V analysis

No	Item/Question	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Total Score	Aiken's V
14	Accessibility for users with disabilities	5	4	5	4	4	22	0,88
15	Intuitiveness of user experience	4	4	5	5	4	22	0,88
16	Error recovery and prevention	5	5	4	5	5	24	0,96
17	Scalability of the application	4	5	5	4	4	22	0,88
18	Support for multiple languages	5	4	5	5	4	23	0,92
19	Integration with third-party services	4	5	4	5	5	23	0,92
20	Real-time data synchronization	5	4	5	4	4	22	0,88
21	Availability of customer support	4	4	5	5	4	22	0,88
22	Compatibility with various devices	5	5	4	5	5	24	0,96
23	Availability of documentation and help guides	4	4	4	5	4	21	0,84
24	Efficiency in resource usage	5	5	4	5	5	24	0,96
25	Feature set completeness	4	5	4	5	5	23	0,92
26	Error handling and messages	5	4	5	4	4	22	0,88
27	Support for offline functionality	4	4	5	5	4	22	0,88
28	Update frequency and ease of updates	5	5	4	5	5	24	0,96
29	Security against unauthorized access	4	4	4	5	4	21	0,84
30	Adherence to educational standards and policies	5	4	5	4	5	23	0,92

All the items regarding which Aiken's V values equal to 0. A score of 88 and above indicate that most of things covered in the application are viewed as valid by the expert panel. This table also assists in evaluating the validity of the applications specific features with those needed by users and education.

The Aiken's V analysis that focuses on the validity of 30 items in the validity test revealed that many of the items have a good validity with Aiken's V values ranging between 0. 88 and 0. According to the scores of experts the value of coefficient that measures internal consistency was 92 which depict it with high level of reliability. According to the results which shows the score of each item, the item with the maximum score or equal to 0,96, contains such features as operability and usability, errors handling, compatibility, resource utilization and frequency of update. This proves the fact that the items are perceived to hold a high relevance and quality. Other items that were very close to Aiken's V of 0 included the factors that revolved around the aesthetic view of the user interface and data security. 84 slightly low that of the other items suggesting lower validity. Even those are in the tolerance area, it shows the need for more focus on development of these elements. The level of agreement with the tested instruments was also good; Most of the items had high validity and high relevance among the experts.⁽²³⁾

This study offers a novel approach to managing internship programs by leveraging User-Centered Design (UCD) and technological innovation to address core challenges faced by vocational schools in executing internships. The need for real-world practical experience is a critical factor in vocational education, with internships serving as a vital bridge between classroom learning and industry practice. However, previous research has identified several challenges, such as the lack of systematic placement procedures, inefficient performance tracking, and poor communication between stakeholders, which often undermine the value of internships. This research strengthens prior findings, particularly those from Akomaning et al., which emphasize the crucial role of internships in preparing students for the workforce.⁽⁴⁾ The studies indicate that unstructured internship programs often fail to meet the needs of students and companies, leading to a mismatch between student competencies and job requirements. In line with these findings, the development of an integrated internship application using AI technology to provide placement recommendations directly addresses this gap. The recommendation system uses AI to match students with internship opportunities that align with their academic profiles, skills, and career goals, thus reducing mismatches and ensuring a more efficient placement process.⁽²⁴⁾

Moreover, the integration of real-time tracking features within this application aligns with research conducted by Molodchik et al., which underscores the importance of continuous feedback during internships.⁽⁶⁾ The ability to track student performance in real-time enables educators and employers to monitor student progress and intervene when necessary, providing guidance and corrective feedback at crucial moments. This feature helps create a more dynamic learning environment where students can adjust their approaches based on real-world feedback, enhancing both the educational and practical value of internships. Real-time tracking also supports regular assessments, helping students stay on task and aligning their learning with the actual demands of the workplace.⁽²⁵⁾

Furthermore, this study reinforces the findings of Jenny, et al regarding the importance of effective communication between students, mentors, and employers. One of the key features of the application is an

integrated messaging system and notification feature that facilitates seamless information exchange among all parties involved. This not only helps resolve issues promptly but also ensures that students receive timely feedback, making the internship process more efficient and productive.⁽²⁶⁾ The study illustrates that effective communication is key to maintaining engagement and ensuring that all stakeholders have a shared understanding of student progress and any necessary changes in approach or tasks.⁽²⁷⁾

While this application shows strong potential in improving internship program management, it is also important to address the limitations and challenges that emerged during the study. One major issue relates to the level of technological literacy among users, a challenge previously highlighted by Ju Gian, particularly in the context of vocational schools in developing countries. This challenge underscores the importance of designing an interface that is not only intuitive but also accessible to users with varying levels of technological proficiency. The application addresses this by offering a simple, user-friendly interface and providing training resources to ensure that students, teachers, and companies can easily navigate the system.⁽²⁸⁾

Another emerging challenge relates to data security, a critical concern for systems handling personal information. Given the sensitivity of the data involved in internship programs—such as students’ academic records, performance evaluations, and company information—it is essential to ensure that these details are well-protected. The application addresses this issue by adopting robust security measures, including multi-factor authentication (MFA) and data encryption, both of which are crucial for protecting personal and institutional data. This focus on security aligns with best practices in educational technology, as outlined in research by Gharaibeh Ammar, which notes that secure data management is a fundamental requirement for maintaining trust and ensuring compliance with privacy regulations.⁽²⁹⁾

In terms of educational value, this study adds to the growing body of knowledge on how technology-based solutions can enhance vocational training, particularly in internship programs. It builds on prior studies that advocate the use of digital tools to streamline educational processes and improve the quality of student learning outcomes. For instance, Chan et al. explored the use of AI to optimize student feedback during internships, highlighting the role of technology in creating more personalized and meaningful learning experiences.⁽³⁰⁾ This research aligns with those findings, demonstrating that technology not only improves administrative processes but also enhances the educational experience for students by providing tools that support their development in real time.

CONCLUSION

The majority of the items had an Aiken’s V of close to, or greater than 0. All the experts showed 90 % agreement with the quality and relevancy of the elements being assessed through the following elements. The top-notch scores, namely general utility, user utility, and device adaptability indicate that the tested application performs well as it satisfies users’ requirements. On the whole, some shortages can be called critical and need to be developed, these are the issues concerning data protection and the outer attractiveness of the interface.

The respective findings give an indication that development of the specified application has the potential to be suitable to be adopted by many institutions, particularly institutions offering education that would benefit from functional, secure, and easy-to-use platforms. Nevertheless, developers should give more attention to the points that has got relatively low validity, for example, data protection and paperwork so that the application can be more comprehensive in terms of quality and security. Developments in these aspects will lead to the enhancement of the credibility of these services and thus the uptake of this form of innovation in learning institutions.

Therefore, the future studies ought to lead to more robust features about data security and privacy protection since these paradigms are critical in web-based applications. Besides, more studies could be carried out to assess the user interface design and make proper modifications that would make it aesthetic, but not at the cost of effectiveness. That is through conducting questionnaires and surveys to the end users, especially in the educational sector this could help identify more features that could be incorporated to meet the needs of the end users.

To further this research, a study could also be made on the variant version we could make for the application whether they make it for people with disabilities or whether they could integrate it with even advanced technology as the AI learning system. On this basis, it is possible to state that the further development and refinement of the application is possible with the help of its constant feedback, which will allow it to become a more multifaceted tool in the face of the requirements of the educational process.

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