



## Prodistik: Madrasah Management to Develop IT Skill in Industrial Revolution 4.0 Era

Ansharuddin M<sup>1</sup>

Universitas KH. Abdul Chalim, Mojokerto, Indonesia  
[anshar\\_ruddin@yahoo.com](mailto:anshar_ruddin@yahoo.com)

Sholihan<sup>2</sup>

Sekolah Tinggi Agama Islam Hasan Jufri Bawean, Gresik, Indonesia  
[sholihanhan@gmail.com](mailto:sholihanhan@gmail.com)

Mohammad Adnan<sup>3</sup>

Sekolah Tinggi Agama Islam Hasan Jufri Bawean, Gresik, Indonesia  
[adnan.bawean@gmail.com](mailto:adnan.bawean@gmail.com)

### ABSTRACT

*In the era of the Industrial Revolution 4.0, which requires the younger generation to develop expertise in the IT field, educational institutions must also develop Madrasah management to provide this knowledge and skills for their students. This study aims to examine Prodistik Madrasah's management in developing IT skills in the era of the Industrial Revolution 4.0 so that Madrasah graduates can also master technology. The approach used in this research is descriptive qualitative with case study type. At the same time, the research location is in MA Negeri 2 Probolinggo. Data collection techniques used include observation and in-depth interviews equipped with documentation. The data analysis technique refers to the Miles and Huberman technique, which allows data reduction, data display, and data verification/conclusion. The study results indicate that Madrasah's management in implementing Prodistik is collaborating with ITS Surabaya, forming an IT Skills Vocational Team and ToT, developing the Prodistik curriculum, and monitoring and evaluating programs in collaboration with ITS every semester. The conclusion is the increasing ability of MA Negeri 2 Probolinggo students in the IT field who can make various useful products by utilizing IT in the preparation of Final Projects and achievements in various IT competitions. The implication is that educational institutions can realize Madrasah programs to the maximum if there is cooperation with other relevant institutions or institutions.*

**Keywords:** *Prodistik, Madrasah Management, IT Skills*

### INTRODUCTION

Currently, humans are faced with the era of Industrial Revolution 4.0, where technological advances have affected various areas of life. Sociologists such as Ruiner and Wilkesmann stated that the era of Industrial Revolution 4.0 was marked by increased digitalization and the proliferation of communicative networks. It opened up new perspectives (Cropley, 2020; Zamroni et al., 2021). All sectors of life seem to depend on technology, and humans



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themselves must be able to develop their potential not to be technologically ignorant or stuttering. Although technological advances seem to be a challenge, it opens up opportunities for the younger generation to build expertise in the IT (information technology) field to utilize digital technology as optimally as possible (Rohida, 2018; Wahid, Hidayati, & Bon, 2021).

Not without reason, the young generation as the relay holder for the success of the nation's progress must develop the ability or skill in the IT field so that this nation is not backward and can lead world civilization which still maintains the religious values that characterize the madrasah. Because it is the young generation who will later become the national workforce in developing the country, they must anticipate and prepare themselves in the face of the wave of the industrial revolution (Puriwat & Tripopsakul, 2020; Mahmud et al., 2021). The younger generation is also called an agent of change who determines the good or bad of the nation. Therefore, the younger generation must be mentally educative, creative, innovative, and religious to build a more developed country's production system (Mulyana, 2020). Without this capability, it will be difficult for the younger generation to bring the Indonesian nation into a civilized nation and not drown in the wave of Industrial Revolution 4.0.

Of course, educational institutions have an essential role in producing the young generation expected by the nation. With the demands of the 4.0 industrial revolution era, educational institutions must be able to harmonize programs so that students can have adequate abilities, especially in the IT field (Roma, 2021; Dakir, Sholihin, & Faisol, 2021). For this reason, educational institutions are expected to be able to build technology-based learning systems to improve the abilities and skills of students in utilizing advances in digital technology (Syamsuar & Reflianto, 2018; Mahande, Darmawan, & Malago, 2021). Suppose grow up to be a young generation who are technologically stuttering, left behind, and unable to deal with the demands of the times swiftly.

Unfortunately, technology-based learning to develop students' IT skills must also be accompanied by the teacher's ability to utilize IT. The facts on the ground show that most teachers still have difficulty mastering technology-based learning media, both in the form of hardware (e.g., OHP/Overhead Projector, PC/Personal Computer; smart television, and so on) and software (e.g. Ms. Office). What's more, the COVID-19 pandemic forced the education world to carry out online learning such as through Google Classroom, Zoom, or E-learning. However, many teachers still find it challenging to take advantage of the online learning platform, so learning also experiences many obstacles (Winda & Dafit, 2021). Face-to-face learning will also tend to be boring if the teacher does not use technology to hone students' imagination.

