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Developing an E-Module for French Manicure in Nail Art for Grade XI Beauty Students

Angel Vatricia [1a*], Sri Yanida [2b], Helen Laras Sari [3c], Farihah [4d], Astrid Sitompul [5e]
[1,2,3,4,5] Universitas Negeri Medan, Indonesia

[a]angelvatricia08@gmail.com, [b]sriyanidaaaa01@gmail.com, [c]helenlarassari@gmail.com,
[d]farihah@unimed.ac.id, [e]astridsitompul@unimed.ac.id

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***Correspondence Address:**
angelvatricia08@gmail.com

Abstract:
This study developed and evaluated the feasibility of a French Manicure e-module for Grade XI Beauty students at SMK Swasta Pariwisata Imelda Medan, Indonesia. The module addressed students' difficulties in identifying tools and materials and following manicure procedures. The study adopted a research-and-development design using the ADDIE model: Analysis, Design, Development, Implementation, and Evaluation. Data collection involved classroom observation and questionnaires for needs analysis, expert validation, and staged student trials. Needs-analysis scores reached 94.54% for the teacher and 94.37% for students. Material and media experts assigned feasibility scores of 89.33% and 95.18%, respectively. Small-group (n = 8), medium-group (n = 16), and large-group (n = 32) trials yielded scores of 92.65%, 95.07%, and 95.55%, with an unweighted mean of 94.42%. All validation and trial scores fell within the highly feasible category. The module's practical contribution lies in integrating written explanations, procedural images, a tutorial video, and evaluation activities into one resource for reviewing procedures before and during supervised vocational practice. These findings support its feasibility within the assessed setting. Further experimental research should examine its effects on knowledge and practical performance.

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Introduction (مقدمة)

Vocational high schools (Sekolah Menengah Kejuruan/SMK) prepare students to acquire occupational knowledge, practical skills, and professional attitudes. Learning should therefore connect classroom explanations with the procedures and performance expected in the workplace.

Suhaedin (2024) emphasizes the importance of aligning vocational instruction with students' competency needs and occupational requirements. In cosmetology education, this alignment involves helping students combine technical accuracy, creativity, hygiene, and aesthetic judgment when completing practical tasks.

Instructional media can help teachers explain these competencies and present procedures in an organized manner. Their suitability depends on the learning objectives, subject content, available facilities, and characteristics of the learners (Miftah & R., 2022). Practical cosmetology instruction requires resources that show visual details while explaining the purpose and sequence of each action. Students need to understand both how to perform a procedure and why particular tools, materials, and techniques are appropriate.

An electronic module offers a format for organizing these elements within a digital resource. It can combine written explanations, illustrations, demonstrations, learning activities, and assessment tasks. Najuah et al. (2022) discuss the development of digital modules around learner needs and accessible content organization. Studies on e-modules in school settings also provide relevant contexts for developing structured learning resources (Antonius et al., 2022). However, combining several media formats does not automatically produce effective instruction. The content must follow a clear sequence and address the specific difficulties that students encounter.

Nail Art forms part of practical cosmetology learning. It involves decorating nails through the selection and application of colors, patterns, shapes, and design techniques. Krisnawati et al. (2022) discuss the history, design variations, colors, and techniques associated with Nail Art. Students also need foundational knowledge of nail care and manicure procedures before applying decorative techniques, as reflected in the learning resources presented by Ni'mah (2025) and Sari (2024). Nail Art instruction therefore requires a connection between conceptual knowledge, appropriate preparation, and accurate practical execution.

French Manicure is one technique taught within this competency area. Its characteristic appearance combines a natural or soft-pink base with a white nail tip. Producing a neat result requires students to follow connected stages, including nail preparation, tool and material selection, buffing, shaping, and product application. Creating a consistent white tip also requires precision. Research comparing French Nail Art results with and without an overlay technique provides a related context for examining technical execution and final appearance (Rila Kontensa, 2025).

