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Table Of Contents

Journal Cover	1
Author[s] Statement	3
Editorial Team	4
Article information	5
Check this article update (crossmark)	5
Check this article impact	5
Cite this article.....	5
Title page	6
Article Title	6
Author information	6
Abstract	6
Article content	8

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Pedagogical Transformation Through Local Ecosystems Advances Civic Character Building: Transformasi Pedagogis Melalui Ekosistem Lokal Memajukan Pembangunan Karakter Kewarganegaraan

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Abstract

General Background The success of character education depends on the readiness of educators to implement adaptive instructional models. **Specific Background** Implementing independent curriculums necessitates complex analytical frameworks, yet many instructors lack the comprehensive preparation required to manage this transition. **Knowledge Gap** Previous research rarely examines the readiness to execute high-order thinking assessments within civic instruction across remote regions facing unique geographical complexities. **Aims** This research analyzes instructional execution at SMPN 1 Randangan and SMPN 5 Randangan Satap, focusing on educator comprehension, systemic challenges, and developmental solutions. **Results** Successful execution relies on instructors transitioning through understanding, applying, and reflecting phases via problem-based designs. While systemic challenges include conventional mindset resistance and infrastructure limits, utilizing the Banuroja village as a living laboratory mitigates these barriers. Furthermore, sustainability is guaranteed through synergies like digital teaching platforms and weekly collaborative communities. **Novelty** This study formulates a specific pedagogical framework that integrates geographical dimensions, resource capacity, and professional competence for remote areas. **Implications** Integrating instructional maturity with local wisdom creates a robust educational environment, offering a practical reference for similarly situated regional schools.

Highlights

- ♦ 1. Educator preparation across comprehension, application, and reflection phases dictates the realization of substantive philosophical instruction.
- ♦ 2. Utilizing Banuroja village as an active learning environment resolves student literacy heterogeneity and grounds abstract values.
- ♦ 3. Continuous professional collaboration and digital platform utilization systematically overcome infrastructure limitations and evaluation constraints.

Keywords

Educator Readiness; Deep Learning; Living Laboratory; Civic Instruction; Higher Order Thinking

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Introduction

The success of character education is not solely determined by learning policies that focus on cognitive orientation but also depends on the parameters of teacher readiness in implementing and developing adaptive learning strategies. In certain positions, the formation of a strong character in the school environment is a manifestation of the extent of teacher competence in understanding learning dynamics both internally and externally. Teacher readiness serves as a crucial bridge that connects curriculum ideals with the realities of student behavior in real life. Regarding the implementation of the independent curriculum that is oriented towards deep learning, on the one hand it also triggers a contrast both in terms of its implementation, especially on the readiness of teachers. This is shown by the implementation of this curriculum has not reached its maximum potential because there are still many educators who do not have comprehensive readiness, so the effectiveness of the Independent Curriculum is highly dependent on the readiness of teachers to manage these changes effectively. This gap is reinforced by the finding that many teachers have not been able to implement the curriculum in a complete and correct manner, which indicates that mental readiness and technical mastery remain major challenges in educational transformation [1]. On the other hand, it shows that the factors that contribute to this readiness are very complex, ranging from professional competence to environmental support, which demands an in-depth analysis to understand how teachers can adapt to the new curriculum framework [2]. In addition to mastery of the material, teachers' mental readiness and enthusiasm have been proven to have a direct positive impact on the quality of teaching, so that the psychological aspect of teachers needs to be the main concern in the curriculum transition process [3],[4].

Referring to its meaning, deep learning or *Deep Learning* It is a process that demands the ability to understand the representation of data and values through various levels of complex abstraction. In a broader perspective, deep understanding is not just the retention of factual information, but the ability to recognize patterns, segment thoughts, and build an intuitive understanding of the material being studied [5]. This confirms that to achieve a substantial quality of learning, it is necessary to be able to transcend technical limitations towards a more comprehensive understanding of the essence of the subject [6]. Furthermore, deep learning requires a rethinking of the generalization aspect, where the learning process does not only depend on explicit regulation or memorization, but on the ability to relate concepts to real behavior organically [7]. The essence of *Deep Learning* lies in how the subject is able to represent data and value through layered levels of abstraction, thus enabling the creation of an understanding that transcends the boundaries of conventional texts towards transformative insights [8], [9]. In the context of Pancasila Education, this principle is a crucial foundation that the mastery of values cannot be achieved without a deep understanding of the underlying phenomena and basic principles, so it is necessary to synchronize classical learning methods with innovative approaches to produce a solid understanding.

One of the subjects that has an epicenter with the concept of deep learning is the subject of Pancasila education. Pancasila Education is a philosophical and historical evolution of Civic Education which is based on five basic values as the nation's view of life to counteract the negative impact of globalization such as radicalism and intolerance, where the transformation from the Old Order period to the Independent Curriculum shows a shift from indoctrination to a dialogical, reflective, and contextual learning process. Formally, this subject aims to form intelligent and responsible citizens through the realization of a graduate profile that includes critical reasoning, collaboration, and independence based on the 1945 Constitution of the Republic of Indonesia and the spirit of *Bhinneka Tunggal Ika* (Ministry of Primary and Secondary Education, 2025). Implementation at the junior high school level (Phase D) is arranged holistically through four main elements (Pancasila, the 1945 Constitution, *Bhinneka Tunggal Ika*, and the Republic of Indonesia) which requires teachers to present moral dilemmas and contextual issues to encourage students' evaluation and decision-making skills. This is in line with the paradigm *Civic Education* that integrates knowledge, skills, and civic character so that learning is not only information transmission but also character transformation [10]. The success of this education depends on its ability to build competence through the mastery of knowledge and functional disposition, so that the values learned develop from mere knowledge to an integral part of the student's identity [11]. From a psychological perspective, the internalization of these values must be pushed towards a post-conventional moral level, where the principles of Pancasila are believed to guide consistent universal behavior through authentic and reflective learning experiences. In the complex digital era, Pancasila Education faces major challenges in the form of national identity crises and disinformation that require strengthening ideological resilience and digital literacy based on unity values [12]. Therefore, a transformative approach is needed that goes beyond mere celebration of diversity towards the construction of inclusive understanding, where students actively engage in cross-cultural dialogue to build appreciative social cohesion.

The review of this is very interesting to examine the readiness of teachers in transforming learning, especially in the scope of Junior High School (SMP). As a transitional phase from childhood to early adolescence, junior high school students are at a stage of formal operational cognitive development that allows them to think abstractly, hypothetically, and systematically. This characteristic makes the junior high school level a crucial momentum to optimize critical and analytical thinking skills which are the core of deep learning. In a psychosocial perspective, early adolescence is at the stage of identity versus role confusion, where they actively explore and shape their identity through internalized values. Pancasila education at the junior high school level has a strategic role to facilitate healthy identity exploration through discussion and value reflection, in order to prevent identity closure or role confusion due to passive indoctrination approaches [13]. In line with this, the moral development of junior high school students, who are generally at the conventional stage, can be stimulated towards post-conventional morality through in-depth designed learning [14]. The use of moral dilemma discussions and philosophical questions about justice and the balance of collective interests is an important instrument to encourage students' moral reasoning to a more autonomous and universal level.