To overcome these problems, educational institutions should be able to make



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management that can develop students' IT skills and encourage teachers to be enthusiastic about utilizing technological sophistication in education. In this context, Madrasah Aliyah Negeri 2 Probolinggo made an innovation in Madrasah management through collaboration with the Institut Teknologi Sepuluh Nopember Surabaya (ITS) to develop IT capabilities. From this collaboration, Prodistik (Applied Education Program in the ICT Sector) emerged, which seeks to equip students with insights and skills in digital technology that is currently very much needed.

For this research to produce a comprehensive study, the researcher also examines several previous studies relevant to the topic of Madrasah management in developing skills in the IT field. The research conducted by Puji, (2017), The study states that Karangpucung State Vocational School seeks to optimize educational services by utilizing the Madrasah Management Information System, which results in ease of managing teacher, student data, payment of tuition fees, as well as student assessment information. Meanwhile, in research conducted by Hidayat et al. (2016), It is known that educators are currently responding positively and are aware of technological developments, so they seek to integrate them into learning. However, this must also be accompanied by the ability and experience of educators in using computers for making learning, learning media, and assessment systems. Then, Sulistiyono (2020) studied the MGMP in Semarang and conducted online-based ICT training management as a teacher at a public high school education unit in Semarang. This research found that the competence of teachers in the ICT field increased after participating in the training so that teachers could carry out DFH (Daring from Home) learning for students to the maximum.

This research seeks to examine Madrasah's management in developing students' IT skills while at the same time triggering the enthusiasm of educators to participate in developing competencies in the IT field through Prodistik, which is applied in MA Negeri 2 Probolinggo. Madrasah Aliyah, which incidentally belongs to an educational institution, aims to form students with Islamic personalities (Kusmawati & Surachman, 2019), sometimes only focusing on developing the spiritual side of students through various kinds of learning and religious activities. However, MA Negeri 2 Probolinggo also seeks to produce students who excel in technology through the application of Prodistik in collaboration with the Institut Teknologi Sepuluh Nopember Surabaya (ITS). Of the several State MAs in Probolinggo Regency, only MA Negeri 2 Probolinggo has implemented and developed Competence in the IT field, this is the uniqueness and novelty of this research and distinguishes it from previous studies.

Departing from the various explanations mentioned above, it is essential to research Madrasah management in developing IT capabilities in the era of the Industrial Revolution 4.0. The goal is for educational institutions to realize the importance of IT skills for students and strive to equip students with these abilities. The OECD (Organization for Economic Cooperation and Development) states that IT soft skills are needed in an increasingly digital and global world



(Anicic & Buselic, 2021; Ramdlani et al., 2021). In addition, the era of industrial revolution 4.0 has led to cross-country business competition that is developing with industrial automation by utilizing technological sophistication (Eskak, 2020; Mahmud et al., 2021). That is why students as the nation's next generation must be equipped with IT skills to compete later in the world of work.

## RESEARCH METHOD

Research on Madrasah management in developing IT skills in the era of the Industrial Revolution 4.0 through this Prodistik uses a descriptive qualitative approach in reviewing research topics. A descriptive qualitative approach produces descriptive data in the form of written or spoken words from people whose behavior can be observed (Moleong, 2000). The type of research used is a case study so that researchers can obtain data and facts that are relevant to research objectives related to theories from points in the field (Moleong, 2013).

As case study research, this research is located in Madrasah Aliyah Negeri 2 Probolinggo, which implements Prodistik as one of the institution's flagship programs. Data collection techniques are carried out by observing something and systematically recording the phenomena being investigated (Hadi, 2001). In addition, in-depth interviews were also conducted to obtain information from trusted sources so that the observations made were more comprehensive. The informants in this study were the Head of MA Negeri 2 Probolinggo, two IT Skills Vocational Team members, and one student of MA Negeri 2 Probolinggo. To complete the data from observations and interviews, the researchers also included documentation of activities to strengthen the validity of the data.

After all the data was collected, the researcher analyzed the data using the Miles and Huberman technique which included the stages of data reduction, data display, and data verification or conclusion (Miles et al., 2013). Data reduction is a stage for selecting, focusing, simplifying, abstracting, and changing field notes, interview transcripts, documents, and other empirical material (findings). The display data compiles a collection of information so that conclusions can be drawn and action. Meanwhile, data verification or conclusion answers the problem formulation and becomes the essence of research findings (Hardani. Ustiawaty, 2017).



