Needs Analysis for Environment Based Local Curriculum and Local Wisdom in Melawi Regency

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Abstract: This research aims to analyze the needs and design a local content curriculum (Muatan Lokal) based on the environment and local wisdom in Melawi Regency. This analysis aims to bridge formal education with the socio-ecological reality of Melawi, responding to environmental crises (deforestation, waste management) and cultural crises. This research approach uses a descriptive qualitative method, with primary data collection techniques through Focus Group Discussions (FGD) and workshops. This process is methodologically framed using Hilda Taba's 7-step inductive curriculum development model, starting with Diagnosis of Needs (Taba, 1962). The results of the needs analysis identified two main pillars: (1) a systematic sustainable asset-based approach mapping 7 key capitals and (2) problem analysis identifying 5 critical environmental issue clusters, namely waste management, deforestation, access to clean water, food security, and educational tourism. The recommendations resulted in (1) Implementation Model: Local Content as an independent subject; (2) Content Organization: Using a flexible and contextual thematic module structure; (3) Pedagogy: Project-Based Learning (PBP) oriented towards real action. This content was validated for significance using the national Climate Change Education (PPI) framework. Curriculum sustainability requires (1) formal legitimacy through a Regent Regulation; (2) systematic sustainable teacher capacity development through pedagogical and inquiry training; and (3) sustainable multi-party collaboration.

Keywords: Curriculum Development; Hilda Taba; Local Curriculum; Melawi; Needs Analysis.

Introduction

Background: Double Socio-Ecological Crisis in Melawi

Melawi Regency, West Kalimantan, faces complex challenges often referred to as interconnected "double crises." First, an ecological crisis manifesting in the form of deforestation, recurring forest fires, illegal gold mining practices, and chronic problems in waste management (Lourrinx et al., 2022). These issues are not mere abstractions but realities directly faced by the school community, as confirmed in the needs analysis brainstorming data, which identified these problem clusters.

Second, a cultural and functional crisis. There is significant erosion of local wisdom among the younger generation, who are increasingly uprooted from their traditions and local wisdom roots. Functionally, this ecological crisis correlates directly with welfare. Data shows that Melawi is among the five poorest regencies in West Kalimantan, with the lowest GRDP per capita. This indicates that environmental damage (deforestation) not only eliminates cultural heritage (values that protect customary forests) but also exacerbates poverty.

Urgency of Local Content Curriculum as a Contextual Bridge

In the context of this double crisis, the development of the Local Content Curriculum (Muatan Lokal) is positioned as a strategic intervention. The goal is to bridge formal education with ecological and cultural realities. The national regulatory mandate defines local content as study material intended to "form students' understanding of the potential in the area where they live" (Damarjati & Irfan, 2025). This view is reinforced by IBE-UNESCO, which states that local curriculum allows learning to become "more meaningful and relevant" (... can allow learning to become more meaningful and relevant) (Damarjati & Irfan, 2025).

Theoretical Foundation: Hilda Taba's Inductive Model as a Grassroots Approach

The main theoretical framework used is Hilda Taba's 7-Step Curriculum Development Model (Taba, 1962). Taba (1962) argued that logical curriculum planning must follow "an order of steps to be taken" (Taba, 1962). She proposed a logical sequence to be taken in curriculum planning (Taba, 1962):

1. Diagnosis of Needs
2. Formulation of Objectives
3. Selection of Content
4. Organization of Content
5. Selection of Learning Experiences
6. Organization of Learning Experiences
7. Evaluasi (Determination of what to evaluate and of the ways and means of doing it)

The advantage of Taba's model for the Melawi context is its inductive and grassroots nature (Taba, 1962). This model uniquely starts from the bottom (Step 1: Diagnosis of Needs), where teachers and the community—not central administrators—are the first to identify needs (Taba, 1962). This process precisely reflects what happened in the workshops in Melawi, which began with teachers from 16 schools mapping their assets and problems. This report will use Taba's 7 steps as an analytical structure to dissect

the Melawi Local Content development process. The development process in Melawi is an authentic application of the Taba Model.

