

Optimizing Digital Pedagogy in Education: Exploring Human Resource Management Approaches

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ABSTRAK

Transformasi digital dalam dunia pendidikan telah menjadi kebutuhan mendesak seiring dengan perkembangan teknologi dan tuntutan pembelajaran abad ke-21. Namun, optimalisasi pedagogik digital di lembaga pendidikan masih menghadapi berbagai tantangan, terutama dalam aspek pengelolaan sumber daya manusia (SDM). Rendahnya kesiapan tenaga pendidik dalam memanfaatkan teknologi digital secara efektif dapat menghambat proses pembelajaran yang inovatif. Penelitian ini bertujuan untuk mengeksplorasi pendekatan Manajemen Sumber Daya Manusia (MSDM) dalam mendukung optimalisasi pedagogik digital di lembaga pendidikan. Penelitian ini dilakukan dengan metode kajian kepustakaan, yang mencakup analisis literatur terkait MSDM dan pedagogik digital dari berbagai sumber relevan. Data dikumpulkan melalui studi dokumen yang terdiri atas jurnal ilmiah, buku, dan laporan penelitian yang membahas pengelolaan SDM di sektor pendidikan dalam konteks transformasi digital. Teknik analisis data menggunakan metode deskriptif kualitatif dengan pendekatan analisis isi untuk mengidentifikasi konsep kunci, tema utama, dan praktik terbaik dalam implementasi MSDM yang mendukung pedagogik digital. Hasil kajian menunjukkan bahwa pendekatan MSDM yang terstruktur dapat meningkatkan kompetensi tenaga pendidik dalam memanfaatkan teknologi digital serta menciptakan ekosistem pembelajaran yang inovatif dan adaptif. Pendekatan MSDM ini mencakup identifikasi kebutuhan pelatihan digital, pengembangan program pelatihan berkelanjutan, dukungan terhadap penggunaan alat pembelajaran digital, evaluasi kinerja berbasis digital, serta pemberian penghargaan dan pengakuan kepada tenaga pendidik yang berprestasi. Simpulan dari penelitian ini adalah bahwa pengelolaan SDM yang efektif menjadi kunci dalam mendorong optimalisasi pedagogik digital, yang pada akhirnya dapat meningkatkan kualitas pendidikan di era digital.

ABSTRACT

Digital transformation in education has become an urgent necessity in response to technological advancements and 21st-century learning demands. However, the optimization of digital pedagogy in educational institutions still faces various challenges, particularly in human resource management (HRM). The limited readiness of educators to effectively utilize digital technology may hinder the implementation of innovative learning processes. This study aims to explore HRM approaches that support the optimization of digital pedagogy in educational institutions. This research employs a literature review method, analyzing relevant sources on HRM and digital pedagogy. Data were collected through document studies consisting of academic journals, books, and research reports addressing HR management in the education sector within the context of digital transformation. Data analysis was conducted using qualitative descriptive methods with content analysis to identify key concepts, main themes, and best practices in implementing HRM to support digital pedagogy. The findings reveal that a structured HRM approach can enhance educators' competencies in using digital technology and foster an innovative and adaptive learning ecosystem. The HRM approach includes identifying digital training needs, developing continuous training programs, supporting the use of digital learning tools, implementing digital performance evaluations, and recognizing outstanding educators. This study concludes that effective HR management is a key driver in optimizing digital pedagogy, ultimately improving the quality of education in the digital era.

1. INTRODUCTION

The development of the era that demands changes in various aspects is an inevitability, including in the world of education, now the world of education is also experiencing what is called disruption. The change, for example, during covid, students around the world must be able to adapt to the online learning model (Arianto, 2022; Renaldi et al., 2022; Syahrir et al., 2021). Education is no longer just adapting to the digital world, but has become a necessity, so that the pedagogical abilities of educators have now undergone a transformation in various aspects, including digital pedagogy or digital pedagogy. The digital pedagogical approach in the context of modern education is increasingly getting attention (Diana & Rodhiyana, 2023; Haz & Sugianto, 2022). In this case, human resource management (HRM) plays an important role in optimizing the use of technology in the learning process (Diana & Rodhiyana, 2023; Haz & Sugianto, 2022; Rahayuningsih & Muhtar, 2022).

