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# Training in academic information system usage at Ash Shidiq Integrated Islamic Middle School

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**ABSTRACT**

Ash-Shidiq Foundation recently established the Integrated Islamic Middle School (SMP IT). Currently, the school manages academic data manually, either on paper or through spreadsheet applications. Recognizing an opportunity, the Telkom University Software Engineering Expertise Group decided to provide community service by implementing a web-based academic information system for the school. This system is hosted on a server accessible via the Internet, enabling staff, teachers, and students to access it. It aims to simplify academic data reporting for school managers. The entire community service project, from initial observation to system installation, training, video documentation, and final report preparation, spanned approximately six months. Training sessions were conducted in a classroom setting for school principals, staff, and teachers. Feedback from this community service activity showed that 25% strongly agreed, 37.5% agreed, and 37.5% were neutral regarding the suitability of the training material to partners' needs. Regarding the presentation of material, 75% strongly agreed, 25% agreed, and 50% were neutral, with 37.5% in agreement and 12.5% in disagreement about the usefulness of the technology offered.



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## 1. INTRODUCTION

Integrated Islamic Middle School "Ash-Shidiq" (SMP IT Ash-Shidiq) is one of the educational institutions under the Ash-Shidiq Foundation which also oversees other educational units such as Early Childhood Education, Raudatul Athfal, and Madrasah Ibtidaiyah (Ash-Shidiq, 2023). Based on the official website of the Ash-Shidiq Foundation, this Middle School is located in Ciganitri RT 08 RW 03, Lengkong, Bojongsoang Sub-district, Bandung, West Java. In the course of their operations, both the school management and the Foundation's administration require a school academic system. This system is needed to store, manage, and convey students' academic information to parents as well as the Ministry of Religious Affairs and the Ministry of Education and Culture (Ash-Shidiq, 2023).

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The school's academic system is defined as a mechanism utilized by educational institutions to efficiently manage and convey students' academic information to pertinent parties (Muhammad et al., 2021). According to the historical account of information systems compiled by (Hirschheim & Klein, 2012) information systems in the realm of education have been present since the 1970s. This evolution is rooted in the curriculum related to information systems that was established by the Association for Computing Machinery in the years 1972-1973.

**Table 1.** Four historical eras of information system according to (Hirschheim & Klein, 2012)

| Era | Technology | Research Themes | Research Methodology | Education | Infrastructure |
|---|---|---|---|---|---|
| **First Era** Management/ Governance: Centralization; IS reporting relationship under control of accounting | Third generation mainframe; Languages: 360); Languages: Assembler, Fortran, COBOL; Database; Ethernet | Decision Support Systems; Human-Computer Interaction; Early Frameworks; Skeptics; Stages of Growth of IS; What is the real value of IS | Churchman, Teichroew, Langefors, Blumenthal, Emery & Trist (also Mumford, Davis | ACM graduate curriculum; ACM undergrad curriculum; IFIP TC3 | *Organizations: TIMS, AoM, ACM, DPMA, ASM, SMIS, AIDS, IFIP TC8. Research Centers: CISR, MISRC, ISRAM* |
| **Second Era** Management/ Governance: Steering committees; User-led IS development project | Minicomputers; Mid-range computers; PCs; Fifth Generation Computer project | New Frameworks; Defining the field; Impact of IS Success; Competitive advantage; IT & organization change; IS in the public sector; Participative design | Colloquium at Manchester Business School 1984 – need for different research approaches | DPMA | *Conferences:* ICIS, HICSS, IRIS, IFIP TC8 WG8.2 Journals: MISQ, I&M, IS, JMIS |
| **Third Era** Management/ Governance: Departmental computing/ Decentralization; Emergence of the CIO | Internetworking leading to the emergence of the Internet | IT productivity/ economic performance; IT Value; Technology acceptance; GDSS; Process-based view of IT implementation; Outsourcing; Aligning IT Strategy with Business | Harvard Business School Colloquia on research methodology; Copenhagen Conference 1990 expanding research approaches | IFIP/BCS curriculum | *Organizations:* AIS, ISWorld Conferences: ECIS, PACIS, AMCIS, ICOIS *Journals:* ISR, CAIS, JAIS, JIT, EJIS, JIS, I&O, JSIS, IT&P, SJIS, AJIS, DSS, JGIM |
| **Fourth Era** Management/ Governance: Management of widely distributed technologies and personnel | Internet Age; Ubiquitous computing; Search Engines; Social Media | Adoption of Internet/e-commerce; Globalization and cross-cultural studies; IT in developing countries; Virtual teams; Knowledge management; IT personnel; Business intelligence; IS research productivity; Design Science; IS journal practices and ratings; New disciplinary frameworks Discipline critiques: - Is there a future for the field? - Relevance vs. Rigor | Philadelphia Conference 1997 encouraging qualitative research; Aalborg Colloquium 2000 promoting new research methods; MISQ special issues and conference panels; Second Manchester Conference 2004 expanding research approaches; Books on qualitative research methods in IS | IS'97 Model Curriculum; IS 2010 | *Journals:* JECR, EJISDC, ISF, JITTA, JITCA, MISQ Executive Also new AIS sponsored journals, e.g. Pacific Asia Journal of the AIS; RELCASI as well as non-Anglo-American journals: Wirtschaftinformatik/ Business & Information Systems Eng. Journal *Special Interest Groups*: SIGPHIL, SIGOUT *Specialist Conferences*: Design Science |

