

Conference Paper

Digitalization of Education in the Implementation of Kurikulum Merdeka

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Abstract.

The Indonesian Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) recently released several educational platforms like *Merdeka Belajar*, *Rapor Pendidikan*, Belajar.id, ARKAS, TanyaBOS, SiPLah and Kampus Merdeka to make a leap in educational progress. However, the user percentage is still low, which may be due to various reasons such as limited internet access and reluctance to learn new technology. Discussion on which priority technology platforms are and how they are used to support *Kurikulum Merdeka's* implementation has been limited. Therefore, this paper will analyze the primary educational platforms useful for the implementation of *Kurikulum Merdeka*. We carried out a systematic review of the relevant databases on the digitalization of education in implementing *Kurikulum Merdeka*. Although the current educational platforms are still being developed, they provide unique features which facilitate students, teachers, administrators, and principals in the learning-management process at all levels of education. This work has the potential to become an essential reference that provides guidelines for using the educational platform to improve the number of users.

Keywords: *Kurikulum Merdeka*; *Merdeka Belajar*; software; digital school; application

1. Introduction

The Indonesian Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) has released several educational platforms i.e., *Merdeka Mengajar*, *Rapor Pendidikan*, Belajar.id, ARKAS, TanyaBOS, SiPLah, and *Kampus Merdeka* to realize a leap in educational progress. Those are several efforts as the real step in the digitalization of education. They were developed to provide infrastructure to support the *Kurikulum Merdeka* in the aftermath of the COVID-19 pandemic (1,2). The *Kurikulum Merdeka* itself has been targeted for all educational levels starting from early childhood education (*Pendidikan Anak Usia Dini* or PAUD), kindergarten (*Taman Kanak-Kanak* or TK), elementary school (*Sekolah Dasar* or SD), middle school (*Sekolah Menengah*

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Pertama or SMP), high school level (*Sekolah Menengah Atas* or SMA) and eventually college. The essence of this policy is *Merdeka Belajar* program which has been launched 11 December 2019 for the first time. At first, the policy was established to catch up with the world's rapid education development. This curriculum is further adjusted to overcome learning loss during the COVID-19 pandemic. Through the end of September 2022, *Merdeka Belajar* has been launched for 22 episodes. Especially, related to the digital infrastructure, several platforms were introduced such as in episode 12 for SiPLah platform, episode 15 for Platform *Merdeka Mengajar*, and episode 19 for *Rapor Pendidikan* platform.

Although the infrastructures have been provided with a noble purpose and can be used for free, the user percentage of those platforms is still low. This may be caused by various reasons such as being less aware of the importance of digital infrastructure, limited internet access, and reluctance to learn new technology. As this is a relatively new policy, various responses arose from teachers' and students' perspectives (3–6). Some are naturally skeptical, but many also enjoy the space to collaborate and innovate. Up to recently, the discussion on what the priority technology platforms are and how they are used to support *Kurikulum Merdeka* implementation is limited up to recently.

Therefore, this paper will analyze the primary educational platforms useful for *Kurikulum Merdeka* implementation. We carried out a systematic review of the relevant databases on the digitalization of education in implementing *Kurikulum Merdeka*. Although the current educational platforms are still being developed, they provide unique features which facilitate students, teachers, administrators, and principals in the learning-management process at all levels of education. This work has the potential to become an essential reference that provides guidelines for using the educational platform to improve the number of users.

2. Method

This research method is descriptive qualitative, namely a method that describes systematically a phenomenon in a factual and accurate manner or describes systematically the phenomena that occur (7,8). In qualitative research, the researcher is the main instrument or the main data collection tool. The presence of the researcher in this study as a fact finder and as an observer means that in the process of collecting data the researcher conducts fact mining and makes observations of all activities that apply as carefully as possible to the smallest ones (9). The goal is to describe the findings of the library taken from articles, Internet, and YouTube streaming related to the topic

discussed. The lack of published literature on research topics is the reason researchers take references from the Internet and the official YouTube channels of policymakers. The data analysis technique used is based on the method described by Sugiyono et al. (9). Among collected data with relevancy to a given article, this data is then reduced to produce a dataset that is in line with the research questions. Then, the data is presented visually, whereupon conclusions can be drawn.

