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Transforming Teachers' Roles in Navigating the Challenges of Implementing the Independent Curriculum: Adaptive Strategies and Professional Reflection in Elementary School

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ABSTRACT

Purpose of the study: This research aims to examine the transformation of teachers' roles in facing the challenges of implementing the Independent Curriculum in elementary schools and understand how teachers adapt to these educational changes.

Methodology: This study uses a descriptive qualitative approach with exploratory case study design. Data collection methods include direct classroom observation, in-depth interviews, and documentation studies involving teachers actively implementing the Independent Curriculum in elementary schools.

Main Findings: Teachers face significant obstacles in understanding learning outcomes, implementing project-based learning, and utilizing learning technology optimally. Despite available training programs, teacher participation remains sporadic with limited impact on practice changes. Teachers respond through self-training strategies, informal collaboration, and pedagogical reflection, though lacking institutional mentoring support. Role transformation occurs contextually and gradually, depending on individual initiative and school environment support.

Novelty/Originality of this study: This research contributes by uncovering teacher role dynamics in marginalized schools previously underexplored in Independent Curriculum studies, providing insights for developing contextual, collaborative, and sustainable teacher capacity building policies.

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1. INTRODUCTION

The Government of Indonesia has established the Independent Curriculum policy as a strategic effort in transforming the education system to be more adaptive to the challenges of the times and the needs of students [1]-[3]. This curriculum is designed to serve as a flexible guide for educational units in compiling contextual and meaningful learning experiences. One of the main foundations of the Independent Curriculum is the granting of autonomy to teachers to design learning experiences based on the needs of students and the specific conditions of the school. The Independent Curriculum ideally provides space for teachers to develop learning models based on local potential and student characteristics, while instilling the values of the Pancasila Student Profile as the main foundation of the nation's character education [4], [5]. In this policy paradigm, teachers are not only in charge of delivering material, but also acting as active facilitators in shaping students' social-emotional and cognitive competencies in a dynamic learning environment. [6], [7]

The Merdeka Curriculum is designed based on a constructivist framework that puts students' learning experience at the center, as well as emphasizing the role of teachers as active facilitators. This concept emphasizes the importance of project-based learning and strengthening the values of mutual cooperation, critical thinking, and independent learning in the educational process [8], [9]. This idea is in line with Dewey's progressive education theory, which states that education should be relevant to real life and foster students' adaptive abilities [10]-[12]. The Independent Learning Approach also adopts the spirit of *Learning Independence*, which requires collaboration between teachers and students in creating a personalized, reflective, and future-oriented learning process [13], [14].

However, the implementation of the Independent Curriculum in various educational units has not shown alignment between policies and field practices**.** At Elementary School Trans Madang, South Sumatra, teachers face complex challenges, ranging from a limited understanding of the curriculum's essence to a lack of supporting facilities and low technological literacy, which hinders project-based learning. Previous research [15]-[17] revealed that limited human resources, infrastructure, and parental participation are the primary factors that hinder the optimal implementation of this curriculum. Additionally, there are differences in perceptions among stakeholders that hinder the coordination of curriculum implementation at the school level.

A significant research gap exists in understanding how teachers transform their roles within resource-limited educational settings during curriculum implementation. Most previous studies have concentrated on technical aspects of the Independent Curriculum in urban schools with sufficient infrastructure and training support, while the dynamics of teachers in marginalized areas navigating role changes reflectively and strategically remain underexplored. Specifically, there is a lack of empirical evidence on how teachers in schools with structural and social limitations develop adaptive strategies to shift their pedagogical approaches from traditional methods to innovative, collaborative, and contextual learning design [18], [19]. Academic discussions about teacher role transitions in new curricula are minimal in contexts of resource-limited schools, creating a significant knowledge gap in understanding the process of teacher transformation under structural constraints. This gap is particularly clear in elementary schools, where teachers must shift from traditional roles to become creative, collaborative, and contextual learning designers, yet not all teachers are adequately prepared mentally or skill-wise for this transition. The urgency of this research arises from three critical factors: First, the immediate need for contextual empirical evidence to improve primary school teachers' capacity to implement curricula in resource-constrained environments. Second, there is a strong requirement to develop adaptive educational policies based on real-world field data rather than just theoretical frameworks. Third, it is vital to address the growing gap between policy expectations and actual implementation capabilities in marginalized educational settings.

