

From Concept to Implementation: Development of a Digital Guidebook for Joint Degree Students' Departure Preparation at State Polytechnic of Malang

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Abstract

One of the international student mobility programs implemented by Malang State Polytechnic is the Joint Degree (JD) program, launched in 2019. In 2021, a digital guidebook was developed to help students prepare for their first international experience. However, in 2025, this guidebook has not been updated, even though the program has undergone significant development. This study aims to incorporate the substantial updates into the digital guidebook to facilitate pre-departure preparation. The research method used is Design and Development Research (DDR), which involves the stages of the in-depth interview process for the preliminary study, analysis, product development, evaluation that covers expert validation, field testing, and a user satisfaction survey of the digital guidebook. Research participants included one program coordinator and 14 students from various study programs currently enrolled in the JD program as users. The research instruments used were in-depth interviews and a user satisfaction survey. Meanwhile, thematic analysis was used to analyze the data. Content was validated by the Vice Director of Planning and Partnership; layout was validated by the head of State Polytechnic of Malang (Polinema) Press. Despite expert validation, the guidebook received an unsatisfactory user satisfaction rating (2.52/5.00), indicating critical gaps in content relevance, institutional support, design, and accessibility that must be addressed before implementation. These findings show the importance of collecting user feedback earlier and throughout the DDR development process. They also provide a framework that other polytechnics and vocational institutions can use to develop student-centered pre-departure resources for international mobility programs.

Keywords: Guidebook, Joint Degree, Preparation, Students' Mobility.

1. Introduction

Cross-border student mobility has grown substantially since the mid-twentieth century, driven by globalization, rising family incomes in developing nations, and the increasing international focus of universities worldwide (Kwak & Chankseliani, 2024). In the last twenty years alone, the number of international students globally has grown from approximately two million to six million, with international students now comprising 8.3% of higher education enrollment in developed countries (Kwak & Chankseliani, 2024). In Indonesia, this trend has been present since the Fulbright Program was first introduced in 1952 (AMINEF, 2022), and has since expanded into diverse mobility schemes including the Joint Degree (JD) program now implemented at institutions such as State Polytechnic of Malang (Polinema).

Polinema's Joint Degree program emphasizes the importance of thorough preparation before departure, including logistical, language, and cultural adjustment aspects. Prospective joint degree students often face difficulties obtaining information and preparing departure



documents (Khanal & Gaulee, 2019). English language proficiency and cultural understanding are key to academic success (Chen & Bang, 2020), while external influences such as preparatory schools can also motivate study abroad (Lin, 2019). Unlike short-term exchanges, joint degree programs require students to navigate multiple academic systems, assessment cultures, and administrative regulations simultaneously. Little research exists that looks closely at the pre-arrival period and the ways international students manage their stress or difficulties (Hernández López, 2021). This complexity makes joint degree participation particularly demanding, especially for students from non-elite or vocational institutions.

While existing research largely emphasizes institutional policy or post-arrival student support, limited attention has been paid to structured, student-informed pre-departure resources (Humenna, 2020). Moreover, few studies document such initiatives in vocational higher education contexts in Indonesia. To address these gaps, this study is guided by three research questions: (1) What informational gaps and student preparation needs are missing from the 2021 Polinema JD guidebook? (2) How was the 2025 digital guidebook designed and developed to address these gaps? (3) How do content experts and student users evaluate the guidebook in terms of validity and user satisfaction?

2. Literature Review

This section reviews relevant literature on joint degree programs, international student mobility, pre-departure preparation, and the theoretical frameworks underpinning the design of educational resources, particularly Cognitive Theory of Multimedia Learning (CTML).

2.1. International Student Mobility

The internationalization of higher education is a process that encompasses various academic and administrative dimensions, including student exchanges, cross-border research collaborations, and international degree programs. This process is increasingly necessary for universities to prepare graduates who are competitive in the global workforce (Chan, 2016; Dewanto & Pritasari, 2023). This trend is not new, especially for institutions in developed countries. From 1974 to 2020, collaborations between Australian, British, and American universities with other countries have steadily strengthened, with the main themes of mobility, knowledge transfer, and cooperation (Ghani et al., 2022). This reflects the crucial role of internationalization in the sustainable development of educational institutions.