Initial observations at SMK Swasta Pariwisata Imelda Medan identified several difficulties among Grade XI Beauty students learning French Manicure. Students struggled to identify the order of procedures, explain the functions of tools and materials, buff nails, apply artificial nails, and form neat white tips. Preliminary achievement records showed that 15 of 32 students met the minimum mastery criterion (Kriteria Ketuntasan Minimal/KKM) of 80, while 17 students did not. These findings provided a practical basis for developing additional instructional support. However, the achievement records alone do not establish the causes of these difficulties or demonstrate that a new resource would improve performance.

The school previously used printed textbooks, PowerPoint presentations, and reference videos from YouTube for this topic. Each format offered useful information, but students needed to consult separate sources to connect conceptual explanations with demonstrations and practical

instructions. The identified need therefore concerned the integration and sequencing of learning content. A resource organized around the complete French Manicure procedure could give students a consistent reference when reviewing preparation, tools and materials, and individual work stages.

Previous studies provide foundations for this development while addressing different instructional scopes. Putri et al. (2022) examined the practicality of an e-module in Nail Art learning, establishing a relevant comparison within the same competency area. Devtian (2024) developed a video tutorial specifically for French Manicure. The latter study relates directly to the technique examined here, but its instructional format differs from the integrated resource proposed in the present study. A tutorial video primarily demonstrates actions, whereas an e-module can place those demonstrations alongside learning objectives, conceptual explanations, written procedures, and evaluation activities.

Research on other cosmetology competencies also provides useful context. Rahayu (2023) developed video learning media for hair styling through braiding and twisting techniques. That study concerns visual demonstrations in practical beauty education, although its procedural content differs from French Manicure. Research on multimedia integration offers an additional basis for considering how different content formats can function within instructional materials (Rumkoda et al., 2022). These studies inform the design of the present product, but they do not establish its suitability for the difficulties identified at the school.

The research gap concerns the development and feasibility assessment of an integrated French Manicure e-module tailored to this instructional setting. The cited studies address related formats or competencies, but their reported scope does not establish whether a resource combining conceptual content, written procedures, visual guidance, a tutorial, and evaluation is feasible for the target students. The present study addresses that specific question through product development, expert validation, and staged student trials.

The product differs from the resources previously used at the school by organizing related information within one learning sequence. It includes learning outcomes and objectives, nail-care concepts, descriptions of tools and materials, sequential procedures, supporting images, a tutorial video, evaluation activities, and a glossary. Students can consult the written procedure and its associated visual guidance within the same resource. Compared with a standalone French Manicure video, the tutorial functions as one component of a broader instructional structure. The contribution therefore lies in the organization and adaptation of instructional content to the identified learning needs. It does not imply that the product is the first French Manicure e-module or that it produces better outcomes than existing resources.

Accordingly, this study aimed to develop a French Manicure e-module for Grade XI Beauty students at SMK Swasta Pariwisata Imelda Medan and assess its feasibility through material-expert validation, media-expert validation, and student responses during staged trials. Needs analysis informed the product design. The resulting resource is intended to complement teacher demonstrations and supervised practice while giving students a structured reference for independent review. The study focuses on development and feasibility; its effects on learning achievement and practical competence require separate investigation.

Method (منهج)

Research Design and Setting

This study employed a research and development (R&D) approach using the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model was selected because it provides a systematic framework for identifying learning needs, designing and developing instructional materials, implementing the product, and evaluating its feasibility for further improvement. The research and development procedures were guided by Sugiyono (2023) and Risal et al. (2022), while the application of the ADDIE model in electronic module development was informed by Silitonga et al. (2022). The study was conducted during the second semester of the 2025/2026 academic year at SMK Swasta Pariwisata Imelda Medan, Indonesia. It focused on developing an electronic module for French Manicure learning among Grade XI Beauty students..

