

Development of a Complaint System to Improve Services for Senior High School Students

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ABSTRACT

Improving the efficiency and transparency of school services in the digital era requires complaint handling that is documented accurately and coordinated across units. This study developed a website-based student complaint system for SMAN 1 Babadan, Ponorogo, as a strategic step to ensure that every student is heard and receives an appropriate response. The research applied a research and development approach within the System Development Life Cycle using the Waterfall model, comprising analysis, design, implementation, testing, and maintenance. The system design was expressed through Unified Modeling Language diagrams, namely use case, activity, sequence, and table relationship diagrams, while the implementation used the PHP CodeIgniter framework with a MySQL database. The development itself followed three stages: requirement planning, system design, and implementation. Black-box testing involving students and administrators showed that all system functions, including login, student data management, complaint submission with file attachments, follow-up status recording, and report printing, operated as required. User acceptance testing conducted by the appointed school assessor produced a total score of 41 out of a maximum of 50, or 82%, which falls into the Very Good category. The developed system was therefore feasible for supporting student complaint services.

Keyword : Complaint System; High School Students; Website; Waterfall Model; User Acceptance Testing.



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1. INTRODUCTION

Information technology in education has become a vital component that supports the smooth delivery of teaching and learning as well as the improvement of school services (Febriyan et al., 2026). Ideally, effective communication between students and the school is the main key to guaranteeing optimal educational quality and creating a conducive learning environment (Dewa, 2022; Saputra et al., 2025). Schools are obliged to provide services that are fast, accurate, transparent, and easily accessible so that the needs of students within the educational environment can be met to the fullest (Ajay & Sunardi, 2023). Complaint and aspiration services are regarded as highly important for the progress and orderliness of an institution (Fuadi, 2023), because they enable the school to conduct continuous evaluation in order to improve the quality of its services (Rahardjo et al., 2020).

In practice, however, senior high schools, in this case SMAN 1 Babadan, still rely on manual or conventional methods for handling complaints, such as physical suggestion boxes, written reports on paper, or direct oral conversation with teachers (Reski & Esabella, 2023). This condition reveals a communication gap in which the management process becomes inefficient because it is time-consuming and the handling procedure is not measurable (Manalu et al., 2023). In addition, a psychological barrier exists in which many students feel hesitant, embarrassed, or even afraid to report sensitive problems such as *bullying* directly, out of concern over intimidation or the lack of confidentiality of their identity (Febriyan et al., 2026). Similar obstacles occur in services related to facilities and infrastructure as well as other student affairs, where students are reluctant to report because they feel afraid or awkward when dealing directly with teachers (Wicaksono & Mulyana, 2025).

This traditional complaint management produces significant negative impacts, one of which is the slow response of the school in following up urgent complaints from students (Saputra et al., 2025). Information conveyed manually is often not recorded neatly, is at risk of being lost, or is not clearly delivered to the authorised parties, so that monitoring of the follow-up action becomes difficult (Mulyani

et al., 2022). In the long term, problems that are not well managed, such as acts of violence or damage to facilities, can disrupt the harmonious atmosphere of the school (Kusumawati, 2022), reduce the learning motivation of students, and weaken their trust in the school system as a safe place (Pratama & Mayasari, 2025).

As a solution to these problems, the development of an integrated website-based or mobile student complaint information system is proposed (Bulu & Lede, 2024). Such a system has to be designed to enable students to convey their aspirations, criticism, and complaints anytime and anywhere without having to meet face to face or fill in physical forms (Zain, 2024). By utilising modern *frameworks* such as Laravel or CodeIgniter together with a MySQL database (Febrita & Nurdiana, 2024), the system has to be able to manage every report in a structured manner, provide a *real-time* report status tracking feature (Ipnuwati et al., 2024), and present automatic reports for school managers so that decisions can be made more quickly (Latifa et al., 2024).

The urgency of developing this system lies in the need to improve the efficiency and transparency of school services in the digital era. Digitalising the complaint service allows the school to document every problem accurately and simplifies coordination between units in resolving it (Elentia, 2025). Furthermore, providing an inclusive *digital platform* is a strategic step to ensure that every student of SMAN 1 Babadan is heard and given an appropriate response, so that the vision of responsive, learner-centred education can be realised more optimally (Rasyid & Ardiansyah, 2025).

