



Design and Development of Concepts-Based Higher Education Digital Curriculum Books with Agile Scrum Method

Desain dan Pengembangan Buku Kurikulum Digital Pendidikan Tinggi Berbasis Notion dengan Metode Agile Scrum

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Abstract

Indonesian higher education institutions are challenged to quickly adapt amidst digital disruption, particularly in developing curriculum aligned with Outcome-Based Education (OBE) and the Indonesian National Qualifications Framework (KKNI). However, current curriculum management methods often rely on static, less adaptable tools, leading to inefficiencies in meeting dynamic educational needs and policy changes. To address this, the Digital Curriculum Book was developed using the Agile Scrum method to create a more flexible and responsive curriculum management system. Each sprint focused on key components such as Graduate Learning Outcomes (CPL), Course Learning Outcomes (CPMK), and Semester Learning Plans (RPS). The results show that integrating Notion as the curriculum management platform facilitated collaboration and enabled more dynamic adjustments. In conclusion, the implementation of Agile Scrum in digital curriculum management significantly enhances efficiency and adaptability to policy changes, offering an innovative solution to bridge existing gaps in curriculum development.

Keyword: Agile SCRUM, Digital Curriculum, Higher Education, KKNI, Notion

1. INTRODUCTION

In the era of digital disruption, universities in Indonesia face the demand to become more adaptive and responsive to rapid changes in the world of education and industry. The implementation of the "Independent Learning Independent Campus" (MBKM) program by the Ministry of Education, Culture, Research, and Technology encourages higher education institutions to develop a more flexible, inclusive, and outcome-based education (OBE) curriculum that focuses on measurable learning achievements and in accordance with the needs of the world of work and the Indonesian National Qualifications Framework (KKNI) [1], [2]. The curriculum developed must be able to adapt to rapid changes in the era of technological disruption.

However, the process of preparing and managing the curriculum often faces various obstacles, such as the complexity of integrating curriculum components (graduate profiles, learning outcomes, study materials, courses, and semester learning plans), limited human resources with information technology expertise, and the need to quickly adapt to the latest developments. Conventional approaches in curriculum preparation are often not fast enough to respond to change, especially in dynamic fields such as information technology and computers [4], [5].

Several studies have explored various approaches to curriculum development using technology. Aisah et al. [6] developed a web-based e-learning system, but it focused on high school education and lacked adaptability for dynamic higher education needs. Apriliyani et al. [7] implemented Agile methods for web-based applications, while Ariesta et al. [8] applied Agile for API systems, but both studies did not target curriculum management. Meanwhile, Buntoro et al. [9] demonstrated the use of Notion with Agile Scrum for managing digital projects but did not apply it to higher education curricula. Finally, Hasibuan et al. [10] introduced a comprehensive framework for OBE- and KKNI-based curricula, but their study lacked a practical implementation tool for dynamic changes.

While these studies have contributed significantly to technology-based education solutions, none have fully addressed the challenges of dynamic curriculum management for higher education institutions in Indonesia. Current tools and methods remain inadequate in meeting the flexibility and adaptability required for OBE- and KKNI-based curricula.

Notion, as a flexible and easy-to-use digital platform, has great potential to become the basis for the development of digital curriculum books that can be accessed by lecturers from various study programs, even by those who do not have a technical background in the field of information technology [9], [11]. By leveraging Notion as a digital platform and applying Agile Scrum methods, this study aims to fill this gap by creating a more efficient and adaptive solution for curriculum development [11], [12], [13].

This study aims to address the challenges of designing a Notion-based Digital Curriculum Book aligned with Outcome-Based Education (OBE) and the Indonesian National Qualifications Framework (KKNI). It explores how the Agile Scrum Development method can enhance efficiency and flexibility in curriculum development and management while integrating key components such as graduate profiles, learning outcomes, and semester plans. The research objective is to create a responsive and adaptive curriculum management system that meets national standards and supports dynamic educational needs.

2. MATERIALS AND METHOD

2.1. Literature Review

This section highlights previous studies relevant to digital curriculum development, focusing on their strengths, limitations, and how this study builds upon them. Various approaches to digital curriculum management, including Learning Management Systems (LMS), web-based systems, and mobile applications, have been proposed. However, the integration of platforms such as Notion with Agile Scrum remains underexplored, particularly in implementing Outcome-Based Education (OBE) and the Indonesian National Qualifications Framework (KKNI). Table 1 summarizes the state of the art in previous research.

Table 1. State of the Art

No.	Research	Method/ Platform Used	Focus	Gap/ Limitations	Novelty of This Study
1	Aisah et al. (2021)	Web-Based E-Learning System	E-learning system for high schools	Limited adaptability for dynamic curriculum changes	Uses Notion, focusing on dynamic and higher education curriculum
2	Apriliyani et al. (2022)	Agile Method	Web app for cultural recognition	Did not address curriculum development	Applies Agile Scrum specifically for curriculum management
3	Ariesta et al. (2021)	Agile Method	API system development in private companies	Limited focus on education-specific use cases	Focuses on education with direct lecturer involvement
4	Buntoro et al. (2023)	Notion + Agile Scrum	Digital project management (Gamelan Metaverse)	Not applied in curriculum management	Adapts Notion for OBE- and KKNI-based curricula
5	Hasibuan et al. (2024)	Guidelines for OBE/KKNI/SK KNI-Based Curriculum	Framework for curriculum development	Lacks tools for flexible implementation	Provides a practical digital solution using Notion
6	Nugrahani & Amalia (2022)	Scrum	Mobile-based application for cultural learning	Limited scalability for broader educational applications	Expands Scrum implementation to a scalable higher education curriculum
7	Murdiani et al. (2020)	Agile Scrum	Electronic journal development	Focused only on journal management	Extends Agile Scrum to broader curriculum management
8	Almeida & Espinheira (2022)	Management 3.0 + Agile Scrum	Large-scale project management	Limited focus on education	Adapts Agile Scrum for dynamic, flexible curriculum development
9	Müller-Amthor et al. (2020)	Scrum	Higher education teaching-learning process	Did not focus on curriculum digitalization	Combines Agile Scrum with digital tools for higher education curricula
10	Sutherland & Sutherland (2014)	Scrum	Agile software development	Generic application in software projects	Focuses on Agile Scrum implementation tailored for curriculum development
11	Dewi Akbari &	ThreeS Framework	Addressing digital learning challenges	No explicit focus on curriculum integration	Provides specific features for curriculum elements