International student mobility itself has become an integral part of the global higher education landscape, with growth of approximately 61% since 1999, as international student study destinations shift from traditional countries like the United States and the United Kingdom to developing countries in Asia and Europe (Verbik & Lasanowski, 2007). One concrete example of the success of an international mobility program is the Erasmus program in Europe, which has proven crucial in facilitating the exchange of learning experiences, enhancing student competencies, and developing educators' teaching skills (Breznik et al., 2023). At the institutional level, the presence of international students enriches campus culture and opens opportunities for domestic students to develop global competencies (Hanayeen, 2018).

2.2. Joint Degree Program in Indonesia

A Joint Degree (JD) is a collaborative educational program that allows students to earn a single degree from two different universities, typically lasting eight semesters, with study time divided between domestic and international institutions (Kemendikisaintek, 2023). In Indonesia, its implementation is regulated by Minister of Education and Culture Regulation

No. 14 of 2014, which stipulates a minimum of two collaborating universities, a minimum accreditation of the study program, and the requirement for students to complete at least 50% of their study load at their home university (Kemendiktisaintek, 2023). This program is implemented by various universities, including ITS, UMN, and Malang State Polytechnic, as a commitment to preparing globally competitive graduates (Direktorat Jenderal Pendidikan Vokasi, 2024) while simultaneously enhancing international collaboration and the quality of learning (De Wit & Altbach, 2020). Graduates of this program not only earn two official diplomas but also expand their valuable international network in the workplace (Kemdikbud, 2016; Kemendiktisaintek, 2023).

To date, JD program guidelines have been developed independently by each host university, given the differences in characteristics between universities and polytechnics in terms of partner campuses, document requirements, and language proficiency (Nizamov et al., 2023). Existing official guidelines only cover the general legal basis for implementation (Ministry of Education and Culture, 2016), so each university still needs to provide specific guidelines containing detailed information on requirements, selection procedures, costs, and student departure preparation.

2.3. Developing A Guidebook

Mayer (2020), in his book *Multimedia Learning* (3rd edition), developed the Cognitive Theory of Multimedia Learning (CTML), which is based on three main assumptions: (1) humans have separate channels for processing verbal and visual information (dual-channel assumption); (2) each channel has a limited capacity to process information simultaneously (limited capacity assumption); and (3) meaningful learning occurs when learners actively select, organize, and integrate information (active processing assumption). Based on more than 200 experimental studies, Mayer formulated 15 principles of multimedia instructional design, including the principle of coherence (eliminating irrelevant material), the principle of signaling (providing visual cues to guide attention), the principle of segmentation (dividing complex information into smaller units), and the principle of personalization (using user-friendly and communicative language).

Prospective JD students are faced with dense and complex information, ranging from academic requirements and administrative procedures to visa requirements and information about life in the destination country. If the information is presented without considering the reader's cognitive capacity, students risk experiencing cognitive overload, which can hinder comprehension. Therefore, the application of CTML principles in the JD guidebook, such as the use of infographics and visual icons to guide readers, the division of content by departure preparation phase, the selection of easy-to-read sans-serif typefaces, and the use of clear, student-friendly language, is crucial to ensuring the information is effectively absorbed. Thus, the JD guidebook is not merely an administrative document, but functions as a scientifically designed instructional tool to support students' pre-departure readiness.

2.4. Previous Research

Dual and joint degree programs have been a strategy for internationalizing higher education in Europe since the 1970s, but data on student experiences and motivations in these programs remains limited (Borsetto & Saccon, 2023). Various studies have examined aspects of JD programs, ranging from policies and practices for developing cross-border programs (Chan, 2021), the role of internal stakeholders in the sustainability of collaborative programs (Shenderova, 2023), and the benefits of international collaboration through dual degree programs in improving university quality and attracting international students (Bogdanova et al., 2024). Ali et al. (2024) proposed the World Twin Program to align curricula across

universities to foster deeper intercultural understanding. Nhan & Nguyen (2018) found that while dual degree programs in Vietnam helped prevent brain drain, their implementation was hampered by the complexity of government accreditation and the high costs of partnerships. Huyen (2024) emphasized the importance of quality assurance in international joint degree programs through a transparent and collaborative framework. Other research examines the implementation of a joint education program in Uzbekistan (Nizamov et al., 2023) and the quality of learning from the perspective of JD program students at seven European universities (Juknytė-Petreikienė & Žydzīūnaitė, 2017).