Digitalization of education not only involves the use of digital tools and platforms, but also requires effective management strategies to manage the human resources involved in the educational process (Bina et al., 2022; Kurniawan & Aruan, 2021). Therefore, it is important to understand how HR management can be integrated with digital pedagogy to achieve optimal learning outcomes. One important aspect of digital pedagogy is its ability to enhance reflective and collaborative learning (Isma et al., 2022; Shodiq & Zainiyati, 2020). Technology can actually be used to create a learning environment that supports interaction between students and teachers, as well as between students themselves. For example, the use of online learning platforms allows students to share ideas and experiences, which in turn can improve their understanding of the material being taught (Aisyah et al., 2021; Albashtaw et al., 2020; Guillén-Yparrea et al., 2023). Therefore, HR management needs to ensure that teachers are equipped with the necessary skills and knowledge to utilize this technology effectively.

In order to optimize digital pedagogy, HR management must also pay attention to diversity in teaching staff. Diversity can bring different and innovative perspectives to the learning process, which can improve students' learning experience (Baiti & Munadi, 2014; Mustopa & Hidayat, 2020; Puspitowati, 2019). Therefore, creating an inclusive recruitment strategy and supporting diversity in the educational environment is also an urgency. In addition, HR management must play an active role in creating a clear vision and mission related to digital pedagogy. This vision must include a commitment to using technology as a tool to improve learning and teaching (Hidayati et al., 2021; Mulyani & Haliza, 2021; Salsabila et al., 2023). By having a clear vision, all parties in the educational institution can work together to achieve the goals that have been set. In addition, HR management must ensure that all staff understand and support this vision, so that it can create a culture that supports innovation and continuous learning (Rusdarti et al., 2019; YK Sari, 2020). Therefore, it is important to explore further how digital pedagogy can be more optimal if carried out with Human Resource Management (HRM).

Digital pedagogy plays a very important role in the modern world of education because it can increase the effectiveness and accessibility of learning. By utilizing technology, such as e-learning platforms, educational applications, and social media, teachers can deliver materials in a more interactive and interesting way, while students can access learning materials anytime and anywhere (Hari Santhi Dewi et al., 2020; Ningsih et al., 2021). In addition, digital pedagogy allows for personalized learning, where each student can learn according to their own rhythm and learning style. Technology also facilitates collaboration between students and teachers, and supports the development of digital skills that are much needed in the 21st century (Hari Santhi Dewi et al., 2020; Listiaji & Subhan, 2021; Ningsih et al., 2021; Safitri et al., 2020). Thus, digital pedagogy not only supports a more efficient teaching and learning process, but also prepares students to face the challenges of an increasingly digital workplace.

Research on digital pedagogy and human resource management has been widely conducted, in the last three years research has been conducted on efforts to improve teacher competence through digital pedagogy (Haz & Sugianto, 2022; Rahayuningsih & Muhtar, 2022). The importance of pedagogical competence and digital literacy of teachers in efforts to improve teacher performance (Afor et al., 2022; Diva & Astuti, 2022; Zulkarnain & Nurjanah, 2023) Other research formulates the concept of HR, conducts research with case studies of lecturers, and finally there is the implementation of HR based on individual creativity in the digital era (Joesyiana et al., 2024; Selvia et al., 2023). Although it has been done a lot, there has been no research that explicitly talks about digital pedagogy through human resources, most of the research as above only explains each of HR in education and digital pedagogy. Therefore, this research will explore the optimization of digital pedagogy through a human resource management approach, how digital pedagogy can actually be done with optimal HR, starting from stages to strategies.

2. METHOD

This research uses a literature review research type. The author emphasizes the strength of the analysis of sources and data to be interpreted based on writings that lead to discussion (Creswell, 2014).

Library research is a series of activities related to library data collection methods, reading and recording and managing research materials, in this case utilizing library sources to obtain research data (RK Sari, 2021). Literature review research on human resource management analysis in educational units plays an important role in understanding the complexity of workforce management in educational environments. In this context, human resource management analysis involves an in-depth understanding of the policies, practices, and challenges faced by educational units in recruiting, managing, and developing their human resources. This study can discuss various theories and concepts related to human resource management, such as recruitment, selection, training, development, performance evaluation, and compensation policies. Through a review of various literatures, researchers can identify current trends, best practices, and obstacles that educational units may face in optimizing the role and contribution of their human resources. The results of this literature analysis can be an important foundation for designing effective and sustainable human resource management strategies in educational units, creating an environment that supports the professional development of educational staff, and improving the quality of educational services.

