Core Curriculum Model for the Pancasila and Civic Education Study Program in the Industrial Revolution Era 4.0

Yogi Nugraha[1(✉)], Sapriya[2], Endang Danial[2], and Rahmat[2]

[1] Universitas Buana Perjuangan Karawang, Karawang, Indonesia
yogi.nugraha@ubpkarawang.ac.id
[2] Universitas Pendidikan Indonesia, Bandung, Indonesia

Abstract. This research is based on the absence of a core curriculum for the Civic Education and Citizenship Education program in Indonesia. The purpose of this research is to develop a digital-based core curriculum for the Civic Education program in the era of Industry 4.0. In the era of Industry 4.0, graduates need to have the ability to adapt quickly to the digital advancements that support the learning process. This research utilizes a research and development (R&D) approach, resulting in the design of a core curriculum product for the Civic Education program in the era of Industry 4.0, consisting of 58 semester credit units in the fields of Civic Education, learning, social studies, and law. The proposed model is validated by experienced curriculum experts. This research is conducted at Buana Perjuangan University in Karawang. The research participants include experts, lecturers, and students. The outcome of this research is a draft of the core curriculum that can serve as a reference for all Civic Education programs in Indonesia. The draft curriculum consists of 58 semester credit units distributed across various fields of study, including Civic Education, learning, politics, law, and additional subjects.

Keywords: Core Curriculum · PPKN Study Program · Industrial Revolution 4.0

1 Introduction

The curriculum as a necessity in the implementation of the educational process must of course get the main position and continue to be considered and improved. This repair process sometimes not everyone can understand. Many interpret that the changes that occur in the curriculum are only the inability and inconsistency of the government in carrying out the curriculum itself. Of course, we need to turn such a stigma into a good stigma. Changes that occur in the curriculum should indeed be carried out, because the curriculum is actually a guide in carrying out the educational process at every level of education, including higher education. According to Law Number 12 of 2012 on Higher Education, Article 35 paragraph (1), it is mentioned that the higher education curriculum refers to a collection of plans and preparations that encompass the aims, subject matter, instructional resources, and methodologies, serving as a framework

D. Iswandi et al. (Eds.): ACEC 2022, ASSEHR 768, pp. 697–709, 2023.
https://doi.org/10.2991/978-2-38476-096-1_74

for conducting educational activities in order to accomplish the objectives of higher education. Because the curriculum is a set of plans, the planning carried out in the educational process must of course be good and in accordance with the times. The curriculum is required to be able to adapt to the times so that the needs of future students have been conveyed by the current curriculum. Currently, the core curriculum used by the Civics Study Program has not found a point of agreement regarding which core curriculum is used as a reference in the process of providing education in the Civics Study Program. This can make the graduates produced by the Civics Study program in Indonesia do not have the ability evenly in their minimum competencies. Potential problems can also arise in the form of curriculum components that are not in accordance with standards, resulting in unplanned education quality and the results are not in line with expectations. It is this inequality in the quality of graduates that can adversely affect the output produced by the study program. According to the statement of the Minister of Education and Culture, Nadiem Anwar Makarim, only 20% of university graduates are in accordance with their fields [1]. This is reinforced by statistical data released by the Ministry of Manpower in 2017 which states that there are only about 37% of university graduates who work in their respective fields. In this case, approximately 37% of university graduates annually match the educational profession they are involved in (match). This means that approximately 63% of the Indonesian population does not work according to their educational background (mismatch), or it can be said that out of 10 people who have graduated from formal education, only 3 to 4 people match [2]. This is of course sad because the knowledge possessed by university graduates is not at all able to be practiced directly in the field according to their field. Approximately 37% of university graduates each year according to the educational profession they are involved in (match). This means that approximately 63% of the Indonesian population does not work according to their educational background (mismatch), or it can be said that out of 10 people who have graduated from formal education, only 3 to 4 people match [2]. This is of course sad because the knowledge possessed by university graduates is not at all able to be practiced directly in the field according to their field. Approximately 37% of university graduates each year according to the educational profession they are involved in (match). This means that approximately 63% of the Indonesian population does not work according to their educational background (mismatch), or it can be said that out of 10 people who have graduated from formal education, only 3 to 4 people match [2]. This is of course sad because the knowledge possessed by university graduates is not at all able to be practiced directly in the field according to their field. Only 3 to 4 people match [2]. This is of course sad because the knowledge possessed by university graduates is not at all able to be practiced directly in the field according to their field. Only 3 to 4 people match [2]. This is of course sad because the knowledge possessed by university graduates is not at all able to be practiced directly in the field according to their field.