No.	Research	Method/ Platform Used	Focus	Gap/ Limitations	Novelty of This Study
	Azmi (2022)				integration in Notion
12	Rohmah et al. (2023)	Literature Study	Implementation of “Merdeka Belajar” Curriculum	Did not propose technical implementation tools	Provides digital solutions for implementing “Merdeka Belajar” using Notion
13	Kartiko et al. (2021)	Lean UX	Mobile application for student knowledge	Limited focus on curriculum management	Adapts Lean UX principles within Agile Scrum for curriculum design in Notion

The table above summarizes key studies, methods, and platforms that have contributed to curriculum and digital education. However, these studies often lack the practical integration of a flexible and scalable tool tailored to higher education curricula. This research introduces Notion combined with Agile Scrum to address these limitations, ensuring dynamic updates, collaborative workflows, and alignment with OBE and KKNI standards.

By synthesizing insights from the above studies, this research builds upon existing methodologies while addressing the gaps in adaptability, collaboration, and scalability. The novelty lies in developing a digital curriculum management system that is not only practical but also aligns seamlessly with national education standards and outcome-based learning objectives. This innovative approach ensures that curriculum management becomes more efficient, adaptive, and accessible to educators across diverse academic disciplines.

2.2. Research Methods

This study uses a qualitative descriptive approach with design-based development (Design-Based Research) to develop a Notion-based digital curriculum book that is in accordance with the Outcome-Based Education (OBE) approach and the Indonesian National Qualifications Framework (KKNI). This research process is divided into several stages which can be seen in the diagram in Figure 1.

The process begins with the Product Backlog stage, where a needs assessment and context analysis are conducted to identify the requirements for implementing an OBE- and KKNI-based curriculum. This stage involves collecting data through interviews and document reviews to understand the specific needs of study programs. A comprehensive list of tasks and features is compiled, including elements such as graduate profiles, CPL (Graduate Learning Outcomes), CPMK (Course Learning Outcomes), study materials, and Semester Learning Plans (RPS), which are added to the backlog for prioritization.

In the Sprint Planning stage, the tasks from the backlog are prioritized, and specific goals for each sprint are established. For instance, early sprints may focus on developing graduate profile templates and CPL mapping, while later sprints address course integration and interactive feature development. A Work Breakdown Structure (WBS) is created to allocate resources effectively, ensuring clear task assignments and efficient workflow.

During the Sprint Development stage, the primary focus is on designing and developing the curriculum’s database structure in Notion. This involves creating intuitive templates and user interfaces (UI/UX) for lecturers, integrating key curriculum components such as CPL and CPMK into a dynamic database. Interactive features are also developed to enable seamless mapping between curriculum elements, ensuring that changes in one component are reflected across the system.

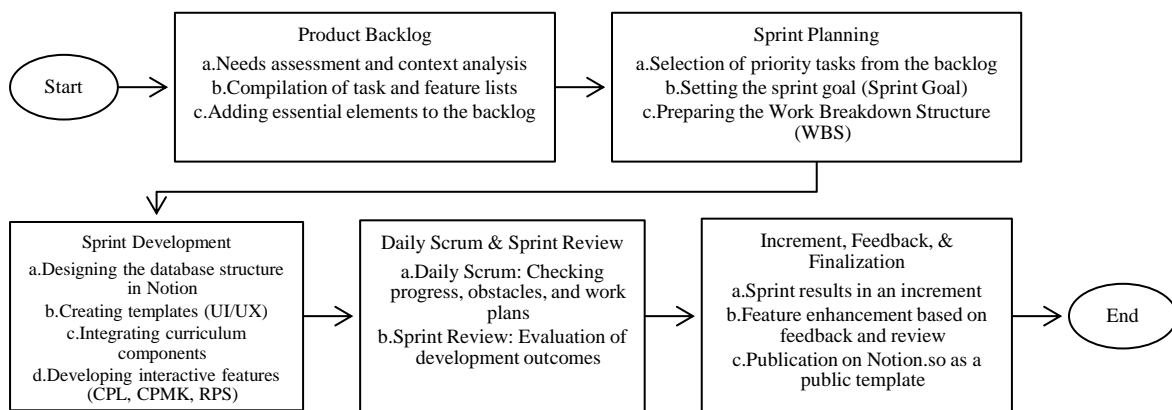


Figure 1. SCRUM Development Flow

The Daily Scrum and Sprint Review stages involve regular collaboration among the development team and stakeholders. Daily Scrum meetings ensure progress is tracked, obstacles are addressed, and adjustments are made to the workflow as needed. Sprint Reviews are conducted at the end of each sprint to present the developed features to stakeholders, gather feedback, and identify areas for improvement, which are then incorporated into subsequent sprints.

Finally, the Increment, Feedback, and Finalization stage focuses on testing and refining the developed features. Feedback gathered during the Sprint Reviews is used to enhance the digital curriculum book incrementally. Once all sprints are completed, the final template is published on Notion as a public resource, providing a flexible, user-friendly tool for curriculum management in higher education. This iterative methodology ensures that the final product is both efficient and responsive to the dynamic needs of the education sector.

The methodology begins with the Product Backlog phase, where a comprehensive needs assessment and context analysis are conducted to identify the requirements for implementing OBE- and KKNI-based curricula. Interviews and document reviews are employed to compile elements such as graduate profiles, CPL, CPMK, study materials, and RPS. These components are then listed as prioritized tasks. This approach aligns with prior studies emphasizing the importance of structured needs analysis and contextual adaptability in educational frameworks [1], [7]. Agile methods ensure that the initial task breakdown remains flexible to accommodate future iterations [16].

During Sprint Planning, tasks from the backlog are prioritized based on feasibility and educational impact. Sprint goals are defined for focused implementation, such as developing graduate profile templates or CPL mapping. A Work Breakdown Structure (WBS) ensures resource allocation and efficient task management, which are critical in large-scale educational settings and the use of Scrum for managing task complexity and enhancing team collaboration in iterative environments [8], [18]. Agile planning has been shown to increase the efficiency and focus of development teams, particularly in education technology projects.