The *novelty* of this research lies in the implementation of a monitoring feature that systematically supervises the timeliness of the handling of each student complaint. Unlike complaint systems in general, the features of this system cover all fields of school management, are managed in *real time*, and are *website*-based so that they can be accessed from any device connected to the internet. This feature allows the school administrator to detect automatically the reports whose follow-up is overdue, so that the service process becomes more measurable and can be evaluated objectively. In addition, the system emphasises a validated reporting mechanism through the attachment of physical evidence in the form of documents, images, or videos. The feature is intended to increase the motivation and the courage of students to report ethically without involving teachers or homeroom teachers, and it can be monitored directly by the school principal.

2. RESEARCH METHOD

Based on theoretical and empirical studies from various sources on the development of complaint information systems, the research methodology for the development of the student complaint system at SMAN 1 Babadan, Ponorogo, is described as follows.

A. System Development Approach and Model

This research used a *System Development Life Cycle* approach with the Waterfall model. The model was selected because its stages are systematic and sequential, so that the development of the system is well documented and every stage produces a clear output before moving on to the next one. This alternative was used because development that is more responsive to rapid change was required (Sulianta, 2019). The stages of the research that were carried out are as follows (Sommerville, 2011):

1) Analysis Stage

The initial stage aimed to identify the functional and non-functional requirements of the system through the following data collection techniques:

- a) Observation: direct observation of the manual complaint flow at SMAN 1 Babadan in order to detect obstacles, such as slow handling or untidy documentation.
- b) Interview: question-and-answer sessions with the guidance and counselling teacher and the student affairs division in order to obtain the complaint business process and the school regulations in force.
- c) Literature study: searching for the theoretical foundation and the results of previous research from journals or books related to web-based complaint information systems.

2) Design Stage

The system design was carried out using the Unified Modeling Language (UML) in order to visualise the architecture and the data flow of the system. The diagrams used were:

- a) Use case diagram: to describe the interaction between the actors (the student, and the guidance and counselling teacher or the vice principal for student affairs as the administrator) and their working functions in the system.

- b) Activity diagram: to depict the sequence of the activities of the complaint process from beginning to end.
 - c) Class diagram: to define the data structure, the relationships between tables, and the attributes in the database.
 - d) User interface design: to create the layout of the website so that the system is easy to use (user-friendly).
- 3) Implementation Stage
- At this stage, the technical design was translated into program code. The technology specifications recommended on the basis of the empirical studies were:
- a) Programming language: PHP, which is open source.
 - b) Framework: to accelerate the development process and to ensure that the code is more structured through the Model View Controller concept.
 - c) Database: MySQL as the storage for student data, complaint report data, and the reporting of the follow-up status.
- 4) Testing Stage
- The system that had been built had to pass a testing stage in order to guarantee its quality:
- a) Black-box testing: used to test the functionality of the system without having to inspect the internal code structure, ensuring that every feature such as login, complaint input, and report printing runs as expected.
 - b) User acceptance test (UAT): a trial with the prospective users (students and teachers) in order to measure the level of satisfaction and the ease of access to the system before it was fully implemented.
- The assessment instrument for the aspects of user acceptance of the interface and the ease of the system, completed by teachers and students, was as follows (Pressman, 2014):
- (a) Usability aspect
 - (b) Functionality aspect
 - (c) Performance and reliability aspect
- 5) Maintenance Stage
- After the system was implemented, periodic maintenance was carried out in order to correct the bugs that might appear, to update the data, and to adjust the features to the new needs of the school, so that the system continues to operate optimally in the environment of SMAN 1 Babadan.

