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FACING THE ERA OF DISRUPTION: CHALLENGES AND STRATEGIES FOR TEACHERS IN DEVELOPING INNOVATIVE CURRICULUM

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Abstract

The era of educational disruption driven by the Fourth Industrial Revolution and the COVID-19 pandemic has radically changed the paradigm of curriculum development, requiring teachers to integrate digital technology while maintaining educational values. This study aims to identify the main challenges faced by teachers in developing innovative curricula and to formulate effective strategies to overcome them, particularly in the context of Islamic Education Curriculum Development. The method used was a literature study by reviewing Sinta-accredited national journal articles, reputable international journals, scientific proceedings, government regulations, and education policy documents published in the last 10 years that were relevant to the theme. The results of the study showed that teachers faced various challenges, such as low digital literacy, limited technological facilities, and the complexity of student needs. In response, teachers implemented a number of innovative strategies, including the integration of educational technology, differentiated learning, recontextualization of material, and professional collaboration. These strategies contributed to improving the quality of the learning process, making it more adaptive, interactive, and contextual. This study confirms that the ability of teachers to respond to the challenges of the era of disruption through innovative curriculum development is an important factor in improving the quality of education.

Keywords: Disruption in Education, Curriculum Development, Independent Curriculum, Islamic Religious Education, Challenges and Strategies for Teachers

INTRODUCTION

The development of digital technology in this era of disruption has driven significant changes in the world of education. The Industrial Revolution 4.0 and the penetration of artificial intelligence require educational units to prepare students to be adaptive, creative, critical, collaborative, and digitally literate. This situation makes curriculum development a strategic necessity in order to respond to the rapidly changing social, economic, and technological dynamics (Herdiansyah, R. E., Hermansyah, R. ., & Dewi, 2025). In this context, teachers play a crucial role as curriculum designers,

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implementers, and developers who are required to integrate technology, adapt pedagogical approaches, and develop teaching tools relevant to the characteristics of digital generation students.

Research over the past 10 years shows that the role of teachers in curriculum development in the era of disruption has not been discussed comprehensively. Abdillah and Hamami's (2022) research only highlights the implementation of 21st-century competencies, while Whindayati et al. (2025) emphasizes the integration of technology without reviewing curriculum development strategies. Winursiti et al. (2024) focus on basic pedagogical competencies without linking them to the challenges of the disruptive era curriculum, while Suwarto (2021) emphasizes learning innovation rather than the systematic curriculum development process. Thus, there is a research gap that indicates the need for a more in-depth study of the challenges and strategies of teachers in developing a comprehensive curriculum in the era of disruption.

The novelty of this article lies in its comprehensive analysis of the specific challenges faced by teachers in developing innovative curricula in an era of disruption, especially after the implementation of the Merdeka Curriculum, which demands flexibility, technology integration, and learner-centered learning. Unlike previous studies that tended to discuss teacher challenges, the dynamics of the era of disruption, or curriculum development strategies separately, this article combines all three in a comprehensive analytical framework. This article also emphasizes innovative strategies based on teacher practices, such as differentiation, digitization of learning, and recontextualization of material, which have not been explored in depth by previous research. Thus, this article offers a new perspective on the relationship between challenges, teacher responses, and curriculum innovation relevant to the current needs of Indonesian education.

Research Questions:

a. What challenges do teachers face in the curriculum development process in the era of disruption?
b. What strategies do teachers use to develop innovative and adaptive curricula in response to changing times?
c. What is the role of teachers in ensuring that curriculum development remains relevant to the needs of students and the demands of the era of disruption?
d. What are the implications of these challenges and strategies for the quality of the learning process in schools?

METHODS

This study uses a qualitative approach with a library research method. This method was chosen because the purpose of the study is to analyze concepts, empirical findings, and relevant strategies regarding the role of teachers, the challenges of the era of disruption, and innovations in curriculum development based on published scientific sources. The research data sources consisted of Sinta-accredited national journal articles, reputable international journals, scientific proceedings, government regulations, and education policy documents published within the last 10 years.

The data collection process was carried out through the identification, selection, and critical review of literature relevant to the research focus. Data analysis was conducted through content analysis, which involved data reduction, categorization of findings, comparison between studies, and drawing conceptual conclusions. This analysis was used to identify patterns of challenges faced by

teachers, innovative strategies for curriculum development, and research gaps that could be used as the basis for new articles. The results of the analysis were then synthesized into a holistic framework of thinking about how teachers face the era of disruption through innovation in curriculum development in the context of Indonesian education.

