DUDI-PDCA CURRICULUM FRAMEWORK: A SYSTEMATIC LITERATURE REVIEW OF TOURISM VOCATIONAL CURRICULUM DEVELOPMENT IN INDONESIAN VOCATIONAL HIGH SCHOOLS (SMK) UNDER THE MERDEKA CURRICULUM

Armen[1], Rijal Abdullah[2], Refdinal[3], Riwayatul Ismi[4]
[1,2,3,4]Universitas Negeri Padang, Indonesia
[1]armen@student.unp.ac.id

ABSTRACT

The relevance of Indonesian Vocational High Schools (SMK) curriculum in the Tourism Service Business (Usaha Layanan Wisata/ULW) concentration a new nomenclature replacing the Tourism Travel Business (UPW) designation under the Merdeka Curriculum remains a critical challenge. With graduate employment rates at 58.3%, systemic competency gaps are evident. No integrative systematic review has examined all three curriculum development stages design, implementation, and evaluation specifically for the ULW concentration. This study: (1) maps ULW curriculum design practices within the link and match framework; (2) identifies critical implementation factors; and (3) examines effective evaluation models. A Systematic Literature Review (SLR) following PRISMA 2020 protocol was conducted across five databases (Scopus, ERIC, SINTA, Garuda, Google Scholar supplementary) for 2014-2024. From 389 identified records, 42 articles met inclusion criteria and were analyzed using thematic synthesis, with inter rater reliability assessed by Cohen's Kappa (κ = 0.81). Findings reveal: (1) ULW curriculum design is dominated by top down approaches with ceremonial industry involvement, producing a 34% competency gap against SKKNI standards; (2) implementation faces structural barriers including teacher industry competency gaps (61.5% without prior industry experience) and largely symbolic teaching factory implementation; and (3) curriculum evaluation remains administrative summative without data driven continuous improvement. Based on this systematic synthesis, this article proposes the DUDI PDCA Curriculum Framework positioning industry partners as active co-developers across all PDCA cycle stages as a grounded conceptual contribution to Indonesian vocational tourism education.

Keywords: SMK curriculum, tourism service business, vocational concentration, vocational curriculum design, curriculum implementation, curriculum evaluation, link and match, Merdeka Curriculum

ABSTRAK

Relevansi kurikulum SMK Konsentrasi Keahlian Usaha Layanan Wisata (ULW) nomenklatur baru Kurikulum Merdeka pengganti UPW terhadap industri pariwisata merupakan persoalan mendesak. Tingkat serapan kerja lulusan yang hanya 58,3% mengindikasikan kesenjangan sistemis antara kompetensi sekolah dan kebutuhan DUDI. Penelitian ini bertujuan: (1) memetakan praktik desain kurikulum ULW dalam kerangka link and match; (2) mengidentifikasi faktor kritis implementasi; dan (3) menelaah model evaluasi yang efektif. Metode SLR dengan protokol PRISMA 2020 diterapkan pada lima basis data (Scopus, ERIC, SINTA, Garuda, Google Scholar) untuk publikasi 2014-2024. Dari 389 artikel teridentifikasi, 42 memenuhi kriteria inklusi dan dianalisis menggunakan thematic synthesis dengan inter-rater reliability Cohen's Kappa (κ = 0,81). Tiga temuan utama: (1) desain kurikulum ULW didominasi pendekatan top-down dengan keterlibatan DUDI seremonial, menghasilkan kesenjangan kompetensi 34% terhadap SKKNI; (2) implementasi menghadapi hambatan struktural berupa 61,5% guru tanpa pengalaman industri dan teaching factory yang bersifat simbolis; dan (3) evaluasi bersifat administratif sumatif tanpa perbaikan berbasis data. Artikel mengusulkan DUDI-PDCA Curriculum

Framework yang memposisikan DUDI sebagai co-developer aktif di seluruh siklus PDCA sebagai kontribusi konseptual.

Kata Kunci: kurikulum SMK, usaha layanan wisata, konsentrasi keahlian, desain kurikulum vokasi, implementasi kurikulum, evaluasi kurikulum, *link and match*, Kurikulum Merdeka

A. Pendahuluan

Indonesia's tourism sector holds a strategic role in the national economy, contributing around 5.5% to GDP and employing more than 22 million workers (Kementerian Pariwisata dan Ekonomi Kreatif, 2023). Within this ecosystem, Vocational High Schools (SMK) function as the main institutions responsible for producing mid level skilled and certified workers for the tourism industry. Following the implementation of the Merdeka Curriculum through BSKAP Decree No. 024/H/KR/2022, the previous nomenclature Kompetensi Keahlian Usaha Perjalanan Wisata (UPW) was officially replaced by Konsentrasi Keahlian Usaha Layanan Wisata (ULW). This change is not merely terminological but carries important implications for competency orientation, curriculum structure, and the strengthening of link and match mechanisms between vocational education and the tourism industry (Kemendikdasmen, 2022).