Numerous researchers have also engaged in community service activities focused on academic system training (Apriyani et al., 2022; Ariyanti et al., 2022; Hadinata et al, 2022; Hafasri et al., 2019). This includes the development of web-based information systems to manage academic data in vocational high schools, aiding schools in implementing vocational high school academic systems, and establishing school academic systems based on websites, etc. (Bahar et al., 2021; Sihombing et al., 2022; Pangaribuan & Subakti, 2019). In this community service, a school academic system has been deployed and hosted on a local hosting server. Furthermore, partner schools have received assistance in the installation of server support and training for utilizing the academic system. The school will try to use the academic system in daily school operations. Figure 1 provides a visual representation of the location of Telkom University in relation to SMP IT Ash-Shidiq as the partner school. The distance between two location is approximately 2.1-2.3 kilometers, and the travel time is around 10 minutes.

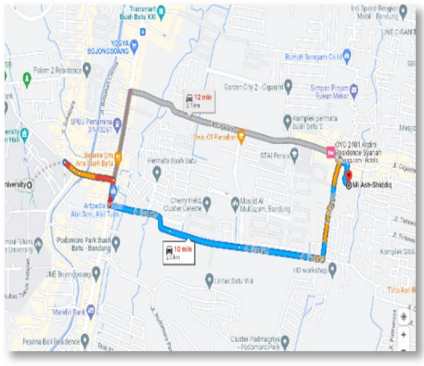

**Figure 1.** Map showing the location of Telkom University and SMP IT Ash-Shidiq

SMP IT Ash Shidiq is a non-profit institution that is oriented towards fostering the young generation of the nation with noble character, having outstanding achievement and broad insight in facing the era of globalization. This school has the potential to be quite competitive, with a market for new students of 12.9% for the school environment in the Bojongsoang sub-district, Bandung.

This community service is expected to be able to provide a good experience for IT Ash Shidiq Middle School stakeholders in managing student and school academic data in a better, easy to understand, and dynamic way following changes in the school's operational data. In addition, this activity is also expected to be a form of Telkom University's contribution to the advancement of society.

## 2. METHODS

### Activity Method

The approach utilized in community service activities during these six months is illustrated in Figure 2. Implementation of this community service activity is proceeds through six stages.


