
Transforming superior teachers through the implementation of a prototype curriculum in the independent learning era

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Abstract

Teacher transformation is a key element in achieving the successful implementation of the Independent Curriculum in educational institutions. This article aims to analyze the role of the prototype curriculum implementation in shaping the profile of superior teachers who are adaptive, innovative, and oriented towards meaningful learning. This research uses a descriptive qualitative approach with data collection techniques through literature studies, observations of learning practices, and interviews with teachers implementing the Independent Curriculum in high schools in Deli Serdang Regency. The results show that the prototype curriculum encourages a paradigm shift in teachers from mere conveyors of material to facilitators of learning that foster student independence and creativity. Teachers also experience improvements in pedagogical competence, digital literacy, and the ability to design differentiated learning according to student characteristics. The implementation of this curriculum strengthens a reflective, collaborative, and sustainable spirit in teacher professional development. Thus, the implementation of the prototype curriculum not only updates the learning system but also becomes a catalyst for transformation towards superior teachers who are ready to face the challenges of education in the era of Independent Learning and Society 5.0.

Keywords

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Introduction

The changing paradigm of education in Indonesia over the past decade has required teachers to adapt quickly to the dynamics of learning policies and innovations (Wakhidah and Erman, 2022). One major breakthrough in the national education system was the introduction of *the Independent Curriculum*, which is based on the philosophy of independent learning, independent thinking, and character building. In this context, *the prototype curriculum* presents a transition to a more flexible, contextual, and student-centered learning system (Rosnelli and Ristiana, 2023). This curriculum is not only oriented towards achieving academic competencies but also towards developing the profile of Pancasila students who are faithful, creative, critical thinkers, independent, cooperative, and globally diverse. The implementation of the prototype curriculum requires a fundamental transformation of the teacher's role (Onwumere et al., 2021). Teachers no longer function as the sole source of knowledge, but rather as facilitators, mentors, and innovators in creating meaningful learning experiences (Leithwood et al., 2006; Knowles et al., 1992). This transformation requires teachers to have reflective skills, critical thinking, and be adaptive to technological changes and the needs of 21st-century students.

Excellent teachers in the context of *Independent Learning* are those who are able to design differentiated learning, integrate digital literacy, and foster a culture of collaboration within the school environment (Wakhidah and Erman, 2022). However, in reality, the process of transforming teachers toward a superior profile still faces various challenges (Banegas, 2019). Some teachers do not fully understand the essence of the prototype curriculum, particularly in the application of diagnostic assessments, project-based learning, and continuous reflection (Onwumere et al., 2021). Other challenges include limited ongoing training, a lack of professional mentoring, and resistance to changes in learning paradigms (Knowles et al., 1992). This situation indicates the need for a systemic strategy to strengthen teacher capacity so they can implement the curriculum effectively and sustainably. In the era of Industrial Revolution 5.0 and *Society 5.0*, education places humans at the center of technological innovation and social progress (Pabbajah et al., 2020). Teachers act as agents of transformation, bridging human values with the use of technology in learning.

The implementation of the prototype curriculum requires teachers to integrate creativity, empathy, and digital literacy into the learning process, oriented towards developing students' potential holistically (Onwumere et al., 2021). Therefore, the transformation of superior teachers is not simply the result of formal training, but rather a reflective, ongoing, and contextual process that grows with the dynamics of the curriculum and the needs of students (Leithwood et al., 2006). This article aims to analyze how the implementation of the prototype curriculum contributes to the transformation of superior teachers in the *Merdeka Belajar era*. The discussion focuses on the role of the prototype curriculum in changing the learning paradigm, strengthening teacher competencies through reflective and collaborative practices, and the challenges faced in its implementation in the field (Rosnelli and Ristiana, 2023). This study is expected to provide an empirical and conceptual overview of how the prototype curriculum becomes a catalyst in forming an adaptive, innovative educational ecosystem oriented towards true learning freedom (Knowles et al., 1992). Thus, superior teachers born from this transformation process are expected to be able to drive change towards quality education in the ever-evolving global era.

