

# Profile of Dital Information System (SIDIA) As a Learning Platform to Accelerate Digital Transformation

**Madlazim, Alim Sumarno, Muji Sri Prastiwi, Fida Rachmadiarti, Ainur Rofik, Muhammad Sholeh, Dyah Pertmata Sari**  
Universitas Negeri Surabaya

## Abstract

The aim of this research was to develop SIDIA UNESA learning platform to improve teaching and learning process activities through the use of digital technology and digitalized teaching materials. This research method used the development of ADDIE model to develop the SIDIA platform, which included Analysis, Design, Development, Implementation and Evaluation stages. The research results at the Analysis, Design, Development stages produced the SIDIA platform profile, a platform that integrates the academic system and Learning Management System (LMS) with the following functions: 1) lecture preparation to facilitate lecturers in preparing Semester Lesson Plan and Student Assignment Plan based on the *Outcome based Education Curriculum* (OBE); 2) lecture implementation to facilitate lecturers and students in carrying out asynchronous and synchronous learning; 3) lecture assessment to facilitate lecturers in carrying out assessments and reporting assessment results. The integration of academic system and LMS results in well-administered teaching and learning process in the form of digital teaching materials and increases LMS activities on SPADA Indonesia page.

**Keywords:** learning platform, digital transformation, LMS.

## 1. Introduction

Traditional learning mainly uses offline instruction, which is a one-way style of knowledge transfer in the classroom. This one-way learning has low recognition, lacks interest, and is uninteresting, resulting in a gradual loss of interest and excitement in the subject matter. The traditional school curriculum is no longer the only option for education in the new media era (T. Xiu-zheng, 2018). Using the advantages of new media, educational content can be continuously improved, teaching methods can be diversified, and communication can be carried out online via networks. Traditional educational methods have been completely reimaged by new media teaching approaches, which have unique advantage of attracting people's attention.

Rapid advances in technology are the main driver of globalization in all aspects of life (Chandir, 2022; Hou & Cheng, 2022). Globalization causes high level competitions and various types of challenges (Gaies et al., 2022). Therefore, it is important for students to develop global competencies. Global competence is defined as the capacity to understand local, global and intercultural issues, to understand and appreciate the perspectives and views of others, to engage in open, appropriate and effective interactions with people from different cultures, and to act for the commonweal and sustainable development (OECD, 2018; Van Roekel, 2010).

Based on this definition, Van Roekel (2010) described that threebasic elements of global competence are: competitive skill. To be able to compete, students need high-order thinking skills that increase creativity and innovation, including critical thinking skills, cooperation, collaboration and communication (Miranda et al., 2021) as well as digital competence (Zhao et al., 2021). Online learning is also known as web-based learning, computer-based learning, and technology-based learning (Carliner, 2004). It is also known as virtual learning, internet-based learning, web-based education, and computer-assisted learning (Paulsen, 2004). The terms e-learning, virtual schools, and cyberschools are mostly used by states in the United States (Watson, Ryan, & Gemin, 2008).

The perceived benefits of using digital technology in almost all aspects of life underlie the importance of digital transformation (Bilyalova et al., 2020; Tulungen et al., 2022). According to Vial (2019), digital transformation (DT) is a process that aims to improve an entity by triggering significant changes in its properties through a combination of information technology, computing, communication and connectivity. Specifically, Vial (2019) identified four characteristics of digital transformation, including: (1) target entity, the unit of analysis influenced by DT; (2) scope, the extent of changes that occur in the target entity; (3) tools, the

technology involved in the change of the target entity; and (4) the expected results of DT.

Considering the importance of technology integration to facilitate the learning process, digital transformation is also widely carried out in the education sector (Susanna, 2022). This transformation is better known as digital education, that is a series of steps to change the learning process through the introduction of information products, tools and technology (IT) in education (Bilyalova et al., 2020). The main areas of IT application in education include: a) development of pedagogical software for various purposes; b) development of educational websites; c) development of teaching materials; d) management of real objects; e) organization and practice of computer experiments in virtual mode; f) information searching.