Viewed from a neurobiological point of view, the early adolescent brain undergoes significant changes in the *Prefrontal cortex* who are responsible for executive functions such as planning, decision-making, and critical reasoning. While these

abilities are still evolving, this understanding of neurobiological development is important for designing problem-based learning and projects that provide opportunities for students to make decisions in a safe context. by Social interaction is also the key to optimal learning in junior high school through the concept of *Zone of Proximal Development*, where learning occurs when students work on tasks slightly above their actual abilities with the help of a more knowledgeable party. By Vygotsky group discussion strategies, peer teaching, and collaborative projects in Pancasila Education classes can harness the power of peer positive influence to achieve deeper understanding [15]. The effectiveness of learning in junior high school is strongly supported by the application of the concept *scaffolding* and a spiral curriculum. Through this approach, complex concepts are revisited at a deeper level according to the stage of student development, so that junior high school students begin to be able to analyze how Pancasila values apply in the broader context of life before later being involved in philosophical discourses at the next level of education [16].

Teachers' readiness in implementing the deep learning approach is not only related to mastery of knowledge and technical skills, but also includes psychological aspects such as self-confidence (*self-efficacy*), motivation, and an open attitude towards innovation. Research proves that teacher readiness is a significant determining factor for the quality of the implementation of learning innovations and the achievement of student learning outcomes. Teachers with an adequate level of readiness are usually more flexible, innovative, and able to face various obstacles in the teaching and learning process. On the other hand, the lack of teacher readiness can result in suboptimal implementation, rejection of change, and even the tendency to return to using conventional learning methods that are no longer in accordance with the needs of the modern era [17]. For the context of Randangan District, various factors such as teaching experience, affordability of training programs, support from school principals, and workplace environment conditions are crucial elements that also affect the level of readiness of teachers.

Research on teachers' readiness to implement deep learning is still relatively rare, especially for Pancasila Education subjects at the junior high school level. The majority of previous studies focused more on assessing the implementation of the curriculum in general or on exact fields of study such as Mathematics and Science. In fact, the distinctive nature of Pancasila Education, which emphasizes affective aspects and character formation, has its own level of complexity in the application of deep learning. Teachers face several challenges in implementing an independent curriculum such as the use of technology to facilitate learning [18]. There are challenges in the implementation of the Independent Curriculum, including infrastructure facilities that have not yet been supported, human resources (HR) of teachers who need to be improved in the use of technology, still difficulties in evaluating learning, the condition of students, parents, and the environment, as well as inequality in government policies. However, these studies have not covered remote areas such as Pohuwato Regency in Gorontalo Province. This is a gap in the research to show the urgency of conducting a more in-depth exploration of the readiness of Pancasila Education teachers in Junior High School specifically [19]. In this regard, Pohuwato Regency located in Gorontalo Province has a Human Development Index (HDI) which is still below the provincial average, with the education sector being one of the main focuses of regional development [20]. The average duration of education for new residents reached 7.59 years, which shows the need for efforts to improve the quality of education as a whole. Improving the quality of education cannot be separated from the development of the capacity and readiness of teachers as the spearhead in the teaching and learning process. The local government has implemented various teacher competency development programs, but evaluation of the effectiveness of these programs and detailed mapping of teacher readiness conditions have not been carried out in depth [21]. This situation makes research on teacher readiness in this region strategic, not only for academic purposes but also for developing appropriate policies and intervention programs.

In response to this, the preliminary study showed that the relationship between the description of the *gap* in the field and the theoretical portrait showed a significant contrast as also illustrated through the initial mapping of the study. Where, the Conditions of Understanding and Application of Deep Learning in terms of Understanding, Applying, and Reflecting at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap were found to be still at the surface level (*surface learning*). Empirically, even though teachers are familiar with the terminology of the Independent Curriculum, internalization of the essence of deep learning has not been realized in authentic classroom praxis. In the aspect of understanding, teachers tend to still be fixated on transferring text knowledge in a linear manner without providing space for students to build value abstraction independently. In the dimension of application, the application of Pancasila values is still limited to artificial classroom simulations, which have not touched the solution of real problems in the environment around students. Meanwhile, at the reflection stage, the learning evaluation process is still dominated by short-term cognitive measurements, so that the transformation of students' character and moral awareness as citizens has not been monitored continuously and deeply. Furthermore, for the Development Strategy for the Implementation of Deep Learning in the two schools, systematic efforts are needed that not only touch the administrative aspect but also strengthen transformative pedagogical capacity. This strategy must include repositioning the role of teachers as facilitators who are able to design project-based learning scenarios (*Project Based Learning*) and problem-based learning (*Problem-Based Learning*) that integrate local potential as primary learning resources. The development of a learning community between teachers at the education unit level is very crucial as a collective forum for designing in-depth learning tools, ranging from the preparation of a progressive flow of learning objectives to the development of authentic assessment instruments that are able to capture students' affective development holistically. In addition, optimizing partnerships with the social environment, such as making Banuroja Village a value laboratory, can be a key strategy to provide a real learning experience and have an impact on strengthening the profile of Pancasila students.

However, these transformation efforts are certain to face various challenges in implementing the deep learning approach at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap. The main challenge lies in the resistance to the transition of teachers' mindsets that have long been comfortable with conventional methods, coupled with bureaucratic workloads that often take time to innovate creatively. From the external side, the limited technology support facilities and uneven access to information in the Randangan area are real technical obstacles in diversifying learning media that are

attractive to digital generation students. Furthermore, the heterogeneity of literacy levels and the very contrasting learning readiness of students require teachers to have high instructional differentiation skills, which is often difficult to realize without intensive and continuous assistance from various related parties. The complexity of this challenge confirms that the success of deep learning is not just a technical problem of curriculum fulfillment, but a matter of the readiness of the education ecosystem as a whole in responding to dynamic times. Based on this reality, this research study specifically chooses to focus on the exploration of implementation in terms of the conditions of understanding and application of deep learning which includes the dimensions of understanding, applying, and reflecting. In addition, this study is directed to look at implementation development strategies and map the challenges of implementing the deep learning approach specifically in SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap. The urgency of this research is very urgent to comprehensively dissect the real conditions of teachers' understanding and the application of deep learning in the field, as well as offer an appropriate development strategy formula in dealing with various implementation obstacles in the educational unit which is part of the novelty of this study with other researches.