Theoretical review

The curriculum is the primary instrument in the education system, serving to guide the learning process to align with national education goals (Banegas, 2019). In the context of the changing

paradigm of 21st-century education, the curriculum is no longer viewed merely as a set of administrative documents, but rather as a *living curriculum* that is dynamic, contextual, and responsive to the needs of the times (Leithwood et al., 2006; Pabbajah et al., 2020). The prototype curriculum is presented as a refinement of various previous policies, particularly to address the challenges of implementing *Merdeka Belajar*, which emphasizes freedom of thought and student-centered learning (Onwumere et al., 2021).

According to the Ministry of Education, Culture, Research, and Technology (2022), a prototype curriculum is a curriculum model that provides educational units with the flexibility to develop operational curricula tailored to student characteristics and environmental potential. This curriculum emphasizes project-based learning to strengthen the Pancasila student profile, formative and diagnostic assessments, and a reduced content load for more in-depth and contextual learning. This approach allows teachers to be more creative and reflective in designing meaningful learning experiences.

Conceptually, the Independent Curriculum and the prototype curriculum are closely related to the constructivist theory proposed by Piaget and Vygotsky. This theory emphasizes that knowledge is actively constructed by students through experience and social interaction. In this context, the teacher's role is not as a center of knowledge, but rather as a facilitator who creates a collaborative, enjoyable, and individual learning environment (Banegas, 2019). Therefore, implementing the prototype curriculum requires teachers to understand a learning philosophy that emphasizes student autonomy and diverse learning styles.

Furthermore, the transformation of teachers into excellent teachers cannot be separated from the concept of *teacher professional growth*, which emphasizes the process of continuous professional development through reflection, collaboration, and lifelong learning (Knowles et al., 1992). Excellent teachers are individuals who possess integrity, high pedagogical competence, adaptive abilities to technology, and a commitment to humanitarian values and the sustainability of education (Leithwood et al., 2006). In the context of *Independent Learning*, excellent teachers are expected to be able to foster a spirit of independence, creativity, and responsibility in students through innovative and contextual learning approaches.

Furthermore, the theory of transformational leadership in education (Leithwood and Jantzi, 2006) can be used as a framework for understanding the role of teachers in curriculum change. Transformative teachers not only implement the curriculum but also become agents of change, inspiring students and colleagues to innovate (Pabbajah et al., 2020). They demonstrate moral, empathetic, and collaborative leadership that impacts the learning culture in schools. The prototype curriculum provides space for teachers to develop instructional leadership through collaboration, interdisciplinary projects, and reflection based on best *practices*.

From a 21st-century educational perspective, teacher competencies include critical thinking, effective communication, collaboration, creativity, and digital literacy (Trilling & Fadel, 2009). The prototype curriculum strengthens these dimensions through an approach that integrates digital technology, *blended learning*, and authentic assessment. Teachers are expected to be able to use technology not only as a tool but also as a means of building an interactive and adaptive learning ecosystem to meet the needs of students in *the Society 5.0 era* (Pabbajah et al., 2020). This era demands a balance between technological advancements and human values, so teachers must be a bridge between digital intelligence and emotional intelligence.

Meanwhile, the andragogy theory of (Cannon, 2001) provides the view that adult learning, including that of teachers, emphasizes independence, experience, and a problem-solving orientation. Therefore, the teacher professional development process in implementing the prototype curriculum needs to be based on *self-directed learning* and continuous reflection (Banegas, 2019). Teachers must be given space to experiment, conduct classroom action research, and share good practices through

learning communities (Knowles et al., 1992). Thus, teacher transformation is not the result of short-term training, but rather a continuous process that internalizes the values of authentic learners.

In addition to pedagogical aspects, the prototype curriculum also strengthens character values in learning (Wakhidah and Erman, 2022). This aligns with the Pancasila student profile concept, which places character education at the core of the learning process (Onwumere et al., 2021). Excellent teachers must be able to instill religious values, nationalism, mutual cooperation, and integrity through contextual and reflective learning (Rosnelli and Ristiana, 2023). In this regard, teachers serve as role models and facilitators who guide students in developing spiritual, emotional, and social intelligence (Cannon, 2001). In practice, teacher transformation through the prototype curriculum faces several challenges, including limited training, lack of implementation support, and a digital competency gap among teachers. However, various studies show that school leadership support, collaboration between teachers, and a culture of reflective learning can accelerate this transformation process (Cannon, 2001; Fullan, 2020). Therefore, the implementation of the prototype curriculum needs to be accompanied by a strategy for increasing teacher capacity that is sustainable and based on real needs in the field.