3. RESULT AND DISCUSSION

Result

First, digital pedagogy: a must in educational institutions. Digital pedagogy is an approach that positions teachers as facilitators in the use of technology to build critical thinking skills while developing the affective aspects of students. This approach is not only centered on teachers' technical skills in using technology, but also on their ability to strategically integrate technology into the learning process. In the context of modern education, digital pedagogy has become a must, especially considering that learning is now increasingly integrated with technology. The use of technology-based educational tools not only facilitates the teaching and learning process, but also supports the development of critical, collaborative, and creative skills among students. Research shows that learning designs that integrate technological elements can help students bridge technical and conceptual ideas, thereby creating a more meaningful learning experience (Cowie & Khoo, 2014). In addition, well-designed learning spaces, such as those that support collaboration and interaction, have been shown to increase student engagement and learning outcomes. This suggests that the configuration of learning spaces has a significant impact on students' learning experiences and success (Byers et al., 2014).

However, the success of digital pedagogy does not only depend on technology and learning spaces, but also on the role of teachers as the main drivers in the learning process. Teachers have a great responsibility to integrate technology into their teaching practices. Research shows that teachers' beliefs about the benefits of technology, their level of competence, and access to digital tools influence the pedagogical decisions they make. Therefore, adequate training for teachers is crucial to ensure that they are able to adopt and utilize technology effectively in teaching (Drigas & Charami, 2014). To answer the challenges of the digital era, educational institutions need to make changes with several strategic approaches. First, the integration of information and communication technology (ICT) in learning must be adjusted to the needs of the digital era. Second, all teachers are required to have adequate ICT literacy and are encouraged to innovate digitally. Third, digital competence is one of the main indicators of an ideal teacher, where they not only understand technology theoretically but are also able to use it practically to support learning (Rahayuningsih & Muhtar, 2022). By utilizing ICT, teachers can act as facilitators who not only deliver lesson materials, but also guide students in developing the digital literacy skills needed to adapt to a changing world (Drigas & Charami, 2014). Therefore, digital pedagogy is not just a tool, but a holistic approach that educational institutions must adopt to prepare students for future challenges.

Second, human resource management and education. Human resources (HR) in schools have an irreplaceable role, because the presence of teachers is an essential element in the education system. Human resource management in the context of education is the process of empowering teachers in a humane manner so that their physical and psychological potential can function optimally to achieve organizational goals. In general, HR management includes policies and practices that institutions need in the "people" aspect, including recruitment, screening, training, compensation, and assessment. In addition, HR management can also be defined as the art of managing relationships and roles of workers so that organizational activities run effectively and efficiently. Based on this understanding, HR management in schools can be understood as the management of educators and education personnel in a sustainable and systematic manner. This process includes recruitment, coaching, implementation, supervision, rewarding and motivating, and evaluation aimed at achieving the school's vision, mission, and goals. The competency standards for educators and education personnel set by the school are an integral part of HR management.

Human resource management in educational institutions is oriented towards the effective and efficient use of teachers to achieve educational goals optimally. The objectives of human resource management vary, depending on the vision and mission of each educational institution (Akilah, 2018). Hierarchically, the objectives of HR management include: 1. Personal Objective: Increasing individual

satisfaction at work; 2. Functional Objective: Ensuring HR functions run according to organizational needs; 3. Organizational Objective: Supporting the achievement of educational institution goals. 4. Society Objective: Contributing to society nationally and internationally.

The main function of HR management is to improve work effectiveness through the development of teachers' knowledge, skills, and attitudes towards their duties. Gary Dessler identifies the operational functions of HR management as follows: 1. Recruitment: The process of recruiting educators and education personnel. 2. Development: Improving technical, theoretical, conceptual, and moral skills. 3. Compensation: Providing rewards and welfare guarantees. 4. Integration: Uniting individual interests with organizational goals. 5. Maintenance: Improving the physical, mental, and loyalty conditions of the workforce. 6. Discipline: Enforcing rules to maintain organizational order. 7. Termination: Managing the process of terminating employment for various reasons, such as retirement or ending employment contracts. HR management functions include planning, organizing, mobilizing, controlling, compensating, supervising, and evaluating. These functions are designed to ensure that educators and education personnel can make optimal contributions to school and community goals.

