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Developing Interactive Teaching Materials for Practical Webinar Tutorials in Distance Education

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Abstract: Interactive teaching materials play an important role in distance learning by presenting various media formats such as text, audio, and video to facilitate effective learning. This study aims to develop interactive teaching materials and test their feasibility and practicality in supporting the implementation of distance learning. The research used the research and development method in accordance with Sugiyono's development model. Research data were obtained from material and media experts, tutors, and document analysis. The instruments used were trial and interview assessment sheets. The collected data were analyzed using descriptive statistics. The results of the study show that the developed product was deemed feasible by both material and media experts and was proven practical through trials with tutors. These findings indicate that these materials are feasible and practical to support webinar-based tutorials. This study contributes to the field by developing integrated teaching materials that strengthen tutors' pedagogical and technical competencies in conducting practical-course webinar tutorials within open and distance higher education.

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Introduction

Open and distance higher education has expanded rapidly worldwide, increasing universities' reliance on online and blended learning to improve educational access and flexibility (UNESCO, 2024). Alongside this expansion, ensuring the quality of instructional support has become increasingly important because effective online learning depends not only on digital platforms but also on competent tutors who facilitate meaningful learning experiences (Istenič, 2024). Distance education is a learning system designed to provide flexible access to education without being limited by space and time, and supported by the use of digital technology and structured learning services (Bueche et al., 2023; Segbenya et al., 2024). Distance education not only requires a learning platform but also effective tutorial services to support student interaction, academic mentoring, and engagement throughout the learning process. (Heinz, 2024). The existence of tutors is an important component in helping students understand the material, providing feedback, and facilitating meaningful learning experiences in an online learning environment (Mohale, 2025).

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As a pioneer of distance education in Indonesia, the Open University offers distance learning with online tutorial support across various courses, including practical courses with distinctive learning characteristics. Practical courses demand not only conceptual mastery but also practical skills in product creation, procedural implementation, and technical demonstrations. Therefore, implementing tutorials in practical courses requires more intensive, interactive, and contextual support than in theoretical domains. To enhance these services, Universitas Terbuka integrates Tutorial Webinars (TuWeb) three times per period, serving as a synchronous learning platform that facilitates practical demonstrations, direct interaction, and real-time student mentoring (Elilnesan et al., 2025; Hardy et al., 2026).

The need for effective tutorial services in practical courses requires tutors not only to have pedagogical competence but also to have technical skills in managing online learning. In the context of distance education, tutors need materials or practice modules to serve as references for the systematic design, implementation, and evaluation of tutorial activities. However, results from interviews with 10 tutors indicate a persistent competency gap in tutorial implementation. A total of eight tutors admitted they lacked clarity regarding the structure and substance of the material to be delivered during the Webinar Tutorial (TuWeb). In addition, all tutors experienced difficulties in technical aspects, such as inserting Microsoft Teams links into the Learning Management System (LMS), modifying assignment collection times, creating attendance lists, and compiling final tutorial reports. The findings show a competency gap, particularly in pedagogical and technical aspects, that could hinder the effective implementation of practical learning in the distance education system.

A strategy is needed to improve tutors' competence in designing and effectively implementing online learning. One effort is the development of interactive teaching materials specifically designed to guide tutors in online tutorial learning activities. (Ribosa & Durah, 2022; Tua et al., 2023). This interactive teaching material not only serves as a source of information but also as a tool containing procedures, practice examples, and step-by-step guides for managing learning.

Previous studies on distance education have predominantly focused on improving students' learning experiences, satisfaction, and learning outcomes in online environments (Al Lily et al., 2020; Alsubaie, 2022). Student satisfaction in distance learning (Aheto et al., 2024), and a comparison of the effectiveness between face-to-face learning and synchronous learning (Lyu et al., 2024). In parallel, studies on instructional materials have consistently demonstrated their effectiveness in enhancing teachers' competencies, students' critical thinking, and the quality of classroom learning (Abdala, 2024; Choi et al., 2024; Li et al., 2026). Despite these advances, existing studies rarely address the development of instructional resources specifically designed to strengthen tutors' pedagogical and technical competencies for conducting webinar-based tutorials.

