SIGEPS: A System for Managing the Health Internship Program

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Abstract. The healthcare sector's demand for a skilled workforce necessitates effective management of internship and residency programs. This study introduces the System for Managing the Health Internship Program (SIGEPS), aimed at addressing internship and residency management challenges in Joinville's municipal health network. The method of this study focused on developing a computational solution with applied and exploratory objectives. The research adopted a User-Centered Development approach, involving seven stages from scope determination to system implementation. Key stages included selecting Google's free technological tools, developing forms for information input, integrating these into a Google Sheets spreadsheet, and creating a website for schedule display. The primary result was the successful development of SIGEPS, which automated the process from initial requests to scheduling and analysis of healthcare institutions and displayed schedules online. The system offers several advantages over previous models, such as concurrent scheduling by multiple employees, process automation, enhanced information transparency, and improved efficiency with significant time savings. Future enhancements include integrating decision support systems and enabling data analysis reports through dashboards to further reduce scheduling efforts and enhance professional efficiency. This study demonstrates the feasibility of developing and implementing a free computational solution using the Google platform for managing internships and residencies in the healthcare sector.

Keywords. Internship, Human Resources Development, Management System.

1. Introduction

The health sector is characterized by its labor-intensive nature, requiring a diverse array of professionals and the precise application of knowledge to ensure the delivery of high-quality services. Universities and Educational Institutions are fundamental in the academic landscape of healthcare, as they significantly impact the lives of individuals by

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directly influencing the quality of education and, consequently, the performance of healthcare professionals [1].

An internship program in the vocational-oriented education system is purposefully integrated into the curriculum to foster graduates who excel in their field, in alignment with the university's vision and mission. The program is predicated on the belief that students enhance their knowledge and skills more effectively through hands-on experience. The cornerstone of this program is experiential learning, which empowers students to learn by actively engaging with real-world scenarios [2].

The development of human resources in the healthcare sector in Brazil is both a responsibility and a significant challenge for the Brazilian Unified Health System [3,4]. For students to acquire a holistic understanding of health that goes beyond mere technical procedures, they must learn about the Brazilian Unified Health System during their educational journey, considering its various dimensions [4]. To this end, numerous strategies have been devised over the years to enhance the collaboration between Universities and Educational Institutions and the associated health services [5].

In this context, the municipal health network of Joinville is tasked with the administration of internships within the municipality's health services [5]. This responsibility, however, is far from straightforward, as it involves the coordination of numerous Universities and Educational Institutions across a diverse array of programs, including technical, undergraduate, and graduate courses. This coordination extends to interactions with a significant number of health institutions, such as Primary Care Units, Surveillance Units, Pharmacies, Laboratories, and others. Furthermore, the management of this complex system must ensure the transparency of scheduling processes, considering the requisitions from Universities and Educational Institutions, the constraints, and realities of health services, as well as all the legislation involved in the educational process.

Considering the context, this study proposes the development of the System for Managing the Health Internship Program (SIGEPS), which takes into consideration the available health units within the municipal network of Joinville. After its development, the system was implemented through a case study at the Health Education and Innovation Center, which is tasked with managing internships within the health services of the municipality of Joinville.

2. Methods

This study aimed to develop a computational solution with applied and exploratory objectives [6,7], conducted at the Health Education and Innovation Center. It involved a wide range of stakeholders, including universities, educational institutions, health units, coordinators, teachers, residents, and students. A User-Centered Development approach[8] was adopted to guide the development and technological implementation, which encompassed seven stages:

- Stage 1 involved defining the scope through discussions with employees at the Health Education and Innovation Center.
- Stage 2 focused on identifying viable, free technological tools, with Google's service being selected and the necessary approvals obtained.
- Stage 3 marked the beginning of the computational solution's development, with the creation of three forms for information input.

- Stage 4 entailed integrating these forms into a Google Sheets spreadsheet and developing internal reports to assist with scheduling.
- Stage 5 involved developing a website to display schedules.
- Stage 6 included system implementation and training for employees.
- Stage 7 consisted of training professionals from universities and educational institutions on how to use the system.

3. Results and Discussion

The main result was the development and implementation of the System for Managing the Health Internship Program, which facilitated the automation of the entire process, from the initial requests by Universities and Educational Institutions through the scheduling and analysis of available health units, culminating in the dissemination of schedules via a dedicated website.

The constructed forms encompassed: (a) Request for Health Internship Program, (b) Registration of Supervisors and Preceptors, and (c) Registration of Residents. These forms were officially published on the Joinville Municipal website[2]. Access to the scheduling system is exclusively granted to staff within the Health Education and Innovation Center, with key functionalities including management of schedules, available health units, supervisors, preceptors, residents, students, and an occupancy report, as depicted in Figure 1.

Figure 1. Internship scheduling spreadsheet.

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[2] Joinville Municipal website is accessible at https://www.joinville.sc.gov.br/servicos/solicitar-cenarios-de-praticas-para-formacao-em-saude/

Upon approval of an internship/residency schedule by a professional, the information is instantaneously updated on the SIGEPS website[3], as depicted in Figure 2.

Figure 2. Page where Universities and Educational Institutions can view internship schedules.

Consequently, SIGEPS offers several advantages, such as enabling multiple employees to concurrently schedule appointments, automating processes, enhancing the transparency of information, and improving efficiency with significant time savings compared to the previously employed model, which relied on Excel spreadsheets.

Considering data privacy concerns, the SIGEPS website does not disclose personal or sensitive information to the general public. The displayed information is associated with a registration number, as indicated in the second column of the table in Figure 1, and complies with Brazil's General Data Protection Law (LGPD). The data privacy terms and platform usage adhere to the policies provided by Google[9].

Furthermore, future research on SIGEPS will involve evaluating the system based on various aspects such as usability, effectiveness, and efficiency, taking into consideration all stakeholders involved in the internship scheduling process.

4. Conclusions

This study demonstrated the feasibility of developing and implementing a free computational solution utilizing the Google platform for the management of internships

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[3] SIGEPS website is accessible at https://sites.google.com/view/ceis-gestao-cenarios-pratica/p%C3%A1gina-inicial

and residencies. The outcome of this research was the creation of SIGEPS, which facilitates the automation of the entire process, from the initial request to the scheduling, analysis of available practice scenarios, and subsequent presentation of schedules via a website.

The primary advantages of this system, in comparison to the previously employed model, include the capability for multiple employees to concurrently schedule appointments, the automation of the process from the request to the online display of schedules, and the optimization of time allocation for scheduling tasks.

For future enhancements, SIGEPS offers the potential for integrating the computational logic of decision support systems, providing suggestions for optimal scheduling alternatives, as well as enabling data analysis reports through dashboards. These features represent significant benefits, as they can reduce the effort required during scheduling and further enhance the efficiency of professionals.

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