

# Prototype Design of a Guidance and Counseling System Using the Human-Centered Design Method

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## Abstract

This study aims to design a prototype of a guidance and counseling system using the Human-Centered Design (HCD) method. This method is applied to ensure that the system developed focuses on the needs and experiences of users, particularly students and counselors in educational settings. The research process includes stages of user needs exploration, concept design, prototype development, and evaluation involving end users. The result is a web-based system prototype that is intuitive, facilitates counseling services efficiently, and enhances interactions between students and counselors. Preliminary evaluations indicate that the system effectively meets user needs and has the potential to improve the quality of guidance and counseling services. This prototype is expected to serve as an initial step in developing a more comprehensive system to support educational services.

**Keywords:** *Counseling, Design, Guidance, HCD, Prototype*

## 1. INTRODUCTION

Guidance and Counseling (GC) plays a vital role in supporting students' development, encompassing academic, personal, social, and career aspects. [1], [2] However, in this digital era, the implementation of GC services often faces challenges, particularly in terms of communication effectiveness, accessibility, and real-time monitoring of students' progress. The limitations of manual or conventional systems, such as paper-based records, frequently hinder counselors from delivering services that are fast, structured, and responsive to students' needs. [3], [4]

On the other hand, the rapid development of digital technology presents opportunities to develop technology-based systems that can optimize GC services. The use of technology not only facilitates counselors in managing student data but also enhances student engagement in the counseling process through user-friendly and interactive platforms. [5] However, to ensure the effectiveness of such a system, a human-centered design (HCD) approach is crucial. [6]

The HCD method emphasizes a deep understanding of the needs, behaviors, and experiences of users, including counselors, students, and school staff. [7] This method places the needs, behaviors, and experiences of users at the core of the design process, resulting in solutions that are more relevant and user-friendly. [8]

Various studies have successfully applied the Human-Centered Design (HCD) method to create optimal designs in various fields, such as Design of User Interface and User Experience for a Mobile-Based Baby Equipment Rental Application Using the Human-Centered Design (HCD) Method at Babystuffrent Purwakarta, [9] UI/UX Design Using the HCD (Human-Centered Design) Approach on the Thriftdoor Website, [10] and Design of Interaction Design for the Public Health Service Module in the Malang Sehat Application Using the HCD Method [11]

These successes demonstrate that HCD is effective in producing designs that meet user needs. Therefore, this study aims to develop a web-based guidance and counseling system prototype using HCD.

In addition to addressing the limitations of traditional systems, the integration of technology into the guidance and counseling process offers significant potential to enhance both counselor efficiency and student support. By leveraging digital tools, counselors can track students' progress in real-time, enabling quicker interventions when necessary. This system can also facilitate better communication between counselors, students, and parents, ensuring that all parties are informed and involved in the process. Moreover, the use of digital platforms allows counselors to provide more personalized support, tailoring their advice to each student based on insights gathered from their interactions and academic history.

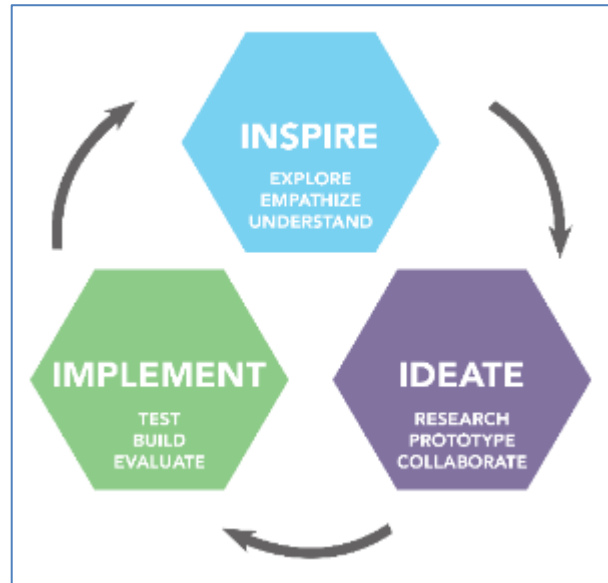
Furthermore, digital systems can increase the scalability of counseling services, allowing schools to provide support to more students without compromising service quality. For instance, a web-based system could enable asynchronous counseling sessions, allowing students to receive guidance at their convenience. The flexibility and convenience of such a system ensure that students from diverse backgrounds, with varying schedules, can access essential services without the barriers posed by traditional face-to-face counseling.