Methods

Research Design and Data Collection

This research uses a descriptive qualitative approach. Primary data was collected through Focus Group Discussion (FGD) techniques and participatory workshops organized by the Melawi Sustainable Development Forum (FPBM) on February 1-3 in Nanga Pinoh and a public discussion on context analysis and needs for drafting the environment-based and local wisdom local curriculum (Muatan Lokal) in Melawi Regency held on September 1, 2025, at the Hall of the Education and Culture Office of Melawi Regency. Workshop and discussion participants included multi-party stakeholders essential for curriculum development, consisting of teachers and principals from 16 schools, the teacher and principal community, representatives of the Melawi Regency Education and Culture Office, academics, and traditional leaders.

Secondary data includes analysis of theoretical curriculum development documents (Hilda Taba Model, Indonesian Curriculum Development Model) (Taba, 1962; Masykur, 2019; Jariyah, 2016), policy and regulation documents on Local Content (Damarjati & Irfan, 2025), as well as national environmental education frameworks (Climate Change Education) and global frameworks (UNESCO) (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2024; Damarjati & Irfan, 2025; Supadmini et al., 2020).

Data Analysis: Synchronization of Methodology with Taba Model

Data analysis was carried out thematically, where empirical findings from the field (workshop and brainstorming data) were categorized, interpreted, and validated using Hilda Taba's 7-step framework. This analysis process follows the flow of the Taba model:

1. Taba Step 1 (Diagnosis of Needs): Analyzing raw data from the identification results of 7 Capitals and brainstorming of 5 Environmental Issue Clusters.
2. Taba Steps 2-6 (Curriculum Design Formulation): Analyzing data from analysis documents regarding objective formulation, content selection and validation (using the PPI framework), content organization decisions (Independent Local Content), and selection of learning experiences (PBP).
3. Taba Step 7 (Evaluation & Implementation): Analyzing policy recommendation data (Regent Regulation) and capacity building needs (teacher training) from various sources.

The synchronization between Taba's theoretical model and the practical process in Melawi is summarized in the table below. This table serves as the methodological map of the report, visually validating the core argument that the process in Melawi is an authentic application of Taba's theory.

Table 1. Synchronization of Hilda Taba's Inductive Model with Melawi Local Content Development Stages

Taba Step (Theory) (Taba, 1962)	Hilda Taba Theoretical Description	Practical Stages in Melawi (Empirical Data)
1. Diagnosis of Needs	**Identifying needs, gaps, and student/community variations (Taba, 1962).**	**Issue Clusters (problem-based approach) at the Public Discussion on context analysis and needs for drafting Environment-Based and Local Wisdom Local Curriculum (Muatan Lokal) in Melawi Regency.**
2. Formulation of Objectives	**Establishing learning objectives (knowledge, skills, attitudes) based on diagnosis (Taba, 1962).**	**Establishing objectives: producing students who are "smart, resilient, and caring about the environment", aligned with 3 competency domains (Masykur, 2019).**
3. Selection of Content	**Selecting valid and significant content to achieve objectives (Taba, 1962).**	**Selecting 5 Critical Issue Clusters (Waste, Deforestation, Water, Food, Local Wisdom) as core content, validated for significance by the Climate Change Education (PPI) framework (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2024).**
4. Organization of Content	**Organizing content logically (discipline structure) and psychologically (learning sequence) (Taba, 1962).**	**Decision on the implementation model of Independent Local Content 2 JP & organizational structure of Flexible Thematic Modules contextual per region (Damarjati & Irfan, 2025).**
5. Selection of Learning Experiences	**Selecting methods/activities that allow students to**	**Selecting core pedagogy namely Project-Based Learning (PBP), hands-on**

	engage with content (Taba, 1962).	**practice, and field experiences (Jariyah, 2016).**
6. Organization of Learning Experiences	**Sequencing learning activities cumulatively and inductively (from concrete to abstract) (Taba, 1962).**	**Compiling Action Plan Documents. Sequence: observation of problems (concrete) -> inquiry (abstract) -> project (application) (Jariyah, 2016).**
7. Evaluation	**Determining what will be evaluated and how to do it (instruments and procedures) (Taba, 1962).**	**Recommendation for authentic evaluation (project portfolios, performance rubrics) (Mauludin, 2019).**

Results And Discussion

The following analysis is structured based on Taba's 7 steps, using data from the Melawi workshop to illustrate how each theoretical step was implemented in practice.