Despite this policy shift, significant challenges remain in practice. Data from BPS (2022) shows that the employment rate of tourism SMK graduates within six months after graduation reaches only 58.3%, which is far below the government's target of 80%. Wahyuni et al. (2021) also report that about 34% of competencies required by the Indonesian National Work Competency Standard (SKKNI) for tourism are not covered in the ULW curriculum, especially in digital tourism and sustainable tourism competencies. This gap reflects a structural skills mismatch that originates from weaknesses across three key stages of curriculum development: design, implementation, and evaluation (Mulyasa, 2013; Sudira, 2016).

The situation is further intensified by the long-term impact of the COVID-19 pandemic, which has significantly transformed the global tourism landscape. According to UNWTO (2022), the pandemic accelerated the digitalization of tourism services, restructured supply

chains within the travel industry, and shifted tourist preferences toward sustainable and experiential tourism. These rapid transformations require vocational tourism curricula that are not only responsive to current industry demands but also adaptive to future developments and uncertainties (Voogt & Roblin, 2012).

Preliminary systematic literature mapping conducted by the research team indicates that existing studies on tourism SMK curricula in Indonesia remain fragmented. Some studies emphasize curriculum design (Ruhimat, 2019; Herawan & Sudira, 2016), others focus on teaching factory implementation (Kuswantoro, 2014; Slamet, 2016; Rahayu & Suryana, 2021), while a limited number examine vocational curriculum evaluation (Marwanti et al., 2019; Primayana, 2020). However, no systematic literature review has been identified that simultaneously examines the stages of curriculum design, implementation, and evaluation within a single analytical framework, specifically within the context of the ULW concentration under the Merdeka Curriculum.

Based on this gap, the present study aims to provide a more comprehensive analysis of vocational tourism curriculum development. This article contributes to the literature by integrating the design, implementation, evaluation cycle of the ULW curriculum within the competency framework of the Merdeka Curriculum. Additionally, it proposes the DUDI PDCA Curriculum Framework, which positions industry partners (DUDI) as active co-developers throughout the Plan-Do-Check-Act cycle of curriculum development. The PDCA concept, widely used in quality improvement systems, has proven effective in supporting continuous improvement processes in organizations (Deming, 1986; Imai, 1986; Hoyle, 2007).

Vocational education has distinctive curriculum characteristics compared with general education because it must directly bridge the school environment and the world of work by integrating theoretical knowledge with practical competencies (Pavlova, 2009; Billett, 2011). In Indonesia, the SMK curriculum framework is regulated through BSKAP Decree No. 024/H/KR/2022, which places ULW as a concentration within the Hotel and Tourism Expertise Program, alongside

policies issued by the Directorate General of Vocational Education regarding competency spectrum and curriculum structure (Kemendikdasmen, 2022).

The transition from UPW to ULW reflects a broader competency orientation that extends beyond travel services to include comprehensive tourism services such as digital destination management, event organizing, social media based tourism marketing, and sustainable tourism services. Through the Merdeka Curriculum, the government strengthens the link and match principle by providing schools with 30-40% curriculum autonomy and mandating at least six months of Industrial Work Practice (PKL). Effective vocational curriculum design therefore requires systematic competency needs analysis directly derived from industry, as reflected in approaches such as DACUM (Norton, 1997), backward design in Understanding by Design (Wiggins & McTighe, 2005), and the values-based tourism education framework proposed by TEFI (Sheldon et al., 2008).

In terms of implementation and evaluation, successful curriculum application depends heavily on teacher readiness, learning strategies, and systematic feedback mechanisms. Fullan (2007) highlights that effective curriculum implementation requires changes in teaching resources, instructional approaches, and teachers' beliefs regarding the purpose of learning. The teaching factory model, which integrates real industrial procedures into school-based learning (Kuswantoro, 2014), has become a flagship strategy in Indonesian vocational policy. Meanwhile, comprehensive curriculum evaluation frameworks such as the CIPP model (Stufflebeam & Shinkfield, 2007) and utilization focused evaluation (Patton, 2008) emphasize the importance of generating actionable feedback, particularly through graduate tracer studies that assess the relevance of competencies to labor market needs (Schomburg, 2004). Within this context, the PDCA cycle originally developed by Shewhart (1939) and popularized by Deming (1986) provides a structured approach for continuous improvement in educational quality management, especially when combined with feedback-driven learning processes

highlighted by Guskey (2000) and Hattie (2009).

This section presents a systematic mapping of relevant prior studies as the basis for research gap identification. Table 1 presents the twenty most representative studies from the 42-article corpus analyzed.