RESULTS

Types of Challenges Faced by Teachers in Curriculum Development in the Era of Disruption

Digital technology disruption in the era of the Industrial Revolution 4.0 and 5.0 has fundamentally changed the role of teachers in curriculum development, from mere conveyors of traditional knowledge to facilitators of independent learning, adaptive curriculum designers, and mentors for the development of 21st-century competencies -21 such as critical thinking, collaboration, creativity, and deep digital literacy, especially in the implementation of the Merdeka Curriculum in Indonesia, which emphasizes local flexibility, project-based learning, and the Pancasila learner profile to suit the personal needs of students.

The background to this disruption began with the explosion of unlimited access to information through the internet, smartphones, and e-learning platforms such as Google Classroom, Zoom, or Ruangguru, which transformed the educational paradigm from a teacher-centered model, where teachers were the sole source of knowledge, to a student-centered model, where students actively explore knowledge independently with guidance from teachers. This was accelerated by the COVID-19 pandemic, which forced a transition to blended learning, as well as the emergence of AI such as ChatGPT, which is capable of generating instant educational content. As a result, PAI teachers must integrate Islamic values such as noble character and monotheism with modern technology through digital da'wah projects, gamification of learning, or virtual reality for worship simulations. while conventional curricula that change every 5-10 years are no longer able to keep up with daily changes such as the metaverse or big data trends that influence the behavior of Generations Z and Alpha (Herdiansyah, R. E., Hermansyah, R. ., & Dewi, 2025).

Curriculum development challenges are increasingly complex due to limited school infrastructure in remote areas, such as unstable electricity or slow internet access, a lack of digital skills among teachers, most of whom are over 40 years old and accustomed to lecture-style teaching methods, heavy administrative burdens on the Merdeka Mengajar platform that require daily portfolio documentation, cultural resistance to change from parents or principals who believe that technology reduces the essence of character education, and moral disruption due to social media that causes students to be more familiar with viral content than textbooks, coupled with unequal access to devices among poor students, which weakens the inclusiveness of the Merdeka Curriculum.

A review of the literature shows that teachers face a number of significant challenges in the curriculum development process in this era of disruption. The main challenge is the limited digital literacy of teachers, which causes a gap between the demands of using learning technology and the actual ability of teachers to design a digital-based curriculum (Hidayat, A., & Prasetyo, 2021). In addition, teachers face the challenge of changing characteristics of Generation Z and Alpha students, who are more critical, fast-paced, visual, and require interactive and personalized learning.

The next challenge is the complexity of the Merdeka Curriculum, such as the preparation of Learning Outcomes (CP), Learning Objective Flow (ATP), teaching modules, authentic assessments, and differentiated learning. Research shows that some teachers still find it difficult to understand the flexibility of the curriculum and the development of appropriate teaching tools. In addition, limited resources, administrative burdens, and a lack of training also undermine teachers' ability to innovate the curriculum (Avita, C. D., Shamdas, H. G. B., Rafiqa, Bialangi, M. S., Rauf, A., & Budiarsa, 2025).

Teacher Strategies in Developing Innovative and Adaptive Curricula

Teachers respond to various challenges in this era of disruption by implementing innovative, creative, and flexible strategies in curriculum development. The first and most prominent strategy is the integration of educational technology in the curriculum design and implementation process. This integration is not limited to the use of digital devices, but also includes the use of various learning platforms such as Google Classroom, LMS, digital assessment applications, interactive videos, and augmented reality-based learning media. Firmansyah (2020) shows that the application of technology enables teachers to create learning experiences that are more engaging, adaptive, and tailored to the needs of students living in a digital ecosystem. Technology also helps teachers differentiate tasks, provide varied learning resources, and enrich curriculum content to make it more contextual and up to date (Firmansyah, 2020).

The second strategy is the implementation of differentiated learning, which is the teacher's effort to adjust the content (material), process (learning method), and product (learning outcome) based on the readiness, interests, and learning profiles of the students. This approach is very relevant in the Merdeka Curriculum, which emphasizes flexibility and the individual needs of students. Rahayu. T (2022) asserts that differentiated learning increases the relevance of the curriculum and helps teachers respond to the diversity of learning styles of Generation Z, who demand more freedom, personalization, and variety in learning. Through this strategy, teachers no longer teach in a one-way manner but facilitate each student to develop according to their potential (Rahayu, 2025).