By employing the HCD approach in developing this system, the project ensures that all these technological advancements are implemented in a way that prioritizes the end-users. Counselors, students, and school staff will be actively involved in the design process to ensure that the system is intuitive, efficient, and aligned with their needs. This user-centered design approach is expected to create a tool that is not only technically effective but also widely accepted and used in school environments.

## 2. RESEARCH METHODOLOGY

This study employs the Human-Centered Design (HCD) method to design a web-based guidance and counseling system specifically aimed at high schools as the research object. Human-Centered Design (HCD) is an approach to designing and developing systems aimed at making them more user-friendly (usable) by incorporating human knowledge, ergonomics, and usability techniques. [12] The Human-Centered Design approach is suitable for designing user interfaces because it aligns with the needs of the users.

According to another perspective, Human-Centered Design (HCD) is a design method aimed at creating systems that focus on interactivity and user benefits. This method pays special attention to usage goals, environments, tasks, user characteristics, and workflows involved in the design process. The approach aims to produce innovative solutions that address various user problems and are tailored to their needs. [13] One of HCD's strengths is its ability to help designers understand users' perspectives, enabling them to comprehensively identify the needs of potential users with ease. [14] Here is an illustration of the stages in the Human-Centered Design (HCD) method.



**Figure 1.** The Stages of the Human-Centered Design Method [15]

Here is an explanation of the stages in the Human-Centered Design (HCD) method:

### 2.1 Inspiration

In this stage, the main focus is to understand the needs and problems of the users. The team conducts field research, interviews, and observations to gather information about the users' experiences and challenges, with the goal of gaining clear insights into the problems that need to be solved.

In the inspiration phase, there are various activities that can be done to gather information, such as direct observation, interviews, questionnaire filling, and others. In the book *The Design of Everyday Things* by Don Norman, one of the activities described in the inspiration phase is observation. In this study, the team conducted a questionnaire distribution activity as part of the inspiration phase, with the goal of collecting data from system users, stakeholders, and school counselors. Below is a list of questions used in the questionnaire.

**Table 1.** A List Of Questions

No	Question	Stakeholder
1	What device do you currently use to manage counseling sessions and store student data?	System Users (School Counselor)
2	Do you prefer using the guidance and counseling services through a website or an app? Why?	
3	How comfortable are you with using digital tools or platforms to manage counseling schedules and notes?	
4	What features do you expect to be available in this system to help you provide counseling services efficiently and easily?	
5	What type of interface design would make it easiest for you to manage counseling schedules and notes with students?	
6	What features would help you track student progress, such as easily accessible counseling session notes or reports?	
7	How important is it for this system to be customizable to handle various student needs and cases?	

No	Question	Stakeholder
8	What is the best way to provide feedback or suggestions to students through this system?	
9	Are there any additional features or tools you think should be added to improve communication with students?	
10	How important is it for you to access reports or analysis on counseling sessions and student progress?	
11	Are there any aspects or features of the guidance and counseling system that you think need improvement or further development?	
12	What specific topics or issues would you like the system to focus on, such as academic stress, bullying, or mental health issues?	

## 2.2 Ideation

The ideation stage aims to generate various creative solutions. The team collaborates to develop new concepts and brainstorm different ideas. In this stage, initial prototypes are created to test these ideas, with the goal of finding the best solution. The team developed the prototype using the Figma tool, as discussed in the previous article. [16]

## 2.3 Implementation

In the implementation stage, the selected solution is tested by involving users directly. The prototype that has been created is tested to determine how effective the solution is in solving the users' problems. The feedback received is used to refine the design until a solution that meets the users' needs is achieved.

Each stage in the HCD method is carried out iteratively, allowing the team to continuously improve and adjust the solution based on feedback, ensuring that the final outcome truly meets the users' needs and expectations.

# 3. RESULTS AND DISCUSSION

Below are the results and discussion after conducting various activities that utilized the Human-Centered Design (HCD) method. This method supports the design of a web-based guidance and counseling system prototype.