Besides that, the digital education system also includes three main aspects, they are: information sources, telecommunications, and management systems (Bilyalova et al., 2020). Information sources include media, video, audio, photo, graphic, animation, information data file, educational portal and internet site. Telecommunications include mobile network and environment, social media, television, telephone, teleconference, hosting, and postal service. Management systems include user authorization, testing, content, rating, personal and collective information space (website, blog, chat, online forum, e-mail, database). three research has developed a digital technology platform to improve teaching and learning process activities.

## **2. Method**

This research used the ADDIE model to develop a digitalized learning platform (Yaumi, 2018). The first development step of the ADDIE Model was analysis stage that included curriculum analysis, material analysis, existing material analysis (SWOT), user characteristics (lecturers-students). The second stage was design stage that included the SIDIA platform story board design. The next stage was development stage of the SIDIA platform that included preparation of software architecture, preparation of data structures, generation of platform interfaces, Focus Group Discussion (FGD) of LMS platform experts, and expert validation. Then the implementation stage of the SIDIA platform included micro implementation with small scale trial, socialization of the SIDIA platform to all UNESA lecturers, and simulation of the SIDIA platform to facilitate lectures for the lecturers and students throughout UNESA. The last stage was evaluation stage that included measuring preparation, implementation, and assessment activities based on the SIDIA platform. The research design used a mixed method named sequential exploratory, which was a

combination of qualitative and quantitative research methods sequentially. The qualitative stage was to obtain platform validation data through FGD activities from the UNESA curriculum team and e-learning team. The quantitative stage was to assess the feasibility of the SIDIA platform which includes its effectiveness by looking at the Key Performance Indicators 7 achievement and its practicality by looking at the LMS activities on the SIDIA platform in SPADA Indonesia.

## **3. Results and Discussion**

The feasibility of the SIDIA platform is seen from the validity, effectiveness and practicality of the platform that is explained below:

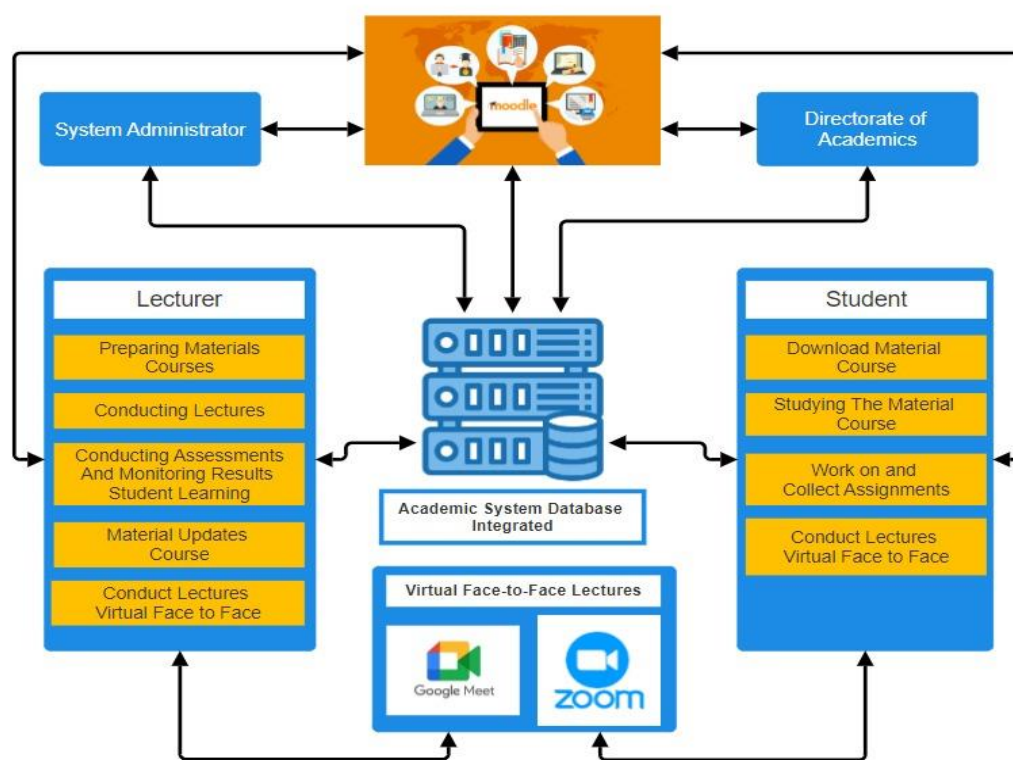
### **Validity of the SIDIA Platform**

The validation process of the SIDIA platform involved its system testing to ensure that the developed system complies the specifications and functions properly. The testing was carried out involving the final users, which is UNESA curriculum team and e-learning team to ensure its compliance with the needs of curriculum transformation and digital transformation in online learning within UNESA. The validation results are as follows: 1) in the curriculum aspects, the UNESA Curriculum team found that: a) the SIDIA platform can facilitate lecturers in the curriculum transformation process starting from the development and implementation stages. Curriculum development began with the Study Program Coordinator inputted Graduate Learning Outcomes, and lecturers creating OBE Semester Lesson Plan based on the course mapping with Graduate Learning Outcomes suitability. Lecturers prepare Semester Lesson Plan in accordance with the higher education curriculum guide, starting from determining the course outcomes, determining learning models, brief descriptions of the course, libraries, lecturers, the sub- course outcomes, lecture activities that include offline and online lectures, as well as assessments which include assessment indicators. b) It is necessary to develop a curriculum evaluation function for Graduate Learning Outcomes assessment so that the stages of curriculum development, implementation and evaluation that is in accordance with UNESA curriculum guidelines can be manifested on the SIDIA platform. Furthermore, 2) in digital learning, the UNESA e-learning team found that the SIDIA Platform can integrate LMS and academic systems which makes it easier for lecturers and students to carry out digital transformation. The SIDIA platform facilitates asynchronous lectures so that lecturers can set the learning resources and activities (Miranda et al., 2021).

The SIDIA platform is a system that integrates 1) the academic system with the LMS as in the data structure in Figure 1. The academic system is a system used to manage

data and information related to web-based or UNESA online academic activities, so that it can be accessed by students, lecturers, staff and leaders. The academic system can cover various aspects, such as admitting new students, preparing curriculum and class schedules, filling out study plan cards, assessment and evaluation, managing lecturer, employee and student data, as well as collaborating with related agencies. The academic system has some benefits, including: 1) Simplifying academic administration processes which often take time and energy, such as inputting data, printing documents, archiving, etc.; 2) Speeding up access and delivery of information needed by various parties, such as

class schedules, grades, fees, etc.; 3) Minimizing the occurrence of errors, loss or duplication of data that could harm the concerned parties.; 4) Improving the quality and relevance of learning, curriculum and evaluation in accordance with academic standards and applicable regulations.; 5) Improving the performance, accountability and transparency of educational institutions in carrying out their academic duties and functions. The Moodle-based LMS of SIDIA platform is an online LMS that uses Moodle as its main platform. Moodle is a web-based software designed to support interactive, collaborative and flexible learning processes (Bilyalova et al., 2020).



**Figure 1.** The Data Structure of SIDIA Platform.

### Effectiveness of The SIDIA Platform

The results of the SIDIA platform implementation shows that the number of course using the Project Based Learning model and Case Method as Key Performance Indicators 7. First quarter achievement was 85.22%, second quarter achievement was 4.51%, third quarter achievement was 1.2%, and the total achievement for quarter I, II and III was 90.93%. It was obtained from (4,973: 5,469) courses x 100%, with the following details: 1). The total number of courses was 5,469 courses; 2). The number of courses that implement Project Based Learning was 2,679; 3). The number of courses that apply the Case Method was 2,294. To support the achievement of these indicators, the following programs

or activities are implemented: 1. Updated the Semester Lesson Plan and Management Review Meeting workshops as well as product assessment workshops and participatory assessments that met 50% of the criteria in accordance with the Project Based Learning Semester Lesson Plan and Case method (Tulungen et al., 2022).