**Figure 2.** Problem solving solution framework

### Preliminary observation

Preliminary observations were conducted to assess the environmental conditions and determine the needs of SMP IT Ash-Shidiq. This process included textual interviews through messaging application and online video conferences with school representatives. The duration of each video conference is ranged from 30 to 60 minutes. Discussions through via messaging applications were tailored to complete the necessary data or additional information required.

### System design and procurement

The system design is conducted with consideration for the previously known environmental condition. In this phase, the team determines what functionality of the system to be developed, how it will be procured within the constraints of the existing budget, and outlines the technical aspects to ensure the system's usability by the partner community. Theoretically, in software engineering, there is a term known as Domain Engineering (Pressman, 2009). Domain engineering is a process within software engineering that seeks to find commonalities across multiple systems to identify reusable components applicable to other systems (Pressman, 2009). However, the team faces limitations related to budget and human resources within this community engagement program. Hence, these constraints prompt the community service team to choose between acquiring a system by purchasing an existing and ready-to-use commercial system, developing a system with involvement from the internal community service team, or utilizing open-source software system products. The decision on the procurement process chosen will be discussed in Chapter 3: Results and Discussion.

### System Implementation

Referring to the definition of system implementation in the Dynamic Systems Development Method approach, system implementation is the process of placing an operational prototype of the software system into the operational environment (Pressman, 2009). The stage of system implementation in this community engagement program involves the installation phase, which has been carried out through server configuration and tailored to the partner's capacity needs. This stage aims to ensure that the academic information system established can function in line with the objectives and requirements of the partner community.

### Development of training module

The next step after the successful implementation of the academic information system is to develop training modules for using the system. These training modules are essential so that system operators at the partner institution can reacquaint themselves with the system through these modules.

Before starting the preparation of training modules, the team needs to agree on which components of the academic information system should be prioritized for presentation to the partner community. This ensures the effectiveness of information dissemination due to time and human resource limitations.

The development of training modules is conducted online by the team using a Microsoft Office Word file stored on a cloud computing platform. This mechanism has been widely adopted since the Covid-19 pandemic, which led to constraints on direct interactions among community service team members. This best practice continues to be implemented as it is considered effective and efficient, particularly when the team is already accustomed to collaborative work in module development.

### Training for system utilization

The team and partner community collaboratively arrange a schedule for conducting training on the implemented system. The training is intended for all system users (Wulandari, 2021), namely school operators, teachers, and students. However, the participants invited to the training need to adjust based on the school's activities once the agreed-upon schedule is determined. This is necessary because the training is conducted offline and heavily reliant on the activities of the system's target users.

### Documentation and report

The documentation and reporting phase focuses on documenting the execution of the community service program. Documentation takes the form of videos and slideshow images, aimed at archiving the conducted community service activities. In order to report on these activities, the team needs to assess several success criteria for the implementation of the community service program and how the budget provided by the sponsor has been utilized.

The following chapter will discuss the result of the implementation of each stage described in this chapter and their discussion. Subsequently, this journal will conclude with a summary and recommendations chapter.

## 3. RESULTS AND DISCUSSION

### Results

The preliminary observation marks the initial phase among the six stages of these community engagement activities. The execution of the preliminary observation is carried out through interview techniques with accessible contacts identified by the team. From the interview outcomes, it can be deduced that the partner community is currently in need of a school academic information system and portable computing devices for academic operational requirements. Figure 3 displays a screenshot taken during the preliminary observation meeting with the partner's contact person.


**Figure 3.** Preliminary observation meeting with partner's contact person

The next stage is system design and procurement. Based on the analysis of the current condition of SMP IT Ash-Shidiq, it can be concluded that the required system functionalities include student admissions, lessons, academics, teachers, and attendance tracking. To accommodate these functions, the team decided to acquire a ready-to-use academic information system that is available on the online marketplace. The team also determined that the system should be designed for access from anywhere, anytime, and is user-friendly for the school. Therefore, at least one virtual machine is required on an on-

premise or on-cloud server that can be configured remotely by the team. This allows the system to be promptly explored and accessed by the team and partners, regardless of time or location.