Part 1: Diagnosis of Needs (Taba Step 1)

Taba's first step is diagnosis, which she defines as the process of determining essential facts for making curriculum decisions, including identifying gaps, deficiencies, and variations (Taba, 1962). The process in Melawi adopted a sophisticated double diagnosis approach: problem-based analysis and asset-based analysis.

1.1 Double Approach: Asset and Problem Analysis

The diagnosis process in Melawi went beyond merely looking for "deficiencies" (deficit model). Instead, the process began with Asset-Based Analysis. Participants were then divided into groups to discuss 7 Capitals or Assets. These Capitals include:

1. Human Capital
2. Social Capital
3. Political Capital
4. Religion and Cultural Capital
5. Physical Capital
6. Environmental Capital
7. Financial Capital

This asset-based approach was simultaneously complemented by Problem-Based Analysis, identified through brainstorming sessions to determine local content themes. The combination of these two approaches is very powerful; the curriculum can be designed with a strategy of using assets to solve problems.

1.2 Problem Diagnosis Findings (5 Critical Issue Clusters)

The brainstorming results mapped 5 main issue clusters considered most urgent and relevant to students' lives in Melawi:

1. Waste Management and Low Environmental Awareness
2. Deforestation, Forest/Land Fires, and Gardening

3. Access to Clean Water and Global Climate Change
4. Food Security
5. Educational Tourism & Local Wisdom

1.3 Asset Diagnosis Findings (Capitals & Local Wisdom)
During the workshop identifying 7 Capitals, participants specifically identified assets in "Religion and Cultural Capital" and "Environmental Capital" that could become the content foundation. Other identified assets were "Human Capital" (reflected in the commitment of 32 participants, including teachers from 16 schools) and "Social Capital" (partnerships already established between the Education Office, FPBM, SUAR, and WWF).

1.4 Implementation Readiness Diagnosis (Teachers and Community)
Taba's diagnosis includes not only content but also the diagnosis of students as learners and curriculum problems. The workshop in Melawi revealed crucial diagnostic data regarding the implementers (teachers). This data informed that local wisdom material must be selected and framed carefully. The facilitator's response was "explaining not to bring up themes that smell of SARA (ethnicity, religion, race, and inter-group relations) and certain religions". This directs that the focus of local wisdom content (such as *Berontang* or Customary Forests) must be on ecological values and practices (ETK), not on theological rituals, to ensure acceptance and comfort for teachers in implementing it.

Part 2: Formulation of Objectives & Selection of Content (Taba Steps 2 & 3)
2.1 Formulation of Objectives (Taba Step 2)
Based on the need diagnosis, the curriculum requires a clear formulation of objectives (Taba, 1962). Objectives are one of the components of curriculum anatomy (Masykur, 2019) formulated beyond mere knowledge transfer. The main goal is to produce students who are "smart, resilient, and caring about the environment". This formulation effectively reflects the three domains of educational objectives (Masykur, 2019):

1. Smart (Cognitive): Includes mastery of knowledge (concepts, facts) and critical thinking skills (reflective) (Masykur, 2019; Jariyah, 2016).
2. Resilient (Psychomotor): Includes real skills, ability to act, and project implementation (Masykur, 2019; Jariyah, 2016).
3. Caring (Affective): Includes the development of values, attitudes, and sensitivity (environmental ethics) (Masykur, 2019; Jariyah, 2016).

This set of objectives aligns perfectly with the Local Content objectives mandated in regulations (Damarjati & Irfan, 2025): (1) Knowing (Cognitive), (2) Having capability/skills (Psychomotor), and (3) Having attitudes aligned with values (Affective).