Method

This research uses a qualitative approach with an interpretive paradigm (explaining/giving meaning). The qualitative approach was chosen because it is in accordance with the research objectives that want to explore and understand in depth the phenomenon of teacher readiness in the implementation of deep learning, which is a complex construct with cognitive, affective, behavioral dimensions, and contextual that cannot be measured simply with quantitative instruments. Qualitative research is research to explore and understand the meanings that a number of individuals or groups of people perceive to be derived from social or humanitarian issues, by Creswell the qualitative approach allows researchers to capture teachers' perspectives, experiences, and meanings towards deep learning, the challenges they face, and the strategies they develop in their specific contexts [22]. Data collection in this study was carried out through the synthesis of three main techniques to ensure the depth and validity of the information obtained. First, in-depth interviews are conducted in a semi-structured and series manner to understand the life experiences and subjective meanings formed by informants related to the implementation of deep learning, where this process prioritizes understanding other people's perspectives rather than simply testing hypotheses [23]. Additionally, the use of serial interviews provides a space for informants to reflect on their insights between meeting sessions [24],[25]. Second, participatory observation with a moderate level of participation is applied to directly observe instructional practices, teacher-student interactions, and the use of classroom learning strategies to understand the perspective of the "insider" while maintaining analytical distance as an observer [26]. This observation is also strengthened by the *stimulated recall* post-learning so that researchers can access the cognitive processes and reasons behind teachers' pedagogical decisions that are not visible to the naked eye [27]. Third, document studies are carried out through systematic procedures to evaluate written artifacts such as lesson plans, assessment instruments, and teaching modules to provide objective data that is not reactive to the research process [28]. However, the analysis of these documents remains critical to the context of their production because each document is a social product created for a specific purpose, thus requiring continuous triangulation with interview data and field observations [29].

The data collection in this qualitative research is designed to provide a holistic understanding through the integration of various complementary data sources. The types of data collected include verbal data from interview results, action data through observations of daily practices, and environmental documents and artifacts that provide in-depth context to the phenomenon being studied [30]. The primary data in this study was sourced directly from the key informants, namely two Pancasila Education teachers who were selected based on the criteria of active teaching, willingness to volunteer, communicative, and diversity of work experience. The key informants represent educators from each educational unit that is the research site. To strengthen the validity and triangulate the sources, this study also involved supporting informants from the school leadership element, namely two school principals. The involvement of the leaders of this education unit aims to photograph the organizational conditions, the direction of institutional policies, and managerial support for the comprehensive implementation of deep learning. Meanwhile, secondary data was collected through systematic document studies of various pedagogical artifacts, including Learning Implementation Plans (RPP), teaching modules, assessment instruments, and school operational curriculum documents. This step is carried out to evaluate the alignment between the ideal plan contained in the written document and the actual practice that occurs in the field. Analysis of these documents serves as crucial to provide additional context, suggest follow-up questions in the interview process, and verify findings obtained from primary sources [28].

The research instrument in this qualitative study places the researcher as the main instrument (human instrument) in charge of planning, implementing, collecting, analyzing, and interpreting research data directly in the field. To support this process, several auxiliary instruments were used that were prepared based on the focus of research on teachers' readiness in the implementation of deep learning. First, semi-structured interview guidelines that contain questions about teachers' understanding of deep learning concepts, pedagogical readiness, implementation experience, challenges faced, school support, and strategies to improve the quality of learning. Second, observation sheets are used to observe learning practices in the classroom, including learning planning, implementation of deep learning strategies, student involvement, use of media and learning resources, and assessment processes carried out by teachers. Third, the document analysis format is used to review various supporting documents such as teaching modules, learning tools, assessment instruments, and school curriculum documents to assess the suitability between learning planning and practice that takes place in the classroom. In addition, researchers use field notes, sound recording tools, and photo documentation as supporting instruments to record important information that arises during the research process. All of these instruments are used in an integrated manner to obtain comprehensive, in-depth data, and allow triangulation of sources and methods to increase the credibility of research findings.

Furthermore, data analysis in this qualitative research applies mInteractive Analysis which views the analysis process as a continuous and iterative cycle consisting of four main components that are intertwined. The first stage is data collection which is carried out simultaneously with preliminary analysis, where initial findings in the field are directly used to sharpen the focus of the research at the next stage to produce rich and in-depth data. The second stage is data reduction which involves the process of selecting, simplifying, and transforming raw data through three-cycle coding, namely descriptive, pattern, and theoretical, to sharpen and organize the data so that final conclusions can be drawn [31]. In this reduction process, the researcher also applies a constant comparison method to refine the categories and identify variations in phenomena through comparison between cases and triangulation of data sources [32]. The third stage is the presentation of data (*Data Display*) which is carried out by organizing information into the form of a matrix, causal network, concept map, and narrative sketch to map the relationship between concepts in a structured manner and facilitate the drawing of justified conclusions. Finally, at the conclusion and verification stage, the researcher interprets the emerging patterns and critically tests their validity through triangulation strategies, negative case search, and participant validation to ensure that the conclusions drawn are solid and confirmable [31]. The validity of the data in this qualitative research is checked to ensure that all findings are reliable and have strict scientific value. The researcher applied four main criteria as a framework, starting with credibility pursued through prolonged involvement in the field for three months, observation diligence, triangulation (sources, methods, and theories), participant validation, and structured discussions with peers and supervisors to minimize distortion and subjective bias. [33].

Results and Discussion

A. Conditions of Understanding and Application of Deep Learning in terms of Understanding, Applying and Reflecting at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap

The ability of teachers to prepare for learning challenges has long attracted the attention of researchers in the field of education. From a conceptual point of view, this condition refers to the overall ability of a teacher to carry out his professional responsibilities well, especially when faced with updates in the world of education. The idea of readiness is closely related to the theories of behavioral transformation and professional growth that have been formulated for a long time. When it comes to the application of different teaching methods, the extent to which a teacher is prepared will greatly determine whether the implementation is successful or not. This is natural considering that teachers act as a bridge that transforms curriculum design into real activities in the classroom. The discussion on teacher readiness was first arranged in a structured manner through an approach called *Concerns-Based Adoption Model* or *CBAM*. This approach describes that the teacher's process of accepting learning innovations occurs gradually: starting from being aware of its existence, finding out more, considering personal impacts, managing its implementation, understanding the consequences, working with peers, until finally making focus adjustments. Each phase describes a different level of understanding and preparation in applying new things. What's interesting about this model is that the concept doesn't view readiness as a black-and-white condition, but rather as a journey that continues to evolve through the experience and help that teachers get. Understanding the dynamics of this journey is very useful when designing professional training that suits the conditions of teachers at different levels [34]. Teacher readiness can be understood as a developmental process that takes place gradually, so an analysis of teachers' positions and experiences is important to explain their level of acceptance of deep learning.

An interesting psychological perspective on teacher readiness through the concept *self-efficacy*. A teacher's confidence in his or her capacity to manage the teaching and learning process is a crucial element of such readiness. Bandura explained that this confidence is formed from four main things: successful experiences that have been achieved, indirect learning through observing others, encouragement and appreciation from the social environment, and a person's physical and emotional state. Teachers who have a high level of confidence are usually more open to trying teaching methods that have never been applied, do not give up easily when facing obstacles, and have positive expectations for their students' achievements. On the other hand, teachers with low confidence tend to be reluctant to get out of their comfort zone and prefer to stick to conventional methods that they have mastered. When it comes to the application of deeper learning, this aspect of teacher confidence is very important to pay attention to [35]. A model of teacher transformation that challenges conventional understandings of professional development. According to Guskey, the change in teachers' attitudes and perceptions actually occurred after not before they implemented the new practice and witnessed its positive impact on students. This model suggests that teacher readiness is not only a matter of initial training, but also depends on how well the implementation experience is accompanied and yields satisfactory results. Thus, teacher readiness should be seen as part of an ongoing cycle of professional development, where reflection on student practice and learning outcomes is the main driver of change. The model proposed by Guskey explains why a number of teacher training programs fail to change teaching practices, namely because there is no mentoring during implementation and no way to measure its impact on students [36]. These two perspectives show that teachers' readiness is not only determined by their competencies, but also by their self-confidence and implementation experience that strengthens the learning practices carried out.