Participants and Validators

The needs analysis involved one teacher responsible for the relevant beauty subject and 32 Grade XI Beauty students. Product validation was conducted by six expert validators, comprising three material experts and three instructional media experts. The material experts were lecturers or specialists in cosmetology and beauty education, while the media experts were lecturers or specialists in instructional media. The validators were selected based on their competence and expertise in the respective fields being assessed. This approach is consistent with Artino et al. (2014), who emphasize the importance of developing appropriate assessment instruments and ensuring that the expertise relevant to the subject being evaluated is considered in educational research. Student trials were conducted in three stages: a small-group trial involving eight students, a medium-group trial involving 16 students, and a large-group trial involving 32 students. Different students participated in each trial stage to obtain responses from separate groups of users during the successive evaluation stages.

Development Procedures

The development process followed the five stages of the ADDIE model:

1. Analysis. The analysis stage involved classroom observation and the distribution of needs analysis questionnaires to the subject teacher and Grade XI Beauty students. This stage aimed to identify students' learning difficulties, the availability and use of existing learning resources, curriculum requirements, and the need for structured learning materials to support the French Manicure procedure.
2. Design. Based on the needs analysis, the module's content structure, navigation flowchart, and storyboard were developed. The design included the sequence of learning activities, presentation of instructional content, supporting visuals, integration of a tutorial video, and evaluation components.
3. Development. The e-module was developed primarily using Canva, while Microsoft Word 2021 was used to prepare and organize the textual content. The product consisted of a cover, foreword, navigable table of contents, glossary, introduction, learning outcomes, learning objectives, learning activities, instructional images, a tutorial video,

evaluation materials accessed through a barcode, references, and the author's profile. The module was provided in PDF format so that students could download and access it offline. After development, the product was submitted to three material experts and three instructional media experts for validation. The validation results, ratings, and suggestions were used as the basis for revising the product before the student trials.

4. Implementation. The revised e-module was introduced to Grade XI Beauty students and evaluated through three stages of user trials: small-group, medium-group, and large-group trials. Each stage involved different students. Student responses were collected using questionnaires to assess the module's content, presentation, ease of access, and suitability as a learning resource for French Manicure.
5. Evaluation.* Evaluation was conducted through expert validation and student responses at each trial stage. Quantitative assessment results and qualitative comments or suggestions from validators and students were analyzed to identify aspects requiring improvement. The findings were used to revise and refine the e-module before the final product was established.

Research Instruments and Data Collection

Data were collected through classroom observation and questionnaires. The research instruments consisted of: (1) teacher and student needs analysis questionnaires; (2) material expert validation forms; (3) instructional media expert validation forms; and (4) student response questionnaires administered during the small-group, medium-group, and large-group trials. The material expert validation instrument consisted of 15 assessment items covering content accuracy and relevance, alignment with learning outcomes and objectives, completeness of theoretical explanations, clarity of procedural instructions, and suitability of supporting learning materials. The instructional media expert validation instrument also consisted of 15 assessment items addressing visual presentation, layout, typography, color composition, navigation, readability, and design consistency. Both expert validation instruments employed a five-point rating scale.

The student response questionnaire consisted of 16 indicators and used a five-point Likert scale. It assessed students' responses to the module's content, presentation, ease of access, and overall suitability as a learning resource. In addition to numerical ratings, comments and suggestions from validators and students were considered during the evaluation and revision process.