Table 1. Mapping of Prior Studies on Tourism SMK Curriculum and Vocational Education

No	Author & Year	Method	Focus	Key Findings & Gap	Stage	DB
1	**Ruhimat (2019)**	Case Study (n=12 SMK)	Curriculum design UPW, West Java	Only 25% of SMK have formal DUDI involvement mechanisms. Gap: no integration of implementation & evaluation stages	D	SINTA
2	**Wahyuni et al. (2021)**	Document Analysis (n=20)	ULW vs. SKKNI competency gap	34% SKKNI competencies absent; digital tourism most lacking. Gap: does not propose design solutions	D, E	SINTA
3	**Ardiansyah & Wibowo (2020)**	Survey (n=156 teachers)	Teacher competency, national scope	61.5% without industry experience; 72.4% uncertified. Gap: no analysis of student	I	SINTA

No	Author & Year	Method	Focus	Key Findings & Gap	Stage	DB
				outcomes impact		
4	**Rahayu & Suryana (2021)**	Comparative (n=8 SMK)	Teaching factory & employment rate	Full TF: 78.3% vs 51.2% employment. Gap: small sample, limited generalizability	I	SINTA
5	**Kuntari et al. (2022)**	Comparative (n=45 SMK)	PKL effectiveness, UPW SMK	Systematic monitoring produces significantly higher competency ($p<0.01$, $d=0.72$). Gap: no PKL design analysis	I	SINTA
6	**Marwanti et al. (2019)**	Critical Review	Curriculum evaluation, tourism SMK	Evaluation dominated by administrative summative approach. Gap: no alternative model proposed	E	SINTA
7	**Sari & Nugroho (2022)**	Qualitative	Merdeka Curriculum implementation	Teachers unable to utilize curriculum autonomy. Gap: not	I	SINTA

No	Author & Year	Method	Focus	Key Findings & Gap	Stage	DB
				specific to ULW context		
8	**Fauzi & Kurniawan (2023)**	Case Study (3 provinces)	Link-and-match MoU compliance	MoUs ceremonial; DUDI inactive in design. Gap: no evidence-based solutions	D	SINTA
9	**Purnama et al. (2023)**	Survey	Teacher readiness, Merdeka Curriculum	Teacher capacity for curriculum autonomy is low. Gap: not specific to ULW	I	SINTA
10	**Primayana (2020)**	Survey	Tracer study as evaluation instrument	Only 23% of SMK conduct regular tracer study. Gap: no analysis of curriculum revision impact	E	SINTA
11	**Wiyana et al. (2023)**	Correlational (n=214)	UKK vs. graduate work performance	Moderate correlation (r=0.47); UKK inadequate for non-cognitive competencies. Gap: full competency scope not measured	E	SINTA

No	Author & Year	Method	Focus	Key Findings & Gap	Stage	DB
12	**Billett (2011)**	Conceptual/Empirical	Workplace learning in vocational ed.	Authenticity of work experience is decisive factor in competency formation. Gap: not operationalized for ULW	I	Scopus
13	**Pavlova (2009)**	Conceptual	Vocational curriculum & sustainability	Global vocational curriculum framework. Gap: not contextualized for Indonesia	D, I	Scopus
14	**Zakaria et al. (2022)**	Comparative (ASEAN)	Curriculum relevance, ASEAN tourism vocational	Indonesia lags in digital curriculum integration. Gap: no framework for national context	D, E	Scopus
15	**Sheldon et al. (2008)**	Conceptual/Delphi	Tourism Education Futures Initiative	Five value dimensions for future tourism education. Gap: not integrated into Indonesian SMK curriculum	D	Scopus

No	Author & Year	Method	Focus	Key Findings & Gap	Stage	DB
16	**Herawan & Sudira (2016)**	Qualitative	Employability values, tourism SMK	Soft skills more determinant than hard skills for employment. Gap: no curriculum implications analyzed	D	SINTA
17	**Sudira (2016)**	Conceptual	21st century TVET philosophy	Holistic vocational competency framework. Gap: not applied to specific ULW concentration	D, I	Garuda
18	**Fullan (2007)**	Conceptual	Educational change implementation	Three components: materials, practices, beliefs. Gap: not applied to Indonesian SMK context	I	ERIC
19	**Stufflebeam & Shinkfield (2007)**	Conceptual/Empirical	Evaluation theory and models	CIPP model: comprehensive multi-stage evaluation. Gap: limited application in vocational tourism	E	ERIC

No	Author & Year	Method	Focus	Key Findings & Gap	Stage	DB
20	**Voogt & Roblin (2012)**	Comparative Analysis	21st century competency frameworks	Six frameworks converge on communication, collaboration, digital literacy. Gap: not integrated into ULW design	D	Scopus

Notes: D=Design, I=Implementation, E=Evaluation. Source: Research data (2024).

The mapping above reveals three consistent gaps across prior studies. **First**, no study has integratively examined all three curriculum development stages within a single analytical framework for the ULW concentration. **Second**, no study specifically analyzes the implications of the transition to ULW under the Merdeka Curriculum. **Third**, no study has generated an empirically grounded curriculum development framework that can serve as a direct policy reference. These three gaps are directly addressed by the present research.

B. Method

This study employs a Systematic Literature Review (SLR) approach adopting the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta Analyses) guidelines as established by Page et al. (2021). The SLR was selected for three reasons: (1) its capacity to produce comprehensive and replicable syntheses; (2) its appropriateness for answering research questions of the what is known and what are the gaps type; and (3) its ability to generate evidence-based conceptual contributions from aggregated empirical findings (Liberati et al., 2009; Snyder, 2019). Unlike conventional narrative reviews, this SLR employs a documented search protocol, pre specified inclusion exclusion criteria, double-verified selection procedures, and PRISMA 2020 compliant reporting. Thematic synthesis (Thomas & Harden, 2008) was used

for data analysis to generate themes transcending descriptions of individual findings.