According to research conducted by Hasibuan [3], an inappropriate educational background can lead to the so-called "job-education mismatch" (a mismatch in the field of expertise of workers) and make it more difficult for people in developing countries like Indonesia to move up economically. This is certainly contrary to the aspiration to become a developed country in 2045. Plus the current development of the world has changed the pattern of human life from conventional to digital. This is certainly influenced by the

development of the times or we also know that there is currently something called the industrial revolution 4.0. The industrial revolution 4.0 is a continuation of the industrial revolution 1.0 to 3.0. The industrial revolution 4.0 began in 2011 until now. During the industrial revolution 4. 0 can be said as an era that occurs in the present for tens or hundreds of years in the future that we do not know. This era offers humans that information technology is able to help every type of our work [4]. Digitalization of every field of work can be done at this time. The digital world has entered into several sectors including information, economics, medical, government, and education. The digitalization of education also affects the implementation of the curriculum held in the study program. Digitalization of every field of work can be done at this time. The digital world has entered into several sectors including information, economics, medical, government, and education. The digitalization of education also affects the implementation of the curriculum held in the study program. Digitalization of every field of work can be done at this time. The digital world has entered into several sectors including information, economics, medical, government, and education. The digitalization of education also affects the implementation of the curriculum held in the study program.

This research focuses on developing the core curriculum of the Civics Study Program as a reference material in curriculum development in the Civics Study Program. Then in its implementation, the core curriculum of the Civics Study program is carried out with various sources of digital-based learning media as demands of the times.

2 Methodology of Research

The research conducted to develop the core curriculum of the Civics Study Program during the era of the Fourth Industrial Revolution employed a mixed methods approach, combining both qualitative and quantitative methodologies. Creswell [5] defines mixed methods research as the combination of qualitative and quantitative approaches, often referred to as a sequential mixed method. This study specifically utilized a sequential exploratory mixed research approach, focusing on the development research methodology, also known as Research and Development (R&D).

The sample for this study consisted of the PPKn (Pancasila and Citizenship Education) study program within the Faculty of Teacher Training and Education at the University of Buana Perjuangan Karawang. The choice of this research location was motivated by the ongoing curriculum review being carried out by the Pancasila and Citizenship Education Study Program for the academic year 2021–2022. The primary target of this research was the students enrolled in the program.

The instruments used in this study are divided into two, namely qualitative instruments and quantitative instruments. Qualitative instruments consist of interview guides, focus group discussions, core curriculum guidelines, observation and documentation. As for the quantitative instrument used a questionnaire. The procedure used by combining the two stages of the development research procedure proposed by Akker and Mc Griff's ADDIE Model consists of an exploration process, an experimental process, and an evaluation process.[6].

The data analysis technique in this study uses qualitative and quantitative analysis. Qualitative data analysis techniques consist of 1) data reduction, 2) systematically compiling records, 3) making data displays, 4) conducting cross-site analysis 5) presenting

research findings, and drawing conclusions [7]. Quantitative data analysis techniques in this study used descriptive statistics.

3 Results of Research

The education system's curriculum undergoes regular updates in line with the progress of the education field. Similarly, the curriculum of the PPKn Renewal study program also addresses the aspects of what, where, when, who, and how the curriculum process is continuously refreshed. Concerning "what," attention should be given to the nature of the curriculum. Regarding "where," the location of the subjects included in the curriculum must be discussed. In terms of "when," the timing of curriculum implementation needs to be examined. When considering "how," it is essential to focus on the structure, implementation, and evaluation of the curriculum.