## 3.1 Inspiration

In the inspiration phase, data will be studied to explore the problems faced by potential users. The result of this phase will be feedback collected through the questionnaires that were provided. This feedback will serve as a reference to formulate ideas for developing a guidance and counseling system that meets the needs of users. Below are some of the feedback obtained from the previous questions:

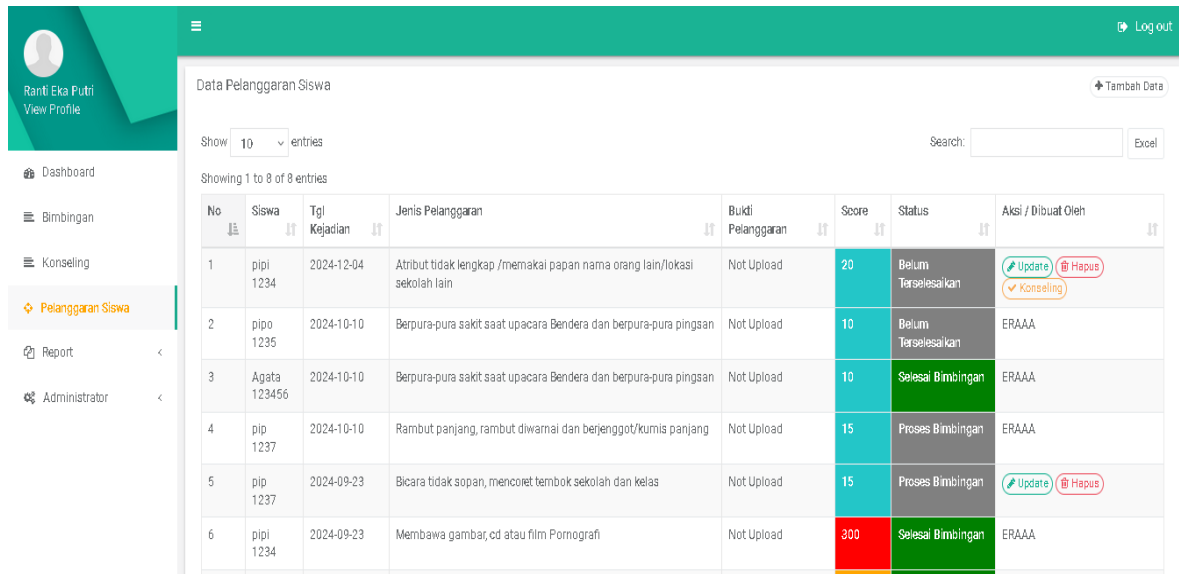
**Table 2.** User Feedback on the System

No	Feedback
1	This system is very helpful because it can be easily accessed using the devices commonly used, both on a computer and a mobile phone
2	Using the website is preferred because the larger computer screen allows for clearer visibility of all the data
3	The digital platform is very supportive in managing schedules and counseling session notes, as the necessary information can be accessed easily
4	The color feature for counseling sessions is very useful as a reminder about the status of the session, whether it is ongoing or completed
5	The simple and clear interface design makes it easier to find information and take notes.
6	The student progress report feature helps in monitoring the results of counseling sessions and tracking students' progress over time
7	This system is flexible and can be adapted to handle various types of student cases, such as academic, social, or personal counseling.
8	The feature for providing direct feedback after counseling sessions is very helpful in giving clearer guidance or evaluations to students
9	The system provides an effective communication channel between the counselor and students, allowing the counselor to easily contact students through direct messages or session reminders (notifications in the system).
10	The available reports provide a clear picture of students' progress and the effectiveness of the counseling sessions.

No	Feedback
11	The system is satisfactory, but the scheduling and reporting features could be improved to facilitate data management
12	This system does not focus enough on students' mental health issues, which are becoming a major concern among teenagers