This research adopts a comprehensive problem-solving framework that examines teacher challenges, adaptive strategies, and transformation processes through qualitative case study methodology. The approach focuses on understanding the reflective and strategic ways teachers navigate role change while developing professional capacity amid structural limitations. The study emphasizes participatory and contextual responses to curriculum demands, providing insights into capacity building based on field challenges. This research aims to achieve four specific objectives: (1) Identify and analyze the multifaceted challenges faced by teachers during Independent Curriculum implementation at Elementary School Trans Madang; (2) Examine the adaptive strategies developed by teachers in response to curriculum demands within resource-constrained environments; (3) Investigate the process of reflection and transformation of teachers' roles in adjusting pedagogical approaches to meet student needs and school ecosystem requirements; (4) Develop evidence-based recommendations for enhancing teacher capacity and designing context-specific education policies.

The research questions are: How prepared are teachers to implement the Independent Curriculum? To what extent is the learning infrastructure being used effectively? How do differences in understanding between parties affect the curriculum implementation process? And what strategies do teachers use to develop their professional skills despite limitations? This research is expected to contribute significantly both theoretically and practically. Theoretically, this research can enhance the literature on the transformation of teachers' roles within the context of new curricula in marginalized areas. Practically, the findings can serve as a reference for other schools in developing strategies to improve teacher capacity and design more context-specific education policies. Additionally, this research can also inform teacher training institutions, the Education Office, and policymakers in developing support programs for implementing the Independent Curriculum based on field data challenges.

2. RESEARCH METHOD

This study employs a descriptive, qualitative approach, designed in the form of an exploratory case study [20]. This approach was chosen because it allows researchers to examine the phenomenon of teacher role transformation in implementing the Independent Curriculum in depth, especially in the context of elementary schools with limited facilities and resources. The qualitative approach emphasizes understanding social meaning and processes in a natural context based on the perspective of the participants [21], [22]. This research is

exploratory because it aims to investigate how teachers respond to the challenges of curriculum implementation and develop contextually adaptive strategies.

The research was conducted at Elementary School Trans Madang, Sumberharta District, Musi Rawas Regency, South Sumatra Province. This location was chosen deliberately because Elementary School Trans Madang is one of the elementary schools that has been appointed as the implementer of the Independent Curriculum since 2023. The school is known for having a good school culture and concern for the environment, but at the same time faces limited infrastructure and access to technology. The focus of the research is directed at classroom teachers who actively implement the Independent Curriculum, namely Class I (M, S.Pd.), Class II (S), Class IV (S.Pd.), and Class V (Y, S.Pd.) teachers.

The researchers were present directly on site as the main instrument. This presence includes the involvement of researchers in the observation process, interpretation of phenomena, and data collection and analysis. The researcher conducted non-participatory observations on the implementation of learning, conducted in-depth interviews with key informants, and collected supporting documents related to curriculum implementation. Primary data was obtained from interviews with teachers and students, while secondary data was obtained from observation and study of documents such as lesson plans, class notes, and documentation of school activities.

The determination of data sources is carried out using purposive sampling techniques, taking into account the direct involvement of informants in the implementation process of the Independent Curriculum. The main data sources include classroom teachers, principals, and students as learning subjects. Data collection was carried out through three main techniques: passive participatory observation, semi-structured in-depth interviews, and document studies. Observations are used to observe learning practices and patterns of interaction in the classroom. Interviews were conducted to explore the perceptions, understandings, and strategies used by teachers. Document studies focus on the study of learning tools, teachers' reflective notes, and documentation of learning activities.

Research instruments, including observation guidelines and interviews, were developed independently by researchers based on theoretical studies and relevant research. Specifically, the instruments were designed based on Dewey's Progressive Education Theory [23], [24] for understanding contextual learning approaches, Constructivist Learning Theory [25], [26] for analyzing teacher-student interaction patterns, Teacher Professional Development Theory by Guskey [27] for studying teacher adaptation processes, and Fullan's Change Theory [28]for understanding curriculum implementation dynamics. Additionally, the development of the instruments referenced recent empirical research on challenges in implementing the Independent Curriculum and on teacher role transformation in resource-limited settings.