## RESULTS AND DISCUSSION

Madrasah Aliyah Negeri 2 Probolinggo is one of two State MAs in the city of Probolinggo, located at Jalan Soekarno-Hatta number 255, and is the first MA in Probolinggo to collaborate with Institut Teknologi Sepuluh Nopember Surabaya (ITS) in developing students' abilities. In the IT field. In its implementation, Madrasah management implementing Prodistik is as follows:

### Collaborating With ITS Surabaya

To realize the vocational madrasah program to strengthen the quality of student skills education in the IT field, MA Negeri 2 Probolinggo submitted a letter of application/proposal for cooperation with Quality Control and Supervisory Agency ITS Surabaya. The MA Negeri 2 Probolinggo chose the development of the IT field because the world is facing the Industrial Revolution 4.0, which makes the production process develop rapidly so that industrial players must master technology competently (Alfan Makmur, 2020; Zamroni et al., 2021). Of course, the submission of the application letter/proposal for cooperation is accompanied by a Madrasah profile so that ITS can assess the feasibility of the applicant/proposer for which a site visit will be carried out. The expertise programs offered by LPPM ITS for implementing Prodistik include 1. Multimedia (MM), 2. Office Administration (AP), 3. Programming, 4. Graphic Design (DG), 5. Robotics.

The head of MA Negeri 2 Probolinggo stated that the site visit carried out by ITS included a Madrasah readiness survey in terms of Human Resources (HR), Madrasah management, and the facilities and infrastructure available to carry out Prodistik. The site visit was carried out in 2017, which resulted in an MoU (Memorandum of Understanding) with 17/PKS/ITS/2017 (Makmur, 2022b). The MoU is proof that the application/proposal submitted by MA Negeri 2 Probolinggo has been approved by ITS.

For vocational madrasahs, cooperating with industry or other institutions involved in industrial activities is a must as a strategy to transfer knowledge and skills in the world of work and technology to their students (Jabbar, 2020). In this context, the collaboration in the IT sector that MA Negeri 2 Probolinggo is trying to establish with ITS Surabaya has become an innovation for educational institutions such as *madrasah aliyah* because this collaboration requires a lot of preparation and clear goals. In line with this, the Regulation of the Minister of National Education Number 19 of 2007 concerning Education Management Standards has stipulated that every educational institution cooperates with other relevant institutions, both related to input, process,



output, and utilization of graduates (Meyana et al., 2017). The cooperation in question is with government or non-government institutions such as universities, Madrasas, and the business and industrial world. This can be an effort to realize the educational goals expected together.

### Formation of IT Skills Vocational Team and ToT

After the MoU was implemented, the Head of MA Negeri 2 Probolinggo immediately formed an IT Skills Vocational Team. The team consists of 24 teachers who have expertise in the IT field and were created to become Prodistik teachers at MA Negeri 2 Probolinggo. The teachers who are members of the IT Skills Vocational Team take part in the ToT (Training of Trainers) from ITS as the manager.

The Head of the IT Skills Vocational Team, Kristian Rahmatullah, stated that the ToT took place for one week in Surabaya. The ToT is the first step for MA Negeri 2 Probolinggo in implementing Prodistik, where teachers are provided with a curriculum and unique materials given to students. In addition, ToT also prepares teachers to carry out Prodistik as LPPM ITS has set the curriculum. At the end of the semester, students must make a Final Project as a condition for graduation Prodistik (Rahmatullah, 2022b).

From the ToT carried out, the following is the Prodistik curriculum formed by LPPM ITS Surabaya.

**Table 1**  
**Prodistik Curriculum from LPPM ITS**

No	Theory	Credits
<b>Semester 1</b>		
1	Operating System	1
2	Microsoft Word	2
3	Microsoft Excel	2
<b>Semester 2</b>		
1	Internet	1
2	Microsoft PowerPoint	2
3	Basic Desain Grafis	2
<b>Semester 3</b>		
1	Option 1	3
2	Option 2	2
<b>Semester 4</b>		
1	Option 3	3
2	Option 4	2
<b>Semester 5</b>		
1	Personality and Career Development	1
2	Final Project	4
<b>Total Credits</b>		<b>25</b>



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The elective programs listed for semesters 3 and 4 are as follows:

**Table 2**  
**Prodistik Optional Programs**

	<b>Theory</b>	<b>Credits</b>
<b>Office Applied</b>		
	Microsoft Access	2
	Microsoft Word Advance	3
	Microsoft Visio	2
	Microsoft Excel Advance	3
<b>Applied Graphic Design</b>		
1	Google SketchUp	2
2	Adobe Photoshop	3
3	Corel Draw	3
4	Adobe Illustrator	2
<b>Multimedia Applied</b>		
1	Adobe Photoshop Advance	2
2	Adobe Premiere	3
3	Adobe After Effect	3
4	3D s Max	2
<b>Applied Animation</b>		
1	Adobe Photoshop Advance	2
2	Macromedia Flash	3
3	Blended 3D Modelling	3
4	3D s Max	2
<b>Applied Programming</b>		
1	Microsoft Access	2
2	Visual Basic	3
3	Web Programming	3
4	Android Programming	2