The Sprint Development phase involves creating and iterating on the curriculum database structure within Notion. Tasks include designing intuitive user interfaces (UI/UX), integrating CPL and CPMK, and ensuring dynamic updates across curriculum components. These iterative designs ensure user-friendliness and adaptability, as highlighted in studies on digital learning systems and Scrum-based educational innovations [8], [14]. Furthermore, the development phase fosters close collaboration between developers and educators, enabling the creation of contextually relevant solutions [15], [16].

The Daily Scrum meetings ensure ongoing progress tracking and address any obstacles that arise during development. Sprint Reviews allow stakeholders to evaluate completed features and provide feedback, which is integrated into subsequent sprints. This iterative feedback loop fosters a collaborative development environment, as demonstrated in the studies by Sutherland & Sutherland and Müller-Amthor et al. [17], [18]. The emphasis on continuous improvement aligns with findings that Agile methods enhance team performance and stakeholder engagement [15], [16].

In the final stage, the developed features are rigorously tested and refined based on stakeholder feedback. The iterative nature of Scrum ensures that the final product is efficient, user-friendly, and responsive to the dynamic needs of higher education institutions. This approach aligns with research demonstrating the adaptability of Scrum in handling complex, collaborative projects in education and industry [15], [18]. The resulting digital curriculum book is then published as a public template on Notion, providing a flexible and scalable solution for curriculum management in higher education [7], [16].

2.3. Tools and Applications Used

In this study, several tools and applications are used to support the development and collaboration process. Notion is used as the main platform for the preparation of Digital Curriculum Book templates and project management using *the Scrum* framework. Simple.ink is used to convert the format of a Notion template into a professional web view. Google Workspace supports team collaboration with a variety of apps on it, such as Google Sheets for WBS creation, Google Chat for team communication, and Google Drive for file storage and sharing. Draw.io is used to create diagrams such as ERDs (Entity-Relationship Diagrams) and process flows, while Canva is used for visual design needs and presentation material creation.

Table 2. Tools and Applications Used

App Name	Main Functions	Features Used	Information
Notion	Platform for the preparation of Digital Curriculum Book templates and project management with <i>the Scrum</i> framework.	<ol style="list-style-type: none"> 1. Preparation of WBS and <i>Scrum</i> Board 2. Design markdown-based templates 3. Database integration and user interface 	Used to compile the WBS, design the database structure, UI/UX, and manage the overall project.

App Name	Main Functions	Features Used	Information
Simple.ink	Transform the format of a Notion template into a professional web view.	<ol style="list-style-type: none"> 1. Convert Notion pages to web views 2. Web display optimization 	Allows Notion templates to be used as websites that are easily accessible and used by public users.
Google Workspace	Support team collaboration and data management.	<ol style="list-style-type: none"> 1. Google Sheets: Initial WBS creation and data management 2. Google Chat: Team communication 3. Google Drive: File storage and sharing 	Facilitate team collaboration in platform development.
Draw.io	Create diagrams such as ERDs and research flowcharts.	<ol style="list-style-type: none"> 1. Diagram ERD 2. Workflow diagram 	Help document the data structure and flow of the application development process.
Canva	Visual design for presentation materials and research documentation.	<ol style="list-style-type: none"> 1. Presentation design creation 2. Poster and infographic design 	Used to create engaging visual materials for presentations and publications.

With the combination of the use of these tools and applications, research and development of the Notion-based Digital Curriculum Book platform is carried out effectively, enabling efficient team collaboration and optimal results.

3. RESULTS AND DISCUSSION

3.1. Result

This research resulted in a Digital Curriculum Book based on the Notion platform using the Agile Scrum method. Each stage of the sprint focuses on developing the main components that are part of the OBE and KKNi-based digital curriculum. The development process is carried out in stages by involving team collaboration and the implementation of the Scrum cycle, which starts from requirements gathering to finalizing the template in Notion. The results of each sprint are evaluated, changed based on feedback, and then published as a public template in Notion.

3.1.1. Product Backlog and Sprint Planning

At this stage, a needs study was carried out by involving lecturers and study program managers to deeply understand the implementation of the OBE and KKNi-based curriculum. Data collected from interviews and curriculum documents are fed into the product backlog in Notion. Important elements included in the backlog include Study Program Identity, Graduate Profile, Graduate Learning Outcomes (CPL), Course Learning Outcomes (CPMK), study materials, and Semester Learning Plans (RPS). This backlog then becomes the basis in Sprint Planning, where priority tasks are selected to be done in the first sprint, such as the development of the Study Program Identity and Graduate Profile pages. Sprint Planning also involves the preparation of a Work Breakdown Structure (WBS) to detail the allocation of tasks, resources, and sprint objectives. Here is the Product Backlog table that illustrates the list of tasks and features that need to be developed in the platform, can view table 3

Table 3. Product Backlog

It.	Features/Tasks	Description	Priority	Time Estimate	Status
1	Needs Assessment and Context Analysis	Identifying the needs of study programs and mapping OBE and KKNi standards	Tall	3 days	Finish
2	Database Structure Design	Create ERDs and database structures for Graduate Profiles, CPL, CPMK, MK, BK, and RPS	Tall	4 days	Finish
3	Graduate Profile Creation	Compiling a page in Notion for Graduate Profiles based on CPL and the vision and mission of the study program	Tall	2 days	Finish
4	CPL mapping with the Constitutional Court	Mapping Graduate Learning Outcomes with Courses in accordance with KKNi standards	Keep	3 days	Finish
5	RPS Creation	Developing a template for the Semester Learning Plan that connects the Constitutional Court with CPMK and CPL	Tall	4 days	Finish
6	CPL-CPMK Mapping Features	Features to facilitate automatic mapping between Graduate Learning Outcomes and Courses	Keep	5 days	Finish
7	Manufacturing of Study Materials	Added pages for relevant Study Materials for each MK	Low	2 days	Finish
8	Assessment Integration with RPS	Creating assessment methods in RPS related to CPMK and CPL	Keep	3 days	Finish

It.	Features/Tasks	Description	Priority	Time Estimate	Status
9	Testing and Feedback	Conducting tests on Notion templates and getting feedback from users (lecturers)	Tall	2 days	Finish
10	Publish the Template on Notion.so	Prepare the final template and publish it publicly on the Notion.so	Keep	1 day	Finish

3.1.2. Sprint Development

In the Sprint Development stage, the main focus is the development of database structures, template design, and user interfaces (UI/UX), as well as the integration of components that support the management of OBE and KKNI-based curriculum. This sprint is carried out with a phased approach, starting from database design creation to implementation in the Notion platform. Here are the steps in Sprint Development:

1. Database Structure Design and Development

The first step in Sprint Development is to develop a database structure to manage various elements of the curriculum, such as Graduate Profiles, Graduate Learning Outcomes (CPL), Course Learning Outcomes (CPMK), Courses (MK), Study Materials (BK), and Semester Learning Plans (RPS). This design aims to create a logical relationship between these elements so that all curriculum components can be dynamically integrated. The figure below shows the ERD showing the relationship between the key entities in the development of the OBE and KKNI-based curriculum:

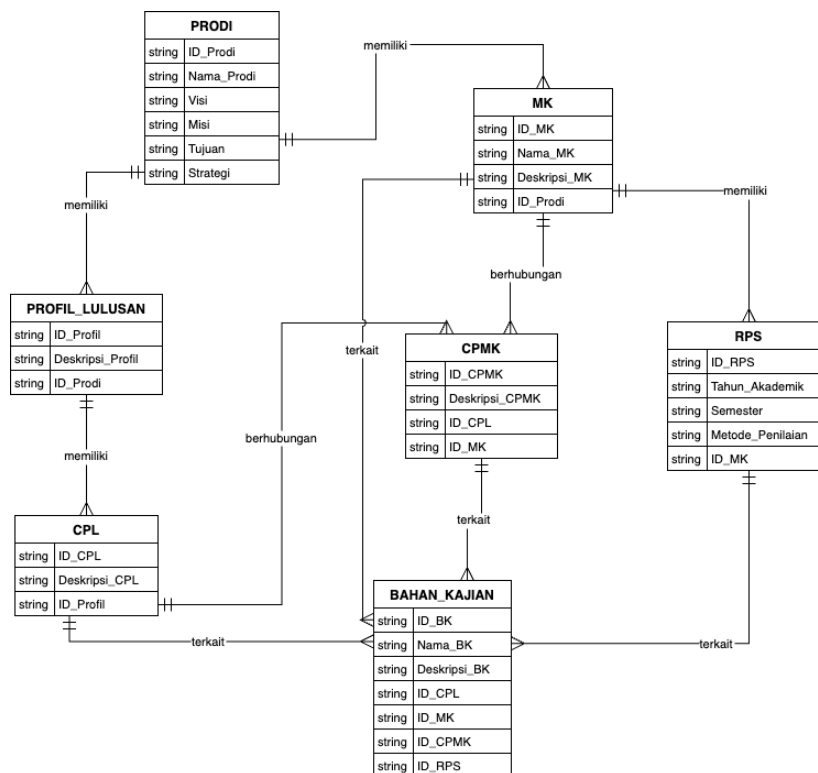


Figure 2. Structure of ERD

The diagram presented in the figure 2 shows the relationships between the various tables in the database. Tables such as PROFIL_LULUSAN, CPL, CPMK, MK, BK, and RPS are interlinked to ensure good integration between curriculum elements. This structure makes it easier for lecturers to compile, manage, and update the curriculum based on OBE and KKNI standards.

2. Page Template Development and User Interface

Once the database design is complete, the next step is the development of page templates and user interface (UI/UX) in Notion. These pages are designed to make it easier for users (lecturers and study program managers) to navigate and manage curriculum elements.

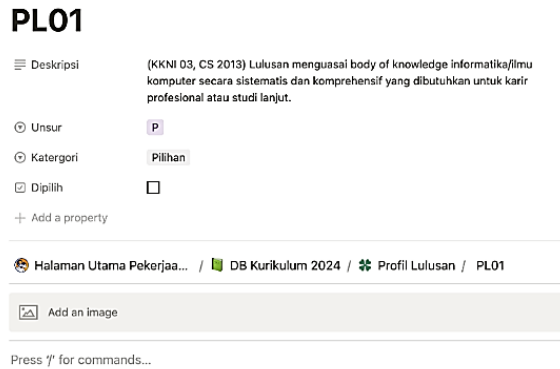


Figure 3. Graduate Profile Page

Graduate Profile is a description of the competencies that must be possessed by graduates of a study program. On figure 3, graduates are explained to have a thorough understanding of the body of knowledge in the field of informatics or computer science, in accordance with KKNI and CS 2013 standards. Graduates are expected to be able to master knowledge systematically and comprehensively, which is necessary for professional career development or continuing studies to a higher level. The "Elective" category indicates that this competency is one of the additional competencies that can be selected according to the career focus or further study of the graduate.

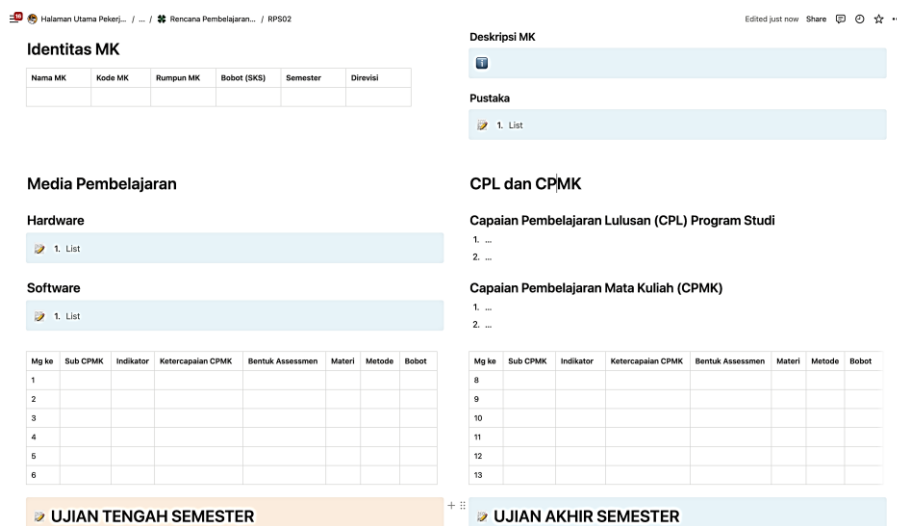


Figure 4. Semester Learning Plan Page

Figure 4 is an important document used to plan and organize the learning process for a semester. In this RPS, there is information about Course Identity such as name, code, weight of credits, and semester. Learning media, both hardware and software, are described to support the teaching process. In addition, there are columns to fill in the Graduate Learning Outcomes (CPL) and Course Learning Outcomes (CPMK) which are adjusted to the learning objectives. Each meeting is equipped with Sub-CPMK, indicators, assessment forms, materials, teaching methods, and assessment weights, as well as special allocations for Mid-Semester Exams and Final Semester Exams.