Data Analysis

The data were analyzed descriptively using percentage calculations. The feasibility percentage was calculated using the following formula:

$$P = \frac{Obtained\ Score}{Maximum\ Possible\ Score}\ x\ 100\ \%$$

The resulting percentages were interpreted using the following feasibility criteria, adapted from Sugiyono (2023):

Table 1. Feasibility criteria

No	Percentage	Feasibility Category
1	81-100%	Highly feasible
2	61-80 %	Feasible
3	41-60 %	Moderately feasible
4	21-40%	Not feasible
5	0-20 %	Highly not feasible

The analysis was used to determine the feasibility of the developed e-module based on expert assessments and student responses. This study focused on product development and feasibility evaluation and was not designed to measure the causal effect of the e-module on students' learning outcomes

Results (نتائج)

1. Needs Analysis

The needs analysis combined direct observation with questionnaires distributed through Google Forms to one subject teacher and 32 students. The teacher needs-analysis score was 94.54%, while the student score was 94.37%. Both scores indicate a strong perceived need for a learning resource that presents French Manicure more systematically. The results align with the initial learning data: more than half of the students had not achieved the KKM of 80, and the reported difficulties concerned several connected procedural steps rather than a single isolated concept. These findings became the basis for developing an e-module that combines explanations, visual examples, and structured practice guidance.

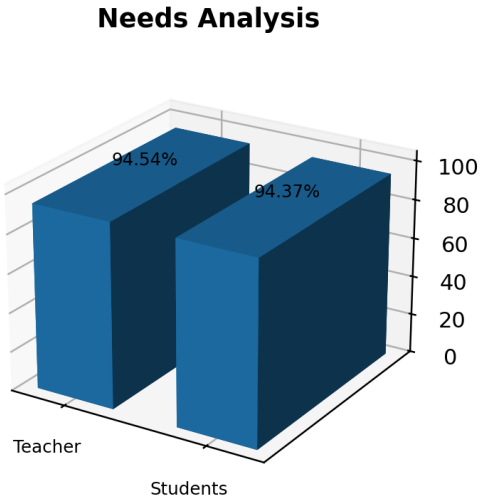

Figure 1. Three-dimensional comparison of teacher and student needs-analysis scores

2. Product Development

The product was developed through the five ADDIE stages. During Analysis, the researcher identified the learning difficulties, curriculum requirements, currently available resources, and teacher and student needs. During Design, the content outline, navigation flowchart, and storyboard were prepared to organize the sequence and function of each module component.

During Development, the planned content and visual layout were produced using Canva and Microsoft Word 2021. The product organizes the material from basic concepts and nail-care preparation to the tools and materials and the sequential procedures of French Manicure. The module also includes a navigable contents page, a glossary, supporting images, a tutorial video, learning objectives, and evaluation activities accessed through a barcode. The PDF format allows the resource to be downloaded and used offline, although barcode-linked content may require access to the relevant external resource.

3. Expert Validation

The material experts gave the e-module an overall score of 89.33%, categorized as highly feasible. The content-feasibility aspect received 88.00%, presentation received 86.66%, and language received 93.33%. These results indicate that the material and its presentation were considered suitable for supporting French Manicure learning, while the lower relative score for presentation identifies an area that required attention during revision. The media experts gave an overall score of 95.18%, also categorized as highly feasible. Their scores were 96.66% for content feasibility, 93.33% for presentation, and 95.55% for overall appearance. Media-related feedback included improving the contents page, writing abbreviated terms in full, adjusting the cover, refining spacing and content order, and improving the arrangement of supporting images. The researcher used validator feedback to refine the product before the student trials.

Table 2. Material Expert Validation Results

No.	Assessment aspect	Score	Category
1	Content feasibility	88.00%	Highly feasible
2	Presentation feasibility	86.66%	Highly feasible
3	Language	93.33%	Highly feasible
	Overall mean	89.33%	Highly feasible

Table 3. Media Expert Validation Results

No.	Assessment aspect	Score	Category
1	Content feasibility	96.66%	Highly feasible
2	Presentation feasibility	93.33%	Highly feasible
3	Overall appearance	95.55%	Highly feasible
	Overall mean	95.18%	Highly feasible