In recent studies, teacher readiness is increasingly seen as a concept consisting of various interconnected dimensions. In his literature review on professional development, educators stated that the readiness includes aspects of knowledge, practical abilities, disposition (placing), and identity as a professional. The knowledge aspect includes understanding the teaching material, how to teach the material effectively, and knowledge of the context of the teaching place. Practical skills include technical expertise in planning and executing teaching and learning activities, utilizing technology, and conducting assessments. The aspect of disposition is related to the values, views, and behavior of teachers towards the learning process and students. While the aspect of professional identity has to do with how teachers see themselves in the profession and how strongly they are committed to this work. These four aspects need to develop in a balanced manner in order to create

comprehensive teacher readiness [37]. The importance of looking at teacher readiness within the framework of a larger system. They said that the readiness of teachers is not solely determined by the personal characteristics of the teachers themselves, but also influenced by organizational conditions in schools, support from leaders, culture of cooperation between teachers, and policies in the field of education. This kind of ecological approach views teacher readiness as the product of the interaction of various factors: individual, interpersonal, organizational, and systemic. In the context of the implementation of deep learning, this means that efforts to improve teacher readiness cannot only be done through individual training, but also must build a school environment that encourages innovation and continuous learning. Things like opportunities to collaborate, the availability of sufficient learning resources, supportive leadership, and a constructive evaluation system are contextual factors that greatly determine the level of teacher readiness [38]. Teacher readiness needs to be understood as a multidimensional construction formed through the interaction between individual factors and the school environment, so that its development requires personal and institutional support.

When talking about the implementation of the Independent Curriculum in Indonesia, the readiness of teachers needs to be seen by considering the peculiarities of the country's culture and education system. A study on Indonesian education reform reveals that the readiness of teachers in the country is influenced by specific things such as the bureaucratic structure of tiered education, public expectations about the role of teachers, limited available resources, and political dynamics at the local level. Teachers in Indonesia are often in a dilemma between the demands of innovation from the central government and the reality of school conditions and the expectations of the local community. Therefore, the readiness of Indonesian teachers can not only be seen from the point of view of teaching competence, but also from their ability to adapt to the complexity of the local social, cultural, and political context. This is what makes the study of teacher readiness in specific areas such as Randangan District important to understand how education policies are really implemented in the field [39]. In addition, teacher readiness in the digital era and 21st century learning adds another layer of complexity. The TPACK framework explains that today's teachers need to have a combination of material knowledge, teaching methods, and technology. Teachers' readiness today is no longer just about mastering subject matter and teaching methods, but also about the ability to integrate technology meaningfully into the learning process. In deep learning, technology can be a very useful tool for creating authentic, collaborative, and inquiry-based learning experiences. However, effective technology integration requires teacher readiness that includes not only technical skills in using digital devices, but also an understanding of how technology can deepen learning and when technology should not be used. The readiness of pedagogical technology is an additional aspect that needs to be explored in this study [40]. Law Number 14 of 2005 concerning Teachers and Lecturers in Article 1 paragraph (1) explains that teachers are professional educators with the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students in early childhood education in formal education, primary education, and secondary education [41]. Based on this description, teachers' readiness in deep learning in the Indonesian context not only includes pedagogic mastery, but also the ability to adapt to curriculum changes, technological developments, and the demands of teacher professionalism.

In this regard, the findings of the study show that the construction of teacher understanding has direct implications for the quality of the process. Research findings at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap show that the quality of learning in Pancasila Education is rooted in the teacher's ability to go through three main phases: understanding, applying, and reflecting. In the understanding phase, teachers have experienced a paradigm shift from just delivering material to facilitators who prioritize the formation of "sense and character." Teachers no longer see material as static memorization, but as a process of constructing meaningful knowledge. The orientation of teachers who view Pancasila Education as a means of strengthening values is in line with the concept of deep learning that emphasizes the search for meaning and connection between concepts, beyond just information retention [42]. This change in perspective can also be explained through a perspective where the design of the learning experience prepared by the teacher will determine whether students use a deep or shallow learning approach in the process [43]. This emphasizes that the understanding phase is the main foundation in deep learning because it determines how teachers interpret learning objectives and direct students' learning experiences towards character formation and meaningful understanding.

In the application stage, teachers show high creativity by bringing the reality of life into the classroom. At SMP Negeri 5 Randangan Satu Atap, democratic values are practiced directly through a simulation of the election of the Student Council President, while at SMP Negeri 1 Randangan, the *Problem Based Learning* (PBL) is used to train students to solve contextual problems. The use of these active methods directly leads students to the development of 21st-century competencies, such as critical thinking and collaboration, which are key pillars in the modern educational framework [44]. From the point of view of developmental psychology, the discussion and simulation space provided by teachers allows the process of assimilation of knowledge through social interaction and the provision of appropriate assistance or *scaffolding* in the student development zone. This activity also puts students at a high cognitive level that involves analytical and evaluation skills in the application of real concepts [45]. The ability to apply learning contextually is an important indicator of teacher readiness, because it allows students to connect academic concepts with the reality of daily life more authentically.

Finally, in the reflection phase, teachers use the final moment of learning as a crucial instrument to ensure the internalization of values into students' attitudes and behaviors. This reflection helps students evaluate their experiences and relate them to everyday life, so that the understanding formed is permanent and substantive. This approach is in line with the principle of authentic assessment which emphasizes that deep understanding must be evident through application in the context of life. Through this process, a transparent learning ecosystem is created where teachers and students are fully aware of the goals and learning outcomes that are being achieved [46]. Comprehensively, the synergy of these three phases ensures that education not only touches on the cognitive aspect, but also integrates the intrapersonal and interpersonal domains as a whole (Pellegrino & Hilton, 2012). Thus, the role of teachers as facilitators who integrate thinking, heart, and taste is the key to creating meaningful and joyful learning [47]. Reflection acts as a learning strengthening mechanism that

ensures that the knowledge, skills, and values learned do not stop at the cognitive realm, but are internalized in students' attitudes and behaviors. These findings show that the integration between understanding, applying, and reflecting is the main contribution of teachers in realizing meaningful and sustainable deep learning. The construction of these findings shows that deep learning at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap is built through a strong relationship between the ability to understand, apply, and reflect on learning. The main contribution of these findings lies in strengthening the empirical evidence that the success of deep learning does not only depend on mastery of the material, but also on the ability of teachers to build contextual learning experiences and conduct continuous reflection to support the formation of students' character and competencies as a whole.