Overall, previous research has focused more on student support after arrival in the destination country (Humenna, 2020), while pre-registration technical preparations have received little attention. This research addresses this gap by developing a JD program guidebook at the State Polytechnic of Malang that not only outlines program regulations but also leverages alumni perspectives on essential preparation for prospective applicants.

3. Methods

This research uses the Design and Development Research (DDR) method as proposed by Richey & Klein (2007), which focuses on the product development process through context analysis, design, and evaluation. The products produced in DDR can be models, techniques, modules, or training programs. This study adopted the four-phase DDR model: preliminary study, analysis, product development, and evaluation. While DDR frameworks vary in their number of phases, Saedah et al. (2013 in Ismail et al., 2020) propose four phases (needs analysis, design, development, and implementation and evaluation), and Ellis and Levy (2010) propose six, including problem-solving, testing, and reporting results, Richey and Klein (2007) affirm that the number of phases should be adjusted to fit the type and scope of the research.

The four-phase model was selected over Ellis and Levy's six-phase model for three reasons. First, this study focuses on a single, bounded product (a digital guidebook) rather than a generalizable instructional model, making the extended problem-solving and reporting phases in Ellis and Levy's framework unnecessary. Second, the four-phase structure maps directly onto this study's sequential activities: coordinator interviews (Phase 1), data analysis (Phase 2), guidebook development (Phase 3), and expert validation with user testing (Phase 4). Third, given the institutional constraints of a single-institution study with a limited timeframe, the four-phase model offers sufficient rigor without the procedural overhead of a six-phase cycle. For greater clarity, these stages are depicted in the figure 1.

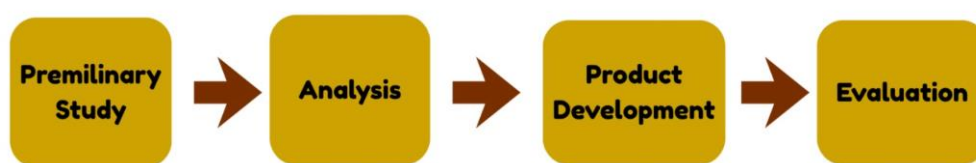


Figure 1. Research Procedure

3.1. Research Participants

Participants included one Joint Degree (JD) program coordinator at Malang State Polytechnic (Polinema) and 14 active students from seven D4 study programs: Management Accounting, Digital Telecommunication Networks, Marketing Management, Construction Engineering Management, Informatics Engineering, Mechanical Production and

Maintenance Engineering, and Industrial Chemical Technology. All 14 students were enrolled in the Joint Degree program at the time of data collection.

3.2. Research Procedure

Phase 1 (Preliminary Study): Three semi-structured interviews were conducted with the JD program coordinator (n=1) to gather detailed information on program implementation, student needs, and pre-departure challenges. Interview data were analyzed using thematic analysis (Maguire & Delahunt, 2017) to identify key themes informing guidebook content.

Phase 2–3 (Analysis and Development): Findings from Phase 1 guided the design and development of an interactive digital guidebook prototype, developed using Canva Pro.

Phase 4 (Evaluation): Expert validation was conducted by two experts: the institution's Vice Director of Planning and Partnership (content validation) and the head of Polinema Press (layout). Following expert feedback and revisions, the guidebook was field-tested with 14 student users, who completed a satisfaction survey using a 5-point Likert scale to assess the guidebook's usefulness and usability.

4. Results and Discussion

This section presents the findings from each phase of the DDR process, preliminary study, analysis, product development, and evaluation, followed by a discussion that situates these findings within the broader literature on joint degree programs and pre-departure student support.