### 3.2 Ideation

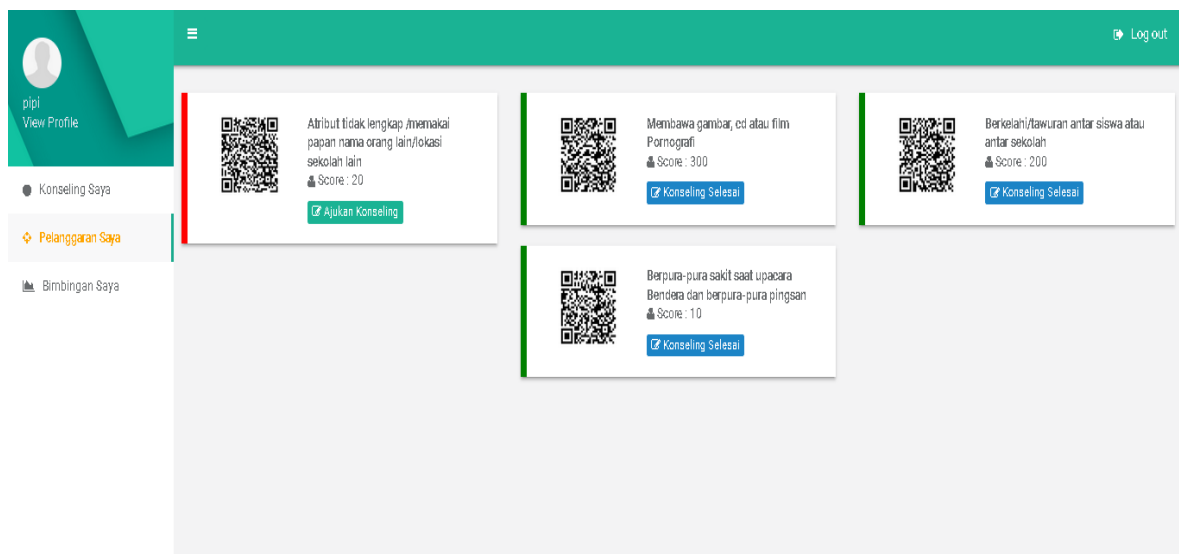
Below are some design displays of the web-based guidance and counseling system that have been refined based on the feedback received by the team. This design was developed to meet the users' needs by considering the input gathered during the ideation phase.



No	Siswa	Tgl Kejadian	Jenis Pelanggaran	Bukti Pelanggaran	Score	Status	Aksi / Dibuat Oleh
1	pipi 1234	2024-12-04	Atribut tidak lengkap /memakai papan nama orang lain/lokasi sekolah lain	Not Upload	20	Belum Terealisasi	[Update] [Hapus] [Konseling]
2	pipi 1235	2024-10-10	Berpura-pura sakit saat upacara Bendera dan berpura-pura pingsan	Not Upload	10	Belum Terealisasi	ERAAA
3	Agata 123456	2024-10-10	Berpura-pura sakit saat upacara Bendera dan berpura-pura pingsan	Not Upload	10	Selesai Bimbingan	ERAAA
4	pip 1237	2024-10-10	Rambut panjang, rambut diwarnai dan berjenggot/kumis panjang	Not Upload	15	Proses Bimbingan	ERAAA
5	pip 1237	2024-09-23	Bicara tidak sopan, mencoret tembok sekolah dan kelas	Not Upload	15	Proses Bimbingan	[Update] [Hapus]
6	pipi 1234	2024-09-23	Membawa gambar, cd atau film Pornografi	Not Upload	300	Selesai Bimbingan	ERAAA

Figure 2. Student Violation List Page for Super User dan School Counselor

The student violation page displayed above can be accessed by the superuser and school counselor accounts. This page allows the superuser and school counselor to add violations committed by students. Violations recorded on this page can only be counseled by the person who entered the student's violation.