B. Development Strategy for the Implementation of Deep Learning and the Challenges of Implementing the Deep Learning Approach at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap

Deep learning is a learning paradigm that has been a major concern in global education reform over the past two decades. This concept is fundamentally different from superficial learning which only emphasizes the mastery of factual information and the reproduction of knowledge. [48] is a pioneer who introduced the difference between an in-depth approach and a superficial approach in learning. They found that students who used an in-depth approach tended to search for meaning, connect new information with existing knowledge, and understand basic principles, while students with a superficial approach only memorized facts for exams without deep understanding. These differences became the basis for the development of more elaborate deep learning theories and practices in the following decades. Further deep learning concepts through models *3P (Presage, Process, Product)* which explains that the student's learning approach (deep or superficial) is influenced by *Omen* (student characteristics and teaching context), which then influences the learning process, and ultimately determines learning outcomes. Biggs emphasized that deep learning is not a fixed characteristic of the student, but rather a response to the learning context created by the teacher. If learning is designed with assessments that encourage memorization and reproduction, students will adopt a superficial approach. In contrast, if learning and assessment are designed to encourage conceptual understanding, application, analysis, and synthesis, students will be more likely to adopt an in-depth approach. This perspective provides an important implication that creating deep learning is the responsibility of teachers in designing learning experiences, not just the expectation that students will automatically learn deeply [49]. Based on this description, it can be understood that deep learning does not arise automatically from the characteristics of students, but is the result of a learning design that is deliberately built by teachers through learning experiences that encourage the search for meaning, conceptual connectedness, and high-level thinking skills. These findings provide a conceptual basis for the research that the success of the implementation of deep learning in SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap is highly determined by the ability of teachers to create a learning context that allows students to move from just remembering to understanding, applying, and reflecting knowledge meaningfully.

A comprehensive framework on deep learning in the context of 21st century education. They define deep learning as learning that develops the competencies students need to thrive in a complex world. Framework *New Pedagogies for Deep Learning (NPDL)* that they developed identified six global competencies (6Cs) which are the focus of deep learning: character, citizenship, collaboration, communication, creativity, and critical thinking. Deep learning in the framework *NPDL* not only about what is learned (content), but also how to learn (pedagogy) and why to learn (purpose). The new pedagogies required include problem-based learning, project-based learning, collaborative learning, and the meaningful use of digital technologies. The goal of learning is no longer just to pass exams, but to develop competencies to contribute to a better world. From a cognitive perspective, deep learning is closely related to the theory of constructivism developed by Piaget and Vygotsky. Piaget emphasized that learning occurs through the process of active knowledge construction by learners through assimilation (integrating new information into existing schemas) and accommodation (modifying schemas to accommodate new information). Deep learning occurs when students experience cognitive imbalances that encourage them to reconstruct their understanding. Vygotsky through the concept *Zone of Proximal Development (ZPD)* and *scaffolding* emphasizing the importance of social interaction and mediation in learning. Deep learning occurs in *ZPD* where pupils work on challenging but achievable tasks with the help of *scaffolding* from teachers or friends who are more capable. Both of these perspectives imply that deep learning requires active, inquiry-based, collaborative, and with appropriate support from teachers [50]. The *NPDL* framework and constructivism perspective suggest that deep learning requires the active involvement of learners in building knowledge through social interaction, authentic experiences, and real-world problem-solving. This synthesis strengthens the research findings that the learning practices of Pancasila Education in both schools have begun to move towards learning that emphasizes collaboration, communication, critical thinking, and character formation through direct experience. Thus, deep learning is not only oriented to academic achievement, but also to the development of social and civic competencies that are relevant to the lives of students.

In Bloom's Taxonomy which provides a framework for understanding the cognitive level in learning. This revised taxonomy identifies six levels: remember, understand, apply, analyze, evaluate, and create. Deep learning operates primarily on the highest four levels: applying, analyzing, evaluating, and creating, which is often referred to as *Higher Order Thinking Skills (HOTS)*. Learning that focuses only on remembering and understanding is superficial learning, while learning that encourages students to analyze arguments, evaluate alternative solutions, and create new products or solutions is deep learning. In the context of Pancasila Education, in-depth learning means not just remembering and understanding the precepts of Pancasila, but analyzing how these values apply in a specific context, evaluating moral dilemmas based on Pancasila principles, and creating innovative solutions to social problems based on Pancasila values [51]. From the perspective of Bloom's revised Taxonomy, deep learning requires teachers to direct students to higher-level thinking activities that involve analysis, evaluation, and creation. In the context of Pancasila Education, this orientation is very

important because the purpose of learning does not stop at understanding normative concepts, but also at the ability of students to apply Pancasila values in facing real social problems. Therefore, the ability of teachers to design HOTS-based activities and assessments is an important indicator of the success of the implementation of deep learning in the school environment.

The other side of the frame *Understanding by Design (UbD)* offers a practical approach to designing deep learning. They identified six aspects of understanding: explaining, interpreting, applying, perspective, empathy, and self-knowledge. Deep understanding is not only knowing the facts but also understanding the causes and effects and being able to apply. *UbD* Using a backward design approach: start with the desired outcome, then determine acceptable evidence, and then design the learning experience. This approach ensures that learning is designed with the goal of deep understanding, not just broad but superficial content coverage. Deep assessment *UbD* authentic, where students demonstrate understanding through meaningful and applicative performance tasks [52]. The Understanding by Design approach emphasizes that effective learning must begin with clarity of the end goal to be achieved and authentic evidence that shows the achievement of that goal. These findings contribute to the research by showing that the implementation of deep learning requires systematic planning so that learning activities, assessments, and learning objectives are in a mutually supportive unit. Thus, teachers not only teach the material, but also design learning experiences that allow students to show real understanding through actions and reflections.