4.1. Results

4.1.1. Preliminary Study

The Joint Degree (JD) program at Malang State Polytechnic (Polinema) began with the establishment of an international class in 2018 and evolved into a Joint Degree program in 2019 as a manifestation of the internationalization of higher education in Indonesia (Dewanto & Pritasari, 2023; Kemendiktisaintek, 2023). The first guidebook was published in 2021, but has not been updated, despite numerous changes in policy and practice since then. To identify gaps in the existing guidebook and capture recent developments in the JD program, semi-structured in-depth interviews were done with the JD program coordinator in April 2025.

The interview covered four main aspects, namely Program Evaluation and Graduate Outcomes; Academic Aspects; Finance and Administrative Aspects; and Additional Information Aspects. The interview generated updated information on program implementation, policy changes, and emerging student needs, which served as the foundation for revising the guidebook. The interview aimed to (1) verify the accuracy of existing guidebook content, (2) assess the effectiveness of current program implementation, and (3) identify policy and operational changes that should be reflected in the updated guidebook.

The interview was audio-recorded, transcribed, and analyzed thematically to identify content areas requiring revision. Findings from the preliminary study revealed substantial updates in academic structure, administrative procedures, and partnership arrangements, indicating that the existing guidebook no longer reflected current JD program practices. These findings informed the subsequent analysis and product development stages.

4.1.2. Analysis

Analysis of the preliminary study data revealed six key areas of change in the Polinema JD program since 2021, summarized in Table 1. Collectively, these changes reflect a significant expansion in program scope, administrative complexity, and institutional partnerships —

developments that the 2021 guidebook does not address. These findings confirmed the necessity of a comprehensive revision and directly informed the structure and content priorities of the 2025 guidebook.

Table 1. JD Program Updates

Area of Change	2021 Status	2025 Update
Nomenclature	"Double Degree (DD)"	"Joint Degree (JD)" — one joint degree + two diplomas
Study Programs	6 programs	10 programs (4 new D4 programs added)
Program Leadership	Previous coordinator	Hilda Cahyani, Ph.D. (International Cooperation Coordinator)
Admission Pathways	2 pathways	6 pathways (Achievement, SNBT, SNBP, Affirmation, Consortium, Independent)
Administrative Support	Limited pre-departure guidance	New visa and pre-departure sections added
International Partnerships	Fewer institutions	10 universities across 5 countries

Collectively, these six areas of change namely nomenclature, program expansion, leadership, admission procedures, administrative support, and partnerships, represent a significant evolution in the JD program's scope and complexity. The analysis confirms that the 2021 guidebook is outdated and that a comprehensive, multi-section revision is essential to support current and prospective JD students. These findings were synthesized from the preliminary interview and cross-referenced with institutional documents (e.g., program handbooks, policy memos) to ensure accuracy.

4.1.3. Product Development

Based on the analysis findings, an interactive digital guidebook was developed using Canva Pro to create a visually engaging, user-friendly resource for JD students. The guidebook (54 pages, A4 format, PDF) was structured around six main sections designed to guide students through the entire JD journey, from program overview to post-departure logistics. The guidebook was organized sequentially to mirror the student journey, from program overview and admission requirements, through selection procedures, to departure logistics and country-specific visa guidance, ensuring students encounter information in a logical, actionable order. Notably, a dedicated four-phase Departure and Visa Guide was added as the primary new contribution of the 2025 edition, an area entirely absent from the 2021 guidebook. The appendices include ready-to-use templates (parental consent letter, SKPI, sample curricula for all 10 programs, and a departure checklist) to support independent student action.

1) Preparation and Departure Guide (Primary Focus):

This section guides students through the complete pre-departure and departure process in four phases:

Phase 1: Administrative Preparation

Covers essential documentation: passport processing, Letter of Acceptance (LoA), Memorandum of Agreement (MoA), travel insurance, and parental consent forms.

Phase 2: Briefing and Orientation

Details mandatory sessions organized by the International Office and Language Unit (UPT Bahasa), addressing academic ethics, cultural adaptation, and partner institution learning management systems (LMS).

Phase 3: Logistics and Departure

Provides practical guidance on ticket coordination, Study Abroad Assignment Letters, and official Polinema communication channels.