Based on various expert opinions, the steps of HR management in schools can be summarized as follows. Planning: Creating programs and activity plans to improve teacher quality. Development: Carrying out structured and unstructured activities to improve teacher competence. Implementation: Implementing programs according to plan to achieve teacher competence goals. Compensation: Providing awards, health insurance, and old age benefits as motivation. Supervision: Conducting monitoring and discussions to ensure the program runs according to plan. Assessment: Collecting teacher performance data for competency evaluation. Evaluation: Analyzing program results for improvement and future planning. In addition, HR management functions also include: 1) Staffing: Planning, recruiting, and selecting workers. 2) Performance Evaluation: Objective performance assessment and according to standards. 3) Training and Development: Training and development of teaching staff skills. 4) Employee Relations: Resolving conflicts and negotiations between workers and the organization. 5) Safety and Health: Providing health and job security programs. 6) Personnel Research: Reviewing HR policies to ensure their relevance and effectiveness. Human resource development includes recruitment, selection, induction or orientation, staffing, capacity building/capacity development and rolling ([Adhim, 2020](#)). All of these stages will be a cycle in the development process according to the condition of human resources that are receiving program intervention. Human resource management in schools is a strategic process that includes various functions, from recruitment to evaluation. The ultimate goal is to ensure that educators and education personnel can contribute optimally to achieving the school's vision, mission, and goals. With effective human resource management, educational institutions can create a learning environment that supports improving the quality of education while providing benefits to the wider community.

Third, digital pedagogy through the HR approach. The development of digital technology has brought significant changes in the world of education. In this context, digital pedagogy through the Human Resource Management (HR) approach plays an important role in improving the quality of teaching and learning. This approach emphasizes the importance of effective human resource management to ensure that educators are able to optimally integrate technology into the educational process. Thus, the HR approach integrated with digital pedagogy can create a dynamic, innovative, and responsive learning environment to students' needs ([Krumsvik & Rokenes, 2024](#)). One of the main elements in digital pedagogy is improving teacher competence in using information and communication technology (ICT). This competence contributes directly to student learning outcomes ([Ruggieri et al., 2015](#)). To achieve this, educational institutions must develop policies that support training and professional development for teachers. This training should not only focus on technical aspects, but also on pedagogical strategies that utilize technology to create more interactive and effective learning.

In addition, technology-based teacher performance assessment can be a tool to encourage innovation and creativity in teaching methods. By integrating the use of technology into assessment indicators, teachers will be more motivated to continue to innovate in the way they teach. Developing ongoing training programs that are relevant to technological developments is an important strategy in the HR approach. Regular training allows teachers to continue to hone their digital skills and integrate technology effectively into learning ([Supit et al., 2021](#)). The program should be designed to help teachers understand and adopt the latest technologies, such as online learning platforms, student data analysis tools, and gamification-based educational applications. Continuous training also ensures that teachers are not just users of technology, but also innovators who are able to adapt technology to students' needs. Thus, teachers can become agents of change in creating education that is relevant to the demands of the times.

HR management has the responsibility to ensure that teachers are fully supported in the use of digital learning tools. This support includes: 1. Provision of adequate technological infrastructure, such as hardware (computers, tablets, projectors) and software (Learning Management System, learning applications). 2. Fast and reliable technical assistance, so that teachers can overcome technical obstacles that arise during the learning process. 3. Digital learning resources, such as access to training materials,

online modules, and professional learning communities. Strong support for the use of digital learning tools creates an environment where teachers feel comfortable and confident in integrating technology into their teaching. The HR approach also needs to include the development of specific metrics to evaluate teachers' digital performance. This evaluation can be done using data analysis tools to measure the extent to which teachers have successfully implemented technology in learning and its impact on student learning outcomes. Some indicators that can be used in evaluating teachers' digital performance include: Frequency of technology use in learning, innovation in technology-based teaching methods, impact of technology on student engagement and learning outcomes. This evaluation is not only intended to assess performance, but also to provide constructive feedback that helps teachers improve their abilities in digital pedagogy.

To encourage wider adoption of technology among teachers, reward and recognition policies can be an additional motivation. Teachers who successfully integrate technology effectively into learning can be awarded with special certifications that recognize their digital competence, promotions or financial incentives for teachers who demonstrate superior digital performance, formal awards, such as the "Innovative Teacher" or "Best Digital Educator" awards. These awards not only motivate teachers to continue to innovate, but also create a work culture that values creativity and adaptation to technology. Digital pedagogy through an HRD approach is an effective strategy to support educational transformation in the technological era. By improving teachers' digital competence, providing continuous training, providing infrastructure support, systematically evaluating performance, and implementing reward policies, educational institutions can create innovative and relevant learning environments to students' needs. This approach not only improves the quality of learning but also ensures that teachers are ready to face future educational challenges.