Following the system design, the subsequent stage is system implementation. The implementation strategy agreed upon by the team involves trialing the system installation on a server currently owned and managed by Telkom University. This approach is more feasible due to the team's existing network infrastructure. If the system proves to work effectively for the partner, it will be installed in the partner's independent environment, and server management training will be provided for them. The system implementation takes place on a virtual machine within an on-premises server in the Telkom University environment, where the team currently serves as a lecturer. The specifications implemented for the academic information system application of SMP IT Ash-Shidiq include: 4 cores CPU, 4 GB RAM, 300 GB storage, Centos 7 as the operating system, web server using Apache version 2.4.53, and PHP version 5.6 as the web programming language. Figure 4 displays the status of the server hosting the academic information system application of SMP IT Ash-Shidiq that has been implemented.

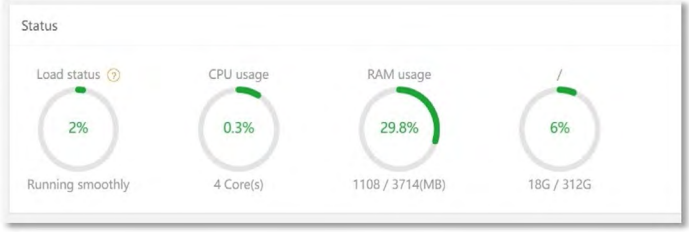


**Figure 4.** Server status for the school information system used by the partner community

Next, the team moves on to the stage of developing training modules for using the implemented school academic information system. This phase involves engaging students as assistants in creating user manuals for the system that has been installed. The modules are designed for the basic functions that were previously determined, namely student admissions, lessons, academics, teachers, and attendance tracking modules. Figures 5 and 6 display screenshots of the successfully installed academic information system application.

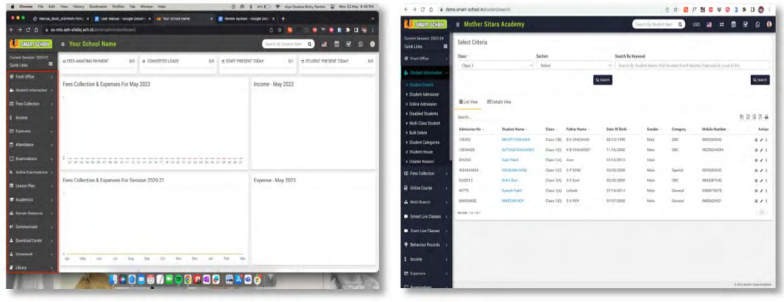

**Figure 5.** List of academic system applications implemented in the partner community.
**Figure 6.** Display of student information in the academic information system application implemented in the partner community

Once the training modules are prepared, the next step is the training for system utilization. Taking both the team and the school's schedule into consideration, it was decided that the system usage training

would be conducted on-site in one of the school's classrooms. Considering the number of modules to be covered, the training was agreed to be held on the last day of school exams on Friday, June 9, 2023, from 13:00 to 15:00 local time. Figure 8 shows the participants of the training and the community service team.

**Figure 7.** Training participants and the team

The last step of this community service is about documenting and reporting. The documented footage includes the training session for using the academic information system, attended by the head of SMP IT Ash-Shidiq and the implementing team members. For our report, the team evaluates six criteria for the successfulness of this training-based community service program: (1) Alignment of content with partner/participant needs; (2) Suitability and adequacy of activity timing; (3) Clarity and ease of understanding of presented content for the community; (4) Quality of service provided by the team to the partner community; (5) Community's acceptance and the sustainability of future activities; (6) Effectiveness of the offered technology. The team also need to report on budget utilization and the schedule of these activities.