Phase 4: Country-Specific Visa Information

Provides country-specific visa guidance for all five partner countries, covering visa categories, application procedures, and required documentation, an area absent from the 2021 edition.

2) Practical Appendices:

To support student action, the guidebook includes ready-to-use templates and reference materials:

1. Parental Statement Letter: A template for obtaining parental consent.
2. Sample Curricula: Program-specific academic pathways for all 10 JD study programs, enabling students to plan their overseas coursework.
3. SKPI (Student Registration Certificate): Template and explanation of this key credential.
4. Sample Scheduling: Example timetables showing 3+1 and 2+2 model structures.
5. Departure Checklist: A tracking tool allowing students to monitor completion of administrative steps, reducing the risk of missing deadlines.

3) Key Improvements Over the 2021 Edition:

The 2025 guidebook addresses critical gaps in the previous version:

1. Expanded Scope: Contact information for 10 study program coordinators (vs. 6 in 2021); explicit coverage of both 3+1 and 2+2 learning models; and new institutional support services (language classes, mandatory orientation).
2. Detailed Procedural Guidance: The selection and departure sections now provide concrete, step-by-step instructions for registration, briefings, logistics, and visa processing, areas that were previously vague or incomplete.
3. Comprehensive Appendices: Includes curricula for all 10 programs, academic pathway maps, and a practical departure checklist, enabling students to plan and track their progress independently.

The completed guidebook prototype was then subjected to expert validation to assess content accuracy, visual design quality, and overall usability before field testing with student users.

4.1.4. Evaluation

1) Expert Validation

Expert validation was conducted by two experts: the head of Polinema Press (layout and visual design) and the Vice Director of Planning and Partnership (content and substance).

Layout and Visual Design Feedback:

The layout expert evaluated the guidebook's structure and navigation as excellent, noting a logical information flow and a clear table of contents. However, several improvements were recommended:

- a) Use of sans-serif fonts to enhance readability
- b) Improved line spacing for visual comfort
- c) Color adjustments to better align with Polinema's institutional identity
- d) Simplification of visual elements to reduce clutter and enhance professionalism

- e) Redesign of appendices using structured layouts rather than screenshots

Content and Substance Feedback:

The content expert identified several areas requiring revision:

- a) Updating legal references to align with the 2025 National Higher Education Standards (SNDIKTI) and recent Directorate General of Higher Education policies
- b) Revising and correcting the list of international partner institutions, including standardized university naming
- c) Clarifying institutional nomenclature (e.g., “Polinema Academic Directorate”)
- d) Specifying mandatory administrative documents (LoA, MoA, insurance, parental consent)
- e) Strengthening the pre-departure briefing section, which has not been consistently implemented

Additionally, the expert emphasized the need for more practical content, including diagrams, case examples, and sample documents to enhance comprehension for students and program administrators. Following expert revisions, the guidebook was field-tested with active JD students to evaluate usability, clarity, and practical relevance.

2) Field Testing and User Evaluation

The revised guidebook was piloted with 14 active students from seven JD study programs. User evaluation was conducted using a 19-item Google Form survey based on a 5-point Likert scale (1 = very unsatisfactory; 5 = very satisfactory), covering four dimensions: usefulness, clarity, layout, and content. The survey yielded an average satisfaction score of 2.52 out of 5, categorized as Unsatisfactory. While the Departure Guide and Visa Guide sections received the highest ratings (2.79), the Structure and Layout (2.07) and Program Objectives (2.21) received the lowest scores. These results indicate that, although the guidebook provides relevant procedural information, its organization, visual presentation, and clarity of program goals require substantial improvement.

Qualitative User Feedback

Analysis of open-ended responses revealed three major areas requiring improvement:

1. **Procedural Clarity and Communication:**
Students requested clearer step-by-step procedures, concrete examples, and a list of official contact persons and complaint-handling channels.
2. **Financial Transparency and Accommodation Information:**
Respondents emphasized the need for detailed cost breakdowns (e.g., visa fees, oath-taking costs, dormitory fees), comparative living-cost guides by country, and clearer financial policies for students using educational agents.
3. **Student Preparation and Language Readiness:**
Students highlighted the need for TOEFL/IELTS preparation guidance, clearer post-JD career pathways, detailed information on partner campus facilities, and technical tutorials (e.g., Weixin account activation).