Based on the image 3 and 4, the Graduate Profile and RPS pages have been developed in Notion. These pages display key information needed in the curriculum, such as learning outcomes, course details, and assessment methods. The user-friendly page design allows lecturers to easily access and edit information without the need for an in-depth technical background.

3. Integration of Curriculum Components into the Database

The integration of curriculum components into the database ensures that all elements, such as Graduate Profiles, CPL, CPMK, Courses, and Study Materials, are dynamically interconnected. This design enables updates in one component to be automatically reflected across related elements, ensuring consistency and adaptability in managing OBE- and KKNI-based curricula.

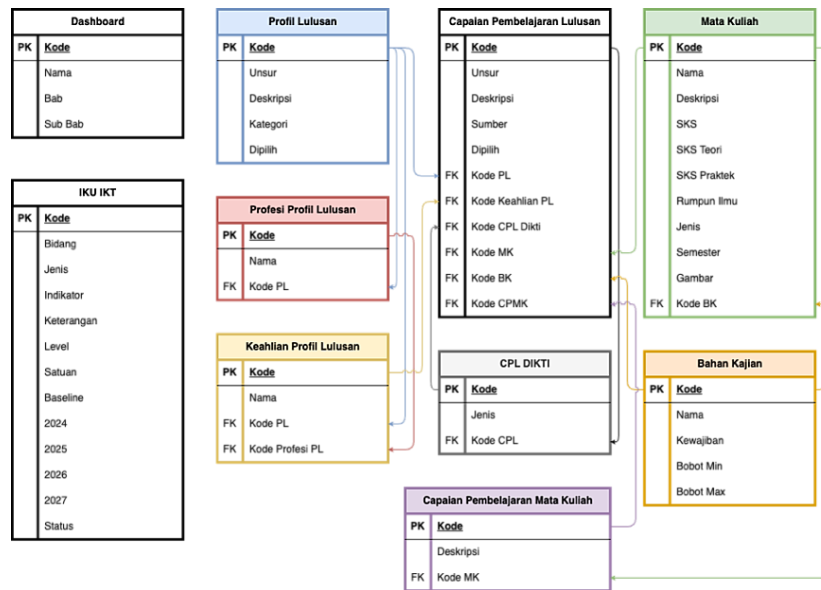


Figure 5. Design Database

The database design, as illustrated in the figure 5, consists of several interconnected components: a Dashboard for navigation, Graduate Profiles to define competencies, CPL and CPMK to align learning outcomes with courses, Study Material to manage topics and weights, and IKI KPIs to evaluate curriculum performance. Each component plays a critical role in supporting a comprehensive, flexible, and standards-aligned curriculum management system.

4. Creation of Interactive Features

The final step in Sprint Development is the creation of an interactive feature that allows lecturers to dynamically map the relationship between CPL, CPMK, BK, and MK. This feature also makes it easier to create and update RPS according to changes in related elements.

This notion database table allows lecturers to map Graduate Learning Outcomes (CPL) with Course Learning Outcomes (CPMK) and Courses (MK) automatically. This interactive feature makes it easy to update the curriculum without having to make manual changes in each section, which speeds up the curriculum preparation process.

With the development of database structures, page template design, and integration of curriculum components carried out in Sprint Development, the Digital Curriculum Book platform in Notion is ready to be used to facilitate curriculum management in various study programs.

Aa Kode	Nama	BAB	Sub BAB
0.1.a	SAMBUTAN REKTOR	0.1. Sambutan	00 Utama
0.1.b	SAMBUTAN DEKAN	0.1. Sambutan	00 Utama
0.1.c	KATA PENGANTAR	0.1. Sambutan	00 Utama
1.	Identitas	1. Identitas	01 Prodi
2.	Evaluasi Kurikulum dan Tracer Study	2. Evaluasi Kurikulum dan Tracer Study	01 Prodi
3.	Landasan Perancangan dan Pengembangan Kurikulum	3. Landasan Perancangan dan Pengembangan Kurikulum	01 Prodi
4.	Rumusan Visi, Misi, Tujuan, Strategi, dan Value	4. Rumusan Visi Misi Tujuan Strategi dan Value	01 Prodi
5.	Indikator Kinerja Utama (IKU)	5. Indikator Kinerja Utama (IKU)	01 Prodi
6.	Rumusan Standar Kompetensi Lulusan (SKL)	6. Rumusan Standar Kompetensi Lulusan (SKL)	02 Kurikulum
7.	Penetapan Bahan Kajian	7. Penetapan Bahan Kajian	02 Kurikulum
8.	Pembentukan Mata Kuliah (MK) dan Penentuan Bobot SKS	8. Pembentukan Mata Kuliah (MK) dan Penentuan Bobot SKS	02 Kurikulum
9.	Peta Kurikulum	9. Peta Kurikulum	02 Kurikulum
10.	Rencana Pembelajaran Semester (RPS)	10. Rencana Pembelajaran Semester (RPS)	03 Pembelajaran
11.	Asesmen Pembelajaran	11. Asesmen Pembelajaran	03 Pembelajaran
12.	Rencana Implementasi Hak Belajar	12. Rencana Implementasi Hak Belajar	03 Pembelajaran
13.	Elemen dan Mekanisme Pelaksanaan Kurikulum	13. Elemen dan Mekanisme Pelaksanaan Kurikulum	03 Pembelajaran
14.	Daftar Pustaka	14. Daftar Pustaka	04 Lainnya
15.	Sitemap	15. Sitemap	04 Lainnya

Figure 6. Database Dashboard

Database in figure 6 is the structure of the Notion-based Curriculum which groups information based on code (Aa Code), section names (Name), and Chapter and Sub Chapter categorization. Each entry is organized with a different label to indicate the type or category of curriculum, such as remarks, identity, curriculum evaluation, as well as lesson plans. Additional properties such as 'Sub Chapters' help in distinguishing more detailed and structured elements of the curriculum. This structure allows for clear and easy navigation through the elements of the curriculum that have been organized.