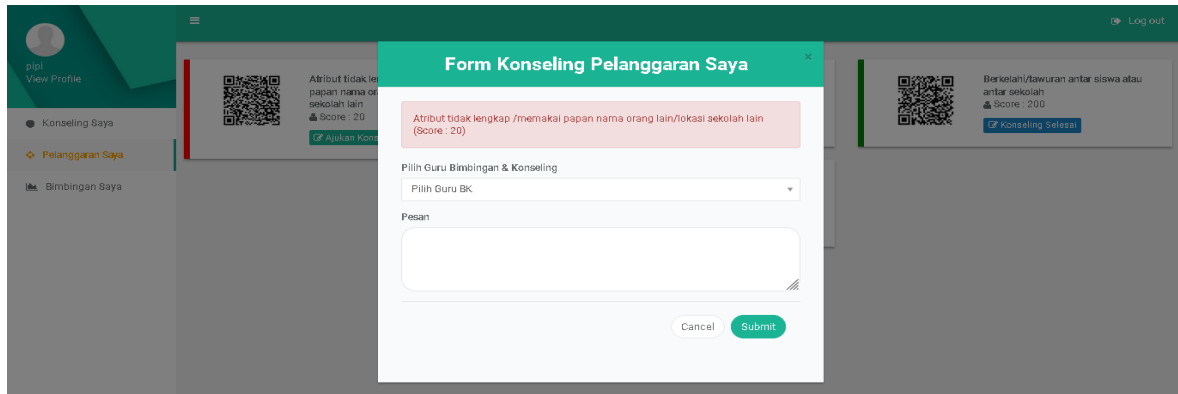
 <p>Atribut tidak lengkap /memakai papan nama orang lain/lokasi sekolah lain Score : 20</p> <p>[Ajukan Konseling]</p>	 <p>Membawa gambar, cd atau film Pornografi Score : 300</p> <p>[Konseling Selesai]</p>	 <p>Berkelahi/tawuran antar siswa atau antar sekolah Score : 200</p> <p>[Konseling Selesai]</p>
 <p>Berpura-pura sakit saat upacara Bendera dan berpura-pura pingsan Score : 10</p> <p>[Konseling Selesai]</p>		

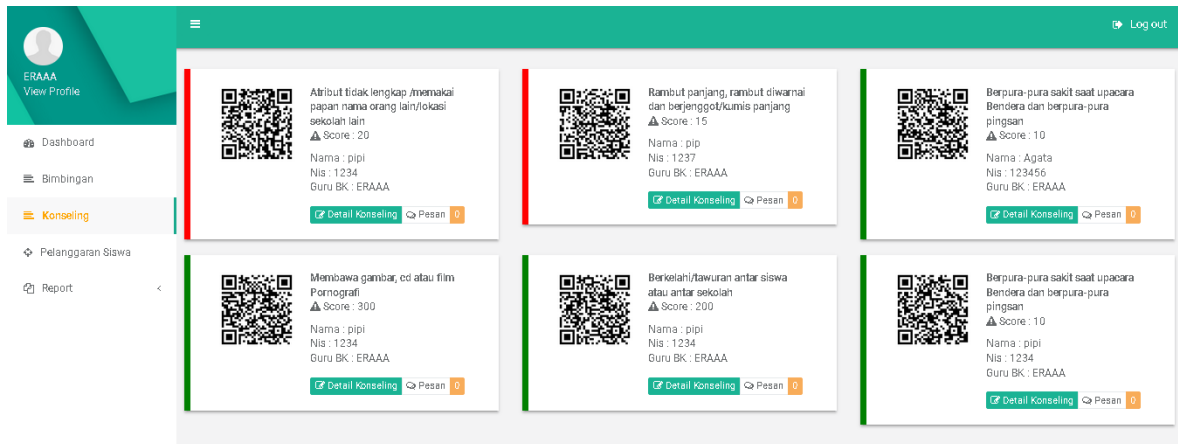
Figure 3. Violation Page on the Student Account

On the violation page in the student account, a list of violations committed by the student is displayed. The items highlighted in green indicate that counseling for the violation has been completed, while the items highlighted in red show that counseling is still in progress