The curriculum serves as a framework developed by the government, educators, or practitioners to facilitate the educational process and ensure that the resulting generation is aligned with the contemporary needs and demands. Oliva and Gordon say that the curriculum is a plan for all the experiences experienced by students under school care which consists of a number of plans, in written form and in varying scopes, that describe the desired learning experiences [8].

According to Marsh, the curriculum can be understood as a challenging journey encompassing different subjects that need to be successfully completed [9]. Similarly, Nasution refers to the definition of curriculum from Webster's dictionary in 1812, where it is described as (1) a track for racing, a place for running, or a chariot, and (2) a course of study, specifically applied to university education [10]. The notion of curriculum is defined as a place to run, a racecar, a course, in general, a curriculum that can be applied to universities. Curriculum development is not just about improving and developing the curriculum but far from it the essence is how the curriculum is developed, who is involved in its development, what is the curriculum developed for and for whom the curriculum has been developed. The curriculum component in a development practice has 4 types of parts. The components in question consist of objectives, content, strategy and evaluation. The four components are interrelated and influence each other (Fig. 1).

3.1 Higher Education Curriculum in Indonesia

The curriculum for higher education in Indonesia follows the guidelines set by the Directorate General of Higher Education at the Ministry of Education and Culture. According to Law Number 12 of 2012 on higher education, particularly Article 35 paragraph 2, each university is required to develop its own Higher Education Curriculum in alignment with the National Higher Education Standards (SN-Dikti) for each study program. These standards encompass the development of intellectual intelligence, noble character, and skills. As educational institutions responsible for producing qualified graduates, universities must assess whether their graduates possess the necessary abilities equivalent to the predetermined qualification levels outlined in the IQF (Indonesian Qualifications Framework).

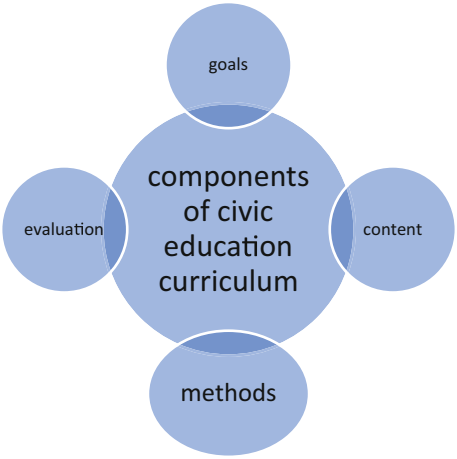

Fig. 1. Curriculum components

Higher education is an institution that produces quality human resources. Every year, universities give birth to educated people who are in accordance with the standards set in the curriculum. Therefore, the curriculum must be prepared and implemented properly and structured as well as an evaluation of the curriculum itself. The curriculum must be able to keep up with the times, the needs of science and technology (IPTEK) and the needs of graduate users.

3.2 Core Curriculum for the PPKn Study Program

The PPKn study program is one of the study programs held at the Institute of Educators and Education Personnel (LPTK) in a university. The curriculum held in the Civics Study Program is developed by taking into account academics and needs and taking into account the needs of graduate users. The Citizenship Education Program (PKn) is a social science discipline program as a teacher education program for Pancasila and Citizenship Education (PPKn) subjects at LPTKs such as IKIP or FKIP in the Civics and Law major or study program in the 1960s or PPKn at this time (Somantri, 1998). Supporting this opinion,

The PPKn (Civic Education) study program is the official designation for a specific program of study, as specified in the Decree of the Minister of Research, Technology and Higher Education of the Republic of Indonesia Number 57/M/KPT/2019. This decree establishes the official names of study programs in higher education, including the PPKn program, which grants a Bachelor of Education degree (S.Pd.) at the undergraduate level.