B. Research Framework

In accordance with the methodology and the stages of this research, the framework of the work can be depicted as follows:

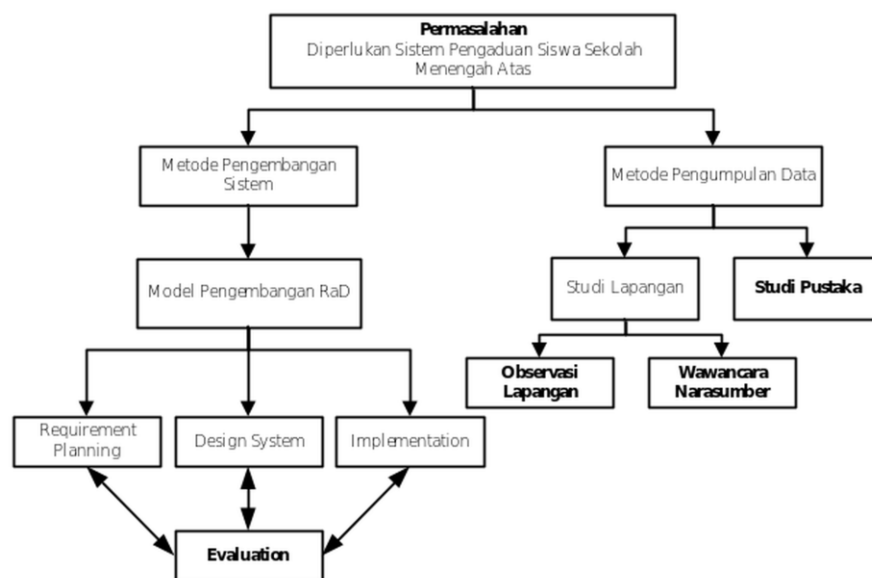


Fig 1. Research framework

3. RESULTS AND DISCUSSION

A. Problem Identification and Analysis of the Running System

The complaint process that has been carried out so far still runs manually: students formulate complaints and aspirations and then convey them to teachers, homeroom teachers, or the principal, who then follow them up through the parties concerned. From the observation and the interviews, the authors identified the following problems in the system currently running:

- The model used is still manual.
- Students still hesitate to complain or to convey their aspirations directly to teachers.
- The recording of all data is still done manually, so that the rate of data input errors by the administration division is high.
- Delays occur for the parties concerned in obtaining information on the complaints and aspirations submitted by students, which leads to slow handling and even to complaints being overlooked.

The alternative solution to the problems faced is that a system needs to be built in order to make it easier for students to submit complaints or to convey their aspirations effectively and efficiently, so that the follow-up process for those complaints can be carried out immediately.

B. Proposed Design of the Complaint System

The proposed system design is intended to improve and to support the information related to student complaints addressed to the school, by designing a web-based system using *Unified Modeling Language* diagrams. The system was built using the *CodeIgniter* framework with PHP as the programming language and the *MySQL database management system*. The following are the results of the system design that have been approved by the school:

1) Use Case Diagram

The actors involved in the operation of this complaint system are the administrator and the student, depicted as follows:

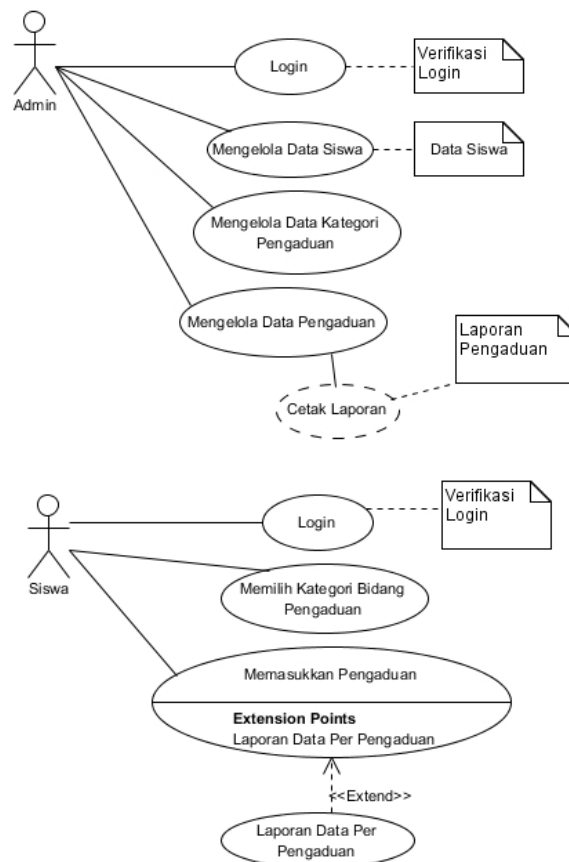


Fig 2. Approved use case diagram

This complaint system begins with a login in order to verify the access rights of the user. A verified administrator can access the system data management page containing student data, complaint category data, and the follow-up action for each complaint in order to report every complaint. The student actor holds the access rights to select the category of the complaint field and to submit complaints in accordance with the attributes and the rules required in the complaint data.