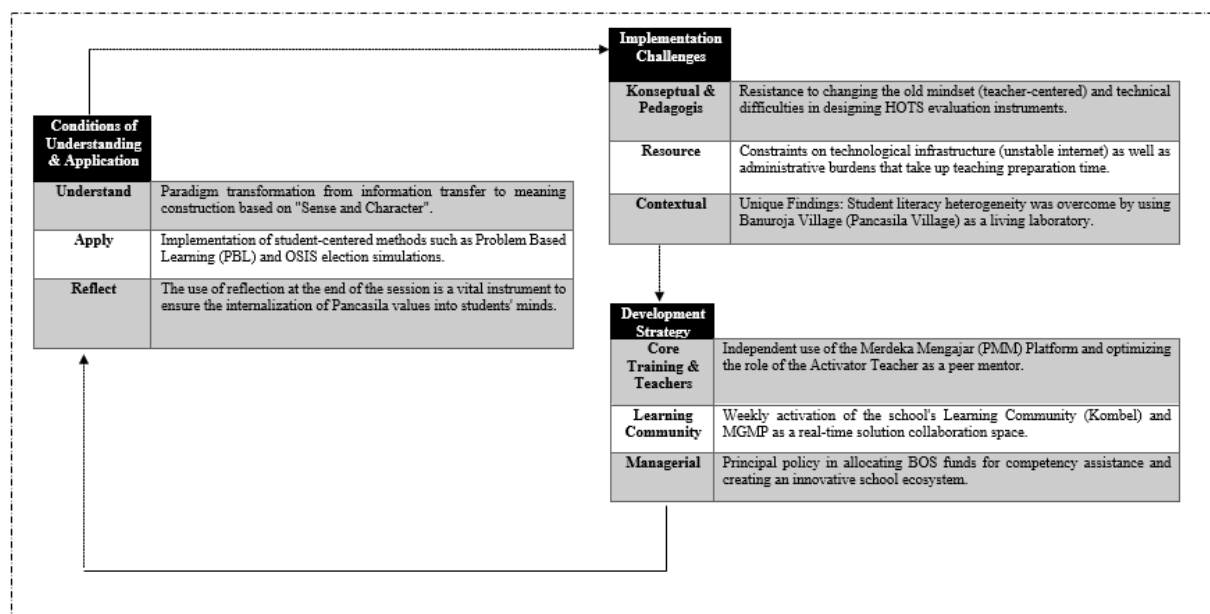
A massive metaanalysis of more than 800 metaanalyses of achievement found that *visible learning* Learning where the teacher makes learning visible to the student and the student makes the learning visible to the teacher produces a huge effect on deep learning. Some strategies with high effect sizes for deep learning include: *First*, quality feedback; *Second*, students set their own expectations; *Third*, formative evaluation; *Fourth*, metacognitive strategies; and *Fifth*, class discussions. Hattie emphasized that deep learning requires teachers who are learning enablers, not just facilitators. Teachers as an activity proactively design challenging learning experiences, provide constructive feedback, teach learning strategies, and create a classroom culture where mistakes are seen as learning opportunities. In the context of Pancasila Education learning, this means that teachers need to do more than just deliver material or facilitate discussions, but strategically activate students' critical thinking about value and moral issues [53]. Deep learning for the 21st century must integrate three domains of competence: cognitive (thinking), intrapersonal (self-managing), and interpersonal (interacting with others). The cognitive domain includes critical thinking, information literacy, reasoning and argumentation, and innovation. The intrapersonal domain includes intellectual openness, work ethic, self-evaluation, and adaptability. The interpersonal domain includes communication, collaboration, responsibility, and conflict resolution. In-depth learning in Pancasila Education must be able to develop these three domains in an integrated manner. Students not only learn to think critically about Pancasila issues (cognitive), but also develop characters that are consistent with these values (intrapersonal), and are able to collaborate with people from different backgrounds in solving social problems (interpersonal) [54]. Based on a visible learning perspective and a 21st-century competency framework, deep learning places teachers as the primary drivers who actively build learning environments that encourage reflection, feedback, and student engagement. This synthesis shows that the success of deep learning is not only determined by mastery of the material, but also by the ability of teachers to develop cognitive, intrapersonal, and interpersonal aspects in an integrated manner. These findings are relevant to the results of the study which shows the efforts of Pancasila Education teachers in integrating character strengthening, critical thinking skills, and social skills in the learning process.

Deep learning is defined as a glorifying approach with an emphasis on creating an atmosphere of learning and learning processes that are conscious, meaningful, and joyful through holistic and integrated thinking, cultivation, taste, and exercise. Through conscious learning, students are invited to be fully present in every learning activity. This approach emphasizes the importance of synchronization between thoughts, feelings, and actions, as taught by Ki Hajar Dewantara through a among system based on the values of honing, loving, and nurturing. Meaningful learning ensures that the material taught is relevant to the student's real life. By connecting learning to cultural, social, and everyday contexts, deep learning motivates students to think critically, analytically, and synthetically in solving complex problems. An exhilarating learning atmosphere is a key principle of deep learning, where learning is designed to be free from excessive stress and full of enthusiasm. The principle of consciousness (*mindful*), Meanings (*meaningful*), and delightful (*joyful*) will be able to honor teachers, students, and other education stakeholders and provide learning experiences to understand, apply, and reflect. Teachers provide opportunities for students to gain learning experiences for the process of gaining understanding, applying in various contexts, and reflecting on deep learning. [55]. In practical implementation, deep learning requires a number of specific pedagogical conditions. *First*, Authentic and challenging igniting questions that encourage in-depth investigation. *Second*, An authentic problem or real-world context that makes learning meaningful and relevant for students. *Third*, collaborative learning that allows students to construct understanding through dialogue and perspective sharing. *Fourth*, Guided inquiry in which teachers provide support is gradually reduced as students become more independent. *Fifth*, diverse representations and modalities that accommodate a diversity of learning styles. *Sixth*, an opportunity for reflection where students are encouraged to think about what they learned, how they learned, and what they will do next. *Seventh*, Formative assessments are continuous and embedded in the learning process, not just summative assessments at the end of the unit. *Eighth*, explicit teaching of thinking strategies and metacognitive skills so that students not only learn content but also learn how to learn. These conditions demand a fundamental shift in learning practice from teacher-centered to student-centered, from knowledge transmission to comprehension construction, and from assessment to accountability to assessment for learning. The principle of aware, meaningful, and encouraging learning provides a new direction for the transformation of learning practices in schools. Learning is no longer understood as a mere process of information transfer, but as a process of humanizing students through learning experiences that integrate thinking, heart, taste, and sports. In the context of this research, this principle is the basis for understanding how Pancasila Education teachers develop learning experiences that are not only oriented to mastery of the material, but also to the formation of character and reflection of life values that are relevant to the context of students.

In this regard, a systematic development strategy is pursued through three main approaches: self-training, revitalization of the role of core teachers, and empowerment of learning communities. In the training aspect, teachers actively utilize the Independent Teaching Platform (PMM) and participate in the Guru Penggerak program to update their professionalism in developing innovative learning. This effort to strengthen competence independently is a series of consistent actions designed to achieve educational goals through optimal use of digital resources [56]. This strategy ensures that teachers have access to the latest development materials that support the transition to more in-depth, student-centered learning. The implementation of deep learning at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap still faces multidimensional challenges that include conceptual, pedagogical, resource, and contextual aspects. In the aspect of conceptual understanding, the main obstacle lies in the difficulty of changing *Mindset* teachers from the conventional teacher-centered pattern (*teacher-centered*) becomes student-centered learning (*student-centered*). The gap between the theoretical understanding of meaningful learning and real practice in the classroom shows that teachers' low readiness to internalize basic concepts is a major stumbling block in the early stages of implementation [57] [58]. Pedagogically, this obstacle is exacerbated by the limitations of teachers' skills in compiling based evaluation instruments *Higher Order Thinking Skills* (HOTS) and authentic assessments that are able to measure students' critical and reflective thinking skills. This reflects that deep learning has not fully permeated assessment practices due to the lack of specific training on competency-based assessments [59] [60]. In terms of resources, limited infrastructure such as unstable internet networks, lack of computer facilities, and high administrative burdens are significant inhibiting factors. This condition makes the use of digital media less optimal and reduces teachers' valuable time to design reflective learning innovations, because the availability of facilities is an absolute prerequisite for the success of innovation-based learning [61]. Meanwhile, in the contextual aspect, challenges arise from the large number of students and the heterogeneity of literacy abilities which require a strong learning differentiation strategy. While there are good practices in the form of using Banuroja Village as a "living laboratory" to reinforce the value of tolerance, overall success remains highly dependent on the support of a wider ecosystem, including participatory school management and the active role of parents in assisting students in learning [62].