The role of the curriculum in this era is to balance and provide a foundation and integrate student abilities with the speed of technology [11]. In line with what was said by Spitzer who said that the use of technology is to make someone become information literate, and have the ability to find, evaluate and use information effectively [12]. Some of the legal bases in curriculum development in the Civics Study Program are:

1. UU no. 20 of 2003 concerning the National Education System.

2. UU no. 12 of 2012 concerning Higher Education.
3. Presidential Decree No. 8 of 2012 concerning KKNI.
4. Permenristekdikti No. 32 of 2016 concerning Accreditation of Study Programs and Colleges.

Apart from that, the study program refers to the association agreement that accommodates the scientific study program. In the PPKn study program, the association is named the Association of Indonesian Pancasila and Citizenship Education Professionals (AP3KnI). The formation of the core curriculum of the Civics Study Program is also based on:

1. Kepmendiknas No. 232/U/2000 concerning Guidelines for Preparation of Higher Education Curriculum and Student PHB.
2. Ministry of National Education No. 045/U/2002 on the Core Curriculum of Higher Education.
3. Decree of the Director General of Higher Education Number: 43/Dikti/Kep/2006 concerning Signs for the Implementation of Groups of Personality Development Courses in Higher Education.
4. Regulation of the Minister of Education and Culture No. 49 of 2014 concerning National Standards for Higher Education.
5. Decree of the Director General of Higher Education No. 84/E/KPT/2020 concerning Guidelines for Implementing Compulsory Courses in the Higher Education Curriculum.
6. Regulation of the Minister of Education and Culture No. 3 of 2020 concerning National Higher Education Standards.

In the present day, a vast and all-encompassing computer network has connected nearly 200 countries, facilitating unprecedented global interaction. This technology has been utilized by more than half of the world's population throughout recorded history [13]. Experts describe the fourth industrial revolution as the extensive digitization of industrial production. At the core of Industry 4.0 is the establishment of an interconnected network of industrial infrastructure through Cyber-Physical Systems (CPS). The objective is to enable communication between machines, workpieces, products, and humans [14].

The advent of the fourth industrial revolution, known as Industry 4.0, has necessitated changes in the education system. The workforce in an Industry 4.0 environment requires a specific set of competencies encompassing technical, methodological, social, and personal skills. Therefore, an education solution is needed to enhance the capabilities of human resources. Education 4.0 aims to establish a new educational paradigm that prepares the future workforce to effectively tackle the challenges of Industry 4.0. The core elements of Education 4.0 are crucial indicators of a country's educational progress. These elements, as identified by Scheer, Fisk, Wallner and Wagner, form the foundational components of Education 4.0 (Table 1).

The core elements of education 4.0 are also simplified in Fig. 2.

Some of the tools used in education 4.0 can be seen in Table 2 [15]:

The categories of tools used in education 4.0 as listed in the table are classified into 3 parts called must-have, should-have, and nice-to-have [15] (Fig. 3).

Table 1. Core Elements of Education 4.0

Scheer (2015) [9]	Fisk (2017) [10]	Wallner & Wagner (2016) [11]
New learning formats	Diverse time and place	Individual programs
Location and time-independent learning	Personalized learning	Self-organization
Individual study careers	Free choice	Independent goals
Globalization and international exposure	Project-based	Interdisciplinary studies
Gamification for motivating students and teachers	Field experience	Individual assessment
Ability to find and locate the knowledge	Data interpretation	Transform information into knowledge
Lifelong learning	Exams to evaluate knowledge instead of question/answers Student responsibility in composing the learning curriculum mentoring	Collaborative learning Active learning New media for learning(web, MOCC)

Fig. 2. Core Elements of Education 4.0

The results of the research on developing the core curriculum of the Civics Study Program obtained the initial model as listed in Table 3.

While the factual model obtained can be described as follows (Fig. 4).