### Practicality of The SIDIA Platform

The practicality of the platform is the ease of using the platform as shown by the number of SIDIA LMS activities recorded on the SPADA Indonesia page, which is as follows:



## Sabtu, 16 Desember 2023 LMS Perguruan Tinggi

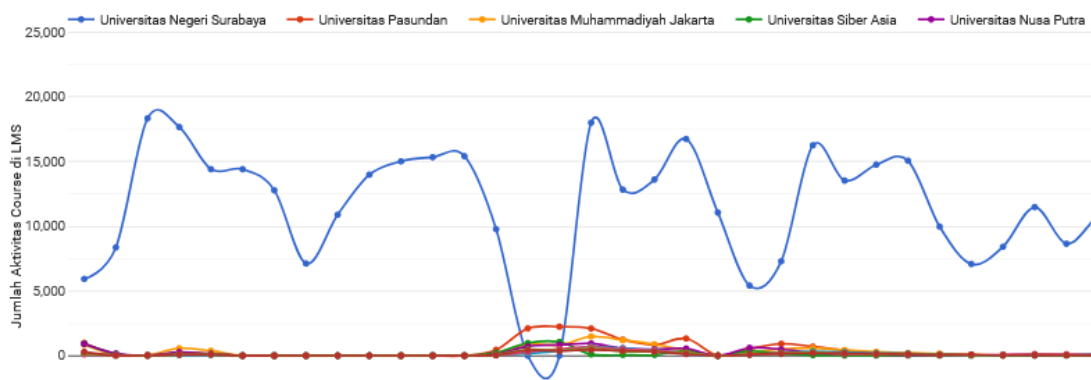


Figure 1. The Graph of Universities' LMS on December 16, 2023

### LMS ACTIVITY




















	<b>Universitas Negeri Surabaya (405.255)</b> <a href="https://sindig.unesa.ac.id">https://sindig.unesa.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>Sekolah Tinggi Teknik Wiworotomo (243)</b> <a href="http://elearning.stt-wiworotomo.ac.id">http://elearning.stt-wiworotomo.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>
	<b>Universitas Pasundan (15.083)</b> <a href="https://lms.unpas.ac.id">https://lms.unpas.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>Institut Informatika Dan Bisnis Darmajaya (241)</b> <a href="https://lms.darmajaya.ac.id">https://lms.darmajaya.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>
	<b>Universitas Muhammadiyah Jakarta (10.483)</b> <a href="https://elearning.umj.ac.id">https://elearning.umj.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>Universitas Prabumulih (237)</b> <a href="https://edlink.id/">https://edlink.id/</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>
	<b>Universitas Nusa Putra (7.516)</b> <a href="https://www.edlink.id/">https://www.edlink.id/</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>Politeknik Pertanian Negeri Kupang (237)</b> <a href="http://elearning.politanikoe.ac.id">http://elearning.politanikoe.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>
	<b>Universitas Siber Asia (4.940)</b> <a href="https://edlink.id/">https://edlink.id/</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>Universitas Islam Nahdlatul Ulama Jepara (232)</b> <a href="https://lms.unisnu.ac.id">https://lms.unisnu.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>
	<b>Institut Agama Islam Negeri ParePare (4.426)</b> <a href="https://www.edlink.id/">https://www.edlink.id/</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>Universitas Sebelas Maret (231)</b> <a href="https://spada.uns.ac.id">https://spada.uns.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>
	<b>Universitas Bangka Belitung (4.419)</b> <a href="https://www.edlink.id/">https://www.edlink.id/</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>Universitas Syiah Kuala (231)</b> <a href="https://elearning.usk.ac.id">https://elearning.usk.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>
	<b>Universitas Setia Budi (3.922)</b> <a href="https://www.edlink.id/">https://www.edlink.id/</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>IKIP Budi Utomo (221)</b> <a href="http://lms.budiutomomalang.ac.id">http://lms.budiutomomalang.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>
	<b>Universitas Lancang Kuning (3.764)</b> <a href="https://blended-learning.unilak.ac.id">https://blended-learning.unilak.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>Institut Teknologi Yogyakarta (221)</b> <a href="https://www.edlink.id/">https://www.edlink.id/</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>
	<b>Universitas Nusa Cendana (3.451)</b> <a href="https://elearning.undana.ac.id">https://elearning.undana.ac.id</a> <a href="#">Buka LMS</a> <a href="#">Buka Informasi</a>		<b>Sekolah Tinggi Ilmu Kesehatan Medistra Indonesia (221)</b> <a href="https://www.edlink.id/">https://www.edlink.id/</a>