3. Result and Discussion

3.1. Platform Merdeka Mengajar (PMM)

The Kemendikbudristek developed the Platform *Merdeka Mengajar* (PMM) which is an educational platform that becomes a driving companion for educators in realizing Pancasila Students which have the features of learning, teaching, and creating. PMM can be accessed using a web browser via <https://guru.kemdikbud.go.id/>. Educators can log in to the Merdeka Mengajar platform using belajar.id account (paid google account provided by Kemendikbudristek) or <https://madrassa.kemenag.go.id> (Madrasah Account). There are 6 menus in the PMM. First is student assessment, which is meant to understand the *Kurikulum Merdeka* either independently, through training, or from colleagues. There are also a variety of teaching materials and references to implement the *Kurikulum Merdeka* in schools. Second is teaching tools, which is meant to know the extent of student learning achievements through various package of questions that can be shared online and offline. The third is self-training, which is meant to find inspiration and teaching materials in the form of teaching materials, project modules, and textbooks, which are arranged according to the *Kurikulum Merdeka*. Fourth is proof of work, which is meant to encourage in learning about the *Kurikulum Merdeka* and other related topics. the material is made short, relevant, and practical so that it can be studied anytime and anywhere. Fifth is a community, which is a forum that can be used by educators to share good practices and a means of discussion in implementing the *Kurikulum Merdeka*. Lastly, sixth is inspirational videos which contain various inspirational videos as a reference for understanding and implementing the *Kurikulum Merdeka*, as well as to improve competence as a teacher.

Table 1 shows the activity record of PMM in 35 cities and districts of Central Java Province obtained from the Kemendikbudristek website in October 2022. Several data on the number of teachers who are registered in the implementation of the *Kurikulum Merdeka*, the number of teachers who are logged in to PMM, and those logged in

for independent training and completing topics are shown. As many as 308,726 are registered as teachers who implement the *Kurikulum Merdeka* from 35 cities and districts in Central Java Province. It shows that only 64.56% or approximately only 200,000 out of the total of 308,726 teachers have ever logged in to PMM. This data implies that the teacher's enthusiasm is quite low. On the other hand, data on the Enter Self-Training and Complete Topics, the percentage of teachers participating in the implementation of independent training is deficient, and the average percentage of each training topic is not more than 60%.

3.1.1. Rapor Pendidikan

Rapor Pendidikan which can be accessed using web browser via <https://raporpendidikan.kemdikbud.go.id/app> is a platform that provides data on reports on the results of the evaluation of the education system that emphasizes orientation towards the quality of education and an integrated system. displays data on the quality of education units or regions obtained from various national assessments or surveys. The *Rapor Pendidikan* can be accessed online by education units and local governments. It measures several indicators which reflect educational inputs, processes, and outputs. This policy is in line with the studies of effective school development (10–14). There are two main menus view data of an education/ services unit and view public data. The education report of an education/ services unit can be downloaded in the form of an Excel file report. This menu enables each user can know their performance when compared to other regencies/cities or provinces that have a similar location and socio-economic characteristics. In this case, we can measure the quality of education more fairly, because the indicators used are not only based on region. The meaning of values and categories of Minimum Competency Assessment (*Asesmen Kompetensi Minimum* or AKM) results shall refer to the *Buku Panduan Hasil Asesmen Nasional untuk Satuan Pendidikan* (15). Unlike the education/ services unit menu which only specific user can access, the view public data can be accessed by anyone. In this menu, there are several mandatory scroll-down button of educational level i.e., SD, SMP or SMA; province and districts or cities which available for all areas in Indonesia. There are also radio button options of status i.e., all, public and private and school types i.e., all, general, religious, package A (SD), and extraordinary school (*Sekolah Luar Biasa* or SLB).