This instrument is not adapted or adopted from previous research, but is constructed based on contextual needs and indicators derived from the literature on the implementation of the Independent Curriculum. The instruments are validated by two curriculum experts and one education practitioner to ensure the suitability of the content, clarity of indicators, and alignment with the focus of the research. The reliability was established through internal consistency reliability, inter-rater reliability (Cohen's kappa coefficient 0.78), test-retest reliability (85% agreement), dependability through detailed documentation, and confirmability through a comprehensive audit trail. These measures ensure consistent and trustworthy findings for understanding teacher role transformation.

Table 1. Research Instrument Grid

Research Aspects	Indicators	Data Source
Challenges of Implementing the Independent Curriculum	- Teachers' readiness to understand and implement the curriculum- Limited training and experience- Availability and utilization of learning facilities- Differences in understanding between teachers, principals, and parents	Teacher interviews, observations, school documents
Teachers' Strategies in Facing Challenges	- Efforts to participate in training and independent development- Innovation in the use of learning technologies- Collaboration with peers and parents in supporting the curriculum	Teacher interviews, observations, documentation of learning activities
Transformation of the Teacher's Role	- Change of pedagogical approach from instructional to facilitative - Role of teachers as designers and learning leaders - Reflection of teachers in the process of curriculum adaptation	Teacher's narrative, the result of learning observation
School Environment Context	- Parental support for curriculum programs- Collaborative culture in the school environment- Community response to learning innovations	Teacher interviews, school documentation, observation of school-parent interaction

The research procedure was carried out in three systematic stages. The first stage is preparation, which includes a literature review to establish a theoretical framework, initial observations of the site for context identification, and the preparation of data collection instruments. The second stage is field implementation, where researchers collect data through observation of learning activities, interviews with teachers and principals, as well as documentation of the learning process and teacher reflection. The third stage is analysis and reporting, which involves the processes of data transcription, coding, categorization, and depiction of key themes based on the qualitative data analysis approach outlined in the Miles and Huberman model.

Data analysis was carried out in Descriptive Thematic following the stages of data reduction, data presentation, and conclusion drawing [29]. Deductions are made by sorting out important data and focusing on research questions. The presentation of data is arranged in the form of simple narratives and visualizations to clarify the pattern of findings. Conclusions are drawn by linking empirical findings and relevant theories. The validity of the data is maintained through the strategy of triangulating sources (interviews, observations, documents), member checking, and audit trail recording. Validity is also strengthened through peer discussion and repeated reflection between researchers. This legitimacy strategy is employed to ensure that research is credible and can be trusted as a reliable reference for understanding the challenges and strategies teachers face in transforming the role of basic education. This overall methodological approach is designed to produce a contextual, reflective, and applicative understanding of the practice of the Independent Curriculum in primary education units.

3. RESULTS AND DICUSSION

Teachers' Readiness in Implementing the Independent Curriculum

Teachers at SDN Trans Madang show limited readiness in implementing the Independent Curriculum as a whole. Teachers do not fully understand the curriculum structure such as learning outcomes (CP), learning objectives (TP), and learning objectives flow. Teachers also face barriers in the pedagogical skills required to implement project-based learning and differentiation. Teacher, if1 stated,

> *"Of course, it is necessary to be ready to implement the Independent Curriculum, such as understanding the curriculum and the learning methods used."* The IF3 teacher added that, "*Before implementing the Independent Curriculum, teachers must understand the needs and feelings of students and build conducive classroom management."*

The statement indicates that teacher readiness encompasses conceptual, emotional, and pedagogical aspects that have not yet been fully developed.

The observation results show that teachers are still predominantly using lecture methods in learning and have not fully implemented the project-based approach as required in the Independent Curriculum. Most teacher lesson plan documents still employ the traditional structure and lack a systematic flow of learning objectives. School documentation shows that training has been held regularly, but teacher attendance is uneven and the results of the training have not been fully reflected in teaching practice. The if2 teacher stated, *"Teacher readiness requires self-development such as participating in the Independent Curriculum workshop, collaboration, and reflection." However*, all the teachers *disagreed,* claiming they had not received regular and intensive training.