The IKI IKU database in the Notion-based Curriculum serves to record and track Key Performance Indicators (KPIs) and Additional Performance Indicators (IKT). This table includes columns such as Aa Code for identification, Field for work area category, Type for indicator type, and Indicator for description of the performance being measured. In addition, there is a Statement, Level, Unit, and time range column from 2024 to 2027, which serves to monitor the development of performance indicators from time to time. Finally, the Status column is used to track the progress of each indicator.

Aa Kode	Uraian	Deskripsi	Status	Kategori
PL01	PK	IKKN1 03, CS 2013) Lulusan menguasai body of knowledge informatika/ilmu komputer secara sistematis dan komprehensif yang dibutuhkan untuk karir profesional atau studi lanjut.	Pilihan	
PL02	PK	IKKN1 05, CS 2013) Lulusan menguasai konsep teoritis dan praktis bidang informatika/ilmu komputer serta interaksinya dengan domain keilmuan lain (inter disiplin).	Pilihan	
PL03	PK	IKCS 2013) Lulusan memahami tren dan peluang perkembangan teknologi informatika/ilmu komputer.	Pilihan	
PL04	PK	IABEE) Lulusan memiliki kemampuan menganalisis pemrosesan informasi serta menerapkan prinsip-prinsip computing dan disiplin ilmu relevan lainnya untuk mengidentifikasi solusi bagi organisasi.	Wajib	
PL05	KK	IKKN1 04) Lulusan mampu menerapkan kaidah, tata cara dan etika ilmiah dalam rangka menghasilkan gagasan, desain, kritik atau solusi bidang informatika/ilmu komputer	Pilihan	
PL06	KK	IKKN1 07) Lulusan mampu memiliki kemampuan penelitian, memahami dan menganalisis informasi dan konsep baru dari raman keilmuan informatika dengan mempertimbangkan bukti, argumen dan asumsi untuk menyelesaikan masalah.	Pilihan	
PL07	KK	IKCS 2013) Lulusan mampu mengaplikasikan keilmuan dalam pelaksanaan proyek bidang informatika/ilmu komputer.	Pilihan	
PL08	KK	IABEE, CS 2013) Lulusan mampu mengorganisasi produk teknologi berbasis multi-platform.	Pilihan	
PL09	KK	IABEE) Lulusan memiliki kemampuan mendesain, mengimplementasi dan mengevaluasi solusi berbasis computing yang memenuhi kebutuhan pengguna dengan pendekatan yang sesuai.	Wajib	
PL10	KK	IKKN1) Lulusan mampu mengaplikasikan pengetahuan di area fungsi Data Management System pasca profesinya. (Profil Lulusan ini sesuai dengan Visi Keilmuan Program Studi dan Proesi yang dituju.)	Pilihan	
PL11	KK	IKKN1) Lulusan mampu mengaplikasikan pengetahuan di area fungsi Programming and Software Development pada profesinya. (Profil Lulusan ini sesuai dengan Visi Keilmuan Program Studi dan Proesi yang dituju.)	Pilihan	
PL12	S	IKKN1 01) Lulusan mampu menunjukkan strategi mandiri, bermutu, dan terukur.	Pilihan	
PL13	S	IKKN1 08, CS 2013) Lulusan mampu bertindak dan menilai secara profesional.	Pilihan	
PL14	S	IKKN1 09, CS 2013) Lulusan mampu berkomunikasi interpersonal secara lisan maupun tulisan.	Pilihan	
PL15	S	IKKN1 09, CS 2013) Lulusan memiliki sikap toleran dan bertanggung jawab dalam tim multidisiplin.	Pilihan	
PL16	S	IKKN1) Lulusan memiliki kepatuhan terhadap aspek legal, aspek sosial budaya dan etika profesi.	Pilihan	
PL17	S	IKKN1 10, CS 2013) Lulusan memiliki komitmen untuk senantiasa mengembangkan diri melalui pembelajaran.	Pilihan	

Figure 7. Graduate Profile Database

The Graduate Profile Database in the Notion-based in figure 7 Curriculum serves to describe the competencies and abilities that graduates must have. Each line represents a specific graduate profile with a unique code such as PL01, PL02, and so on. The Element column describes the type of ability (P: Knowledge, KK: Special Skills, S: Attitude), while the Description provides specific details regarding the competencies that must be achieved. The Category column groups whether the profile is Required or Optional, and Selected allows users to mark relevant profiles according to the course or curriculum they are developing.

Aa Kode	Uraian	Deskripsi	Status	Kategori
CPL01	S01	Bertakwa kepada Tuhan Yang Maha Esa dan mampu menunjukkan sikap religius.	SN DIKTI	Pilihan
CPL02	S02	Mertanggung jawab nilai kemanusiaan dalam menjalankan tugas berdasarkan agama, moral dan etika.	SN DIKTI	Pilihan
CPL03	S03	Berkontribusi dalam peningkatan mutu kehidupan bermasyarakat, berbangsa, dan bernegara berdasarkan Pancasila.	SN DIKTI	Pilihan
CPL04	S04	Berperan sebagai warga negara yang bangga dan cinta tanah air, memiliki nasionalisme serta rasa tanggungjawab pada negara dan bangsa.	SN DIKTI	Pilihan
CPL05	S05	Menghargai keanekaragaman budaya, pandangan, agama, dan kepercayaan, serta pendapat atau temuan orisinal orang lain.	SN DIKTI	Pilihan
CPL06	S06	Bekerja sama dan memiliki kepekaan sosial serta kepedulian terhadap masyarakat dan lingkungan.	SN DIKTI	Pilihan
CPL07	S07	Taat hukum dan disiplin dalam kehidupan bermasyarakat dan bernegara.	SN DIKTI	Pilihan
CPL08	S08	Mengidentifikasi nilai, norma, dan etika akademik.	SN DIKTI	Pilihan
CPL09	S09	Menunjukkan sikap bertanggungjawab atas pekerjaan di bidang keahliannya secara mandiri.	SN DIKTI	Pilihan
CPL10	S10	Mengidentifikasi semangat kemandirian, kejuangan, dan kewirausahaan.	SN DIKTI	Pilihan
CPL11	S11	Memiliki tanggung jawab profesional dan dapat melakukan penilaian berbasis informasi dalam praktik computing berbasis pada prinsip-prinsip legal dan etika.	IABEE	Pilihan
CPL12	S12	Mampu melakukan fungsi anggota atau pemimpin tim secara efektif dalam kegiatan yang sesuai dengan disiplin ilmu program studi.	IABEE	Pilihan
CPL13	S13	Menguasai kompetensi sosial dan kompetensi diri.	ASIN	Pilihan

Figure 8. Graduate Learning Outcomes Database

The Graduate Learning Outcomes Database in the Notion-based in figure 8 Curriculum serves to detail the competencies that must be achieved by graduates in various aspects, such as attitudes, knowledge, and skills. Each entry in this database has a unique code (such as CPL01) that is associated with a standard from various sources, such as SN DIKTI or IABEE, which refers to national and international references. The Element column describes the type of achievement (e.g., Attitude), and the Description column provides specific details about the expected competencies. There is also a Category column that indicates whether the achievement is Mandatory or Optional, as well as a Selected column that allows markers for achievements that are in accordance with the curriculum.