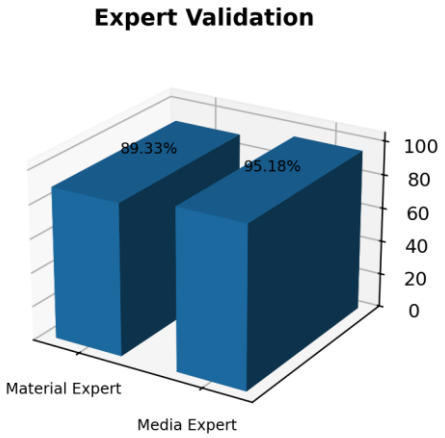

Figure 2. Three-dimensional comparison of material- and media-expert validation scores

4. Product Revisions Following Expert Feedback

The researcher used expert feedback to refine the e-module before the student trials. The recommendations concerned navigation, terminology, visual presentation, and instructional sequence. Table 4 organizes these recommendations alongside the corresponding proposed descriptions of the revisions.

Component	Expert recommendation	Revision description to confirm
Contents page	Improve the contents page.	Revised the entries to match the module sections and their sequence.
Terminology	Write abbreviated terms in full.	Provided the full forms of abbreviated terms to clarify their meaning.
Cover	Adjust the cover design.	Refined the layout of the title and module identity.
Spacing	Improve spacing throughout the module.	Adjusted spacing between text, headings, and visual elements.
Content sequence	Refine the order of the material.	Organized the material from basic concepts and preparation to sequential French Manicure procedures.
Supporting images	Improve image arrangement.	Positioned supporting images alongside the relevant explanations.

5.Product Trials

Product trials were conducted in three stages. The small-group trial, involving 8 students, yielded 92.65%; the medium-group trial, involving 16 students, yielded 95.07%; and the large-group trial, involving 32 students, yielded 95.55%. All three results were categorized as “Highly Feasible.” The mean percentage across the three product-trial stages was 94.42%.

Table 5. Summary of Expert Validation and Product Trial Results

Assessment	Percentage	Category
Small-group trial (n = 8)	92.65%	Highly feasible
Medium-group trial (n = 16)	95.07%	Highly feasible
Large-group trial (n = 32)	95.55%	Highly feasible
Mean product-trial score	94.42%	Highly feasible

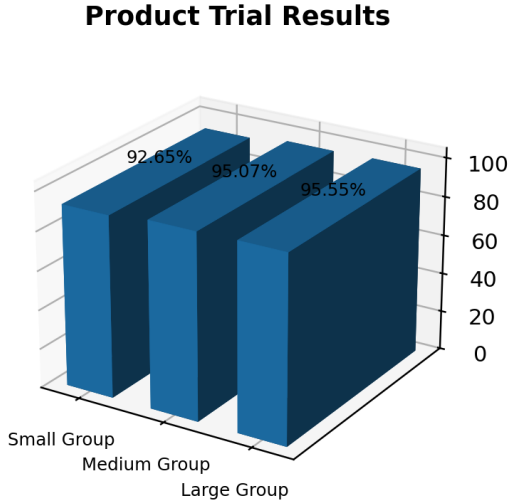

Figure 3. Three-dimensional comparison of product-trial scores across the three groups

Discussion (مناقشة)

The findings address the study's objective of developing a French Manicure e-module and assessing its feasibility. The high needs-analysis scores indicate that the teacher and students perceived a need for additional learning support. The preliminary achievement data reinforce the relevance of this development: 17 of the 32 students had not reached the minimum mastery criterion (KKM) of 80. However, these scores describe the situation before product development. They do not demonstrate the effectiveness of the e-module or establish that insufficient learning resources caused the students' difficulties.

A key advantage of the e-module is its integration of written explanations, supporting images, a tutorial video, navigation, and evaluation activities. This integrated format places the product within the broader development of e-modules as digital learning resources discussed by Anwar et al. (2025) and Antonius et al. (2022). For French Manicure instruction, the format allows students to revisit preparation, tools, materials, and procedural steps within one resource. However, access to these features does not guarantee that students will understand or apply the procedures correctly.