Table 2. Categories of Digital Tools Used in Education 4.0

Category	Information
Learning Management Systems (LMS)	An LMS (Learning Management System) serves as a supportive tool for managing educational programs. Typically, educators, such as lecturers, have access to a dashboard where they can track learning progress and view students' scores [16].
Video Conferencing Tools	This device captures and encrypts the user's voice and video, transmitting it over the internet to participants [17].
Digital Exam Assessment Tools	One advantage is that it reduces evaluation time, making it more efficient and providing immediate feedback on student assessments [18].
Data Exchange and Cloud Systems	Data Exchange and Cloud Systems ensure secure data sharing in various formats.
Document Collaboration Tools	The Document Collaboration tool enables multiple individuals to collaborate on the same document or other files simultaneously.
Game-Based Learning Tools	Game-based learning shows promise, particularly in interdisciplinary subjects that require the application of diverse skills like critical thinking, communication, and decision-making [19].
Digital Library and Database Tools	Digital libraries serve as intermediaries, providing electronic media through their web platforms [20].
Virtual and Remote Lab Tools	Tools that enable practical, real-life experimentation are valuable for hands-on learning experiences [21].
Digital White-/Chalkboard Tools	The Digital Whiteboard Tool allows for the transition of traditional classroom whiteboards to the digital realm.
Digital Gradebooks	Digital Assessment Books are utilized by lecturers to record classroom activities and store assignments and corresponding grades.

4 Discussion

The stages of model development are based on the preliminary study stages that have been carried out. The development of the core curriculum model involves several parties including lecturers, students, experts, and stakeholders. The need for information to improve the model that has been formed in the preliminary study process is revised for its shortcomings. The development of the model is carried out referring to the stages of curriculum development that exist in the guide to the preparation of the higher education curriculum in the industrial era 4.0 to support independent learning-independent campuses in 2020.

Fig. 3. Prioritization of digital tools for Education 4

The results of this initial research are specifically focused on the University of Buana Perjuangan Karawang because the college is a college that has been established for 6 years and is currently in the curriculum review period. The reason for the concentration of research at the University of Buana Perjuangan Karawang is also due to the support from universities to be able to find the best curriculum formulation in the Civics Study program.

At this stage, the author explores information regarding the development of the core curriculum of the digital-based Civics study program facing the era of the industrial revolution 4.0. Then the information extracted from students and lecturers is related to the personality foundation, mastery of knowledge and skills, work skills, attitudes and behavior in working and understanding the rules of community life. The development of the information is further divided into General Compulsory Course learning, mastery of scientific competence, competitive advantage, comparative study program implementation, mastery of insight into working behavior, mastery of the provisions that apply to life in society, and limits on one's work in accordance with the competence of his expertise.

The Preliminary Study begins by identifying needs (needs assessment) as an ingredient in the development process. After this preliminary stage is carried out, the next process is to draft a core curriculum model for the digital-based Civics study program to face the era of the industrial revolution 4.0. The draft of this model was then tested in a limited trial at the University of Buana Perjuangan Karawang. The stages of developing the core curriculum model for the digital-based Civics Study Program facing the era of the industrial revolution 4.0 began with knowing the vision, mission, goals and strategies obtained from the results of interviews with the heads of PPKn study programs. Understanding the vision is needed in order to find the composition of courses that support the vision of the Civics Study Program. The next stage is a critical study related to the development of the core curriculum for the Civics study program and market needs with the Association of Indonesian Pancasila and Citizenship Education Professionals (AP3KnI) and stakeholders. A critical study of curriculum development policies refers to the KKNI, National Standards for Higher Education and the Industrial Era 4.0 by curriculum experts from the Higher Education Curriculum Development Team.

Table 3. Initial Draft of the Core Curriculum Model for the Digital-Based Civics Study Program Facing the Industrial Revolution Era 4.0

No	Subject	credits
PPKn field		
1	Pancasila Education	2
2	Citizenship	2
3	State Science	2
4	Civic education	2
5	PPKn Curriculum and Learning	3
6	Values and Moral Education	3
7	Digital Citizenship	2
Field of Learning		
1	Teacher Professional Ethics	2
2	Student Development	2
3	PPKn Learning Media	3
4	PPKn Learning Evaluation	2
5	PPKn Learning Strategy	3
6	PPKn Learning Planning	3
Politics		
1	Introduction to Political Science	2
2	Legal and Constitutional Politics	3
3	Local Government System	2
4	Indonesian Political System	2
5	Political Education	2
The field of law		
1	PIH and PHI	3
2	Civil Law & Civil Procedure	3
3	Criminal Law, Criminal Procedure & Criminology	3
4	Constitutional Law and State Administration Law	3
5	International Relations	2
Additional Fields		
1	Computer Basics	2
TOTAL		58