The Database of Study Materials in the Notion-based Curriculum serves to organize the material or topics that will be taught in the study program. Each topic is assigned a unique code (such as BK01) and named according to the material being taught, e.g. Computers. The Obligation column shows the status of the topic whether it is mandatory or optional, in this case the General Mandatory BK. In addition, there is information about the Min Weight and Max Weight, which shows the range of the number of credits or study load of the topic, for example 2 to 3 credits.

The Notion-based Curriculum Course Database is used to document each course in the study program. Each course is assigned a unique code, for example MKIF015 for the Computer Network course. The columns in this database contain information such as course descriptions, the number of credits (Semester Credit Units), the division of credits for theory (T credits) and practice (P credits), as well as the Cluster of Sciences related to the course. In addition, there is a Type column to determine the type of course (for example, Study Program), the semester in which the course is taught, as well as additional attributes such as Image and BK Code that can be used for further visualization or mapping.

The Course Learning Outcomes Database in the Notion-based Curriculum functions to record the learning outcomes or targets that must be achieved by students after completing a course. Each achievement is given a unique code in the Aa Code column, equipped with a description that explains the goals or competencies to be achieved, and is related to the MK Code that refers to a specific course. This database helps in designing and monitoring learning outcomes in accordance with the standards that have been set.

3.1.3 Daily Scrum & Sprint Review

Each day, the development team conducts a Daily Scrum, a short meeting that lasts 15 minutes to ensure that each team member understands the progress of the sprint, the obstacles that arise, and the work plan for the day. The problems identified in Daily Scrum are then addressed quickly so that they do not disrupt the development flow.

At the end of the sprint, a Sprint Review is conducted with stakeholders, including lecturers and study program managers, to present the results of the development. Feedback from stakeholders is the basis for improvements in the next sprint. For example, if there is feedback to change the mapping structure of CPL and MK, it will be fixed in the next sprint. The following sprint review can be seen in table 4.

Table 4. Sprint Review

Developed Features	User Feedback	Next Actions
Graduate Profile Page	More info	Add additional competency descriptions
Learning Outcomes (CPL)	Unclear table format	Adjust the table format to the SN-DIKTI standard
Semester Learning Plan (RPS)	The page structure is too complex	Simplify structure and layout

3.1.4 Increment, Feedback, & Iteration

After each sprint is completed, the increment in the form of developed features or components is ready to be tested and used. Feedback received in the Sprint Review will be integrated into the next sprint. In this study, the increment is in the form of Graduate Profile, CPL, CPMK, and RPS pages that have been designed and integrated with the database in Notion.

Each increment is tested with the end user, i.e. the lecturer and the study program manager, to ensure that the system runs well and is in accordance with the needs of the dynamic curriculum. After each iteration, the improved features are refined and ready for use in the next sprint. The following are some of the pages that have been created can be seen in figure 9.

This dashboard is the main interface for Notion-based curriculum management, designed to organize the various curriculum components in a structured manner. Each section is divided into relevant categories:

1. Main: Contains introductory elements, such as the preface, remarks of the rector, and dean, that introduce the curriculum document.
2. Study Program: This section focuses on the identity of the study program, curriculum evaluation, formulation of vision, mission, and key performance indicators (KPIs) that are used as the basis for curriculum development.
3. Curriculum: Includes the formulation of graduate competency standards (SKL), determination of study materials, course formation, and curriculum maps, which are the core guidelines for course development.
4. Learning: Managing semester learning plans (RPS), learning assessments, and learning rights implementation plans.
5. Other: Contains additional sections such as bibliography and sitemaps, which provide additional references and navigation for the entire document.