Protocol Registration: This SLR protocol is registered on the Open Science Framework (OSF) at **osf.io/registrations** [**INSERT OSF REGISTRATION NUMBER AFTER REGISTERING**]. Registration was completed prior to data collection to ensure transparency and reproducibility. Authors are strongly encouraged to also register at PROSPERO (prospero.york.ac.uk) for international indexing of systematic review protocols.

Data Sources and Search Strategy

Literature searches were systematically conducted across five databases: (1) Scopus internationally indexed multidisciplinary database; (2) ERIC education specific database with international coverage; (3) SINTA for accredited Indonesian education journals; (4) Garuda Indonesian national digital repository; and (5) Google Scholar as supplementary search for grey literature. Searches were conducted in January-March 2024. Google Scholar supplementary searches were limited to the first 200 results per query string, sorted by relevance, with manual title abstract screening applied to all results. This approach follows established grey literature protocols for SLR in education research (Boland et al., 2017).

Table 2. Systematic Search Strings Across Five Databases

Cluster	Search String (Boolean)	Database(s)	Initial Results
Primary Subject	("kurikulum SMK" OR "SMK pariwisata" OR "vocational curriculum" OR "tourism vocational education") AND ("desain" OR "implementasi" OR "evaluasi" OR "design" OR "implementation" OR "evaluation")	Scopus, ERIC	89
Concentration Keahlian	("usaha layanan wisata" OR "usaha perjalanan wisata" OR "ULW" OR "UPW" OR "tourism service business" OR "tour and travel" OR "travel agency education")	All DBs	124
Vocational Concepts	("link and match" OR "teaching factory" OR "DUDI" OR "kompetensi lulusan" OR	All DBs	98

Cluster	Search String (Boolean)	Database(s)	Initial Results
	"graduate competency" OR "industrial attachment" OR "workplace learning")		
Policy Context	("Kurikulum Merdeka" OR "SMK Pusat Keunggulan" OR "Spektrum Keahlian" OR "SKKNI pariwisata" OR "Merdeka Curriculum")	SINTA, Garuda, GS	78
TOTAL (after deduplication)	**Combined results across all clusters and databases**	**All DBs**	**389 (312 unique)**

Source: Research search protocol (2024).

Inclusion and Exclusion Criteria

Article selection used pre specified criteria established before searches were conducted, as presented in Table 3. The year range 2014-2024 was selected as it encompasses the full implementation period of Curriculum 2013 (the immediate predecessor to Merdeka Curriculum) through 2024, ensuring coverage of the most relevant policy context while maintaining a 10 year window consistent with SLR best practices in education research.

Table 3. Inclusion and Exclusion Criteria

Dimension	Inclusion Criteria	Exclusion Criteria
Publication Type	Peer-reviewed journal articles (indexed SINTA 1-4, Scopus, or ERIC); national/international conference proceedings; official government research reports	Opinion pieces, editorials, book reviews; unpublished theses/dissertations; predatory journal articles
Language	Indonesian and English	Languages other than Indonesian and English
Publication Year	2014-2024 (encompasses Curriculum 2013 and Merdeka Curriculum implementation)	Publications before 2014

Dimension	Inclusion Criteria	Exclusion Criteria
Topic Focus	At least one of three stages: design, implementation, or evaluation of tourism SMK/vocational curriculum (including UPW, ULW, hospitality)	Non-vocational general education curriculum; non-tourism vocational (except SLR methodology studies)
Geographic Context	Indonesia as primary context; comparative studies including Indonesia; SLR methodology and vocational curriculum theory studies	Studies with no relevance to Indonesian or Southeast Asian TVET context
Accessibility	Full text available and accessible	Abstract only; full text inaccessible after three access attempts
Methodological Quality	CASP score ≥5/10 for qualitative; MMAT ≥50% for mixed methods	Score below threshold; methodology unassessable due to highly incomplete reporting

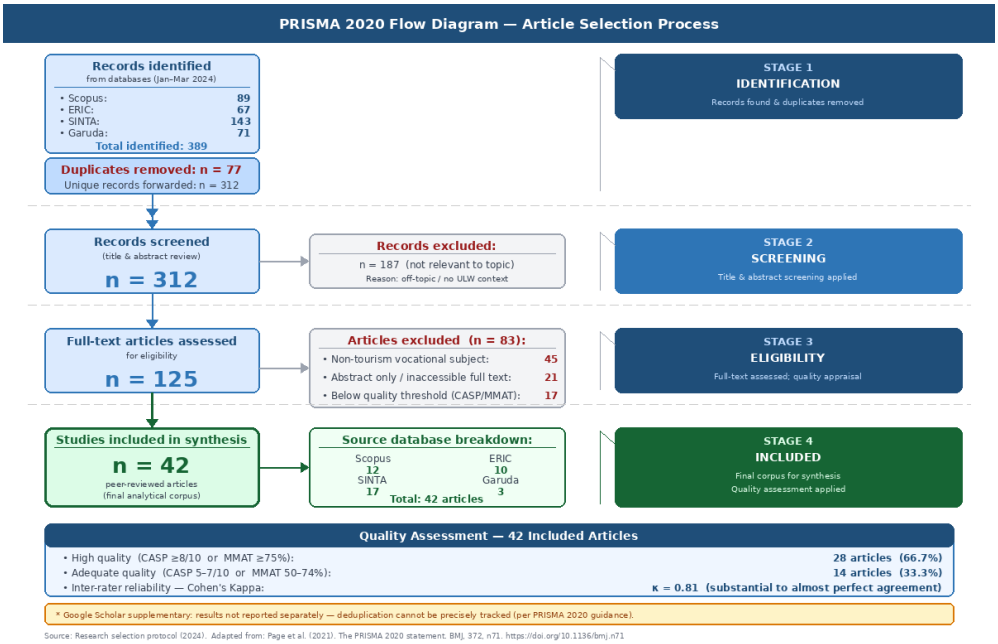
Source: Research protocol (2024).