Overall, the expert validation and user evaluation indicate that while the guidebook addresses critical informational gaps in the JD program, it has not yet achieved optimal usability or satisfaction. These findings confirm the need for further iterative refinement before full institutional implementation.

4.2. Discussion

While existing research on Joint Degree (JD) and Double Degree (DD) programs emphasizes quality assurance, curriculum alignment, and post-departure student support (e.g., Dewanto & Pritasari, 2023), limited attention has been paid to the pre-departure information and preparation phase, a critical juncture where international students often encounter barriers to accurate, comprehensive guidance. This research addresses this gap by developing and evaluating a digital guidebook specifically designed to support students through the registration, documentation, and visa preparation processes prior to departure. This focus is justified by Knight (2012), who notes that international students frequently struggle to obtain reliable information on admission and visa procedures, a challenge that can delay enrollment and increase anxiety. By creating a structured, institution-specific resource, this study contributes to the emerging literature on student-centered pre-departure support in international mobility programs.

The preliminary needs analysis revealed that the 2021 Polinema JD guidebook was substantially outdated and lacked critical information for student preparation. Most significantly, the guidebook omitted a comprehensive Departure and Visa Guide, essential for international programs involving multiple countries with distinct visa requirements. This omission likely contributed to student confusion and anxiety regarding pre-departure procedures. Hence, this research developed a revised digital guidebook that addressed these gaps by incorporating detailed visa guidance, administrative checklists, and country-specific information. The guidebook was then validated by content and design experts and tested with 14 active JD students to assess its effectiveness in supporting pre-departure preparation.

Expert validation revealed that while the guidebook's structure and information flow were sound, significant improvements were needed in visual design and usability. Specifically, experts recommended adopting sans-serif fonts, improving line spacing, simplifying visual elements, and aligning colors with institutional branding. These recommendations align with Mayer's (2020) Cognitive Theory of Multimedia Learning (CTML), which posits that effective multimedia design reduces extraneous cognitive load by using clear typography, adequate white space, and consistent visual hierarchy. However, the fact that these design issues were identified after development suggests that user-centered design principles should have been applied earlier in the development process. Additionally, Mayer (2020) emphasizes that audience awareness and engaging communication styles are essential for maintaining reader engagement, particularly for international students who may be navigating information in a non-native language. The expert feedback thus indicates that the guidebook, while content-comprehensive, had not yet achieved the visual and communicative clarity necessary for optimal user engagement.

The user satisfaction survey yielded an average score of 2.52 out of 5.00, categorized as Unsatisfactory. This low score is particularly significant because it indicates that, despite expert validation and comprehensive content revision, the guidebook did not meet student expectations for clarity, usability, and practical utility. Notably, the highest-rated sections were the Departure Guide (2.79) and Visa Guide (2.79), the very sections that were newly developed based on the needs analysis, suggesting that students value concrete, procedural information. Conversely, the lowest-rated sections were Structure and Layout (2.07) and Program Objectives (2.21), indicating that students struggled to navigate the guidebook and understand the program's core purpose.

Qualitative feedback revealed three critical gaps:

1. Procedural clarity: Students needed step-by-step instructions, concrete examples, and accessible contact information.

2. Financial transparency: Students requested detailed cost breakdowns and comparative living-cost guides by country.
3. Preparation support: Students sought TOEFL/IELTS guidance, career pathway information, and campus facility details.

These findings suggest that the guidebook, while addressing informational gaps, did not fully meet the holistic preparation needs of international students. Prensky's (2001) concept of the "digital native" is relevant here: today's students expect not only practical information but also interactive, contextual, and emotionally supportive content. Research on student engagement in international academic settings similarly confirms that students actively view cross-cultural interactions as learning opportunities (Hanayeen, 2018), suggesting that a guidebook addressing cultural preparation, not only visa logistics, is essential. The low satisfaction score thus indicates that a guidebook alone, without accompanying institutional support, peer mentoring, or interactive platforms, may be insufficient to adequately prepare students for international mobility. This aligns with recent research on student support systems, which emphasizes the importance of multi-modal, integrated approaches to pre-departure preparation (e.g., workshops, mentoring, peer networks) rather than reliance on a single information resource.