Thus, the theories underlying this study emphasize that the transformation of superior teachers is not driven solely by curriculum policies, but also by teachers' professional awareness to continuously innovate and adapt to social change and technological advancements (Cannon, 2001). The prototype curriculum provides a platform for teachers to affirm their identities as lifelong learners, learning leaders, and agents of educational change. In the context of Freedom to Learn (*Merdeka Belajar*), superior teachers are expected to foster a generation of Pancasila students who are globally competitive and deeply rooted in national and humanitarian values.

Research methodology

This study uses a descriptive qualitative approach to explore how the implementation of a prototype curriculum influences the transformation of superior teachers in the *Merdeka Belajar era*. The qualitative approach was chosen because it is relevant to understanding teachers' experiences, perceptions, and practices in depth, thus enabling researchers to obtain rich and contextual data regarding the process of teacher professional transformation (Bryman, A. (2016; Clandinin and Huber, 2010; Creswell and Poth, 2016).

The research participants consisted of subject teachers who were key in implementing the prototype curriculum in secondary schools, namely: Religious Education and Character Education, Pancasila Education, Indonesian Language, English Language, Mathematics, Integrated Science, Integrated Social Studies, Arts and Culture, Informatics, Leadership, Entrepreneurship, and Digital Literacy. The selection of these participants aimed to gain a cross-disciplinary perspective, so that the research results reflect a holistic picture of the role of the prototype curriculum in shaping excellent teachers. Each teacher was interviewed in depth for approximately 40 minutes (Russell and Kelly, 2002), providing an opportunity for them to share their experiences, strategies, and challenges in implementing the prototype curriculum. The data collection techniques used in this research are as follows.

- **Semi-structured interviews:** Interviews were conducted both in person and online using open-ended questions that allowed teachers to speak freely about their experiences in designing, implementing, and assessing prototype curriculum-based learning (Kardanova et al., 2016). The focus of the questions included changes in teacher roles, the implementation of innovative learning methods, the integration of digital literacy, and the development of 21st-century character and competencies.
- **Participatory observation:** Researchers conducted direct observations of classroom learning practices to verify information obtained from interviews, including teaching methods, teacher-

student interactions, and technology use (Mallette and Saldaña, 2019). These observations helped provide a concrete picture of teacher transformation in the context of everyday practice.

- **Document analysis: Documents related to the prototype curriculum**, lesson plans (RPP), assessments, and teacher reflective notes were analyzed to support interview and observation data. This approach allowed for data triangulation, ensuring greater validity and reliability of the research findings.

The questions asked by the researcher to the 12 participants during the interview were as follows.

- What was your experience in implementing the prototype curriculum in the classroom?
- What are the significant differences between the prototype curriculum and the previous curriculum?
- How do you understand the role of superior teachers in the context of the prototype curriculum?
- How do you adapt the learning materials to the characteristics of the students?
- Do you use a collaborative, project-based, or reflective approach? Can you give an example?
- How is digital literacy or technology integrated into your classroom learning?
- What are the main challenges you face in using technology to support the prototype curriculum?
- What competencies do you feel have developed the most since implementing the prototype curriculum?
- How does the prototype curriculum impact your ability to think critically, creatively, and reflectively?
- How do you guide students to develop character, Pancasila values, and 21st-century literacy?
- What are the most significant challenges in implementing the prototype curriculum?
- What suggestions can be given to make the implementation of the prototype curriculum more effective in schools?

The research data analysis procedure used the Matthews et al. (2014) model, which includes three main stages: data reduction, data presentation, and conclusion drawing. Data from interview transcripts, observation notes, and documents were analyzed thematically to identify key patterns, categories, and concepts related to the transformation of superior teachers. The researchers also triangulated between data sources to increase the credibility of the findings.