The combination of written and visual guidance also distinguishes the product from a standalone tutorial. Devtian (2024) developed a video tutorial for French Manicure, whereas the present product embeds tutorial material within a broader instructional sequence. Students can consult written explanations before or after viewing a demonstration. Research on hair-styling

video media provides a related context for using visual support in practical beauty instruction (Rahayu, 2023). Nevertheless, the present study did not compare the integrated e-module with video-only instruction. Its relative advantage therefore remains a design consideration rather than an empirically demonstrated effect.

The product also offers opportunities for self-paced review. Students can return to sections they find difficult without following the pace of a single classroom demonstration. Studies by Delita et al. (2022) and Perwitasari and Aviory (2025) provide broader contexts for examining e-modules in school learning. However, independent access requires students to navigate the material and recognize when they need further explanation. The present study did not observe students' study strategies or measure their ability to use the module independently.

Expert validation identifies areas that require attention despite the high overall feasibility scores. Material experts assigned an overall score of 89.33%, while media experts assigned 95.18%. Presentation received the lowest material-assessment score. This finding highlights the need to examine the sequence and clarity of procedural explanations alongside visual appearance. The two overall scores assess different dimensions, so their numerical difference should not be interpreted as a precise measure of the gap between instructional and media quality.

The experts' recommendations concerning the contents page, terminology, spacing, content sequence, and image placement provide specific directions for product refinement. These components affect how students locate information and connect explanations with procedural illustrations. Attention to learner needs and accessible content organization also reflects the module-development principles discussed by Najuah et al. (2022). However, the study did not separately assess the contribution of each revision to usability or comprehension.

The favorable student-trial results align broadly with the positive feasibility and practicality ratings reported in vocational e-module studies (Pratiwi et al., 2025; Setiyawan et al., 2024). The Nail Art study by Putri et al. (2022) provides a closer disciplinary comparison because it concerns a related practical competency. Nevertheless, differences in participants, instruments, product features, and implementation conditions limit direct comparisons. Similar ratings across studies do not establish equivalent effects on learning.

The consistently high trial scores indicate favorable student assessments of the revised product. They do not demonstrate improved learning achievement. Feasibility questionnaires capture judgments about the resource rather than changes in knowledge or practical competence. Likewise, the higher percentages across trial stages cannot establish progressive learning gains because the stages involved different group sizes and did not measure achievement change.

The e-module also has practical limitations. Students can access the PDF offline, but linked resources may require internet connectivity. Written explanations and visual demonstrations cannot independently verify technique, sanitation practices, or the quality of students' work. Teacher demonstration, supervised practice, and performance feedback therefore remain necessary.

Finally, the study involved one school and one practical topic, which limits the applicability of its findings to other settings. It did not include a pretest–posttest comparison, a control group, or a separate practical-performance assessment. Future research should assess knowledge and

practical skills using validated tests and performance rubrics, preferably with a comparison group. Observation of module use would also clarify whether students use its features as intended. The present evidence supports the e-module's feasibility within the assessed context; its effectiveness in improving learning achievement remains to be tested.

Conclusion (خاتمة)

The e-module for the French Manicure technique in Nail Art learning was developed for Grade XI Beauty students at SMK Swasta Pariwisata Imelda Medan using the ADDIE model. The needs analysis indicated a strong demand for the product, with scores of 94.54% from the teacher and 94.37% from students. Material-expert validation reached 89.33%, and media-expert validation reached 95.18%; both were categorized as highly feasible. The small-, medium-, and large-group trials achieved 92.65%, 95.07%, and 95.55%, respectively, with an average of 94.42%. The product can therefore be considered a highly feasible learning resource for organizing and revisiting French Manicure procedures. Its feasibility should not be equated with proven effectiveness in improving achievement. Future studies should test learning outcomes and practical skills through an appropriate experimental or quasi-experimental design.

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