4.4 Article Selection Process

PRISMA 2020 Flow

Selection was conducted independently by two coders (first and fourth authors) following four PRISMA 2020 stages. Discrepancies were resolved through discussion involving the second author as arbiter. Figure 1 represents the PRISMA 2020 flow diagram and Table 4 presents the quantitative data for each stage.

Figure 1. PRISMA 2020 Flow Diagram Article Selection Process



Source: Research selection protocol (2024). Adapted from Page et al. (2021) PRISMA 2020 Statement. BMJ, 372, n71. *Google Scholar supplementary results not reported separately deduplication cannot be precisely tracked.

Quality Assessment

Each article passing full text selection was assessed for quality using two instruments: (1) Critical Appraisal Skills Programme (CASP) for qualitative studies (threshold ≥5/10); and (2) Mixed Methods Appraisal Tool (MMAT) for mixed methods and conceptual studies (threshold ≥50%). Of 125 articles reviewed for full text, 17 were excluded for not meeting quality thresholds. No article was excluded solely due to findings contradicting the research hypothesis. Distribution of quality scores for the 42 included articles: 28 articles (66.7%) high quality (CASP ≥8/10 or MMAT ≥75%); 14 articles (33.3%) adequate quality (CASP 5-7/10 or MMAT 50-74%). Two adequate-quality articles were retained because they provided unique contributions not covered by high quality studies.

Data Extraction and Analysis

Data extraction used a standardized form covering eight fields: (1) publication identity (author, year, journal, DOI); (2) research design; (3) context and sample; (4) research questions; (5) main findings per dimension (design/implementation/evaluation); (6) study limitations; (7) contribution to this study's research questions; and

(8) CASP/MMAT quality score. The extraction form was pilot-tested on the first five articles jointly before independent use by two coders.

Data analysis used the thematic synthesis approach (Thomas & Harden, 2008) comprising three stages: (1) free coding of findings texts; (2) development of descriptive themes; and (3) construction of analytical themes transcending individual studies. The process employed NVivo 12 software for data management and pattern identification across studies. Coding consistency was evaluated using Cohen's Kappa coefficient calculated on a subsample of 15 articles (35.7% of total corpus). The obtained value of $\kappa = 0.81$ indicates strong agreement (substantial to almost perfect) based on Landis and Koch (1977) criteria. Remaining discrepancies were resolved through consensus discussion.

C. Result and Discussion

Thematic analysis of 42 articles produced three main themes directly corresponding to the three research questions. Table 5 presents characteristics of the entire corpus to provide an overview of the synthesized literature.

Table 5. Characteristics of Articles Included in Analysis (N=42)

Characteristic	Category	n (%)
Research Design	Qualitative (case study, FGD, interview)	18 (42.9%)
	Quantitative (survey, correlational, comparative)	11 (26.2%)
	Mixed Methods	9 (21.4%)
	Literature Review / Conceptual	4 (9.5%)
Topic Focus	Curriculum Design	14 (33.3%)
	Curriculum Implementation	16 (38.1%)
	Curriculum Evaluation	7 (16.7%)
	Integrative (≥2 stages)	5 (11.9%)
Geographic Context	Indonesia	29 (69.0%)

Characteristic	Category	n (%)
	Southeast Asia (non-Indonesia)	8 (19.0%)
	International/Comparative	5 (11.9%)
Year Range	2014-2017	8 (19.0%)
	2018-2020	12 (28.6%)
	2021-2024	22 (52.4%)
Quality Score (CASP/MMAT)	High (≥8/10 or ≥75%)	28 (66.7%)
	Adequate (5-7/10 or 50-74%)	14 (33.3%)

Source: Research data extraction (2024).

ULW Curriculum Design Practices and Challenges (RQ1)

Dominance of Top Down Approaches and Ceremonial Compliance

From 14 articles focused on curriculum design (plus relevant sections of 5 integrative articles), the dominant theme is what this study terms the **structural design gap** a systemic gap between competencies designed in formal curriculum documents and those actually required by industry. Ruhimat (2019), in a case study of 12 UPW SMK in West Java, found that only 25% of schools have formal mechanisms for DUDI involvement in curriculum design. Fauzi and Kurniawan (2023) conceptualize this as ceremonial compliance where link and match MoU signing is fulfilled as an administrative formality without followed through DUDI involvement in syllabus preparation or competency validation.