2) Activity Diagram

This diagram depicts the processes that can be carried out in this student complaint system as approved by the school.

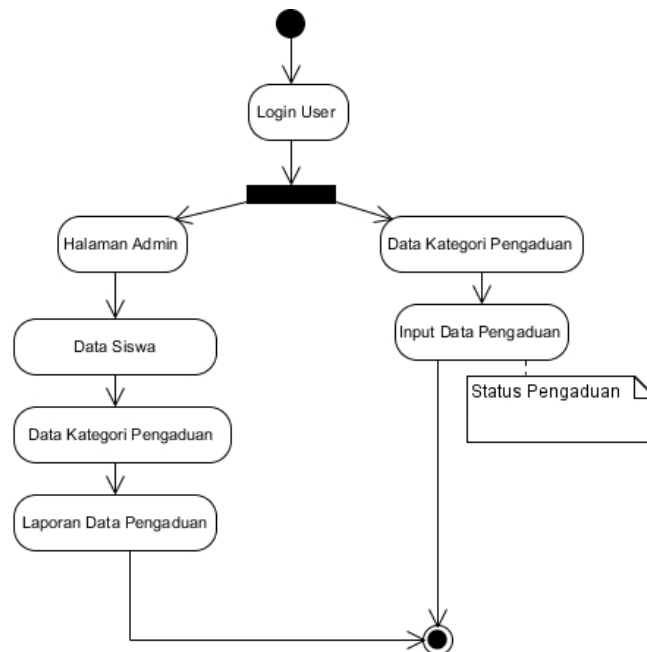


Fig 3. Approved activity diagram

The diagram explains the flow and the procedure of the process of each of its management activities, as has also been explained in the previous use case diagram.

3) Sequence Diagram

This diagram depicts the sequence of the processes that can be carried out in this student complaint system as approved by the school.

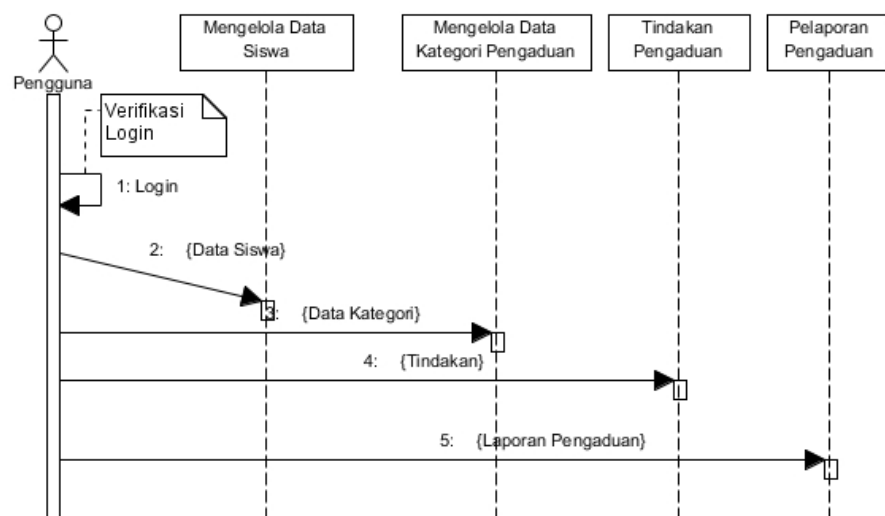


Fig 4. Approved sequence diagram

4) Table Relationship Diagram

The diagram of the relationships between tables was formed in order to create the manipulation of the structure of each table, so that it forms the flow of the data transactions among them. The tables in the database that have been created are the student table, the administrator table, the category table, the report table, and the report status table. The form of the relationships between the tables that have been created is as follows:

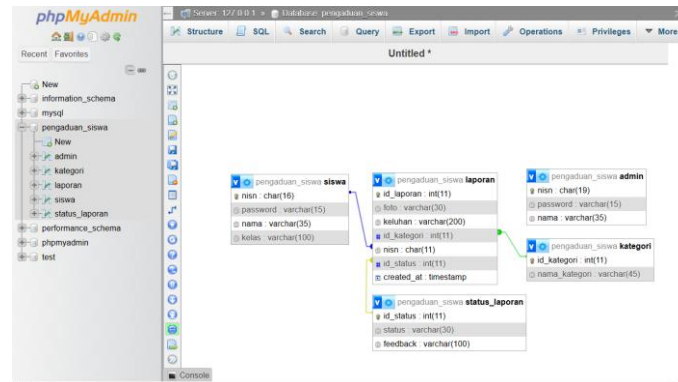


Fig 5. Form of the table relationships created

C. Results of the Development of the Approved System

1) System Display



Fig 6. Home page display

This page contains the Procedure menu, the Category menu, and the Login menu for determining the access rights of the user.

2) Display of the User Login Process

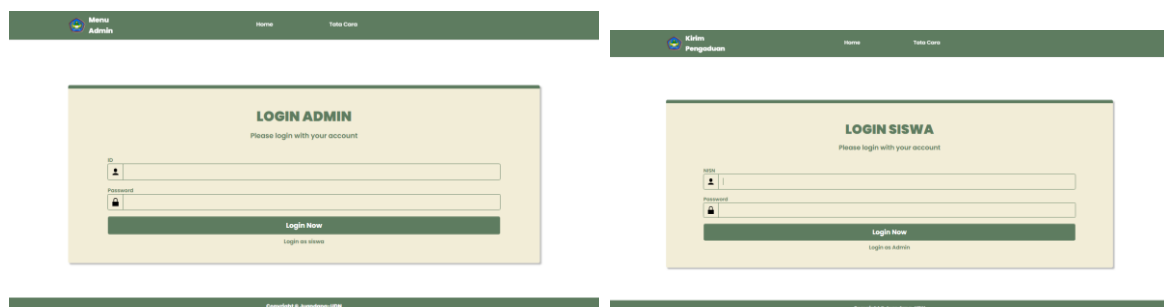


Fig 7. User login page

There are two options for this page, and they can be interchanged for the administrator and the student users by selecting the menu below them.

3) Display of the Student Data Management Process

Fig 8. Student data management page

On this page, the administrator is in charge of entering the student data as the validity of the user as a student who may send complaint data.

4) Display of the Management of the Follow-Up Action on Complaint Data

No	Nama	Keluhan	Kategori	Action
1.	Zidane Maulana A.	Nilai UAS Ibtis Inggris yang diberikan tidak sesuai hasil koreksi	Kurikulum	Detail

Fig 9. Complaint report page

5) Display of the Student Complaint Page

Fig 10. Student complaint input page

6) Display of the Complaint Follow-Up Status Page

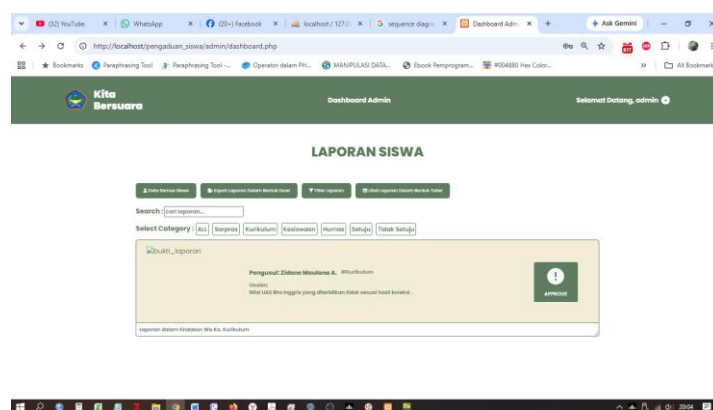


Fig 11. Complaint follow-up data page

D. Evaluation Results of the Approved System

In the system testing phase, the black-box testing model was applied by running the system and then observing the results or the output given by the system in order to ascertain whether it was already in accordance with expectations. The results of that testing are presented through the following steps:

Table 1. Results of the testing using the black-box technique

No.	Test Case	Output	Result
1	Accessing the URL "http://localhost/pengaduan_siswa/" in a browser	The complaint system page is displayed	As required
2	Entering the ID/NISN and the password	Login runs well	As required
3	Student data management	Data successfully entered	As required
4	Complaint status management	Follow-up status successfully entered	As required
5	Complaint input	Complaint data successfully saved	As required
6	Pressing the Select Attachment File menu	The attachment menu runs well	As required
7	Pressing the Send menu	The input menu runs well	As required
8	Printing the complaint data report	The report data can be displayed as a printable table and in Excel format	As required

The subsequent assessment, using *user acceptance testing*, aimed to determine the quality of the website-based student complaint system that had been developed. The assessment data from the school (the guidance and counselling / ICT teacher appointed by the principal) are presented as follows:

Table 2. Results of the user acceptance testing assessment

No.	Assessed Aspect	Alternative Choices				
		1 Very Poor	2 Poor	3 Fair	4 Good	5 Very Good
1	Determination of the display				√	
2	Layout and arrangement of the menu					√
3	Attractiveness of the display design				√	
4	Selection of the typeface					√
5	Appropriateness of the font size			√		
6	Benefit for the school					√
7	Arrangement of the spacing between objects				√	
8	Clarity of the images and the colour of the objects			√		
9	Image format			√		
10	Usefulness for the students					√
Total						41
Average						4.1
Percentage						82%

Based on the results of the assessment using *user acceptance testing*, a score of 41 out of a maximum score of 50, or 82%, was obtained. It can therefore be concluded that the system that has been developed already holds a Very Good rating.

4. CONCLUSION

Based on the results of the system development and the evaluation that was carried out, it can be concluded that:

- a. The website-based student complaint system was developed on the basis of the research and development model, which consists of three stages, namely requirement planning, system design, and implementation.
- b. Based on the results of the trial with the students and the administrator using black-box testing, all functions within the system were found to run well and to be feasible for use.
- c. Based on the results of the assessment using user acceptance testing, a score of 41 out of a maximum score of 50, or 82%, was obtained, so that it can be concluded that the system that has been developed already holds a Very Good rating.

As a closing remark and an expectation for the future, several inputs or suggestions are put forward by the researchers, namely:

- a. The complaint system that has been developed is expected to be continued up to *real-time* usage testing by integrating it into the school server.
- b. The complaint system requires further development in its features and its display.
- c. The testing was carried out by only one subject, the guidance and counselling / ICT teacher appointed as the companion for this research, so that the addition of a more competent team of experts is needed in order to obtain better responses from the respondents.

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REFERENCES

- Ajay, M., & Sunardi. (2023). Sistem Informasi Pengaduan Dan Keluhan Siswa. *Gudang Jurnal Multidisiplin Ilmu*, 1(6). <https://doi.org/10.59435/gjmi.v1i6.205>
- Bulu, M. P., & Ledo, P. A. R. L. (2024). Design and Development of Student Complaint Information System at Wira Wacana Christian University Sumba Based on Object-Oriented Analysis and Design. *MALCOM: Indonesian Journal of Machine Learning and Computer Science*, 4(2). <https://doi.org/10.57152/malcom.v4i2.1262>
- Dewa, R. O. M. (2022). *Aplikasi Layanan Pengaduan Siswa Di SMA Negeri 2 Muara Enim Berbasis Android*. Politeknik Negeri Sriwijaya.
- Elentia, J. P. (2025). *Rancang Bangun Layanan Pengaduan Bullying Berbasis Website Untuk Mengatasi Perilaku Kekerasan Di Sekolah SMKT Darul Ulum*. Universitas Ivet.
- Febrita, N., & Nurdiana, D. (2024). Pengembangan Aplikasi Pengaduan Siswa Berbasis Web Menggunakan Metode Waterfall Di SMKN 1 Kragilan. *Seminar Nasional Sains Dan Teknologi "SainTek" Seri I*, 1(1).
- Febriyan, Z., Sumarlinda, S., & Purwanto, E. (2026). Implementasi Sistem Informasi Pengaduan Siswa Berbasis Web dengan Pemantauan Service Level Agreement. *Bulletin of Computer Science Research*, 6(4). <https://doi.org/10.47065/bulletincsr.v6i4.1180>
- Fuadi, K. (2023). Sistem Informasi Manajemen Pelayanan dan Pengaduan Siswa Berbasis Web. *Jurnal Ilmiah Mahasiswa Sistem Informasi Dan Komputer Akuntansi (JIMASIKA)*, 1(1).
- Ipinuwati, S., Arlisa, Y., & Yuniarthe, Y. (2024). Perancangan Sistem Informasi Pengaduan Mahasiswa Berbasis Web Pada Institut Bakti Nusantara. *Jurnal Teknologi Dan Informatika (JEDA)*, 5(2).
- Kusumawati, B. M. (2022). *Sistem Konseling Dan Pengaduan Siswa Berbasis Web Menggunakan Framework Codeigniter Di SMK Asshodihiyah Semarang*. Universitas Semarang.
- Latifa, N. L. J., Lutfi, A., & Baijuri, A. (2024). Sistem Informasi Pelayanan Dan Pengaduan Mahasiswa Di Fakultas Sains Dan Teknologi Universitas Ibrahimy Berbasis Website. *5th SEMINASTIKA 2024*. <https://doi.org/10.47002/seminastika.v5i1.818>