2.2 Selection of Content and Significance Validation (Taba Step 3)
Once objectives are set, the next stage is content selection, with the main criteria being that the content must be valid, significant, and relevant to social reality (Taba, 1962; Masykur, 2019). The significance of the 5 local issues (waste, deforestation, water, food, and local wisdom) was validated by mapping them into the national Climate Change Education (PPI) framework. The goal of PPI itself is to develop awareness and increase community capacity to respond to climate crisis issues relevantly and effectively (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2024).

The Climate Change Education (PPI) framework focuses on four competencies: Impact, Cause, Adaptation, and Mitigation (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2024). Melawi's critical issues directly map to Adaptation and Mitigation competencies:

1. Climate Mitigation Competency (Reducing Causes):
    - Cluster 1 (Waste Management): Directly related to reducing greenhouse gas (GHG) emissions such as methane from waste piles (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2024).
    - Cluster 2 (Deforestation/Fire): Related to preserving carbon sinks (forests) and reducing emissions from land fires (Lourrinx et al., 2022; Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2024).
2. Climate Adaptation Competency (Facing Impacts):
    - Cluster 3 (Access to Clean Water): Is an adaptive response to climate crisis impacts such as drought and erratic seasons (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2024).
    - Cluster 4 (Food Security): Is an adaptive response to the risk of crop failure due to extreme weather (Badan Standar, Kurikulum, dan Asesmen Pendidikan, 2024).
3. Socio-Cultural Vehicle:
    - Cluster 5 (Local Wisdom): Functions as a vehicle to instill ethics, a sense of care, and provide adaptation/mitigation solutions and Indigenous community habits.

This mapping proves that the Melawi Local Content is not an isolated curriculum, but a locally contextual one that is simultaneously globally relevant, thus meeting Taba's criteria for significance (Taba, 1962).

Table 2. Mapping of Melawi Critical Environmental Issues within the Climate Change Education (PPI) Competency Framework

Local Critical Issue (Needs Diagnosis)	PPI Competency Category	Selected Content/Local Wisdom	Example of Real Action / Project
1. Waste Management & Low Awareness	**Mitigation (Reducing emissions)**	**3R Concept, Zero Waste, organic/inorganic waste, recycling.**	**Project: School composter, Maggot cultivation, mini waste bank.**
2. Deforestation, Forest/Land Fires	**Mitigation (Protecting sinks)**	**Conservation, Customary Forests, berontang culture, Reforestation**	**Project: Local tree nursery, anti-burning campaign, Customary Forest mind mapping.**

3. Access to Clean Water & Climate Change	**Adaptation (Facing drought)**	**Water conservation, hydrological cycle, saving water.**	**Project: Making simple water filters, Rainwater Harvesting (PAH).**
4. Food Security	**Adaptation (Facing crop failure)**	**Gardening, eco-friendly farming, local food diversification.**	**Project: School gardening, processing local chips/jams.**

Part 3: Organization of Content (Taba Step 4)

After content is selected, Taba Step 4 is Content Organization. This includes two main decisions: implementation model and organizational structure.

3.1 Implementation Model: Independent Subject (2 JP)

Based on the workshop, teachers and principals in Melawi recommended option (c), namely Independent Local Content (stand-alone) with an allocation of 2 Lesson Hours (JP) per week. This 2 JP allocation per week (72 JP per year) is in accordance with the curriculum structure set by the government (Damarjati & Irfan, 2025). The independent 2 JP model guarantees specific time allocation for Education *for* the Environment (action, attitude, project), which is the highest level of environmental education (Supadmini et al., 2020) and aligns with PBP pedagogy (Jariyah, 2016).

3.2 Organizational Structure: Flexible Thematic Modules

Once the independent model was selected, the recommended content organizational structure (Taba Step 4) was flexible thematic modules. This is a direct implementation of the local content flexibility principle, namely *Flexible* (Damarjati & Irfan, 2025) and *Learnability and Adaptability* (Taba, 1962). Melawi is a geographically and socially diverse regency. The thematic module design (based on 5 issue clusters) allows for differentiation (Masykur, 2019).

. For example:

1. Schools in urban areas (such as Nanga Pinoh) can prioritize Waste Management and Culinary/Crafts Modules;
2. Schools in rural areas (such as those near Customary Forests) can prioritize Deforestation/Local Wisdom and Food Security Modules.