However, these studies have not specifically examined the role of tutors in managing practical learning, particularly in the context of distance education. (Haren & Hershman, 2024). In fact, in distance learning, tutors play a strategic role not only as facilitators but also as supervisors, ensuring student achievement and the production of learning products. (Lohr et al., 2021). The limitations of this study indicate that strengthening tutor competence, especially in managing webinar-based tutorials, remains relatively underresearched.

Departing from these conditions, this study has a different focus from previous research. This research focuses on developing interactive teaching materials for tutors to improve their pedagogical and technical competence in implementing webinar tutorials. Using the Research and Development approach, this research not only produces descriptive

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findings but also develops teaching materials that tutors can use directly to improve the quality of practical learning services. (Eriksen et al., 2026).

Tutors in practical courses play a crucial role in ensuring that students achieve the learning goals set (Wu et al., 2026). The tutor's duties are not only administrative but also include complex academic activities, such as examining practical assignments, conducting webinar tutorials, managing student attendance, developing interactive teaching materials, and assessing learning outcomes. The complexity of this task requires tutors to have adequate pedagogical and technical competencies to ensure the learning process is effective and meaningful.

This research aims to develop and test the feasibility and practicality of teaching materials informed by experts' and tutors' views. This teaching material is designed to support tutors in delivering tutorials for practical courses in open and distance education environments. The developed teaching materials contain pedagogical and technical guidelines systematically compiled to assist tutors in designing, implementing, and evaluating tutorial activities more effectively. The development of this teaching material is motivated by the limited availability of tutorial companions specifically designed to meet the characteristics of practical courses in distance education. Therefore, this research is expected to contribute to the development of tutor support materials that are more adaptive, contextual, and relevant to the needs of implementing practice-based tutorials in distance education.

Research Method

This study adopted a Research and Development (R&D) approach using Sugiyono's development model (Sugiyono, 2015) to develop interactive teaching materials for tutors of practical courses in distance education. The stages of Sugiyono's R&D model are presented in Figure 1. Consistent with the objective of developing and validating the product, this study intentionally focused on the product validation phase up to the ninth stage (initial product revision). This stage was considered sufficient to establish the content validity, media feasibility, and user practicality of the developed teaching materials before broader implementation.