Beyond its value for the Polinema Joint Degree (JD) program, the difference between the expert validation results and the user satisfaction scores provides a useful contribution to Design and Development Research (DDR). In this study, two experts, an institutional content expert and a layout specialist, gave the guidebook positive evaluations for its organization and content. However, the students who used the guidebook gave it an average satisfaction score of only 2.52 out of 5.00. This difference shows that expert evaluation alone may not fully reflect how useful or practical a resource is for its intended users, especially students who must complete unfamiliar and important processes. Richey and Klein (2007) argue that DDR should be iterative and centered on users. However, because of limited time and resources, many DDR projects rely mainly on expert review before testing the product with users. The findings of this study support the need to involve users earlier in the development process, preferably during the design stage instead of waiting until the final evaluation. This suggests that institutions developing resources for students should consider early user feedback as an essential part of the validation process, alongside expert evaluation.

5. Conclusion

This Design and Development Research successfully created a comprehensive digital guidebook for pre-departure preparation of Polinema Joint Degree (JD) program students. The guidebook addresses critical informational gaps in the 2021 edition by incorporating updated program information, expanded partner country details, and structured visa guidance for five destination countries (China, Malaysia, Taiwan, Japan, and France). Development followed a rigorous DDR methodology encompassing needs analysis, design, expert validation, and user testing.

The 2025 guidebook successfully addresses the primary research objective by providing structured, comprehensive information on program requirements, selection schemes, departure procedures, and visa processing. Expert validation confirmed the logical information flow; however, user evaluation yielded an average satisfaction score of 2.52/5.00 (unsatisfactory), with the Departure and Visa Guide sections receiving the highest scores (2.79), while Structure and Layout (2.07) and Program Objectives (2.21) required the most

improvement. Three priority improvement areas were identified: financial transparency, English language preparation support, and visual design. These findings support Mayer's (2020) CTML, confirming that clarity, visual consistency, and audience-specific design are essential for reducing cognitive load. This study was limited by the small sample size, the dominance of expert/media validation, and the absence of long-term impact assessment. Theoretically, the discrepancy between expert validation and user satisfaction constitutes a contribution to DDR methodology, underscoring the need to integrate user-centered feedback earlier in the development cycle rather than reserving it exclusively for the evaluation phase.

Based on the research findings, there are four priority recommendations for the development of the JD Polinema digital guidebook. Immediately, the guide's content needs to be strengthened through three main aspects: financial transparency with a breakdown of costs per destination country, procedural clarity through step-by-step examples and flowcharts, and an integrated language preparation guide (TOEFL/IELTS) with minimum score requirements for each partner institution.

In the short term (1–3 months), the guide needs to be improved in terms of design and accessibility. Visual enhancements include the use of sans-serif fonts, color alignment with Polinema branding, and a professional redesign of the appendices. Furthermore, the guide should be uploaded as a PDF on Polinema's official website and equipped with interactive features such as hyperlinks and searchable PDFs. In the medium term (3–6 months), Polinema needs to build a more structured pre-departure support ecosystem. This includes regular content updates twice a year, mandatory orientations, peer mentoring programs with alumni, career pathway workshops, and an ongoing student feedback mechanism. In the long term (6+ months), follow-up research is needed to measure the actual impact of the guide on student confidence and preparedness. It is also hoped that this guidebook can serve as a model for other international programs at Polinema and other polytechnics in Indonesia.

Beyond its contribution to Polinema's JD program, this study provides a framework that vocational and polytechnic institutions can adapt when developing student-centered pre-departure resources for international mobility. The difference between the expert validation results and the user satisfaction scores also shows the importance of collecting user feedback earlier and throughout the DDR process. This finding has implications for how educational product development research plans its evaluation stages. Future research should examine integrated pre-departure support models, such as peer mentoring, language preparation programs, and interactive digital platforms, and evaluate their long-term effects on student readiness and international mobility outcomes.

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