To provide a clearer picture of the teacher readiness across several sub-aspects, Table 2 presents a recapitulation of interview and observation data.

Table 2. Recapitulation of Teacher Readiness Data in the Implementation of the Independent Curriculum

Sub-Aspects	Indicators	Teacher Interviews	Observation Results
Curriculum Understanding	Teachers understand CP, TP, and learning flow	*"Still often confused with CP and TP"* (if2)	The teacher mentions the CP without mentioning the learning flow
Pedagogical Skills	Teachers design project-based learning	*"I'm still learning to apply different learning"* (if3)	The lesson plan still contains lectures and practical questions
Use of Technology	Teachers use digital media and platforms	*"I'm not used to using digital platforms yet"* (if2)	No projectors or interactive media were found
Training Participation	Teachers attend training regularly	*"Workshops do exist, but I don't participate regularly"* (if1)	Attendance documents show two teachers who are regularly active

As shown in Table 2, the main weaknesses lie in curriculum comprehension and the lack of application of project-based learning methods. Teachers also struggle with technological adaptation and show inconsistent participation in training programs.

Findings from interviews and observations were reinforced through data triangulation that compared three main sources: teachers, the field, and school documentation. To strengthen the validity of the findings, Table 3 displays triangulation data on teacher readiness in implementing the Independent Curriculum.

Table 3. Triangulation of Teacher Readiness Data

Information Focus	Teacher Interviews	Field Observations	School Documentation
Curriculum Understanding	Teachers feel that they do not understand the flow of CP and TP	The teacher does not explain the learning objectives in full	The RPP does not list the order of CP and TP
Training Curriculum	Teachers say the training is not routine and limited	Only one teacher mentioned continuous training	The training certificate is owned by only two teachers
Use of Technology	Teachers are not used to using digital media	No use of digital media found in the classroom	Facilities available but rarely used

Table 3 confirms that inconsistencies across teacher responses, field observations, and documentation reflect systemic gaps in readiness, particularly in curriculum mastery, training exposure, and technological implementation. Teachers at Elementary School Trans Madang have not shown optimal readiness in implementing the Independent Curriculum. Limited understanding of CP and TP, lack of project-based learning experience, and low mastery of technology are the main obstacles. Although training is available, teacher participation is still sporadic, and training outcomes have not been fully internalized in classroom practice. These triangulated findings underscore the need for structured professional development, continuous pedagogical mentoring, and sustained support systems to ensure effective and contextualized implementation of the Independent Curriculum.

Availability and Utilization of Learning Infrastructure

Teachers at Elementary School Trans Madang stated that the availability of physical learning facilities is adequate, but their use in supporting the implementation of the Independent Curriculum is not optimal. Teacher M said, *"It is very supportive because with adequate facilities, students become enthusiastic in learning"*. Teacher S also stated that, *"With adequate infrastructure and facilities, it will make students comfortable in learning"*. This statement shows that teachers consider the physical environment sufficient to support the implementation of learning activities.

However, observations show that the use of technological devices such as projectors, active speakers, or other digital media has not been optimally utilized in the learning process. Guru Sj stated, *"There is a lack of planning and management of facilities, so the tools are sometimes not used optimally"*. Teacher Y added, *"There are obstacles, such as uncomfortable environmental conditions and not all teachers can use technology"*. This statement indicates that there are challenges in terms of usage, regardless of device availability. School documentation shows that each class has been equipped with digital learning media since 2023, but no official guidelines or schedule for its use in daily activities have been found. To illustrate the gap between availability and usage, Table 4 summarizes the interview and observation data related to infrastructure readiness.

Table 4. Infrastructure Availability and Utilization Data Recapitulation

Sub-Aspects	Indicators	Teacher Interviews	Observation Results
Facility Availability	Learning facilities are generally available	*"Classroom facilities are very supportive"* (M, S)	Full classroom, projector available
Technology Utilization	Utilization of digital media in learning activities	*"I personally am not used to using technology"* (S, Y)	Teachers do not activate media during KBM
Technology Training	Teachers are trained to use technology	*"Lack of technology training for teachers"* (M, Sj)	No ICT training found since 2023

As shown in Table 4, although teachers perceive physical facilities as adequate, the actual use of available technological tools during classroom learning remains minimal, indicating a disconnect between availability and implementation. Triangulation from interviews, observations, and documentation confirms that infrastructure exists but has not been utilized effectively. To reinforce this conclusion, Table 5 presents triangulated data on learning infrastructure from multiple sources.