## Implementation

### Ramah Tamah

"Ramah Tamah" is one of the approaches the team uses to build positive relationships, create a pleasant atmosphere, and enhance social interactions. "Ramah Tamah" is conducted by eating together which intentionally organized before the training, aiming to foster camaraderie between the team and the school. This creates a sense of togetherness, forming memories that will be cherished by the training participants (Sumsari, 2018).

### Opening

In this session, the head of the implementing team explains the background of this community service activity and formally introduces team members to all attending training participants.

### Welcoming remarks

In this session, the school representatives provide a welcoming speech to the implementing team, presenting an overview of the school's status and history at SMP IT Ash-Shidiq. The school's principal expresses gratitude for the team's presence and the community engagement program. As a recently established school, they highlight the community's need for assistance through community engagement initiatives and government grants to further enhance the school's development.

### Training for system utilization

The system utilization training took place directly at SMP IT Ash-Shidiq, located in Ciganitri RT 08 RW 03, Lengkong, Bojongsoang Sub-district, Bandung Regency, West Java. The event was held in one of the second-floor classrooms of the school building. During the implementation, there were 15 participants present, consisting of three lecturers as the members from the implementing team, 11 teachers including the school principal, and one liaisons between the team and the school.

### Closing

The final stage, which is the 7th meeting, is the closing session, which takes the form of a farewell gathering between the instructor team and the participants. This event is held at the Community Hall on Betet Raya Street, Cibodasari Village, Cibodas, Tangerang City, Banten, Indonesia.

### Activity materials

In this community service program, the training material for using the school's academic information system application is tailored according to the initial observation results, covering student admissions, lessons, academics, teachers, and attendance tracking. The training modules for using the academic information system are digitally created and distributed to participants through social media.

The provided training content in this community engagement activity is customized to fit the specific conditions of the partner school. This training scheme is divided into five system modules. Table 2 details the modules and their corresponding activities.

**Table 2.** Training Modules

| | |
|---|---|
| **Student Admission Module** | |
| Activities | - Displaying student data<br>- Adding student data<br>- Editing student data<br>- Deleting student data |
| **Academics Module** | |
| Activities | - Generate new classroom<br>- Displaying class schedule for each classroom<br>- Arranging class schedules<br>- Adding new subject schedule<br>- Deleting subject schedule |
| **Attendance Module** | |
| Activities | - Adding student attendance notes in class<br>- Downloading a list of students in a class |
| **Human Resource Module** | |
| Activities | - Displaying teacher data<br>- Adding teacher data<br>- Editing teacher data<br>- Deleting teacher data<br>- Adding subject title for teacher |
| **Lesson Plan Module** | |
| Activity | - Displaying lesson subject<br>- Adding new lesson subject<br>- Editing lesson details<br>- Deleting lesson subject |

Out of a total of 11 participants who attended the training, only eight participants responded to the online survey provided. According to the survey results, participants found the training activity to be neutral, satisfied, and very satisfied, considering it aligned with their needs. Regarding the timing of the activity, 62.5% of participants strongly agreed and 37.5% agreed that the timing was relatively appropriate and sufficient. Additionally, the implementing team received very positive feedback from the participants. As for the content and activities presented, 75% of participants strongly agreed and 25% agreed that the activities were clearly presented and easy to understand. Participants also strongly agreed and agreed that the team provided excellent service throughout the activity. Moreover, 75% of participants strongly agreed, and the rest agreed, that activities like these are hoped to continue in the future. Concerning the offered School Academic Information System, 50% were neutral, 37.5% agreed, and 12.5% disagreed that the technology is highly beneficial. The feedback results shown in Table 3.