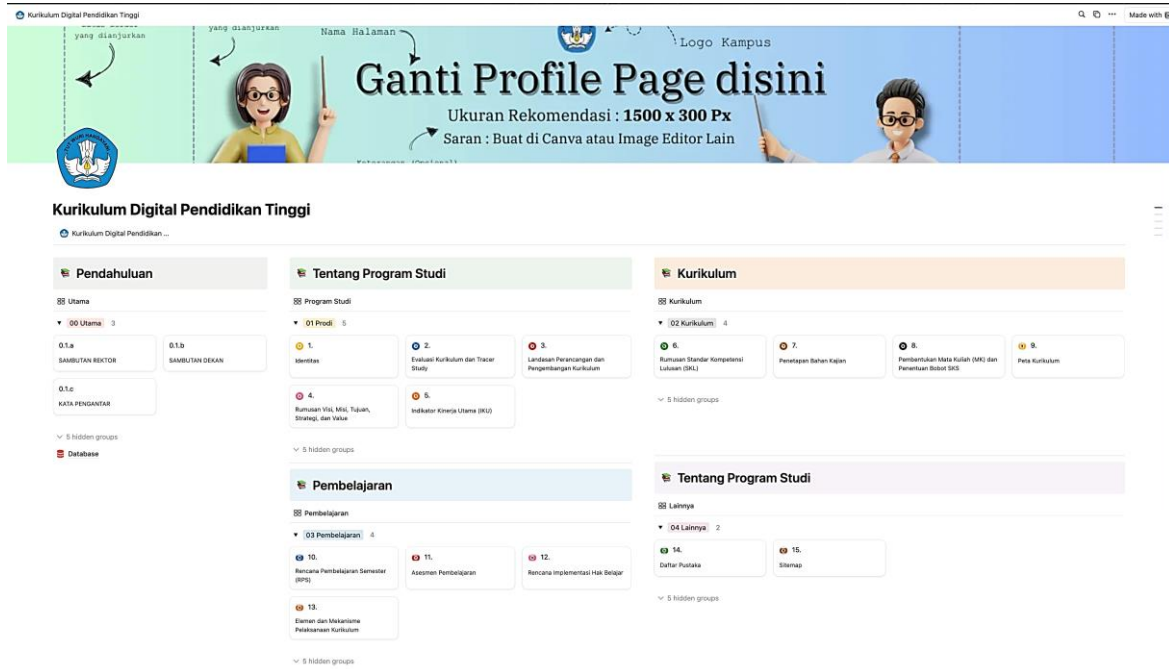


Figure 9. Dashboard Page

The Dashboard Page, as the central interface, organizes the curriculum into categories: Main (introductory elements such as prefaces and rector's remarks), Study Program (identity, curriculum evaluation, and KPIs), Curriculum (SKL, curriculum maps, and course details), Learning (RPS, assessments, and implementation plans), and Other (bibliography and sitemap). This layout provides a clear and structured overview of all curriculum components.

Key pages, such as the KPI Page, play a critical role in tracking institutional performance. This page manages Key Performance Indicators (KPIs) and Additional Performance Indicators (IKT) to evaluate study program achievements, such as improving graduate quality and fostering innovation. The Curriculum Foundations Page establishes the philosophical, sociological, psychological, and legal underpinnings of the curriculum, while the Curriculum Evaluation Page analyzes tracer study data to ensure alignment with stakeholder and industry needs.

Other essential pages include the Graduate Competency Standard (SKL) Page, which links graduate profiles to CPL and industry requirements; the Study Material Determination Page, which maps learning materials to CPL and courses; and the Semester Learning Plan (RPS) Page, which guides lecturers in planning and implementing learning activities. Supporting pages, such as the Bibliography Page and Sitemap Page, enhance navigation and ensure the curriculum is well-documented and transparent, making the Notion-based system an efficient tool for higher education curriculum management.

After completing each sprint and developing the increment, a User Acceptance Test (UAT) was conducted to evaluate the system's usability and alignment with user needs can be seen in table 5. The UAT was carried out at Institut Teknologi dan Kesehatan Mahardika, involving lecturers from various programs, including Informatics, Public Health, Nursing (S1), Midwifery, and Medical Records and Health Information (D3). Out of the 35 lecturers at the institution, 20 participated in this testing process.

The testing revealed varying levels of adaptability among the participants. Lecturers from non-technical programs, particularly those in health-related fields, initially faced challenges in using the **Notion platform** due to unfamiliarity with digital tools. However, these lecturers were highly proficient in curriculum development and academic standards, which facilitated their ability to assess the relevance of the system.

Table 5. System Testing Results (User Acceptance Test)

No.	Assessment Category	Evaluation Results	Satisfaction (%)
1	Ease of System Navigation	Non-technical lecturers faced initial difficulties navigating Notion, but support sessions significantly improved their understanding.	75%
2	Completeness of Curriculum Features	The system's features were deemed comprehensive and relevant for managing KKNI/OBE-based curricula.	88%
3	System Performance and Speed	The platform performed efficiently with no significant lags or errors reported during testing.	90%

No.	Assessment Category	Evaluation Results	Satisfaction (%)
4	Compliance with KKNi/OBE Standards	The curriculum structure aligned well with national standards and was highly rated by all participants.	95%
5	Collaboration Features	Collaboration tools were appreciated, but lecturers noted the need for enhanced cross-program communication features.	82%
6	Relevance to Academic Processes	The platform was considered relevant for supporting academic processes, particularly for curriculum development.	85%
7	Availability of Documentation	The provided documentation was clear and helpful in addressing initial challenges faced by users.	83%

3.2. Feedback Analysis

Lecturers from Informatics adapted quickly to the platform and provided advanced feedback on improving specific system functionalities. On the other hand, lecturers from Public Health, Nursing, Midwifery, and Medical Records programs, who were predominantly female, required additional training sessions to familiarize themselves with the Notion platform. Despite the initial learning curve, these lecturers demonstrated a strong understanding of academic and curriculum requirements, allowing them to provide valuable feedback on the curriculum management features.

1. Strengths: The system was praised for its compliance with KKNi/OBE standards, intuitive design (after initial guidance), and comprehensive curriculum tools.
2. Challenges: Non-technical users suggested simplifying navigation and improving the user interface to make it more accessible for those unfamiliar with Notion.

Overall, the satisfaction level averaged 85.4%, with notable improvements in user experience as the participants became more accustomed to the platform. The feedback will guide the development of user-specific tutorials and enhancements to collaboration features in the next sprint.

3.3. Discussion

This research effectively addresses the design of a Notion-based Digital Curriculum Book aligned with OBE and KKNi standards, utilizing the Agile Scrum methodology to meet the demands of dynamic curriculum management. Agile Scrum's iterative sprints enable a gradual and systematic integration of key curriculum components, such as Graduate Learning Outcomes (CPL), Course Learning Outcomes (CPMK), and Semester Learning Plans (RPS). The flexibility of this approach allows the curriculum to be continuously refined based on input from lecturers and study program managers, ensuring its alignment with educational and industry needs [1], [3], [8]. Additionally, using Notion as a platform enhances collaboration and reduces technical barriers, creating an accessible, efficient environment for curriculum management [7], [13], [20].

By combining Agile Scrum with the collaborative features of Notion, this study overcomes challenges found in traditional curriculum development methods. Previous studies highlighted limitations in adaptability and integration within digital platforms [6], [16]. The iterative nature of Agile Scrum prioritizes specific curriculum goals during each sprint, allowing for swift adjustments to feedback and regulatory changes, while Notion's structured data organization supports scalability and transparency [11], [18]. This research provides a scalable and adaptable framework for higher education institutions, setting a benchmark for modern curriculum development practices [9], [14], [19].

3. CONCLUSION

This research designed a Notion-based Digital Curriculum Book that is in accordance with OBE and KKNi standards using the Agile Scrum Development method. The Agile Scrum approach allows for an efficient and flexible development process, breaking down each component of the curriculum into structured sprints, allowing it to respond quickly to change. The implementation of Notion as a management platform supports collaboration between stakeholders and facilitates the integration of components such as CPL, CPMK, and RPS. Thus, this method not only improves curriculum adaptability, but also provides practical solutions for digital curriculum management in universities.

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