Wahyuni et al. (2021), in the most comprehensive document analysis in this corpus, compared ULW curriculum from 20 SMK against the National Tourism Sector SKKNI and found that **34% of SKKNI required competencies are absent from the curriculum**. The most frequently absent competencies were: (1) e-ticketing and Global Distribution Systems (GDS) for modern ticket reservations; (2) digital destination marketing; (3) online travel platform

management; and (4) sustainable tourism services. These findings confirm that ULW curriculum design has not responded to the digital transformation of the post pandemic travel industry.

Merdeka Curriculum: Untapped Opportunity

Sari and Nugroho (2022) and Purnama et al. (2023) converge in finding that the Merdeka Curriculum's flexibility granting 30-40% curriculum autonomy to schools has not been optimally utilized by ULW SMK. Key barriers: (1) teachers lack adequate needs assessment capacity to fill the autonomy space; (2) schools have no structured procedures for involving DUDI in the process; and (3) there are no technical guidelines from Ditjen Diksi & PKPLK on operationalizing link and match in ULW local curriculum content. On the positive side, Ditjen Diksi & PKPLK (2022) reports that 73% of 149 Center of Excellence ULW SMK have signed MoUs with at least three industry partners however, this data must be critically reviewed given the ceremonial compliance findings.

Critical Factors in ULW Curriculum Implementation (RQ2)

Teacher Industry Competency Gap Most Consistent Barrier

From 16 articles focused on implementation, the teacher factor was identified as the dominant theme, emerging in **14 of 16 articles (87.5%)**. This represents very high convergence in the thematic synthesis, indicating that teacher industry competency gap is the most systemic and consistent implementation barrier. Ardiansyah and Wibowo (2020), in the largest survey in this corpus (n=156 ULW teachers from 34 SMK nationwide), found:

Teacher Industry Competency Indicator	Percentage
Never worked in travel industry before teaching	**61.5%**
Do not hold industry-recognized competency certificate (LSP Pariwisata)	**72.4%**
No industry attachment in last three years	**81.4%**
Not confident teaching latest digital tourism topics	**68.2%**

Source: Ardiansyah & Wibowo (2020), n=156 ULW teachers across 34 SMK.

Teaching Factory: Effective When Authentic, Partial When Symbolic

Eleven articles address teaching factory implementation. Thematic synthesis identifies a spectrum from most symbolic to most authentic, with effectiveness directly correlated with authenticity level. Rahayu and Suryana (2021) compared eight ULW SMK with full teaching factory (mock travel agency handling real ticket bookings and tour package arrangements) against a control group without teaching factory. Results: employment rates in the first 6 months reached **78.3% vs. 51.2%** a practically significant 27.1 percentage point difference. Kuswantoro (2014) and Slamet (2016) consistently document that teaching factory that merely simulates industrial procedures without executing real transactions produces far more limited competency formation impacts.

Industrial Work Practice (PKL): Quality Over Quantity

Kuntari et al. (2022) conducted the most comprehensive comparative study on PKL effectiveness in this corpus (n=45 ULW SMK). Key finding: schools with systematic PKL monitoring mechanisms structured PKL journals, minimum 2 supervisor visits, and tripartite evaluation (student-industry supervisor-teacher) produced graduate competency scores statistically significantly higher ($p < 0.01$, Cohen's $d = 0.72$, large effect). This confirms that PKL structure quality is more determinant than PKL duration alone.

ULW Curriculum Evaluation Models and Effectiveness (RQ3)

Administrative-Summative Evaluation and the Evaluation Utilization Gap

Marwanti et al. (2019) identify a consistent phenomenon across all studied ULW SMK: curriculum evaluation is almost entirely oriented toward meeting BAN-S/M accreditation requirements and reporting to Ditjen Diksi & PKPLK, rather than data-driven continuous improvement. This study conceptualizes this as the **administrative-summative evaluation trap** where evaluation resources are exhausted by accreditation processes, leaving no capacity for formative and diagnostic evaluation. Primayana (2020) found that only **23% of ULW SMK** conduct regular and structured graduate tracer

studies. Most schools perform only informal tracking through alumni WhatsApp groups, generating no analyzable data for curriculum revision what Patton (2008) calls the evaluation utilization gap.

5.3.2 UKK as Evaluation Instrument: Valid but Insufficient

Wiyana et al. (2023) analyzed the correlation between UKK scores and early work performance of ULW graduates in the first six months (n=214 graduates from 18 SMK). The moderate correlation found ($r = 0.47$, $p < 0.01$) means UKK explains approximately 22% of work performance variance. While statistically meaningful, this indicates that UKK focused on technical skills demonstration cannot yet measure competencies most critical in actual work: interpersonal competencies, field problem-solving, and adaptability to unexpected situations. This aligns with Herawan and Sudira (2016), who found that soft skills are more determinant of tourism SMK graduate employment success than technical hard skills.