The third strategy is professional collaboration. Teachers cannot develop curricula individually because the complexity of changing times requires the exchange of ideas, academic discussions, and the sharing of good practices. Through MGMP, digital learning communities, workshops, independent training, and other professional networks, teachers exchange teaching modules, assessment strategies, learning media, and innovative practices in curriculum development. This collaboration has been proven to improve curriculum literacy, broaden pedagogical insights, and strengthen teachers' competence in continuously adapting the curriculum. In fact, in many cases, teacher networks have become a space for experimenting with curriculum ideas that cannot be formally implemented in schools.

Another important strategy is the recontextualization of learning materials, which is the adjustment of curriculum content to align with the local, social, cultural, and contemporary global issues. Nurdin (2020) explains that the curriculum should not be understood as a static document, but as a dynamic construct that needs to be adapted to the learners' environment. This recontextualization creates learning that is more relevant, meaningful, and down-to-earth, for example by linking environmental topics to waste issues in the students' area, or connecting civics

lessons to actual cases in the media. This strategy makes it easier for students to understand the material and fosters critical thinking and problem-solving skills (Nurdin, 2020).

The Role of Teachers in Ensuring Curriculum Relevance for Students

Teachers play a very strategic role in maintaining curriculum relevance amid the accelerating pace of change in this era of disruption. Teachers are no longer positioned merely as curriculum implementers, but also as curriculum designers who are involved in the process of designing, developing, evaluating, and adjusting the curriculum according to the needs of students. In the current context, the role of teachers has transformed into that of learning designers who are able to integrate educational technology, adapt learning materials to global dynamics, and relate the learning process to real-life situations faced by students in their daily lives (Kharismawati, I., Djamali, M. F., Effendi, E., Nurvicalesti, N., Mukhlisin, H., Prasasti, T. I., & Kistiani, 2025).

In addition, teachers play an important role in providing continuous feedback through authentic assessment. Through this assessment, teachers can map students' learning needs more accurately and make adaptive curriculum improvements. Teachers also function as agents of change, individuals who encourage innovation and ensure that the curriculum does not merely follow formal policies but is truly aligned with 21st-century competency requirements such as creativity, collaboration, critical thinking, digital literacy, and problem solving (ANGGRAENI, 2024).

Implications of Teacher Challenges and Strategies on Learning Quality

The challenges and strategies faced by teachers in curriculum development have significant implications for the quality of the learning process. If challenges such as low digital literacy among teachers, limited technological resources, or a lack of training support cannot be overcome, the quality of learning tends to decline. Learning becomes less interactive, less relevant to the needs of students, and unable to accommodate the characteristics of the digital generation. These conditions can lead to decreased learning motivation, low student engagement, and failure to achieve the essential competencies required by modern curricula (Avita, C. D., Shamdas, H. G. B., Rafiqa, Bialangi, M. S., Rauf, A., & Budiarsa, 2025).

Conversely, the application of innovative strategies by teachers, such as integrating technology into learning, implementing differentiated learning, recontextualizing material, and professional collaboration between teachers, has been proven to increase learning effectiveness. These strategies encourage the creation of a curriculum that is more adaptive, interesting, contextual, and in line with the skills needed in the 21st century (Firmansyah, 2020). Thus, the quality of learning will improve significantly when teachers are able to select and apply the right strategies in facing the dynamics of the era of disruption.

CONCLUSIONS

The era of disruption has brought major changes to the world of education, especially in the curriculum development process. Teachers face various challenges, such as low digital literacy, limited technological resources, the complexity of 21st-century student needs, and the demand to continuously adapt to global changes. These challenges require teachers to not only act as curriculum implementers, but also as designers, developers, and evaluators who are able to ensure that the curriculum remains relevant and responsive to the times.

Teachers have implemented various innovative strategies to address these challenges, including the integration of educational technology, differentiated learning, recontextualization of material, and professional collaboration. These strategies enable teachers to design a curriculum that is more adaptive, engaging, and contextual for students. The implementation of these strategies has had a positive impact on improving the quality of learning, as seen in increased learning motivation, student engagement, and the achievement of 21st-century competencies. Thus, it can be concluded that the success of curriculum development in the era of disruption greatly depends on teachers' ability to understand challenges, apply innovative strategies, and actively play a role as agents of change. These efforts are key to realizing learning that is relevant, meaningful, and future-oriented.

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