TABLE 1: Activity record of PMM in Central Java Province.

No.	City / District	Number of registered IKM teachers	Number of teachers Login to PMM	Enter Self-Training and Complete Topics			
				1 Topic	2 Topic	3 Topic	4 Topic
1	Pemalang	12.877	69,40%	81,14%	66,10%	53,44%	42,40%
2	Kebumen	12.592	69,82%	79,41%	64,43%	52,77%	43,00%
3	Boyolali	8.055	67,56%	77,33%	70,64%	61,73%	50,33%
4	Jepara	9.320	67,98%	76,73%	63,87%	51,34%	40,27%
5	Brebes	12.072	64,99%	76,42%	65,75%	55,58%	44,91%
6	Wonosobo	7.017	74,93%	76,09%	55,90%	39,43%	28,16%
7	Semarang	15.466	71,40%	75,66%	57,46%	48,60%	42,14%
8	Batang	7.323	79,60%	73,07%	55,63%	38,08%	25,50%
9	Wonogiri	11.348	74,73%	70,74%	47,92%	32,94%	22,82%
10	Pati	10.802	72,71%	69,23%	48,97%	32,22%	22,14%
11	Sukoharjo	9.032	69,05%	68,12%	50,80%	38,65%	30,85%
12	Kota Tegal	3.263	66,69%	67,97%	60,55%	54,69%	48,44%
13	Semarang	8.020	62,17%	65,40%	54,91%	48,23%	43,12%
14	Karanganyar	8.993	68,45%	61,86%	41,86%	29,28%	21,13%
15	Kudus	6.608	66,00%	61,62%	42,21%	31,76%	23,38%
16	Cilacap	16.643	71,84%	61,57%	42,16%	28,44%	19,63%
17	Pekalongan	3.432	71,42%	60,00%	42,41%	27,24%	19,31%
18	Surakarta	8.604	66,92%	58,71%	42,16%	32,93%	25,61%
19	Blora	9.264	67,91%	54,02%	31,88%	19,57%	12,65%
20	Kota Magelang	2.632	60,18%	53,18%	27,17%	21,39%	10,98%
21	Salatiga	2.415	69,03%	52,63%	35,09%	25,44%	19,30%
22	Grobogan	9.891	64,27%	51,37%	32,56%	22,37%	16,70%
23	Purworejo	8.615	68,89%	51,34%	38,86%	31,19%	26,29%
24	Kendal	7.053	63,53%	46,09%	28,65%	18,10%	11,20%
25	Demak	8.009	57,75%	45,01%	26,48%	17,10%	12,59%
26	Banjarnegara	7.670	61,64%	40,30%	21,50%	11,14%	6,70%
27	Banyumas	14.737	58,42%	39,29%	21,85%	13,10%	8,68%
28	Temanggung	6.150	58,39%	38,40%	18,56%	9,15%	4,12%
29	Kab. Tegal	11.180	52,57%	37,67%	22,30%	15,09%	11,29%
30	Klaten	11.737	56,68%	37,66%	18,38%	10,60%	7,56%
31	Pekalongan	7.491	53,05%	36,79%	20,00%	12,52%	7,18%
32	Kab. Magelang	8.878	49,00%	33,73%	16,82%	9,11%	5,81%
33	Rembang	5.592	53,17%	31,44%	14,21%	8,03%	5,02%
34	Purbalingga	7.869	55,60%	30,67%	11,82%	6,40%	3,57%
35	Sragen	8.076	53,97%	27,51%	12,59%	6,60%	3,67%
	Average		64,56%	57,17%	39,95%	29,29%	22,14%