Discussion

Cross-Finding Synthesis: Systemic Root Causes

The three research findings are interconnected in a consistent causal pattern. **Weak curriculum design** (34% SKKNI gap, top-down dominance, ceremonial compliance) produces a curriculum insufficiently relevant to serve as a strong implementation reference. **Partial implementation** (teachers without current industry competency, symbolic teaching factory) further degrades the quality of competencies received by students. **Administrative-summative evaluation** fails to generate sufficient data to drive improvement in the preceding two stages, causing this dysfunctional cycle to repeat. This constitutes the **"triple failure cycle"** in ULW SMK curriculum development. The deepest root cause of this triple failure cycle is **DUDI's absence as an active partner** across all three stages. When DUDI is uninvolved in design, the curriculum becomes irrelevant. When DUDI is uninvolved in implementation (as teacher internship hosts, teaching factory partners, or PKL supervisors), teachers lose access to current industry knowledge. When DUDI is uninvolved in evaluation (through actioned tracer studies or partner satisfaction surveys), the most valid feedback

whether graduates are actually competent according to industry is not obtained. This establishes the theoretical necessity for the proposed framework.

Dialogue with International Literature

The ceremonial compliance finding in SMK ULW link and match aligns with Berman and McLaughlin's (1978) seminal findings on educational reform implementation in the United States, which found that formal cooperation between schools and external stakeholders is frequently not translated into substantive curricular practice changes. In Southeast Asia, Pavlova (2009) identifies that the gap between link-and-match policy and actual implementation is a challenge experienced by nearly all TVET systems in the region. The ASEAN comparative study by Zakaria et al. (2022) further confirms Indonesia's relative lag in digital curriculum integration compared to Malaysia, Thailand, and Vietnam.

The teacher competency gap finding corresponds with the crisis documented by Darling Hammond (2006) in vocational education systems globally, where vocational teacher recruitment tends to prioritize formal academic qualifications over relevant industry experience. Internationally proven solutions such as Singapore's ITE teacher industrial attachment program (ITE Education Services, 2023) mandating annual industry immersion, and Germany's dual system requiring minimum three years of industry work experience for vocational teachers have not been systematically adopted in Indonesia.

The teaching factory finding aligns with Billett's (2011) consistent research showing that work experience authenticity is the most determinant factor in vocational competency formation. Simulated work experience without real-world consequences produces competencies that do not transfer well to actual workplaces a finding with direct implications for how teaching factory implementation should be measured and funded.

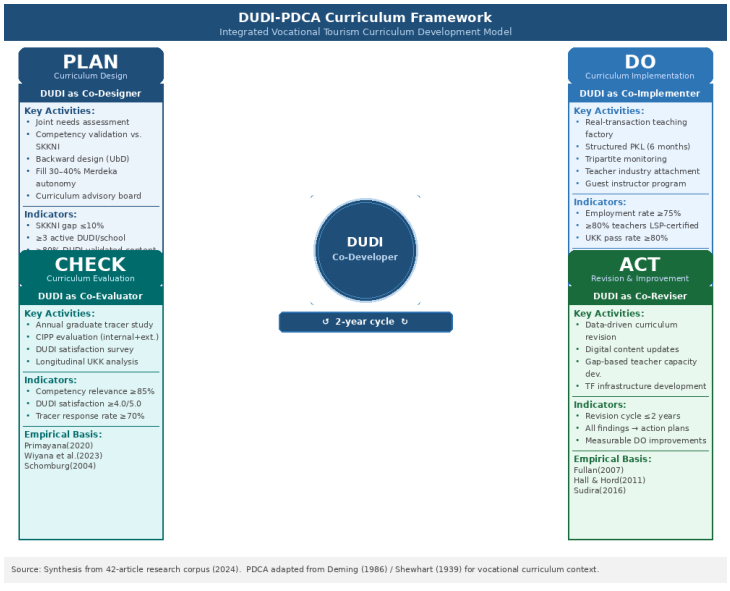
The DUDI-PDCA Curriculum Framework

Based on thematic synthesis of 42 articles, this study proposes the **DUDI-PDCA Curriculum Framework** a vocational tourism curriculum development framework integrating two core principles: (1) the **PDCA**

cycle (Plan-Do-Check-Act) as a continuous improvement mechanism, and (2) **DUDI as co-developer** actively involved in all phases. As theoretically established in Section 2.5, the PDCA framework was selected for its demonstrated effectiveness in educational quality management contexts (Guskey, 2000; Hoyle, 2007; Hattie, 2009) and adapted here with the critical innovation of embedding DUDI as an active stakeholder not merely a passive graduate user across all phases.

This framework differs from Tyler's Rationale (1949), which is linear and objective-oriented; and from Stufflebeam's CIPP model, which is evaluation focused. DUDI PDCA is specifically designed for the Indonesian vocational tourism education context, characterized by high industry dynamism and dependence on industry partnership. Every element of the proposed framework is empirically rooted in findings from the analyzed corpus, not theoretical propositions alone.

Figure 2. DUDI-PDCA Curriculum Framework Integrated Vocational Tourism Curriculum Development Model



Source: Synthesis from 42 article research corpus (2024). PDCA cycle adapted from Deming (1986) / Shewhart (1939) for vocational curriculum development context.