Figure 2. SIDIA LMS activities on SPADA Indonesia page

Based on Figure 1 and Figure 2, it is known that LMS activities using the SIDIA is in the top position during August to 16 December 2023, which can be seen from <https://spada.kemdikbud.go.id/course/lmspt.php>. LMS activity on SPADA Indonesia page shows that the SIDIA platform can be used repeatedly (rapid development/re-use) (Susanna, V., 2022); fully integrated with UNESA academic information system; all software documentation has been verified; successfully operated; there is ongoing support for software engineering; and the Digital Learning System is up-to-date. The UNESA Digital Learning Platform can facilitate

UNESA academic activities that include learning planning activities (lecturers creating OBE-based Semester Lesson Plan and Student Assignment Plan); lecture implementation activities both via synchronous learning (Google meet and Zoom are installed) and asynchronous learning (LMS); Online assessment activities in the LMS using assignments and quizzes to facilitate UNESA mid-semester exams. This is in accordance with the research results of Zhao et al. (2021).

High LMS activity shows the SIDIA platform has 1) Course Overview & Introduction that integrates the academic system and learning management system and has clear

instructions regarding student activities during the learning activities, clear objectives and structure of material that will be used by lecturers and students, clear media usage ethics and link for using the SIDIA platform, explanation of skills or minimum technical skills required by lecturers and students, information on course lecturers and course schedules. The SIDIA platform also has 2) Learning Objectives that can be measured. All learning objectives are stated clearly and written from the student's perspective. Instructions for students on how to achieve the learning objectives are also stated clearly. The SIDIA platform also has 3) Assessment & Measurement that facilitates assessment activities in which the type of assessment chosen can measure and is consistent with learning objectives, the ranking policy is clearly stated, the type of assessment chosen is sequential, varied, and is in accordance with the measured student activities. The SIDIA platform also has 4) Instructional Materials that facilitate lecturers to manage teaching materials with the following characteristics: learning materials contribute to the achievement of learning objectives, instructions on how learning materials are used are clearly stated, all used learning materials must have correct references, the used learning materials are up-to-date, and the difference between mandatory and optional material is clearly stated. The SIDIA platform also facilitates 5) Learner Interaction and Engagement between lecturers and students in which student activities promote the achievement of learning goals, learning activities provide opportunities for students to be actively involved, estimated time required and expected responses from students are clearly stated, instructions regarding interaction with students are clearly stated. Finally, the SIDIA platform also has 6) Accessibility that integrates the academic system and learning management system in which the online learning can be accessed from several device options, provides easy-to-use navigation, and can be accessed with devices that use touch screen. This is in accordance with the results of Chandir's research, 2022; Hou & Cheng (2022).

#### 4. Conclusion

Based on the results and discussions achieved in this research, it can be concluded that the UNESA digital learning platform (SIDIA) has been produced with indicators that can be used repeatedly (rapid development/re-use); fully integrated with UNESA academic information system; all software documentation has been verified; successfully operated; there is ongoing support for software engineering; and it is up-to-date.

#### 5. Suggestions

It is necessary to improve the function of the SIDIA platform so that it can facilitate the curriculum evaluation stage, which is the graduate learning outcome assessment. the graduate learning outcome assessment can be carried out if the assessment activities are based on the SIDIA system, so that the process uses technology to bring a change to improve the quality and effectiveness of learning, facilitate accessibility, and help lecturers and students to prepare themselves in a world that is increasingly connected digitally. In this way, the digital transformation through the SIDIA platform can be achieved.

#### 6. Acknowledgement

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