Discussion

Digital pedagogy has become a necessity in educational institutions in the modern era, where information and communication technology (ICT) plays a very important role in the learning process. By utilizing various digital tools, educational institutions can improve the interaction between teachers and students, while creating a more engaging and effective learning environment (Ferdiansyah et al., 2021; Ling et al., 2024; Puriasih & Trisna, 2022). The use of online learning platforms and digital resources allows students to access information more broadly and flexibly, which can ultimately increase their learning motivation and learning outcomes (Alneyadi et al., 2023; Benitez et al., 2022; Kim & Yu, 2019). In addition, the integration of digital pedagogy into the curriculum helps students develop skills relevant to the needs of today's workforce, such as digital literacy and the ability to collaborate online. Therefore, educational institutions must commit to adopting and implementing digital pedagogy as an integral part of their learning strategies (Ferdiansyah et al., 2021; Ling et al., 2024; Mardhiyana & Nasution, 2018; Puriasih & Trisna, 2022). In this case, Human Resource Management (HRM) has a very important role to support the successful implementation of digital pedagogy. Effective human resource management can improve the quality of teaching and learning in educational institutions. One of the steps that must be taken is to provide continuous training and professional development for educators. This training includes not only the use of digital tools, but also the development of pedagogical competencies needed to manage diverse and dynamic classes. With the right training, educators can optimize the use of digital technology in the teaching and learning process, thereby creating a more meaningful learning experience for students.

With the right HR approach, educational institutions can create an environment that supports innovation and creativity, and improve the overall performance of teachers and students. The application of digital pedagogy through the HR approach allows educational institutions to respond to rapid changes in the digital world and industry needs. By developing relevant curricula and aligning teacher training with technological developments, educational institutions can prepare students to face future challenges (Basra, 2023; Ferdiansyah et al., 2021; Ling et al., 2024; Puriasih & Trisna, 2022; Santiago Jr et al., 2021). Collaboration between educational institutions and industry is very important to ensure that the curriculum taught is in accordance with the needs of the job market. In addition, an integrated HR approach with digital pedagogy can also increase student engagement in the learning process, so that they are better prepared to contribute effectively in an increasingly competitive world of work (Lam & Tse, 2022; Yacob & Yunus, 2019). Thus, digital pedagogy integrated with HR not only improves the quality of education, but also prepares students to become a competitive workforce in the digital era.

Implementing the right HR management strategy allows educational institutions to ensure that teachers have the skills and knowledge needed to face the demands of digital learning. This includes identifying digital training needs, supporting the use of digital learning tools, evaluating digital performance, and providing reward and recognition policies to encourage innovation (Anggraeni et al., 2023; Benitez et al., 2022). The application of digital pedagogy in the context of HR must also include the development of a curriculum that is relevant to technological developments and industry needs. Educational institutions must be able to respond to rapid changes in the digital world by developing a curriculum that emphasizes practical skills needed in the world of work (Fauziyyah, 2019; Yunansah et al.,

2022). This is important to prepare students to have skills that are in line with market demands, including the ability to adapt to new technologies and work in diverse teams (Diana & Rodhiyana, 2023; Haz & Sugianto, 2022). Collaboration between educational institutions and industry is key to ensuring that the curriculum taught is relevant and meets the needs of the workforce. Thus, digital pedagogy integrated with the HR approach not only improves the quality of education, but also prepares students to become a competitive workforce in the digital era.

Overall, digital pedagogy integrated with HR is a strategic step that must be taken by educational institutions to face the challenges of the times. By providing continuous training for teachers, designing a curriculum that is relevant to industry needs, and creating an environment that supports innovation, educational institutions can ensure that students not only receive quality education, but also have relevant skills to face the ever-evolving world of work. Close collaboration between educational institutions, educators, and industry will ensure that digital pedagogy-based learning can have a positive impact on students, both in academic and professional contexts.

4. CONCLUSION

The Human Resource Management (HRM) approach is a strategic key in supporting this process, starting from the recruitment, selection, orientation stages, staffing, to the development of the capacity of educators in a sustainable manner. This cycle is equipped with a process rolling which ensures the sustainability of adaptive and innovative human resource management. In the context of digital pedagogy, optimization through the HR approach is carried out with a strategic approach, namely: identification of digital training needs, development of sustainable training programs, providing support for the use of digital learning tools, digital-based performance evaluation, and awarding awards (reward) and recognition of achievements. With structured implementation, this approach not only improves the competence of educators in utilizing technology, but also creates a learning ecosystem that is more effective, efficient, and relevant to the needs of the times.

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