Table 6. DUDI-PDCA Curriculum Framework: Elements, Activities, and Empirical Bases

Phase	Curriculum Stage	Key Activities	DUDI Role	Measurable Indicators	Empirical Basis
PLAN	**Curriculum Design**	Joint needs assessment; Competency profile validation vs. SKKNI; Backward design; Filling 30-40% Merdeka Curriculum autonomy	Co-assessor of competency needs; Profile validator; Curriculum Advisory Board member (min. 2x/year)	≥80% DUDI-validated content; SKKNI gap ≤10%; ≥3 active DUDI per school	Wahyuni et al. (2021); Ruhimat (2019); Fauzi & Kurniawan (2023); Wiggins & McTighe (2005)
DO	**Curriculum Implementation**	Real transaction teaching factory; Structured PKL (6 months, tripartite monitoring); Teacher industry attachment (min. 2 wks/year); Regular teacher PLC	PKL co-supervisor; Teaching factory partner; Teacher attachment host; Regular guest instructor	≥80% teachers LSP-certified; Employment rate ≥75% (6 months); UKK pass rate ≥80%; Teacher attachment 100% implemented	Ardiansyah & Wibowo (2020); Rahayu & Suryana (2021); Kuntari et al. (2022); Billett (2011)
CHECK	**Curriculum Evaluation**	Annual graduate tracer study;	Primary tracer study respondents;	Competency relevance ≥85% (tracer);	Primayana (2020); Wiyana et

Phase	Curriculum Stage	Key Activities	DUDI Role	Measurable Indicators	Empirical Basis
		CIPP evaluation (internal + external); DUDI partner satisfaction survey; Longitudinal UKK data analysis	CIPP co-evaluators; Validators of actual competency relevance	DUDI satisfaction ≥4.0/5.0; Tracer response rate ≥70%	al. (2023); Marwanti et al. (2019); Schomburg (2004)
ACT	**Revision & Improvement**	Data-driven curriculum revision; Regular digital content updates; Gap based teacher capacity development; Teaching factory infrastructure strengthening	Validator of revision relevance; Teacher development partner; Teaching factory infrastructure sponsor/donor	Revision cycle ≤2 years; All evaluation findings documented with action plans; Measurable improvements in DO phase	Fullan (2007); Slamet (2016); Sudira (2016); Hall & Hord (2011)

Source: Synthesis from 42-article research corpus (2024).

Table 7. Comparative Positioning of DUDI-PDCA Framework Against Existing Models

7.1 Comparative Positioning: DUDI-PDCA vs. Existing Models

Dimension	Tyler Rationale (1949)	CIPP (Stufflebeam, 2007)	Germany Dual System	Singapore ITE System	DUDI-PDCA (This Study)
Process Orientation	Linear, objective-driven	Evaluation-centric	Cyclic, industry led	Industry integrated	**Cyclic PDCA, co-developmental**
DUDI Role	Not specified	Context evaluator only	Legal co-regulator	Curriculum co-designer	**Co-developer in ALL phases**
Revision Cycle	Not specified	Per evaluation cycle	Annual industry review	Annual/biennial	**2-year cycle (adaptive)**
Context Specificity	Generic/universal	Universal	Germany-specific	Singapore-specific	**Indonesia ULW-specific**
Empirical Basis	Conceptual	Conceptual/Empirical	Empirical (decades)	Empirical	**Grounded in 42 studies**
Evaluation Integration	Outcome only	Comprehensive (4 types)	Process + outcome	Process + outcome	**Comprehensive + data-driven ACT**

Source: Author synthesis (2024).

The DUDI PDCA framework's three distinguishing features are: First, DUDI is positioned not as a graduate end-user but as a co-developer with rights and responsibilities across every cycle phase a role repositioning aligned with the German dual system and Singapore's ITE system, but adapted for the regulatory context and capacity of Indonesian SMK. Second, the PDCA cycle is designed to rotate every two years more responsive than national curriculum revision cycles (5-10 years) enabling ULW curriculum to track the rapidly changing tourism industry. Third, the framework provides specific, measurable success indicators at each phase, enabling genuine data-based monitoring.

D. Conclusion

This systematic literature review of 42 studies on the Tourism Service Business (ULW) curriculum in Indonesian vocational high schools (SMK) identifies three main issues: curriculum design, implementation, and evaluation. The findings show that

curriculum design is still dominated by a top-down approach with limited industry involvement, resulting in a 34% competency gap with tourism industry standards, particularly in digital and sustainable tourism skills. In implementation, two major structural barriers are evident: most ULW teachers lack professional experience in the travel industry, and the teaching factory approach is often implemented only symbolically, even though authentic teaching factories significantly improve graduate employability.

In terms of evaluation, the ULW curriculum remains focused on administrative and accreditation requirements rather than data-driven continuous improvement. Only a small proportion of schools conduct regular tracer studies, and the correlation between competency test results and workplace performance is moderate. Based on these findings, the study proposes the DUDI PDCA Curriculum Framework, which positions industry partners as co-developers throughout the Plan-Do-Check-Act cycle to strengthen industry responsive vocational curriculum development.

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