Table 5. Learning Infrastructure Data Triangulation

Information Focus	Teacher Interviews	Field Observations	School Documentation
Facility Availability	All teachers said that the facilities were adequate	Neat classrooms, tech tools available	Complete inventory of projectors and audio devices
Technology Utilization	Three teachers admitted that they were not used to using the tool	No digital media was found to be used during KBM	No evidence of regular use in the class schedule
Tool Use Training	All teachers said they had never attended formal training	The teacher did not show media integration during the observation	No in-house ICT training program

Table 5 confirms that while the infrastructure is physically available, the absence of formal training and operational policies hinders effective integration of technology into daily teaching practices. The availability of learning infrastructure at Elementary School Trans Madang has met the basic needs of the implementation of the Independent Curriculum. However, the use of technology facilities has not been carried out optimally due to the lack of training, the absence of a structured use system, and the limited skills of teachers in integrating technology into learning. This condition emphasizes that the mere presence of educational tools does not ensure successful curriculum implementation unless supported by teacher competence, structured usage policies, and consistent professional development.

Differences in Understanding Between Related Parties

Teachers, principals, and parents of students at SDN Trans Madang do not have a uniform understanding of the Independent Curriculum. The teacher stated that the difference in perception and level of educational literacy between the parties involved is a challenge in the process of implementing the curriculum. Teacher M said, *"Yes, lack of effective communication between parents and schools".* Teacher Y also asserts that *"Teachers and principals may understand the curriculum, but parents have not fully understood its implementation."* This statement shows that although teachers and principals participate in the training and socialization of the curriculum, parental understanding has not been systematically built.

Observation of interactions during school meetings and learning activities shows that parental involvement is still formal and has not touched the curriculum aspect in depth. Teacher S stated, *"Differences in educational background and experience between teachers and parents often lead to a gap in understanding".* Guru Sj also added that the limited information provided to parents is the main cause of their lack of understanding of the change in learning approaches. School documentation shows that there is no routine socialization program for parents related to the Independent Curriculum, and communication between schools and parents focuses more on developing learning outcomes, rather than curriculum approaches. To highlight these discrepancies, Table 6 presents the recapitulated data from interviews, observations, and document analysis regarding differing understandings among school stakeholders.

Table 6. Data Recapitulation of Differences in Understanding between Teachers, Principals, and Parents

Observed Components	Teacher's Statement	Observational Findings	Analysis
Curriculum Direction and Objectives	*"Parents don't understand the direction of this curriculum"* (Y)	No discussion of the Independent Curriculum was found in the parents' meeting	Parents only focus on grades and learning outcomes
The Role of Parents in the Curriculum	*"Lack of communication between school and parents"* (M)	Teacher-parent interaction only occurs during the distribution of report cards	The role of parents is administrative, not substantive
Commonality of perception between parties	*"There are differences of opinion due to educational background"* (S)	The principal leads the program without involving parents	There is no forum for equality between school and family
Curriculum Socialization to Parents	*"There are no special training or workshops for parents"* (Sj)	No brochures, modules, or curriculum socialization documentation available	Delivery is informal and not systematic

As shown in Table 6, multiple factors contribute to the gap in curriculum understanding among teachers, principals, and parents. These include a lack of structured communication, limited parental involvement in important matters, and the absence of formal curriculum outreach programs. Differences in perceptions of the

Independent Curriculum among these groups still pose challenges to its implementation. The lack of two-way communication, the scarcity of educational forums for parents, and the limited information shared by schools lead to misunderstandings. These findings confirm that successfully implementing the Independent Curriculum requires not only teacher preparation but also inclusive communication strategies and collaborative frameworks to foster a shared vision among all school stakeholders.