- Manalu, W. U. S., Hakim, L., & Wulandari, C. (2023). Sistem Informasi Pengaduan Siswa Berbasis Website Dengan Framework Laravel. *Journal of Information System Research (JOSH)*, 4(3). <https://doi.org/10.47065/josh.v4i3.3368>
- Mulyani, A., Septiana, Y., & Alamsyah, R. (2022). Rancang Bangun Sistem Informasi Pengaduan Layanan Menggunakan Metode Rational Unified Process. *Jurnal Algoritma*, 19(2). <https://doi.org/10.33364/algoritma/v.19-2.1199>
- Pratama, T. P., & Mayasari, R. (2025). Rancang Bangun Sistem Pengaduan Online Interaktif Berbasis Web Dengan Menggunakan Framework Laravel (Studi Kasus: SMA Negeri 1 Cikampek). *JATI (Jurnal Mahasiswa Teknik Informatika)*, 9(2). <https://doi.org/10.36040/jati.v9i2.12927>
- Pressman, R. S. (2014). *Software Engineering: A Practitioner's Approach* (8th ed.). McGraw-Hill Education.
- Rahardjo, J. S. D., Setiady, T., & Sugiarto, T. (2020). Sistem Informasi Pengaduan dan Aspirasi Warga Sekolah Pada SMK Negeri 53 Jakarta. *Jurnal Sisfotek Global*, 10(1). <https://doi.org/10.38101/sisfotek.v10i1.275>
- Rasyid, M., & Ardiansyah, T. (2025). Integrasi Layanan Pengaduan pada Sistem Informasi Penerimaan Peserta Didik Baru (PPDB) Berbasis Web di SMPN 01 Rawa Pitu. *Journal of Artificial Intelligence and Technology Information*, 3(4). <https://doi.org/10.58602/jaiti.v3i4.211>
- Reski, T., & Esabella, S. (2023). Aplikasi Layanan Pengaduan Siswa SMA/SMK Berbasis Android. *Management of Information System Journal*, 1(3). <https://doi.org/10.47065/mis.v1i3.788>
- Saputra, F. D., Azis, R. F., Harahap, A. R., & Haryono, W. (2025). Pengembangan Aplikasi Web Pengaduan Masalah Sekolah sebagai Media Komunikasi Siswa dan Sekolah di SMAN 17 Kabupaten Tangerang. *Jurihum: Jurnal Inovasi Dan Humaniora*, 2(6).
- Sommerville, I. (2011). *Software Engineering* (9th ed.). Addison-Wesley.
- Sulianta, F. (2019). *Strategi Merancang Arsitektur Sistem Informasi Masa Kini*. Elexmedia Komputindo.
- Wicaksono, B., & Mulyana, D. I. (2025). Rancang Bangun Aplikasi Pengaduan Sarana Dan Prasarana Berbasis Web Pada SMK IDN Jonggol. *JATI (Jurnal Mahasiswa Teknik Informatika)*, 9(3). <https://doi.org/10.36040/jati.v9i3.13698>
- Zain, M. A. H. (2024). *Sistem Pengaduan Siswa dan Siswi SMA Negeri 6 Berbasis Website*. Universitas Sumatera Utara.