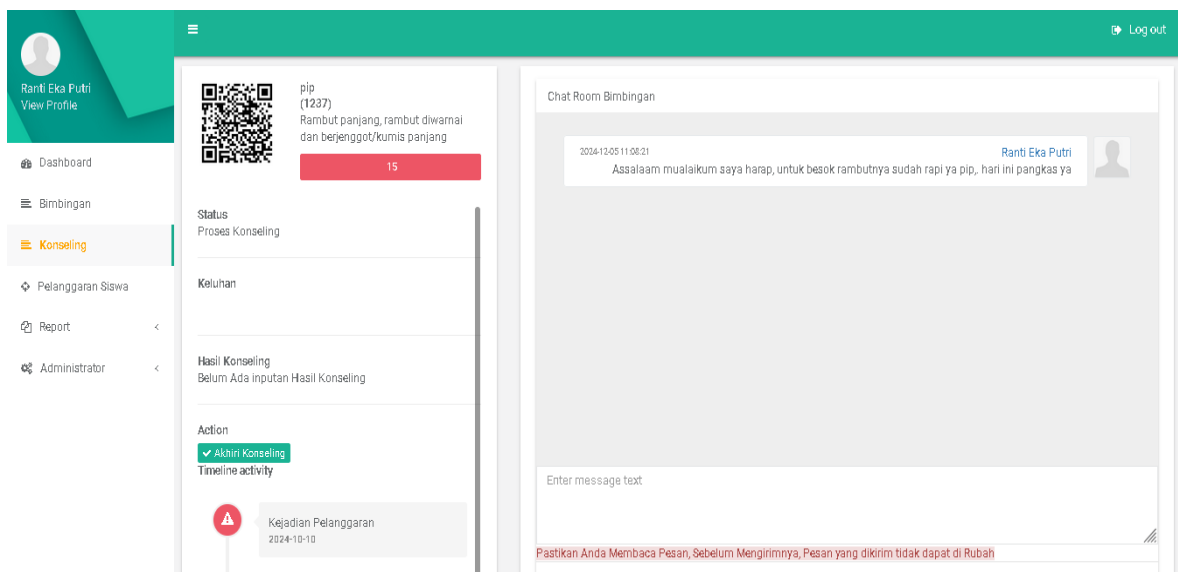
**Figure 4.** Counseling Page for Violations on the Student Account

Unlike the counseling process on the superuser and school counselor accounts, on the student account, the student can choose the counselor who will address the violation they have committed. This applies if the "Counseling" button has not been clicked by the superuser or school counselor on their account after entering the student's violation. The display above will appear when the student clicks the "Request Counseling" button (Fig.4).



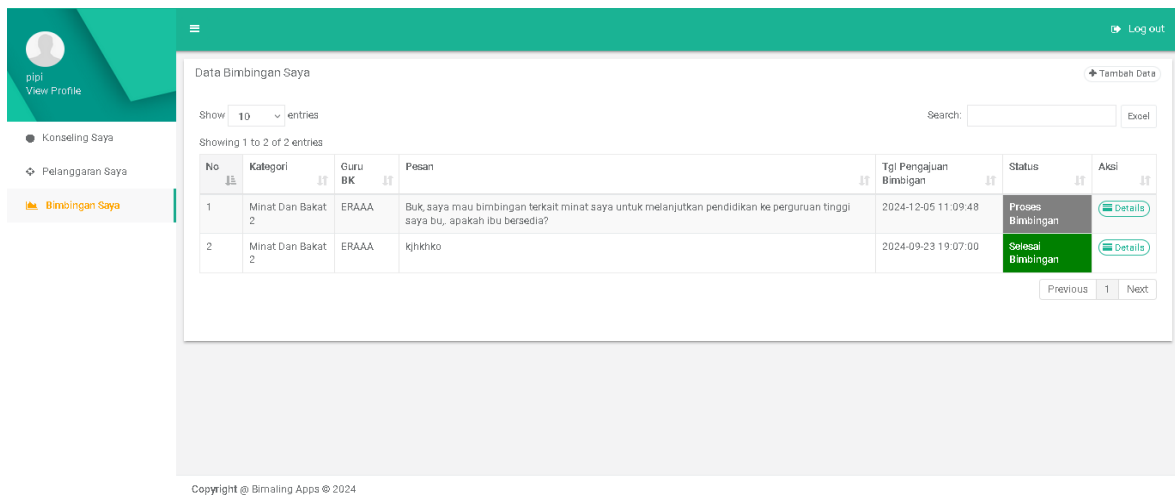
**Figure 5.** Counseling Page on the School Counselor's Account

The counseling page on the superuser and school counselor accounts serves the same function as the violation page on the student account. The items highlighted in red indicate that the counseling process is still ongoing, while the items highlighted in green indicate that counseling has been completed.