**Table 3.** Feedback on Community Engagement Activity

| Question | SD | D | N | A | SA |
|---|---|---|---|---|---|
| The content aligns with partner/participant's needs | | | 3 | 3 | 2 |
| The activity timing is suitable and adequate | | | | 3 | 5 |
| The presented materials are clear and easy to understand | | | | 2 | 6 |
| The implementing team as organizing committee provides good quality of service | | | | 1 | 7 |
| Community accepts and expects for sustainability in the future activities | | | | 2 | 6 |
| The offered technology is effective | | 1 | 4 | 3 | |

## Discussion

This training-based community service activity aims to enhance participants' knowledge about using a web-based academic information system for schools. This is based on the initial observations conducted together with the liaison from the partner institution, which highlighted the benefits that the partner community would gain. As a result, the school community, comprising teachers and school administrators, believes that the implementation of this academic information system can assist them in managing academic data such as attendance records, semester reports, and other activities.

Based on the results of an online survey conducted among participants, consisting of six closed-ended questions and one open-ended question, the implementation of this program yielded the following outcomes: The program successfully increased participants' understanding of using academic information systems. This increase in understanding is reflected in the responses to the open-ended question, where some participants expressed critical views, suggesting that the offered academic information system needs to be aligned with the Educational Management Information System (EMIS), which is the education data management system managed by the Ministry of Religious Affairs. For the organizing team, the decision to use a ready-made system as offered in this program needs to be reconsidered due to resistance encountered from the partner community.

During the implementation of the program, several supporting factors were present. These include the support from the partner institution in providing facilities for the training venue, as well as the active involvement of SMP IT Ash-Shidiq teachers who contributed to the success of the training on the use of the academic information system. Additionally, support was evident in the provision of meeting consumptions by the partner community during the community service activity, as well as the cooperative attitude of the school principal in terms of post-activity administrative facilitation. This was

seen during two post-activity visits by the partner institution, particularly the school principal, who was willing to assist in completing the necessary administrative tasks required by the team.

However, some challenges were also encountered. These include issues during the application purchase, the proximity of the reporting period to the uploading of final semester grades, the partner school's policy to immediately adopt the system, time constraints for training sessions, and the limited resources available to participants. The team faced difficulties with the purchase of the school information system on the local marketplace platform, encountering a lack of integrity vendors, which resulted in a temporary hold of funds on the platform, requiring several days to resolve. The team had to swiftly find an alternative vendor after the funds were returned. The proximity of the reporting deadline to the final semester grade uploading impacted the timeline for reporting, as all team members who are all lecturers were required to upload final grades first. The school principal's policy to directly adopt the academic information system coinciding with the start of a new academic year caused the team to miss the peak time for system performance testing, leading to challenges in determining the appropriate server configuration. Time limitations for training sessions due to school partner adjusting to the schedule of the final semester exams, resulting in limited practice time for the teachers participating in the training. This was evident from several responses received in the online survey. Due to the limitations of laptop owned by partner communities, teachers cannot directly practice using the system when the training is conducted.

## 4. CONCLUSION AND RECOMMENDATIONS

This community service program aims to provide training in using an academic information system application to partner institutions, specifically middle schools lacking such infrastructure. The objectives of this activity are to enable partners to enhance their management of student academic data and school operations, making the process more comprehensible and adaptable to operational changes. The implementation of this program is divided into six stages: preliminary observation, system design and procurement, system implementation, development for training module, training for system utilization, and documentation and reporting. The support from the partner institutions' facilities and the cooperative attitude of the school principal are key factors in the success of achieving the program's goals. The achieved outcomes include the availability of a web-accessible academic information system application and a user manual for the system. Through this activity, it is expected that the partner will be able to utilize the system to manage academic data in the upcoming new semester.

There is a necessity for subsequent community service program that aid the partner community in maximizing the utilization of the provided system and evaluating its system performance. Ongoing guidance in the system's usage is vital to enable the partner community to truly experience the benefits of implementing the academic information system. Recently established pioneer schools like SMP IT Ash-Shidiq require operational support for promotional endeavors, whether offline or online, such as installing school signs or advertisements, to enhance their visibility in the public eye and bolster their competitive standing among other private schools.

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