3.1.2. Belajar.id Account

The belajar.id account which can be accessed via <https://belajar.id/> is an electronic account associated with paid google account issued by Kemendikbudristek. It consists of user ID and a password that can be used to access various learning applications. The belajar.id accounts are given to students, educators, and education staff from various educational units, ranging from PAUD, SD, SMP, SMA, SMK, SLB, and equality. The student referred to here is including PAUD, SD and Package A Program grades 1-6, SMP and Package B Program grades 7–9, SMA and Package C Program grades 10–12, Vocational High School (SMK) grades 10–13, Special Schools (SLB) grades 5–12. The educators refer to here are the educators in early childhood education, primary education, and secondary education; the education personnel in early childhood education, basic education, and secondary education, include: the Head of Education Unit (Principal) and the Education Unit Operators (School Operators) recorded in the Basic Education Data (*Data Pokok Pendidikan* or Dapodik); and the department of education, including Head of Department of Education, Head of Division at the Education Office, School Supervisor, School Supervisor, and Tutor of Learning. With a belajar.id account, educators and students can access various needs for teaching and learning activities. Starting from accessing the Kemdikbudristek platform to various applications that will facilitate teaching and learning activities, either face-to-face or remotely. By 21 October 2022, there were 15,844 out of 19,070 belajar.id account for early age educational units have been activated. On the other hand, 27,184 out of 28,347 belajar.id account have been activated for elementary school units. Figure 1 shows the belajar.id activity record of elementary school in each regency of Boyolali District. The data shows that there are still many unused accounts ranging from 1-10% varied depending on the region.

3.2. ARKAS

The school activity plan and budget application (*Aplikasi Rencana Kegiatan Dan Anggaran Sekolah* or ARKAS) which can be accessed via <https://rkas.kemdikbud.go.id/> is an information system that utilizes information and communication technology to facilitate budgeting, implementation and administration as well as accountability for school operational assistance funds in primary and secondary education units nationally. Through ARKAS, education units are connected to local district/city and provincial education offices in the process of planning school activities, data recapitulation, and accountability for budget management in each education unit. Through ARKAS, it

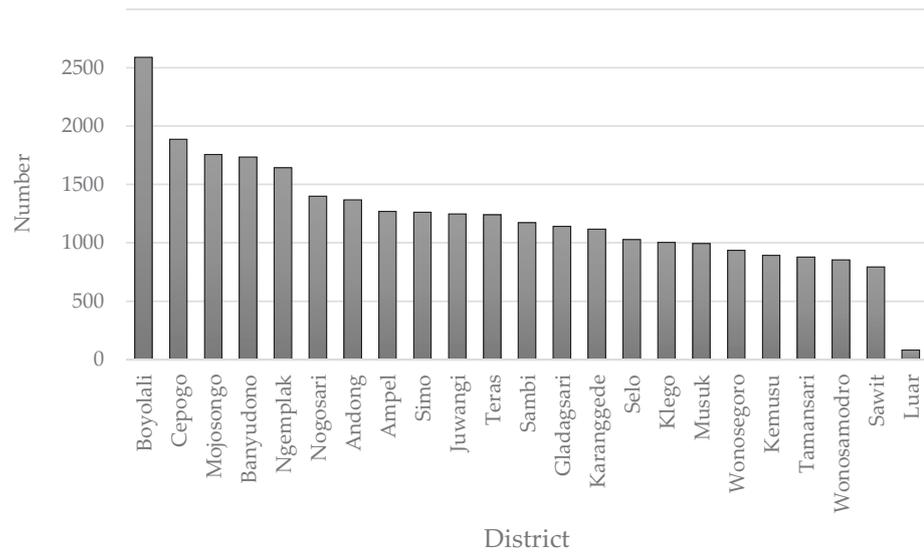


Figure 1: Belajar.id account activity record of elementary school in each regency of Boyolali District.

is hoped that all School Operational Assistance (*Bantuan Operasional Sekolah* or BOS) fund management in education units will be more transparent, accountable, and sustainable. ARKAS also provides administrative convenience, especially regarding the financial recapitulation of educational units. Thus, it will be easier for educational units to manage financial management in order to improve the quality of education in Indonesia. The currently available ARKAS is version 3.4. ARKAS version 4.0 is still under development. Later, ARKAS 4.0 will gradually be used by all education units in Indonesia in 2023.