Teacher Professional Capacity Building Strategy

Elementary School Trans Madang teachers showed various initiatives in developing their professional capacity in responding to the demands of the implementation of the Independent Curriculum. Teachers seek to build a deeper understanding of curriculum content and approaches through formal and informal channels. Interviews with informants M and Y revealed that training and workshops have been routinely attended before and mid-semester. Teacher M stated *that "we attended workshops organized by the office at the beginning of the school year and in the middle of the semester"*, while teacher Y added that *"this training was very helpful in understanding the structure and assessment in the Independent Curriculum".*

Observations of teacher interaction in the workspace show that there is informal collaboration between teachers as a means of sharing good practices. Teachers S and Sj often discuss learning planning and strategies for strengthening the Pancasila Student Profile. In addition, some teachers also develop capacity independently. Teacher Y, for example, actively reads journals and articles about the curriculum, as well as accesses educational video content on online platforms to broaden their horizons. He said that *"watching YouTube educational channels and reading articles is my way of compensating for information gaps".*

From an institutional perspective, schools have facilitated capacity building through the implementation of periodic training and the provision of access to technology. However, formal mentoring programs are not structurally available. Guru Sj said that he was mentored by a senior teacher without a formal program, but on the basis of personal awareness. The teacher said *"I learned a lot from the senior teachers at the school, even though there was no mentoring program set by the school".*

Teacher-principal interaction is also an important part of reflective strategies. Teacher Y shared his experience in discussing the achievements and obstacles of curriculum implementation, even though this forum has not taken place regularly. School support can be seen in the provision of discussion spaces and encouragement for pedagogical reflection, but it has not been institutionalized in sustainable programs.To illustrate the forms of teacher initiatives and school-level support, Table 8 provides a summary of the professional capacity development strategies observed in this study.

Table 8. Teacher Capacity Development Strategy

Development Strategy	Examples of Teacher Practice	Form of School Support
Participate in Independent Curriculum training/workshops	M and Y teachers attend workshops before and mid-semester	Implementation of training twice a year
Sharing good practices between teachers (informal collaboration)	Teachers S and Sj have an informal discussion in the teacher's room	Facilitation of teachers' rooms as a place for informal discussions
Self-paced learning (journals, articles, educational YouTube)	Teacher Y reads literature and online content to deepen their understanding of the curriculum	Provision of internet access and a simple library
Reflective discussion with the principal	Teacher Y discusses the implementation of the Independent Curriculum with the principal	There is a reflection forum with the principal (not scheduled regularly)
Peer mentoring (teacher-to-teacher mentoring)	Teacher Sj gets guidance from senior teachers at school	There is no formal mentoring program; Mentoring is carried out on personal initiative

As shown in Table 8, teachers' efforts to develop their professional skills include formal training, peer collaboration, independent learning, and informal mentoring. However, these initiatives are often started individually and lack a systemic support from school leadership. Elementary School Trans Madang teachers have demonstrated genuine efforts in enhancing their professional capacity through training, collaboration, independent learning, and peer guidance. Nonetheless, most of these strategies remain individual efforts and are not backed by an official institutional system. These findings highlight the crucial role of school leadership in creating a sustainable and structured support system to boost teachers' competence in implementing the Independent Curriculum.

Challenges of Implementing the Independent Curriculum

Teachers at Elementary School Trans Madang face structural and cultural challenges in implementing the Independent Curriculum which is rooted in individual readiness, limited facilities, and dynamics of understanding between stakeholders. These challenges arise simultaneously and influence each other's pedagogical transformation processes in the classroom.

First, in terms of individual readiness, most teachers admitted that they did not fully understand the framework of the Independent Curriculum, especially in the aspects of formative assessment and learning differentiation. Interview data showed that four out of five teachers felt less confident in implementing the new approach. This grade II (S) teacher stated, *"we are still in the learning stage and often feel confused when compiling teaching modules according to CP and TP".* This unpreparedness is reinforced by observational data that shows that the teaching modules used by teachers have not fully referred to the principles of the Independent Curriculum.

Second, infrastructure and facilities are still the main obstacles that slow down the adoption of the curriculum. Grade IV teachers (Sj, S.Pd.) said that classrooms are not equipped with basic technology such as LCD projectors and stable internet connections, even though project-based learning requires access to digital learning resources. Observations show that only one in four classrooms has adequate facilities. The school's internal documentation noted budget constraints as the reason for the lack of facility updates.