Research ethics were observed by obtaining *informed consent from participants*, maintaining the confidentiality of teachers' identities, and ensuring participants could withdraw from the study at any time without consequence. Furthermore, research results were used solely for academic purposes and teacher professional development. With this methodology, the research is expected to be able to reveal in depth how the prototype curriculum influences changes in teacher roles, competencies, and practices, while also providing implementative recommendations for teacher professional development in the era of *Independent Learning* and Society 5.0.

Findings

Research findings based on the results of interviews with participants to explore the experiences, challenges, and innovative practices of teachers in implementing the prototype curriculum as an effort to realize adaptive learning to the demands of the 21st century can actually provide a positive contribution to the development of educational policies and practices in Indonesia as expressed by the following participants.

What was your experience in implementing the prototype curriculum in the classroom?

The results of the interview with participant@1 are as follows.

My experience was both challenging and enjoyable. This curriculum provides ample room for innovation and adapting learning to students' needs, although it initially required some adaptation in designing assessments and projects based on the Pancasila student profile. (Participant@1)

Discussions with participants revealed that my experience implementing the prototype curriculum in the classroom was quite challenging, yet very enjoyable. This curriculum provides teachers with greater flexibility to innovate in designing learning, allowing the methods and materials used to be tailored to the needs, interests, and characteristics of students. Each student has different potential and learning styles, requiring teachers to be more creative in designing learning strategies that are not only informative but also engaging and meaningful. However, in the initial stages of implementation, I faced challenges in adjusting assessments and designing projects that align with the profile of Pancasila learners, such as instilling the values of mutual cooperation, creativity, and social responsibility. This adaptation process required time, reflection, and repeated experimentation, but over time, I began to see positive impacts in the form of increased student engagement, learning independence, and the development of critical and creative thinking skills in the classroom.

What are the significant differences between the prototype curriculum and the previous curriculum?

The results of the interview with partispan@2 are as follows.

The difference lies in its flexibility and focus on the learning process, not just the end result. While learning used to be more structured and content-dense, it now places greater emphasis on contextual, reflective, and collaborative learning (Participant@2)

Discussions with participants revealed that the main differences between the prototype curriculum and the previous curriculum lie in its level of flexibility and focus on the learning process, rather than simply achieving outcomes. Previously, learning was more structured, content-dense, and oriented toward exam-based assessments or memorization, limiting teacher creativity and student independence. With the prototype curriculum, the learning approach has shifted to a more contextual one, allowing teachers to adapt the material to real-world situations and student needs. Furthermore, the curriculum emphasizes reflective learning, where students are encouraged to evaluate their own learning processes, and collaborative learning, which fosters social, communication, and teamwork skills. These changes not only improve the quality of classroom interactions but also foster an active and participatory learning culture. Thus, learning is no longer solely about pursuing grades but also fosters 21st-century competencies and the holistic development of student character.

How do you understand the role of superior teachers in the context of the prototype curriculum?

The results of the interview with participant @3 are as follows.

superior teacher is a facilitator who can motivate, guide, and provide space for students to be independent and creative. Teachers are no longer the center of information, but rather the driving force and guide of the learning process (Participant@3)

Discussions with participants revealed that superior teachers, within the context of the prototype curriculum and Merdeka Belajar (Freedom to Learn), act as learning facilitators, not simply transmitters of material. Superior teachers are able to motivate students to actively learn, guide them in exploring ideas, and provide space for the development of creativity and independence. In this role, teachers become the primary drivers of the learning process, encouraging students to think critically and reflectively, and make independent decisions. Teachers are no longer centralized as the sole source of information, but rather guide, inspire, and accompany students in discovering their own knowledge. This approach requires teachers to understand the character, interests, and potential of each student, making learning more personalized and contextual. Furthermore, superior teachers are also able to integrate technology and innovative strategies to create engaging, relevant learning experiences that positively impact students' academic development and overall character.

How do you adapt the learning materials to the characteristics of the students?

The results of the interview with participant @4 are as follows.