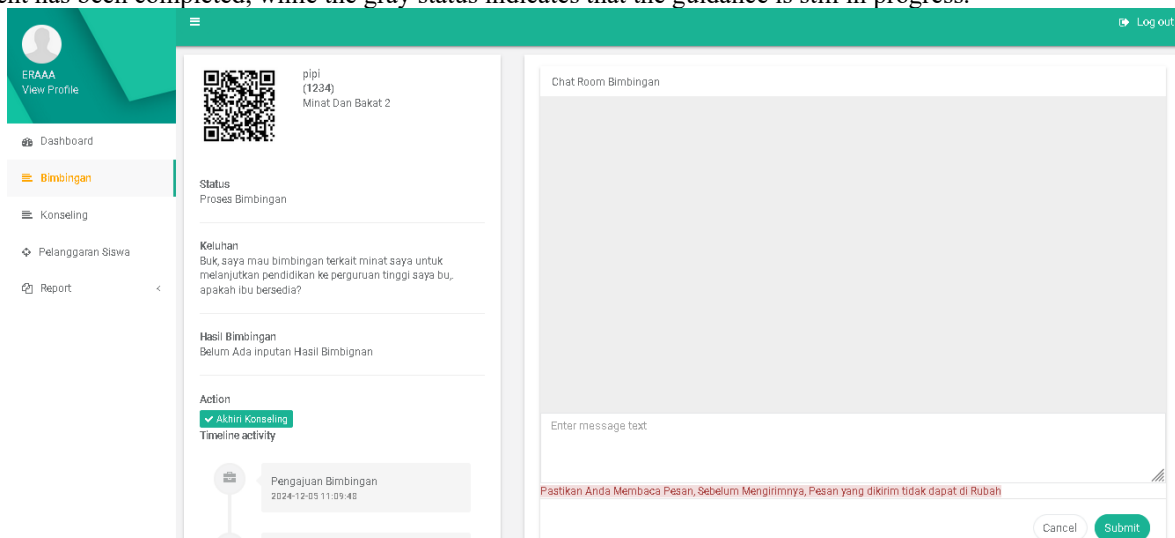
**Figure 6.** The page when the school counselor clicks on the counseling details in the counseling menu on their account

Figure 6 shows the page display that appears when the superuser and school counselor click on the counseling details in the counseling list found in the counseling menu on their account.



**Figure 7.** Guidance Page on the Student Account

Figure 7 is the "My Guidance" display on the student account. On this screen, the student can have multiple guidance sessions on different topics or discussions, and all sessions are displayed on this page. The student can also choose the school counselor who will conduct the guidance. The green status indicates that the guidance requested by the student has been completed, while the gray status indicates that the guidance is still in progress.



**Figure 8.** Guidance Page on the School Counselor's Account after Clicking on the Guidance Details Submitted by the Student

Figure 8 shows the page used by the school counselor and the student to conduct guidance. The guidance session will be considered complete when the school counselor clicks the "End Guidance" button on their account on this page.

### 3.3 Implementation

In this implementation phase, the team conducted testing, known as usability testing, with users, assessing both UX (User Experience) and IX (Interaction Experience). The results of these tests were then analyzed and used as a basis to further develop the application's interface design to better meet the users' needs.

## 4. CONCLUSION

This research has successfully implemented the Human-Centered Design (HCD) method with school counselors to align perceptions and identify various aspects that need improvement in the guidance and counseling system. This process involved close collaboration between the researchers and counselors to understand the needs and challenges faced in their daily practices. Moving forward, to obtain a more comprehensive perspective, the team will continue field research through interviews and observations involving students, aiming to gain deeper insights into their experiences with the

existing guidance and counseling system. This step is crucial to ensure that the system developed not only meets the needs of school counselors but also provides relevant and beneficial solutions for students in addressing their academic and personal challenges. With a user-centered approach, it is expected that the resulting guidance and counseling system will be more effective, efficient, and adaptable to the expectations of all parties involved, including counselors, students, and schools. The ongoing collaboration between school counselors, students, and researchers will help create a system that fosters an environment conducive to students' academic, emotional, and social development, promoting holistic growth.