### Implementation of Prodistik at MA Negeri 2 Probolinggo

From the results of the ToT implementation, members of the IT Skills Vocational Team immediately adjusted the infrastructure and abilities of Prodistik teaching members by developing the curriculum provided by LPPM ITS Surabaya. The Head of the IT Skills Vocational Team stated that the development of the Prodistik curriculum at MA Negeri 2 Probolinggo is to integrate semester 1 and 2 material on ICT subjects (Rahmatullah, 2022a). Meanwhile, the implementation of Prodistik itself is carried out as follows:



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Table 3

### Implementation of Prodistik in MA Negeri 2 Probolinggo

Time allocation per credit	45 minutes
Time Allocation for each meeting	2 x 45 minutes
Meeting	Two times a week after the lesson is over (going home from madrasa) on facultative days (each class carries out parodistic on different days

The choice of material for semesters 3 and 4 is adjusted to students' interests in each class. Information on student interest is known from a questionnaire distributed to students at the beginning of semester 1. One of the students of class X IPA 4 MA Negeri 2 Probolinggo stated that if the majority of students choose animation-applied material in one class, then the class will receive animation material and focus on studying it. For three years. Thus, each class will have one IT-applied skill (Safitri, 2022). One member of the IT Skills Vocational Team explained that curriculum development in selecting such materials is done so that students do not study too much material to explore one material area and excel in it. It can also make it easier for students to prepare for the Final Project (Ulinuha, 2022b).

As for increasing student competitiveness and developing self-ability, MA Negeri 2 Probolinggo is also actively participating in the Procommit competition (IT field competition), which ITS Surabaya routinely holds for high school/MA level students. In Procommit V.II, born in 2021, MA Negeri 2 Probolinggo won 1st place in the Cinematic Vlog Procommit. In addition, MA Negeri 2 Probolinggo also won several championships in other IT competitions, such as 3<sup>rd</sup> place in the STDI Creativity Month General Poster Design Competition and the Favorite Champion in the Asia Poster Design Competition.



Figure 1.  
The Process of Making Cinematic Vlogs on Procommit V.11





Related to the preparation of the Final Project listed in semester 5, each student must make 1 product by utilizing one of the applications that have been studied (adjusted to the program of choice for each class) and compile a report related to the product. For example, a student in his class chooses animation-applied material; then, the student can compose a Final Project by making an animation-based learning video. Toward the end of semester 5, each student will attend a session to present their work to the board of examiners consisting of 1 IT Skills Vocational Team teacher and one member of the ITS LPPM (Ulinuha, 2022a).

### **Monitoring and Evaluation Prodistik MA Negeri 2 Probolinggo**

During one semester of Prodistik implementation, MA Negeri 2 will always carry out monitoring and evaluation to find out the shortcomings that need to be addressed so that the implementation of Prodistik is getting better. Of course, M&E is carried out by the IT Skills Vocational Team. Then, the Monitoring and Evaluation results are reported to LPPM ITS for re-evaluation. In addition, monitoring and evaluation from the LPPM ITS are also carried out by checking the results of the incoming Final Project and the achievements of educational institutions in the IT field during the implementation of Prodistik (Makmur, 2022a). Prodistik monitoring and evaluation implementation include graduate competency standards, content standards (preparation of lesson plans, implementation of learning, student assessments, etc.), and process standards.

In addition to knowing the advantages and disadvantages of program implementation, monitoring, and evaluation are essential to improve the quality of data collection systems, planning and budgeting, and the achievement of the learning cycle in an educational institution (Zubair, 2017). The primary purpose of implementing monitoring and evaluation is to control a program. With the monitoring and evaluation, academic institutions can find out all the obstacles, deviations, and input for implementing a program. This is because monitoring and evaluation are inseparable parts of Madrasah management (Zubaidi, 2020).

### **CONCLUSION**

MA Negeri 2 Probolinggo is the first madrasa in the city of Probolinggo to innovate in realizing vocational madrasas by implementing Prodistik madrasah management to develop the IT skills of its students. Prodistik, in collaboration with ITS Surabaya, offers a curriculum with several expertise programs in the IT field such as office materials, graphic design, multimedia, animation, and programming. Of course, the knowledge and skills that students gain from Prodistik are helpful to face the wave of the industrial revolution 4.0 era that is currently happening. This is proven by the increasing ability of MA Negeri 2 Probolinggo students in the



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IT field who can make various useful products by utilizing IT to prepare Final Projects and achievements in various IT competitions. This research implies that when an educational institution can collaborate with other relevant institutions, the goals and programs of Madrasahs can be achieved more optimally. However, the results of this study cannot be generalized to all educational institutions. There are still many considerations, such as local wisdom, infrastructure, and the quality of human resources in developing IT-based Madrasah management. This can be an opportunity for other researchers to develop research related to IT in the world of education by referring to this research.

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