For educational units, various benefits that can be felt after using ARKAS include Make planning and budgeting, administration, and reporting of BOS funds more efficiently can make changes and shifts in BOS budget planning more easily, can report the results of expenditure realization from BOS budget planning more easily, Accelerate the process of reporting the use of BOS funds efficiently and effectively. Already integrated with Dapodik, and will be integrated with existing applications in the Kemendikbudristek such as Rapor Pendidikan and SiPLah. In the future, ARKAS will also be integrated with the Local Government Information System (*Sistem Informasi Pemerintahan Daerah* or SIPD) owned by the Ministry of Home Affairs through ARKAS Management (MARKAS). Ensure that reports are made in accordance with regional regulations because the ARKAS report format refers to Permendagri Number 24 the Year 2020 (16). Education units are allowed to cross-subsidize from various posts or sources of funds related to the design of a program. However, it is still necessary to pay attention to the allocation of funds in accordance with Permendikbudristek Number 2 the Year 2022 (17) concerning Technical

Guidelines for the Management of Operational Assistance Funds, Implementation of Early Childhood Education, School Operational Assistance, and Operational Assistance for the Implementation of Equivalent Education.

Generally, there are a variety of funding Sources. BOS is a central government program aimed at funding non-personnel expenditures for primary and secondary education units. Several forms of BOS that become a source of funding for educational units include regular BOS, performance BOS (*BOS kinerja* or BOSKin), Operational Assistance for the Implementation (*Bantuan Operasional Penyelenggaraan* or BOP) PAUD dan equality education and Remaining Excess of Budget Financing for the Year (*Sisa Lebih Pembiayaan Anggaran Tahun Berkenaan* or SiLPA). Regular BOS are allocated to assist the operational expenditure needs of all students in primary and secondary education units. BOSKin is allocated for primary and secondary education units that are considered to be performing well in providing education services determined by the Ministry of Education and Culture. BOP PAUD and equality will begin in the 2023 budget. Based on Permendagri Number 13 the Year 2006 (18) and Number 77 the Year 2020 (19), SiLPA, is the difference in the realization of budget revenues and expenditures during one budget period. SiLPA is basically the remainder of last year's budget that can be brought and reused the following year. The amount of SiLPA is a deduction from the total allocation of channel funds that will be received by the education unit in the next fiscal year because SiLPA cannot be returned from the school to the ministry. Based on the Regulation of the Minister of Finance No. 119 of 2021 (20), specifically, the SiLPA of regular BOS for the 2020 fiscal year, will be taken into account in the distribution of phase II for the 2022 fiscal year. Another source of funds is regional BOS (*Bantuan Operasional Sekolah Daerah* or BOSDA) which comes from the local government for education units.

Filling out working papers on ARKAS is the first step in managing school finances to be more accountable and well-documented. This step is in the form of financial arrangements, one of which funding comes from the government to the education unit, BOS fund. Broadly speaking, the activities of the education unit in the ARKAS working paper include planning, recording, implementation, and accountability to reporting on BOS funds.

3.3. TanyaBOS

TanyaBOS which can be accessed via <https://tanyabosdanbop.kemdikbud.go.id/> is a question-and-answer forum, useful for sharing experiences & practices good in managing BOS funds and BOP PAUD and equality. The purpose of this application is to eliminate doubts & confusion in the management BOS and BOP funds and make the question-and-answer process more effective, traceable and directed. All questions will be answered by Kemendikbudristek's team, therefore the answers that appear on this platform have been verified and validated by Kemendikbudristek.