## REFERENCES

- [1] R. E. Putri, Y. Yusman, and I. Puspita Sari, "Perancangan Sistem Informasi Bimbingan Dan Konseling Berbasis Website," *Nasional Teknologi Informasi dan Komputer*, vol. 6, no. 1, 2022, doi: 10.30865/komik.v6i1.5904.
- [2] R. Rahmadani, Neviyarni, and Firman, "Manajemen Bimbingan Dan Konseling Di Sekolah," *Jurnal Pendidikan Tambusai*, vol. 5, no. 2, 2021.
- [3] R. E. Putri *et al.*, "PROTOTYPE (DESAIN UI UX) APLIKASI PERPUSTAKAAN DIGITAL DENGAN FIGMA," 2024.
- [4] Agung Prabowo, F. Kiranasari, and L. Febriyanti, "Implementasi Teknologi Dan Media Dalam Layanan Bimbingan Dan Konseling," *Jurnal Selaras : Kajian Bimbingan dan Konseling serta Psikologi Pendidikan*, vol. 4, no. 1, 2021.
- [5] K. Khairiyah *et al.*, "Dukungan Sistem dan Pengembangan Program Bimbingan dan Konseling," *Journal on Teacher Education*, vol. 4, no. 2, 2022.
- [6] R. R. Putra, E. Putra, and S. Handayani, "User Interface Design for Citizen Data Grouping Information System Using Human Centered Design Method," *Jurnal Sains dan Teknologi Industri*, vol. 20, no. 2, 2023, doi: 10.24014/sitekin.v20i2.21450.
- [7] V. Tasril, M. Zen, E. S. Fitriani, and A. D. Putra, "DESAIN UI/UX PROTOTYPE PEMBELAJARAN BERBASIS GAME KOSAKATA BAHASA INGGRIS DENGAN METODE HCD UI/UX DESIGN OF ENGLISH VOCABULARY GAME-BASED LEARNING PROTOTYPE USING THE HCD METHOD," *Journal of Information Technology and Computer Science (INTECOMS)*, vol. 6, no. 1, 2023.
- [8] D. Cahyaningsih, H. M. Az-Zahra, and I. Aknuranda, "Perancangan Antarmuka Sistem Informasi Akademik Siswa berbasis Web menggunakan Metode Human Centered Design ( Studi Kasus : SMK Negeri 8 Malang )," *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, vol. 5, no. 10, 2021.
- [9] S. Milah, M. A. Sunandar, and M. Andayani Komara, "PERANCANGAN USER INTERFACE DAN USER EXPERIENCE APLIKASI PENYEWAAN PERALATAN BAYI BERBASIS MOBILE MENGGUNAKAN METODE HUMAN CENTERED DESIGN (HCD) DI BABYSTUFFRENT PURWAKARTA," *JATI (Jurnal Mahasiswa Teknik Informatika)*, vol. 7, no. 3, 2023, doi: 10.36040/jati.v7i3.7066.
- [10] A. R. Setiadi and H. Setiaji, "Perancangan UI/UX menggunakan pendekatan HCD (Human-Centered design) pada website Thriftdoor," *Automata*, vol. 1, no. 2, 2020.
- [11] C. A. Dinsa, H. Tolle, and R. I. Rokhmawati, "Perancangan Desain Interaksi Modul Pelayanan Kesehatan Masyarakat Pada Aplikasi Malang Sehat Dengan Menggunakan Metode HCD (Human-Centered Design)," *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, vol. 5, no. 6, 2021.
- [12] S. F. Widiono, N. Hendrakusma, and M. A. Akbar, "Perancangan User Interface Aplikasi Travelingyuk Berbasis Mobile Menggunakan Metode Human Centered Design (HCD)," *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, vol. 3, no. 8, 2019.
- [13] Z. Azziqra, "Perancangan UI/UX Untuk Aplikasi Al-Quran Menggunakan Metode HCD (Human Centered Design)," *Jurnal Repositor*, vol. 6, no. 1, 2024, doi: 10.22219/repositor.v6i1.31881.
- [14] C. Husnul Fitri and F. Rahma, "Evaluasi dan Perbaikan Tampilan Desain Antarmuka Pengguna Web Jogja Center dengan Metode Human-Centered Design," *Automata*, vol. 3, no. 1, 2022.
- [15] M. Abdi Humanika, G. Prihadi Mahardhika, and H. Setiaji, "Perancangan Tampilan Antarmuka Website Trisno Motor Menggunakan Pendekatan HCD (Human-Centered Design)," *Prosiding Automata (Ajang Unjuk Tugas Akhir oleh Mahasiswa Informatika)*, vol. 2, no. 2, 2021.
- [16] R. Putri, R. Widya, and Y. Yusman, "PROTOTYPE SISTEM INFORMASI BIMBINGAN DAN KONSELING MENGGUNAKAN FIGMA," *Jurnal Indonesia : Manajemen Informatika dan Komunikasi*, vol. 4, no. 2, pp. 540–551, May 2023, doi: 10.35870/jimik.v4i2.246.