Findings regarding development strategies and implementation challenges show that deep learning is a transformation process that requires individual teacher readiness as well as the support of the education system as a whole. Efforts to strengthen capacity through PMM, Driving Teachers, Kombel, and MGMP show a commitment to build professional competence in a sustainable manner. However, various conceptual, pedagogical, infrastructural, and contextual constraints are still factors affecting the effectiveness of implementation. This synthesis indicates that the success of deep learning is not only determined by teacher competence, but also by the quality of the school ecosystem that supports innovation and sustainable learning. In connection with this, the novelty of this study found that, Pedagogical Transformation through Deep Learning: From Teacher Readiness, Implementation Challenges, and Character Strengthening Strategies in Junior High School can be seen based on the indicators in the chart below;

Figure 1. Findings of Pedagogical Transformation through Deep Learning at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap



The research findings in figure 1 show that the readiness of Pancasila Education teachers in implementing the deep learning approach at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap Pohuwato Regency is at a developing and adaptive stage. The results of the study illustrate the relationship between teachers' understanding of the concept of deep learning, implementation challenges in the field, and development strategies carried out by schools and teachers to overcome these obstacles. In terms of understanding and application conditions, teachers have shown a change in the learning paradigm. Teachers no longer only focus on information transfer, but begin to direct learning on the process of constructing meaning that emphasizes strengthening the "sense and character" of students. This indicates a shift from traditional approaches to more humanistic and contextual learning. In practice, teachers began to apply *student-centered learning* methods such as *Problem Based Learning* (PBL) and problem-solving discussions. This approach provides space for

students to think critically, have dialogue, and relate Pancasila Education material to the reality of daily life. In addition, teachers also use reflection at the end of learning as a means of internalizing Pancasila values so that learning is not only cognitive, but also touches the affective aspects and character of students. However, the implementation of deep learning still faces a number of challenges. In the conceptual and pedagogical aspects, resistance to the change in the old *teacher-centered mindset is still found*. Some teachers still have difficulties in designing HOTS (Higher Order Thinking Skills) evaluation instruments that are in accordance with the character of deep learning. This shows that pedagogic transformation requires a continuous process of mentoring and strengthening competencies. In terms of resources, the limitations of technological infrastructure, especially unstable internet access, are obstacles in the use of digital learning media and platforms. In addition, the administrative burden of teachers is also considered to reduce the time for innovative and reflective learning preparation. Meanwhile, in the contextual aspect, there is a challenge of heterogeneity of students' literacy skills. Nevertheless, the research found good practices in the form of the use of Banuroja Village as a living laboratory for Pancasila learning. The socio-cultural environment of the village is used as a real learning resource to strengthen the values of tolerance, mutual cooperation, and diversity.

The transformation of pedagogy through deep learning at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap takes place through a dynamic relationship between teacher readiness, implementation challenges, and professional development strategies. The novelty of this research lies in the discovery of a transformation model that shows that changes in learning practices are not only influenced by individual competency factors, but also by the support of the learning community, school leadership, and the use of the potential of the local environment as an authentic learning resource. Thus, this study makes an empirical contribution to the development of contextual deep learning implementation models for schools in remote areas. To answer these challenges, schools and teachers carry out several development strategies. In terms of improving competence, teachers use the Independent Teaching Platform (PMM) to learn independently and participate in Teacher Driving activities as a form of strengthening professionalism. This strategy helps teachers understand the implementation of deep learning in a more practical way. Furthermore, strengthening is carried out through learning communities such as Kombel and MGMP who actively carry out routine discussions, share good practices, and collaborate on the preparation of teaching tools based on real problems. In the managerial aspect, the principal provides support through the policy of allocating BOS funds for the development of teacher competencies and the creation of an innovative school ecosystem. These findings show that the readiness of Pancasila Education teachers in the deep learning approach is not fully optimal, but has moved in a positive direction. Teachers have the awareness to change the learning paradigm and start implementing more reflective, contextual, and student-centered learning practices. The success of the implementation of deep learning is greatly influenced by the support of continuous training, learning community collaboration, school leadership, and the use of the potential of the local environment as a learning resource.

Based on these findings, several studies were also related to previous studies where, Deep learning requires integration between cognitive, social, and emotional development, which can only be facilitated if teachers have a deep understanding of how students learn. Their research found that teacher preparation programs that integrate developmental science, culturally responsive pedagogy, and hands-on clinical experience result in teachers who are better prepared to implement learning responsive to students' developmental needs. They also emphasize the importance of continuous professional learning and supportive organizational conditions as critical factors in sustaining innovative practices. These findings are particularly relevant to the context of this study, as they underline that teacher readiness is not only a matter of knowledge but also the support system that surrounds it [17]. The findings of the research on teacher readiness in SMP Negeri 1 and SMP Negeri 5 Randangan Satu Atap show a dynamics of pedagogical transformation that can be dissected in depth through three main theoretical layers. At the level of Social Constructivism, the paradigm shift of teachers from the conventional model to student-centered learning reflects the understanding that the internalization of Pancasila values cannot be done through verbal memorization, but must be constructed through discursive and dialogical social experiences. Real practices such as the use of methods *Problem Based Learning* (PBL) and the use of Banuroja Village as a living laboratory proves that teachers have tried to facilitate the learning process as a social phenomenon, where students are invited to interact directly with the socio-cultural environment to build substantive meaning. In this context, teachers play a strategic role in managing *Zone of Proximal Development* (ZPD) through the granting of *scaffolding* or proportionate support so that students are able to achieve a higher level of cognitive and affective understanding than independent learning [15].

Furthermore, when viewed from the Theory of Teaching Readiness, the condition of teachers who are in the developing and adaptive stage is greatly influenced by the level of *self-efficacy* or their self-confidence in the face of innovation. The school's efforts through the optimization of the Independent Teaching Platform (PMM) and involvement in the Driving Teacher function as a provider *Mastery Experience* and *Vicarious Experience* which is crucial to build an innovative mentality. Although the challenges of infrastructure limitations and resistance to the old mindset still loom, the managerial support of the principal and intensive collaboration in the Learning Community (Kombel) play a role in the *Social persuasion* which strengthens the teacher's determination. The confidence built through the support of this ecosystem allows teachers to be more tenacious and courageous to leave the traditional comfort zone in order to create learning activities that stimulate critical thinking and continuous reflection, in accordance with the principle that self-confidence is the main motor for successful curriculum implementation [35]. Operationally, the effectiveness of this transformation boils down to mastering Pedagogical Content Knowledge (PCK), where teachers are challenged to synthesize the understanding of Pancasila Education material with delivery techniques that are responsive to student characteristics. The obstacles found in the preparation of the HOTS evaluation instrument show that the PCK aspect still needs strengthening, especially in terms of converting philosophical values into authentically measurable assessment indicators. However, the teacher's ability to integrate the heterogeneity of students' literacy and utilize Pohuwato's specific geographical context shows maturity in aspects *knowledge of learners* and *knowledge of educational contexts* [63]. The ability of teachers to plan and implement learning that remains relevant in the midst of limited facilities proves that their professional readiness has included the integration of various dimensions of knowledge needed to realize deep learning that is truly contextual for the surrounding community.