Third, differences in understanding between parties are also a serious obstacle in the implementation of the curriculum. The teacher of grade V (Y, S.Pd.) explained that *"parents of students have not understood the change in learning approach, so many consider students to be too relaxed because they do not memorize much".* This condition is exacerbated by the lack of intensive communication forums between teachers, principals, and parents. The results of observations show that student guardian meetings are only held once a semester, and focus more on administrative aspects than curriculum education. To provide a structured overview of the challenges, Table 10 recapitulates the major obstacles identified from interviews, observations, and school documents.

Table 10. Challenges of Implementing the Independent Curriculum at SDN Trans Madang

Challenge Aspect	Description of Field Findings
Teacher Readiness	Teachers are still hesitant and do not fully understand the structure of CP-TP, assessment, and teaching modules.
Facilities and Infrastructure	Limited classes have internet access, LCD projectors are not widely available, and learning devices are minimal.
Differences in Understanding of Related Parties	Parents have not understood the essence of the Independent Curriculum, teacher-parent communication is still limited.

As shown in Table 10, these three core challenges overlap and influence each other, creating a layered complexity in the curriculum implementation process. To validate the findings from multiple sources, Table 11 presents triangulated data that demonstrates consistency and gaps across interviews, observations, and documentation.

Table 11. Triangulation of Data on the Challenges of Implementing the Independent Curriculum

Aspects	Interview	Observation	Documentation
Teacher Readiness	Teachers admitted that they were still confused about compiling teaching and assessment modules	Teaching modules are inconsistent with CP-TP	No teaching module guidance from the office
Infrastructure	Teacher complains about lack of LCD and internet in classroom	Only 1 class has complete digital facilities	Procurement plan delayed due to limited funds
Understanding of Related Parties	Parents misunderstand and the values of the curriculum are too loose	The meeting of the student's guardian is administrative	Parents' communication schedules are not regularly arranged

As seen in Table 11, the consistency between teacher statements, classroom observations, and the school's internal documents reinforces the depth and persistence of the identified challenges. The implementation of the Independent Curriculum at Elementary School Trans Madang faces challenges in terms of teacher readiness, infrastructure limitations, and gaps in understanding between parties. These findings suggest that the success of curriculum implementation depends not only on technical readiness but also on the

consistency of communication and systemic support between stakeholders to ensure sustainable and contextual transformation in learning.

In light of these findings, this research began with the formulation of problems regarding how elementary school teachers respond to the challenges of the Independent Curriculum, especially in the context of structural and cultural limitations at Elementary School Trans Madang. This research is designed as a qualitative case study of exploration with data collection techniques in the form of classroom observation, in-depth interviews, and document analysis. The main focus is directed at three aspects: teacher readiness, the use of learning infrastructure, and the understanding gap between teachers, principals, and parents.

The results of the study show that teachers face a limited understanding of the concept of the Independent Curriculum, including learning outcomes and differential learning strategies [30]-[32]. Although training has been provided, teacher participation is sporadic and its impact has not been fully reflected in practice. Learning infrastructure, such as digital media and ICT devices, is available, but has not been optimally utilized. This shows that technological skills are not only technical, but also require a contextual pedagogical approach. In addition, the disparity in perception between teachers and parents regarding the meaning of independent learning and non-numerical assessments also hinders synergy in curriculum implementation [33], [34].

The interpretation of these findings shows that the transformation of the teacher's role does not occur linearly but through a complex and contextual adaptation process [35]-[37]. These findings confirm that the success of the implementation of the Independent Curriculum is not only determined by technical training, but also by the capacity of teachers to conduct critical reflection on their practice [38], [39]. In line with the theory of social constructivism, pedagogical change requires teachers not only to master the content of the curriculum, but also to build the meaning of learning based on local contexts and social relationships in schools [40], [41]. Strategies carried out by teachers such as reflective discussions, peer mentoring, and access to independent digital literacy reflect the practice of critical reflection that is in line with the "teacher agency" approach in transformative education [42], [43].

The results of this study show that the success of implementing the Independent Curriculum is highly dependent on the readiness of teachers and the structural support in the school [44], [45]. However, this study differs from others in that it focuses on marginalized schools, which have been underrepresented in national education policy discourse. These findings also reinforce the need for contextual and teacher-based training approaches [46]. In this context, teachers are not only policy implementers, but also play the role of reflective actors who adapt policies to contextual realities [47], [48].