This flexibility (Damarjati & Irfan, 2025) ensures the curriculum remains relevant and contextual across all sub-regions of Melawi.

3.3 Comparative Analysis of Local Content Organization

To strengthen the justification for the Melawi design, a comparison can be made with other environmental Local Content models in Kalimantan.

1. Katingan Model, Central Kalimantan (Tim Penyusun, n.d.): Uses content organization based on elements: Air, Water, Soil, and Forest. The focus is on understanding environmental components structurally per class.

2. Kongbeng Model, East Kalimantan (Utami, 2024): Uses content organization based on dominant economic practices: Agrarian Practices. This was chosen because it is relevant to the context of the majority of the population being farmers and the availability of fertile land (Utami, 2024).
3. Melawi Model, West Kalimantan: Uses content organization based on critical issues (Waste, Deforestation, Food, Water) validated by the problem-solving framework in the Climate Change guide. The Melawi model uniquely combines contextual relevance (like Kongbeng) and component understanding (like Katingan) into a Climate Change Education (PPI) action framework oriented towards problem-solving.

Part 4: Selection & Organization of Learning Experiences (Taba Steps 5 & 6)

4.1 Selection of Learning Experiences (Taba Step 5)

This step is about methods or strategies (Masykur, 2019). Selection of learning experiences that can achieve diverse objectives (cognitive, affective, and skills) simultaneously (Taba, 1962). The main pedagogical choices in Melawi are practice, projects, and field experiences. This is the core of Project-Based Learning (PBP). This PBP approach perfectly embodies the three conceptual vehicles of environmental education identified by UNESCO (Supadmini et al., 2020):

1. Education *about* the Environment (Knowledge/Cognitive): students learn why waste becomes a problem;
2. Education *in* the Environment (Experience/Skills): students observe waste in the school environment or visit Customary Forests;
3. Education *for* the Environment (Action/Affective): students take action, create compost projects, or campaign for forest preservation.

The Melawi model, with its emphasis on PBP, firmly focuses on "Education for the Environment", which is the highest and most transformative level of environmental education (Supadmini et al., 2020).

4.2 Organization of Learning Experiences (Taba Step 6)

This step is about sequence, promoting an inductive learning sequence starting with concrete experiences, moving to abstraction (concept formation), and ending with application (Taba, 1962). The PBP model (Jariyah, 2016) and Inquiry (Jariyah, 2016) are inherently inductive. The sequence is:

1. Stage 1: Concrete/Diagnosis: Students are faced with real problems or "something that causes confusion" (Jariyah, 2016).
2. Stage 2: Inquiry/Exploration: Students carry out inquiry activities as far as possible, collecting information/trying (Jariyah, 2016) (e.g., searching for data on waste).
3. Stage 3: Application/Action (PBP): Students manage their learning by working realistically to produce real products (Jariyah, 2016).

Part 5: Evaluation and Implementation Strategy (Taba Step 7)

5.1 Curriculum Evaluation (Taba Step 7)

Taba (1962) defines evaluation as the process of determining whether objectives have been achieved. Given Melawi's goal is "smart, resilient, and caring", evaluation cannot rely solely on pencil-and-paper tests, but demands a shift to authentic assessment,

focusing on performance-based assessment (Mauludin, 2019). Evaluation must measure all three objective domains:

1. Cognitive ("Smart"): Using comprehension tests, case studies, and ability to explain concepts (Jariyah, 2016; Masykur, 2019).
2. Affective ("Caring"): Using attitude assessments, observations, and scales (e.g., Likert Scale) to measure love for the region and environmental concern (Mauludin, 2019; Jariyah, 2016).
3. Psychomotor ("Resilient"): Using performance/product assessment (PBP), Performance Rubrics, Portfolios, and Project Assessment (Mauludin, 2019).

Overall curriculum evaluation must also include process evaluation (formative) and outcome evaluation (summative) for continuous improvement (Masykur, 2019; Taba, 1962).