3.4. SiPLah

School Procurement Information System (*Sistem Informasi Pengadaan di Sekolah* or SiPLah) which can be accessed via <https://SiPLah.kemdikbud.go.id/> is an innovation in the procurement of goods/ services (*Pengadaan Barang/Jasa* or PBJ) for education units to increase transparency and convenience in administration and reporting as well as for micro, small, and medium enterprises (MSMEs, in Bahasa is *Usaha Mikro Kecil dan Menengah* or UMKM) to participate as providers of goods and services at SiPLah. To support its implementation, the Corruption Eradication Commission of Indonesia issued Surat Edaran Number 8 of 2020 (21) concerning the implementation of the PBJ for education units. The features in SiPLah have been developed referring to the rules for the PBJ in accordance with the Permendikbud Number 14 of 2020 (22) concerning guidelines for the PBJ by education units. By using SiPLah the education unit can carry out the PBJ process effectively, efficiently, transparently, and accountably so that it obtains the right goods/ services from every fund spent by the education unit.

Technically the SiPLah page is a web-based application in the form of a marketplace that is online 24 hours and can be accessed from anywhere and anytime as long as it is connected to the internet. This application will facilitate providers to offer their merchandise and also facilitate educational units in carrying out transaction processes according to the rules of PBJ in educational units. Thus in it will be stored all the history and documents of the education unit PBJ. Therefore, a security system is needed in the form of authentication with an account, namely in the form of a user and password. Moreover, this verified account is utilized to strengthen account security for authentication at SiPLah since SiPLah's users are educational units, which in reality must have been registered in the education data collection system at Dapodik.

3.5. Kampus Merdeka

Kampus Merdeka is a comprehensive career preparation program to prepare the best generation of Indonesia. *Kampus Merdeka* is part of the *Merdeka Belajar* policy by Kemendikbudristek which provides opportunities for students to hone skills according to their talents and interests by going directly into the world of work as preparation for future careers. This program was launched on 24 January 2020 as Episode 2 of *Merdeka Belajar* by Nadiem Makarim. The first policy in this program is to allow universities to create new study programs. However, the creation of the new study program can only be done by universities that have A and B accreditation. The next policy is the university accreditation system. Later accreditation would be voluntary for every college and study program that is ready. The third policy is the issue of freedom for State Universities (*Perguruan Tinggi sebagai Badan Layanan Umum* or PTN BLU) and work units (*Satuan Kerja* or Satker) to become State Universities as Legal Entities (*Perguruan Tinggi Negeri Badan Hukum* or PTN BH). Nadiem also said that there was no coercion for PTN BLU and Satker who wanted to turn into PTN BH. The last policy, which is now receiving a lot of attention, is the freedom for students to take courses outside the study program. There are several programs offered to college students such as *Bangkit* by Google, *Goto*, *Traveloka*; Indonesian International Student Mobility Awards; *Kampus Mengajar*; *GERILYA* Independent Study (Solar Power Initiative Movement); internship; building a village (*Kuliah Kerja Nyata Tematik* or KKN Tematik); *Pejuang Muda Kampus Merdeka*; *Merdeka* student exchange; humanitarian project; research; independent study; and independent entrepreneur. These programs can be accessed via <https://kampusmerdeka.kemdikbud.go.id/>.

4. Conclusion

The government has provided good resources, in this case, seven platforms useful for students and teachers to the learning-teaching process for all educational levels starting from PAUD, TK, SD, SMP, SMA, and college. Students and teachers must actively use this platform in order to benefit from it fully. Unfortunately, a lot of people still haven't made the best use of this platform or have never ever checked in. In order to boost teachers' interest and usage of the PMM platform, they must be encouraged and even privately guided. Starting with regular training and dissemination of the platform's advantages. Train the teachers on how to use digital infrastructures as a reference for learning and

how to use the PMM platform to grow professionally. Peer study through a practitioner community (*komunitas praktisi*) will also provide a means of sharing good practices.

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