Differences in conceptual understanding, administrative obstacles in the form of limited teacher training, and scarcity of educational resources, especially in rural areas, hinder the adoption of creative and contextual learning approaches. The research is still general and does not explicitly analyze the implementation of Pancasila Education learning in the Independent Curriculum, especially the development dimension *HOTS* and assessment of attitudes and values as characteristics of this subject. Furthermore, this study has not reached remote areas with specific geographical and socio-cultural characteristics such as Pohuwato Regency in Gorontalo, which has different structural, geographical, and infrastructural challenges in the implementation of learning. To fill this gap, this study comprehensively explores the readiness and constraints of Pancasila Education teachers in implementing learning-based learning *HOTS* and authentic assessments in remote areas that have not been the focus of previous research. The uniqueness of this research lies in the specific situational analysis of the implementation of Pancasila Education in Pohuwato Regency by considering the geographical dimension, resource capacity, and teacher competence in the context of the Independent Curriculum, so as to produce policy recommendations that are more implementable and in accordance with the reality of remote areas of Indonesia [18].

In principle, the implementation of the Independent Curriculum in elementary schools includes inadequate infrastructure, teacher capacity in technology that requires improvement, difficulties in learning evaluation, the condition of students and parents, and unequal government policies. This research is still general and has not analyzed in detail the implementation challenges in specific subjects such as Pancasila Education which has peculiarities in development *HOTS* and assessment of attitude aspects, and does not yet cover remote areas with their own geographical complexity. Moreover, this study has not specifically examined teachers' readiness to implement learning-based learning *HOTS* and authentic assessments for Pancasila Education in areas with limited accessibility such as Pohuwato Regency, Gorontalo. To fill this gap, this study holistically explores the readiness and constraints of Pancasila Education teachers in implementing learning-based learning *HOTS* and an authentic assessment of the dimensions of attitudes and values in remote areas that have not been the focus of empirical research before. The uniqueness of this research lies in the in-depth contextual exploration of the implementation of Pancasila Education in Pohuwato Regency by integrating considerations of geographical factors, resource availability, and teacher competence within the framework of the Independent Curriculum, thus producing policy recommendations that are more practical and in accordance with the real conditions of remote areas in Indonesia [19].

In this regard, school leadership found that the pandemic crisis accelerated the adoption of innovative pedagogies including deep learning approaches. They found that schools that were successful in transitioning to distance learning were those that previously had a foundation in student-centered and personalized learning. Teachers in these schools are familiar with digital tools and inquiry-based approaches, so adaptation becomes smoother. In contrast, schools with traditional teaching cultures have significant difficulties. These findings underscore the importance of building teacher capacity for innovative pedagogy in preparation for any disruption, not just a pandemic. In the post-pandemic context, the question of how teachers in areas with limited digital infrastructure such as Randangan District navigate deep learning is becoming increasingly relevant [64].

A comparative review of the three studies above shows a convergence in identifying the complexity of teacher readiness as a multidimensional problem, where the integration of cognitive-social-emotional aspects in deep learning [17]. Differences in teachers' conceptual understanding of the Independent Curriculum, and [19] Finding Teacher Technology Capacity Limitations as an Obstacle to Implementation [18]. On the other hand, the research also agreed that limited resources, lack of continuous professional training, and weak organizational support systems are the main inhibiting factors in the implementation of new curriculum or learning approaches. As it focuses on the Indonesian context but is general and has not explored specific subjects such as Pancasila Education which has uniqueness in development *HOTS* and assessment of the dimensions of attitudes and values. Furthermore, none of the three studies in-depth analyzed the challenges of learning implementation in remote areas with specific geographical and socio-cultural characteristics such as Pohuwato Regency which faces limited accessibility, infrastructure, and unequal distribution of educational resources. This research gap shows the need for a more specific and contextual study of teachers' readiness in implementing learning-based learning *HOTS* and authentic assessments on specific subjects in remote areas. Therefore, this study fills the scientific gap by comprehensively exploring the readiness and obstacles of Pancasila Education teachers in implementing learning-based learning *HOTS* and an authentic assessment of the dimensions of attitudes and values in Pohuwato Regency as a representation of remote areas that have not been the focus of empirical studies so far. The novelty of this research lies in a contextual analysis that integrates the geographical dimension, resource capacity, and teacher competence within the framework of the Independent Curriculum with an in-depth learning approach, thereby producing policy recommendations that are more responsive, practical, and applicable in accordance with the realities of remote areas in Indonesia [19]. Deep learning is a complex and multidimensional process. Although various previous studies have highlighted the importance of teacher readiness, organizational support, and professional development, this study makes a new contribution through contextual analysis on the subject of Pancasila Education in the Pohuwato Regency area which has different geographical, social, and resource characteristics. The findings of the study show that the success of deep learning can be achieved through the synergy between strengthening teacher competence, school institutional support, learning community collaboration, and the use of the local environment as an authentic learning resource. Therefore, the pedagogical transformation model produced in this study can be a conceptual and practical reference for the development of deep learning in schools with similar regional characteristics in Indonesia.

Conclusion

This study shows that the implementation of deep learning in Pancasila Education subjects at SMP Negeri 1 Randangan and SMP Negeri 5 Randangan Satu Atap has gone through three main stages, namely understanding, applying, and reflecting. The findings of the study indicate that the success of the implementation of deep learning does not only depend on the mastery of the material by the teacher, but also on the ability of the teacher to construct a meaningful, contextual, and

reflective learning experience so that students are able to connect the values of Pancasila with the reality of daily life. Through problem-based learning strategies, discussions, simulations, and contextual activities, Pancasila Education is no longer oriented to the mastery of knowledge alone, but becomes a means of character formation and strengthening of students' civic competence. This research also found that the implementation of deep learning still faces various challenges, both from individual aspects and the education system. These challenges include the tendency of conventional learning patterns, the difficulty of teachers in designing assessments that measure high-level thinking skills, the limitations of supporting facilities and technologies, the high administrative burden, and differences in students' literacy skills. This condition shows that learning transformation is not enough to be carried out at the classroom level, but requires the support of a broader education ecosystem so that deep learning can be applied optimally and sustainably. The main contribution of this research lies in the affirmation that the implementation of deep learning in Pancasila Education is a collaborative and systemic process. Teachers' pedagogical readiness, the existence of learning communities, the support of school principals, the use of the Independent Teaching Platform, and the integration of local wisdom are factors that strengthen each other in building a learning ecosystem that supports the strengthening of students' character. This finding implies that efforts to improve the quality of Pancasila Education need to be directed not only at the development of teacher competence, but also at strengthening the learning culture in schools and the use of the local socio-cultural context as a source of learning. Thus, deep learning has the potential to be a strategic approach in realizing students with Pancasila character, critical thinking, reflectiveness, and being able to actively participate in community life.

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