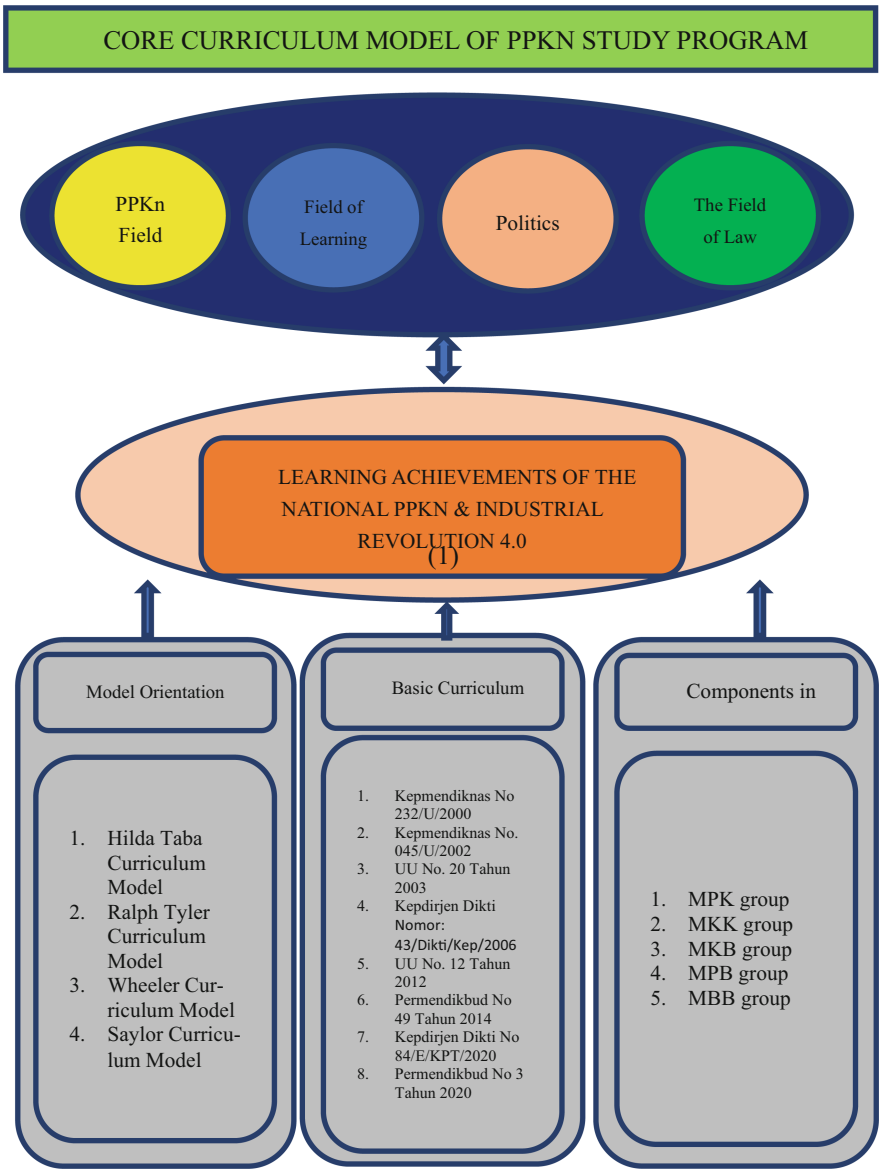

Fig. 4. Factual Model of Digital-based Civics Study Program Core Curriculum Facing the Industrial Revolution Era 4.0

5 Conclusions

Curriculum development is a necessity that cannot be avoided. This activity involves the needs of both students, lecturers, graduate users, and stakeholders. The study of core curriculum development is based on academic needs for the implementation of the educational process in the Civics Study Program which has been operating without any

uniformity in the core curriculum used. The core curriculum model offered is only limited to the factual model as a support for the preparation of the core curriculum model. The core curriculum model that has been refined has become a reference in the preparation and development of curriculum in Civics study programs throughout Indonesia.