I conduct a diagnostic assessment at the beginning to determine students' abilities and interests, then adapt the approach and examples to their life context. This makes learning more relevant and understandable (Participant@4)

Discussions with participants indicated that to tailor learning materials to student characteristics, I always begin with a diagnostic assessment at the beginning of the learning process. This assessment aims to determine each student's initial abilities, interests, learning styles, and potential. With this understanding, I can adjust the learning approach, methods, and examples of the material provided to be more relevant to the students' daily lives. For example, in Integrated Science, I relate scientific concepts to phenomena in their environment, making it easier for students to understand and apply the knowledge. This approach also applies to Social Studies or Language subjects, where the material is linked to their social and cultural experiences. With this strategy, learning becomes more engaging, meaningful, and understandable, because students feel the material is directly related to their needs and the world around them. Furthermore, it also increases motivation and active participation in class.

Do you use a collaborative, project-based, or reflective approach? Can you give an example?

The results of the interview with participant @5 are as follows.

Yes, I often use project-based learning . For example, in integrated social studies, students create mini-projects about local economic potential linked to the value of mutual cooperation (Participant@5)

Discussions with participants revealed that they frequently employ a project-based learning approach because it encourages students to actively think, collaborate, and apply learned concepts in real-world contexts. For example, in Integrated Social Studies, they ask students to create mini-projects on local economic potential in their neighborhoods, such as small businesses, traditional markets, or the agricultural sector. These projects not only require students to conduct research and analysis but also teach them to work collaboratively and respect the role of each group member. Furthermore, they link the projects to Pancasila values, particularly mutual cooperation, social responsibility, and creativity. Thus, students gain not only academic understanding but also real-world experience in solving problems and applying character values. This approach significantly increases students' motivation, independence, and critical thinking skills, while making learning more relevant and enjoyable.

How is digital literacy or technology integrated into your classroom learning?

The results of the interview with participant @6 are as follows.

I utilize digital platforms such as Google Classroom and Canva for creative assignments, as well as using interactive learning videos to make students more engaged and understand concepts visually (participant@6)

Discussions with participants revealed that in integrating digital literacy and technology into their learning, they utilize various digital platforms that support student creativity and understanding. For example, Google Classroom is used to manage assignments, provide quick feedback, and facilitate communication between teachers and students. Furthermore, Canva is used to create creative assignments, such as posters, infographics, or digital presentations, which encourage students to express their ideas visually and innovatively. They also utilize interactive learning videos to present complex concepts more easily, especially for students who learn more effectively through visuals and audio. This approach makes learning more engaging and motivates students to actively participate, while simultaneously practicing digital skills relevant to the demands of the 21st century. With this technology integration, the learning process becomes more effective, interactive, and contextual, so that students not only understand the material but also become skilled at using digital media creatively.

What are the main challenges you face in using technology to support the prototype curriculum?

The results of the interview with partispan@7 are as follows.

The challenges include limited facilities and differences in digital skills among students. Furthermore, the preparation time for digital materials is longer than with conventional methods (Participant@7).

Discussions with participants indicated that one of the main challenges in integrating technology to support the prototype curriculum was the limited facilities available at schools. Not all students have

access to devices or adequate internet connections, sometimes hindering the digital learning process. Furthermore, there are significant differences in digital skills among students; some are highly adept at utilizing online applications and platforms, while others still require intensive guidance to navigate digital tasks. This situation requires teachers to differentiate and provide additional support to ensure all students can continue to optimally participate in learning. Another challenge that emerged was the relatively longer preparation time for digital materials compared to conventional methods, as teachers must create interactive teaching materials, learning videos, or other digital materials to suit students' needs. However, with careful planning and school support, these challenges can be overcome so that technology integration remains effective and supports innovative learning.

What competencies do you feel have developed the most since implementing the prototype curriculum?

The results of the interview with participant @8 are as follows.

My reflective skills, collaborative communication, and digital literacy have improved significantly. I am also more sensitive to students' needs and able to flexibly adapt my learning strategies (Participant@8)

Discussions with participants indicated that since implementing the prototype curriculum, their reflective skills have significantly improved, enabling them to evaluate their teaching methods and adapt them to students' needs. Collaborative communication skills have also developed, as they collaborate more frequently with fellow teachers and encourage active interaction among students in group activities. Furthermore, their digital literacy has been further honed through the use of various digital learning platforms and media that support interactive learning. They have also become more sensitive to students' needs and characteristics, allowing them to flexibly adapt learning strategies, making the learning process more effective, relevant, and enjoyable for students.