5.2 Implementation Strategy: Legitimacy and Collaboration

Taba (1962) dedicated the final part of her model to "Curriculum Change Strategy", realizing that good design can fail without a good implementation strategy. The process in Melawi smartly addresses this weakness through two steps:

1. Initial Commitment (Bottom-Up): The workshop produced minutes of Agreement to develop the curriculum and Action Plan Documents for each school. This represents strong acceptance from 16 schools.
2. Formal Legitimacy (Top-Down): A key recommendation from the analysis is the institutionalization of the curriculum through a Regent Regulation (Perbup). This is a crucial step that provides legal force, budget allocation, and sustainability to the curriculum born from the bottom.

Additionally, sustainability relies on the existing support ecosystem (FPBM, SUAR, WWF), demonstrating the importance of multi-party collaboration.

5.3 Implementation Strategy: Teacher Capacity Development

Taba (1962) emphasized that curriculum change and teacher training are an integrated process (Integration of Production and Teacher Training). The workshop process itself was a form of teacher training. Teacher reflections at the end of the workshop showed their understanding regarding the discussed material. This indicates a transformation in teacher capacity and confidence. For sustainability, teacher training (Damarjati & Irfan, 2025) and thematic module development must be systematic, focusing on PBP pedagogy and inquiry (Jariyah, 2016).

Part 6: Academic Validation and Implementation Plan (Follow-up Public Discussion)

This curriculum development process was further strengthened through a public discussion held on September 1, 2025, involving various stakeholders, including academics from Tanjungpura University, the Education Office, and the Sustainable Development Forum. In the discussion, academics from Tanjungpura University emphasized that the curriculum is a *grand design* of education that must be compiled systematically. They outlined the stages that must be passed, starting from needs analysis, topic determination, framework design, teaching material preparation, limited trials, and evaluation to legalization through regional regulations.

Conclusion

This analysis shows that the process of developing the Local Content Curriculum in Melawi Regency is a successful and authentic implementation of Hilda Taba's 7-Step Inductive Curriculum Development Model (Taba, 1962). The process began at the grassroots level with a participatory need diagnosis identifying 5 critical environmental issue clusters (problem-based) and 7 local asset capitals. The resulting curriculum design is Independent Local Content of 2 JP per week with content organized into flexible thematic modules. This local issue-based content was validated for national significance using the Climate Change Education (PPI) framework, focusing on mitigation (waste management, deforestation) and adaptation (access and Adaptation (Access to Clean Water, Food Security) actions). The chosen core pedagogy is Project-Based Learning (PBP), aligning with UNESCO frameworks and smartly transforming resource scarcity (textbooks) into learning experience opportunities. The Melawi model is a strong synthesis between bottom-up relevance (Taba's Theory) and top-down significance (PPI Validation), creating a curriculum that is locally contextual yet globally relevant.

Recommendations

Based on the analysis, to ensure the sustainability and effectiveness of this curriculum's implementation, the following strategic steps are recommended:

1. Policy (Legitimacy): The Regional Government of Melawi Regency needs to immediately legalize the agreed-upon curriculum through a Regent Regulation (Perbup). This step is crucial to guarantee resource allocation (budget and HR) and long-term sustainability.
2. Capacity (Teacher Training): The Education and Culture Office must carry out systematic and sustainable teacher training. The training focus should not only be on environmental *content*, but on PBP *pedagogy*, inquiry methods, and authentic evaluation techniques.
3. Development: Materials from the 16 pioneer schools must be immediately consolidated and developed into flexible thematic modules. These modules should be designed as materials that schools can select according to the context and priority issue clusters in their area.
4. Collaboration (Sustainability): Maintain and strengthen the multi-party partnerships already established (Education Office, FPBM, Traditional Leaders, WWF, SUAR, and Academics) as supporting pillars for curriculum implementation, monitoring, and evaluation.

This is a design and needs analysis, not yet covering actual trials/implementation, and I suggest directions for future research (e.g., PjBL effectiveness studies, local wisdom database modeling).

Acknowledgments

Head of the Education and Culture Office of Melawi Regency, FPBM, KGBN Melawi, Traditional Leaders, WWF, SUAR, and Academics of Tanjungpura University.

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