Several unexpected findings emerged, such as the strong intrinsic motivation of teachers to seek independent learning resources without an official program from the school. Teachers' initiatives in building informal learning networks demonstrate the spirit of pedagogical leadership that arises from below. This phenomenon challenges the top-down paradigm in education reform and emphasizes the need for a grassroots empowerment approach. The data reveal that, despite structural limitations, teachers show agency by initiating their own capacity-building pathways, which indicates adaptive professionalism in response to policy-driven demands.

Compared to previous studies, such as [49], [50] which emphasized the importance of centralized professional development programs, the present findings suggest that informal peer collaboration and self-initiated learning can be equally impactful in fostering teacher readiness. Similarly, research [51] concluded that institutional support was the strongest predictor of teacher effectiveness under curriculum change. However, this study expands that view by showing how teachers, even with limited institutional guidance, can demonstrate resilience and creativity in navigating curriculum transformation. Thus, these results nuance the existing discourse by highlighting teacher-initiated agency as a key factor.

From these findings, a general conclusion can be drawn that teachers' adaptive responses are shaped not only by formal training but also by their contextual awareness, reflective ability, and collaborative skills. This supports the idea that professional growth in curriculum innovation is both a systemic and personal process. Although the findings come from a single-site case study, their relevance to other elementary schools particularly those in semi-urban or under-resourced areas seems likely due to similar environmental and structural challenges. The main limitation of this study is its scope, which focuses on one school, limiting its statistical generalizability. Within the qualitative framework, the depth of exploration allows for rich contextual understanding, but time-bound data collection and evolving national policies limit the ability to observe long-term effects of curriculum implementation. Additionally, access to broader stakeholder voices, such as district policymakers, was not included, which could have added another layer of analysis. The implications of this study suggest the need for an adaptive, locally-based teacher training policy that incorporates peer mentoring and practical reflection. Capacity-building programs should move beyond one-way training models and create space for teachers to engage in dialogue, reflect, and share best practices. Educational institutions must foster a collaborative culture that involves teachers in decision-making and learning innovation. Stakeholders should

consider supporting self-directed learning pathways and recognizing informal professional practices as valid forms of teacher development.

The innovative aspect of this research (its novelty) lies in identifying micro practices teachers use to respond to curriculum changes, especially in suburban schools with minimal external support. This study shows that educational transformation doesn't always need to start from large policies; it can grow from small, reflective actions by teachers working within their specific context. The concept of "micro-pedagogical agency" emerging in this study provides a fresh perspective on teacher capacity in policy implementation. For future development, longitudinal studies across different schools and regions are recommended to observe long-term changes in the evolving role of teachers. Comparative research across urban, rural, and suburban settings could further clarify how context influences the curriculum reform process. Moreover, collaborative action research involving teachers, school leaders, and policymakers could serve as an effective way to help educators develop sustainable, transformative practices aligned with both national goals and local realities.

4. CONCLUSION

This study reveals that the transformation of teachers' roles in implementing the Independent Curriculum at Elementary School Trans Madang does not follow a top-down pattern, but emerges through contextual, reflective, and collaborative adaptation. Teachers face three major challenges: limited conceptual readiness in understanding CP–TP and formative assessment, constraints in infrastructure and digital tool usage, and a lack of shared understanding between schools and parents. Despite these barriers, teachers show initiative through self-directed learning, peer collaboration, and informal problem-solving strategies demonstrating agency and resilience in navigating curricular change. These findings enrich the theoretical discourse on teacher role transformation by introducing the concept of reflective micro-adaptation, which positions teachers as active participants in change processes through cycles of reflection, collaboration, and innovation. The study also highlights that meaningful transformation in marginalized or resource-limited schools can stem from small-scale teacher-led actions, not solely from centralized policy directives. This challenges conventional models of implementation and underscores the importance of bottom-up, context-sensitive approaches. In practical terms, the research implies that professional development must be school-based, dialogic, and responsive to local needs. Training should prioritize mentoring, reflective forums, and collaborative decision-making involving all stakeholders, including parents. For future research, longitudinal and multisite studies are recommended to trace the evolution of teacher adaptation and to build grounded models of transformative practice that reflect real-world school dynamics.

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