How does the prototype curriculum impact your ability to think critically, creatively, and reflectively?

The results of the interview with participant@9 are as follows.

This curriculum requires me to continually evaluate methods, seek new approaches, and think critically about the effectiveness of learning. I've learned to be more open to new ideas and feedback from students. (Participant@9)

Discussions with participants revealed that the prototype curriculum required them to continuously evaluate the learning methods used, explore new approaches, and critically evaluate the effectiveness of each strategy implemented in the classroom. This process encouraged them to be more reflective in assessing learning success and adapting teaching techniques to meet students' needs. Furthermore, they learned to be more open to new ideas, suggestions, and feedback from students, allowing for continuous improvement. This approach not only improved the quality of teaching but also fostered more positive relationships between teachers and students, fostering a collaborative and creative classroom culture.

How do you guide students to develop character, Pancasila values, and 21st-century literacy?

The results of the interview with participant @10 are as follows.

I instill the values of Pancasila through daily reflection activities, ethical discussions, and group work that foster mutual cooperation and social responsibility. 21st-century literacy is developed through research- and technology-based assignments (Participant@10)

Discussions with participants indicated that in guiding students to develop character and Pancasila values, they instill these principles through various activities, such as daily reflections to evaluate attitudes and actions, ethical discussions that encourage understanding of moral values, and group work that fosters a sense of mutual cooperation and social responsibility. Furthermore, 21st-century literacy is developed through research-based assignments, problem-solving, and the use of digital technology, so that students not only understand concepts theoretically but also are able to apply them practically in real life. This approach makes learning more holistic, relevant, and able to shape students who are creative, critical, independent, and have character.

What are the most significant challenges in implementing the prototype curriculum?

The results of the interview with participant @11 are as follows.

The biggest challenge is changing the mindset of teachers and students, who are still accustomed to conventional methods. Furthermore, the administrative burden and time required for lesson planning are also quite high (Participant@11)

Discussions with participants revealed that the most significant challenge in implementing the prototype curriculum is changing the mindset of both teachers and students. Many teachers and students are still accustomed to conventional, structured, and outcome-oriented learning patterns, so adapting to a more flexible, reflective, and collaborative approach requires time and patience. Furthermore, increased administrative burdens, such as project-based lesson planning, formative assessment, and documentation, add to the stress on teachers. The time required to prepare materials, adapt methods, and assist students individually is also relatively long. However, these challenges can be overcome through training, collaboration between teachers, and school support, resulting in more effective curriculum implementation.

What suggestions can be given to make the implementation of the prototype curriculum more effective in schools?

The results of the interview with participant @12 are as follows.

Continuous training, collaboration between teachers across subjects, and adequate digital support are required. Mentoring from schools and teacher learning communities is also crucial for successful implementation (Participant@12)

Discussions with participants revealed that for a more effective implementation of the prototype curriculum, ongoing training is needed for teachers to develop pedagogical competencies, digital literacy, and innovative learning design skills. Furthermore, collaboration between teachers across subject areas is crucial for sharing best practices, creative strategies, and solutions to classroom challenges. Adequate digital support, such as devices, internet connections, and learning platforms, is also a key factor in success. Mentoring from the school and the teacher learning community provides guidance, motivation, and regular evaluation, enabling teachers to implement the prototype curriculum with greater confidence, effectiveness, and a focus on developing students' overall competencies.

Discussion

Interviews with 12 participating teachers revealed that the implementation of the prototype curriculum has driven significant transformations in teacher roles and competencies (Wakhidah and Erman, 2022). Teachers no longer function solely as transmitters of material, but rather as learning facilitators capable of motivating, guiding, and providing space for students to learn independently, creatively, and collaboratively (Rosnelli and Ristiana, 2023). Teachers also reported improved reflective skills, collaborative communication, and digital literacy, which support the implementation of project-based and contextual learning tailored to student needs.