Results of Research

References

1. N. Aisyah, "Nadiem Ungkap 80% Lulusan Tak Bekerja Sesuai Prodi, Bagaimana Sisanya?," *detikEdu*, Jakarta, 2021.
2. C. F. Mardiana, "63% orang Indonesia bekerja tak sesuai jurusan," *Retrieved from detikfinance*. https://finance.detik.com/beritaekonomi-bisnis/d-3620313/63orang-indonesia-bekerjatak-sesuaijurusan, 2017.
3. E. Hasibuan and D. Handayani, "Pengaruh qualification mismatch terhadap upah tenaga kerja di Indonesia," *J. Ekon. dan Pembang.*, vol. 29, no. 1, pp. 1–16, 2021.
4. C. Catal and B. Tekinerdogan, "Aligning Education for the Life Sciences Domain to Support Digitalization and Industry 4.0," *Procedia Comput. Sci.*, vol. 158, pp. 99–106, 2019.
5. J. W. Creswell and J. D. Creswell, *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications, 2017.
6. G. Marranci, "Multiculturalism, Islam and the clash of civilisations theory: rethinking Islamophobia," *Cult. Relig.*, 2004. https://doi.org/10.1080/0143830042000200373.
7. J. R. Fraenkel, N. E. Wallen, and H. H. Hyun, *How to design and evaluate research in education*, vol. 7. McGraw-hill New York, 2012.
8. P. F. Oliva and W. R. Gordon II, *Developing the curriculum*. Pearson Higher Ed, 2012.
9. C. Marsh, *Key concepts for understanding curriculum*. Routledge, 2009.
10. S. Nasution, "Asas Asas Kurikulum," 2001.
11. R. Promyoo, S. Alai, and H. El-Mounayri, "Innovative digital manufacturing curriculum for industry 4.0," *Procedia Manuf.*, vol. 34, pp. 1043–1050, 2019.
12. K. L. Spitzer, M. B. Eisenberg, and C. A. Lowe, *Information Literacy: Essential Skills for the Information Age*. ERIC, 1998.
13. P. P. Polański, "Cyberspace: A new branch of international customary law?," *Comput. law Secur. Rev.*, vol. 33, no. 3, pp. 371–381, 2017.
14. R. Obermaier, "Industrie 4.0 als unternehmerische Gestaltungsaufgabe: Strategische und operative Handlungsfelder für Industriebetriebe," *Ind. 4.0 als unternehmerische Gestaltungsaufgabe Betriebswirtschaftliche, Tech. und Rechtl. Herausforderungen*, pp. 3–34, 2016.
15. T. Goldin, E. Rauch, C. Pacher, and M. Woschank, "Reference architecture for an integrated and synergetic use of digital tools in education 4.0," *Procedia Comput. Sci.*, vol. 200, pp. 407–417, 2022.
16. M. Simonson, "Course management systems," *Q. Rev. distance Educ.*, vol. 8, no. 1, pp. 7–9, 2007.
17. C. A., L. H., L. B., L. D., K. P., and E. M., *U.S. Patent Application No. 10/327,038*. 2004.
18. J. Ridgway, S. McCusker, and D. Pead, *Literature review of e-assessment*. Futurelab, 2004.
19. M. Pivec, O. Dziabenko, and I. Schinnerl, "Aspects of game-based learning," in *3rd International Conference on Knowledge Management, Graz, Austria*, 2003, vol. 304.
20. D. I. Greenstein and S. E. Thorin, *The digital library: A biography*, vol. 109. Digital Library Federation, 2002.
21. J. Sáenz, J. Chacón, L. De La Torre, A. Visioli, and S. Dormido, "Open and low-cost virtual and remote labs on control engineering," *Ieee Access*, vol. 3, pp. 805–814, 2015.