Teachers emphasized that diagnostic assessments at the beginning of learning are crucial for adapting strategies and materials to student characteristics (Banegas, 2019). Project-based learning approaches, group discussions, and daily reflections are considered effective in fostering Pancasila values, social responsibility, and 21st-century competencies (Pabbajah et al., 2020). The integration of technology, such as Google Classroom, Canva, and interactive videos, helps increase student engagement, although some teachers face challenges due to limited facilities and differences in digital skills among students.

Another challenge is the changing mindset of teachers and students who are still accustomed to conventional methods, as well as the administrative burden and longer preparation times for materials (Cannon, 2001; Onwumere et al., 2021). To address this, teachers suggest the need for ongoing training, cross-subject collaboration, digital support, and mentoring from schools and teacher learning communities (Rosnelli and Ristiana, 2023). This aligns with the theories of transformational leadership and professional growth, which emphasize the importance of reflection, innovation, and collaboration in improving teacher quality (Banegas, 2019).

Overall, these findings indicate that the prototype curriculum not only improves students' academic competencies but also strengthens teachers' professionalism (Wakhidah and Erman, 2022). Teachers become more adaptive, creative, and responsive to students' learning needs, thus supporting the achievement of the Merdeka Belajar curriculum goals and the holistic Pancasila student profile (Pabbajah et al., 2020).

Conclusion

Based on the analysis of interviews with 12 participating teachers, it can be concluded that the implementation of the prototype curriculum has encouraged teacher professional transformation in the Merdeka Belajar era. Teachers act as learning facilitators, motivating, guiding, and providing space for students to learn independently, creatively, and collaboratively. The implementation of diagnostic assessments, project-based learning, technology integration, and daily reflection are effective in adapting learning strategies to student needs and fostering Pancasila values. Challenges that emerged included mindset changes, differences in students' digital abilities, and administrative burdens, which

can be addressed through ongoing training, cross-subject collaboration, and school support and mentoring. Overall, the prototype curriculum strengthens teacher professionalism and supports students' holistic achievement of 21st-century competencies. Thus The implementation of the prototype curriculum not only updates the learning system but also becomes a catalyst for transformation towards superior teachers who are ready to face the challenges of education in the era of Independent Learning and Society 5.0.

Disclosure Statement

No potential conflicts of interest were reported by the authors .

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Reference

- Bolstad, T., Wallin, P., Lundheim, L., Larsen, B.B., & Tybell, T. (2021). Emergent premises in student experiences of a first-year electrical engineering course. *European Journal of Engineering Education*, 46(2), 302-317. <https://www.tandfonline.com/doi/full/10.1080/03043797.2020.1789069>
- Bryman, A. (2016). *Social Research Methods*. Oxford University Press. [https://books.google.co.id/books?hl=en&lr=&id=N2zQCgAAQBAJ&oi=fnd&pg=PP1&dq=Bryman,+A.+\(2016\).+Social+research+methods.+Oxford+University+Press.&ots=dqKzCYO5rl&sig=v3kw3slv3i5SBe-g7BYj3XBzBF0&redir_esc=y#v=onepage&q=Bryman%2C%20A.%20\(2016\).%20Social%20research%20methods.%20Oxford%20University%20Press.&f=false](https://books.google.co.id/books?hl=en&lr=&id=N2zQCgAAQBAJ&oi=fnd&pg=PP1&dq=Bryman,+A.+(2016).+Social+research+methods.+Oxford+University+Press.&ots=dqKzCYO5rl&sig=v3kw3slv3i5SBe-g7BYj3XBzBF0&redir_esc=y#v=onepage&q=Bryman%2C%20A.%20(2016).%20Social%20research%20methods.%20Oxford%20University%20Press.&f=false)
- Clandinin, D. J., & Huber, J. (2010). *Narrative inquiry*. In B. McGaw, E. Baker, & P. Peterson (Eds.), *International encyclopedia of education* (3rd ed., pp. 436-441). Elsevier. <https://doi.org/10.1016/B978-0-08-044894-7.01387-7>
- Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications. [https://books.google.co.id/books?hl=en&lr=&id=DLbBDQAAQBAJ&oi=fnd&pg=PP1&dq=Creswell,+J.+W.+\(2018\).+Qualitative+Inquiry+and+Research+Design:+Choosing+Among+Five+Approaches+\(4th+ed.\).+Sage+Publications.&ots=it0a9JROu&sig=IyOdYYITxhofXELJ6IIZdhFzHfU&redir_esc=y#v=onepage&q&f=false](https://books.google.co.id/books?hl=en&lr=&id=DLbBDQAAQBAJ&oi=fnd&pg=PP1&dq=Creswell,+J.+W.+(2018).+Qualitative+Inquiry+and+Research+Design:+Choosing+Among+Five+Approaches+(4th+ed.).+Sage+Publications.&ots=it0a9JROu&sig=IyOdYYITxhofXELJ6IIZdhFzHfU&redir_esc=y#v=onepage&q&f=false)
- Delaine, D.A., Seif-Naraghi, S.B., Al-Haque, S., Wojewoda, N., Meninato, Y., & DeBoer, J. (2010). Student involvement as a vehicle for empowerment: a case study of the student platform for engineering education development. *European Journal of Engineering Education*, 35(4), 367-378. <https://www.tandfonline.com/doi/abs/10.1080/03043797.2010.483277>
- Galoyan, T., & Betts, K. (2021). Integrative transfer of learning model and implications for higher education. *The Journal of Continuing Higher Education*, 69(3), 169-191. <https://www.tandfonline.com/doi/abs/10.1080/07377363.2020.1847970>

- Guimarães, L.M., & Lima, R.D.S. (2021). Active learning application in engineering education: effect on student performance using repeated measures experimental design. *European Journal of Engineering Education*, 46(5), 813-833.
<https://www.tandfonline.com/doi/abs/10.1080/03043797.2021.1934406>
- Kardanova, E., Loyalka, P., Chirikov, I., Liu, L., Li, G., Wang, H ., ... & Johnson, N. (2016). Developing instruments to assess and compare the quality of engineering education: *The case of China and Russia. Assessment & Evaluation in Higher Education*, 41(5), 770-786.
<https://www.tandfonline.com/doi/abs/10.1080/02602938.2016.1162278>
- Kolster, R. (2021). Structural ambidexterity in higher education: educational excellence as a testing ground for educational innovations. *European Journal of Higher Education* , 11 (1), 64-81.
<https://www.tandfonline.com/doi/full/10.1080/21568235.2020.1850312>
- Lindsay, E.D., & Morgan, J.R. (2021). The CSU engineering model: educating student engineers through PBL, WPL and an online, on demand curriculum. *European Journal of Engineering Education*, 46(5), 637-661.
<https://www.tandfonline.com/doi/abs/10.1080/03043797.2021.1922360>
- Mallette, L. A., & Saldaña, J. (2019). Teaching qualitative data analysis through gaming. *Qualitative Inquiry*, 25(9-10), 1085-1090.
<https://journals.sagepub.com/doi/abs/10.1177/1077800418789458>
- McKenna, A.F., Hynes, M.M., Johnson, A.M., & Carberry, A.R. (2016). The use of engineering design scenarios to assess student knowledge of global, societal, economic, and environmental contexts. *European Journal of Engineering Education*, 41(4), 411-425.
<https://www.tandfonline.com/doi/abs/10.1080/03043797.2015.1085836>
- Rane, V., & MacKenzie, C. A. (2020). Evaluating students with online testing modules in engineering economics: A comparison of student performance with online testing and with traditional assessments. *The Engineering Economist*, 65(3), 213-235.
<https://www.tandfonline.com/doi/abs/10.1080/0013791X.2020.1784336>
- Russell, G. M., & Kelly, N. H. (2002). *Research as interacting dialogic processes: Implications for reflexivity. Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 3(3). <https://www.qualitative-research.net/index.php/fqs/article/view/831>
- Soares, D., & Dias, D. (2019). Perspectives of lifelong education in Portuguese higher education: a critical analysis of learning outcomes. *International Journal of Lifelong Education*, 38(2), 148-156.
<https://www.tandfonline.com/doi/full/10.1080/02601370.2018.1559890>