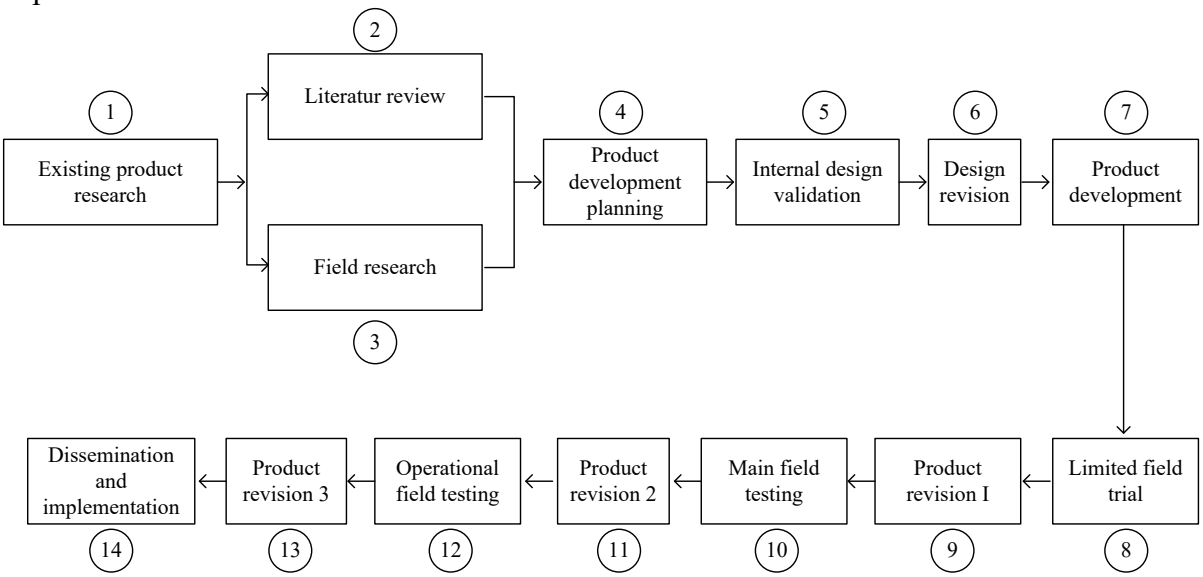

Figure 1. Steps of research and development of Sugiyono's model

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The development process began with a preliminary study consisting of an evaluation of existing teaching materials and a needs analysis. The evaluation involved material and media experts to identify the strengths and limitations of the existing instructional resources. Subsequently, a field study was conducted through document analysis and semi-structured interviews with nine tutors who had experience conducting Webinar Tutorials (TuWeb) for practical courses. The tutors were selected using purposive sampling because they had direct experience implementing webinar-based tutorials and could therefore provide in-depth insights into the pedagogical and technical challenges encountered during implementation. Findings from the preliminary study served as the basis for designing and developing the interactive teaching materials.

The developed product subsequently underwent an internal validation process involving two experts: one material expert and one media expert. The material expert evaluated the content's suitability for tutors' needs, accuracy, systematic presentation, readability, language, and instructional quality. Meanwhile, the media expert assessed the visual appearance, typography, color selection, media presentation, usability, and overall design quality. Suggestions from both experts were used to revise and improve the product before field testing.

Following expert validation, the revised teaching materials were evaluated in a limited field trial involving 30 tutors who actively conducted tutorial activities. The user evaluation focused on the readability of the teaching materials, content suitability, clarity of instructional guidance, usability, and visual appearance. Data were collected using expert validation sheets, interview guides, and user questionnaires.

The collected data were analyzed using descriptive statistics to determine the feasibility and practicality of the developed teaching materials. Product feasibility was interpreted based on the eligibility criteria presented in Table 1. Because this study focused on the product validation phase, the findings provide evidence on the content validity, media feasibility, and user practicality of the developed teaching materials, rather than on their effectiveness in improving tutors' performance through large-scale implementation. Therefore, further studies are recommended to evaluate the effectiveness of the developed product in broader educational settings involving more diverse participants.

Table 1. Analysis of trial data

Scale	Qualifications	Criteria
90 - 100	Excellent	No revision required
75 – 89	Good	Minor revision
65 – 74	Satisfactory	Moderate revision
55 - 64	Less	Major revision
0 - 54	Very Less	Requires a complete redesign

Result and Discussion

Result

The results of the study of existing products conducted by two experts, as shown in Table 1, indicate that the available teaching materials remain very limited. Currently, there are only two video tutorials, namely, how to make a greeting video and how to assess student assignments. On the other hand, there are still many materials that are actually needed by tutors but are not yet available, such as materials that need to be delivered during webinar

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tutorials (TuWeb), how to create TuWeb links in LMS, how to take attendance, how to record TuWeb activities, how to check assignment collection time, and how to compile final reports. This is also supported by interviews with 9 tutors, who stated that these competencies are indispensable for implementing tutorials. Therefore, these materials need to be developed to help tutors carry out their duties more effectively.

Table 2. Types of Teaching Materials that Already Exist

No	Types of Teaching Materials	Availability		Comments
		Yes	No	
1	How to make a greeting video	√		Very clear and worth using
2	How to grade student assignments	√		Very clear and worth using
3	Types of Materials		√	Needs to be developed
4	How to create a Tuweb link in an LMS		√	Needs to be developed
5	How to create a Tuweb attendance		√	Needs to be developed
6	How to record your web activity		√	Needs to be developed
7	How to check task time		√	Needs to be developed
8	How to Create a Final Report		√	Needs to be developed

Based on research on existing products, as shown in Table 1, only two teaching materials align with the tutor's duties for the practical course. The expert assessment results recommend developing teaching materials tailored to tutors' needs.

Table 3. Results of expert material evaluation

No	Indicators	Score	Comments
1	Content Relevance	100%	The material aligns with the learning material development objectives
2	Clarity of Material	94%	The terminology used matches the context of webinar-based tutorials
3	Systematic presentation	93%	The sequence of the material is logically and systematically structured
4	Usability	95%	The steps in the teaching materials are easy for tutors to follow
5	Language and Readability	97%	The sentences used are simple, straightforward, and appropriate for the target users
6	Layout and Design	96%	The use of images, tables, or illustrations supports the understanding of the material
	Mean	**95,8**	

Table 4. Results of media expert evaluation

No	Indicators	Score	Comments
1	Selection of letters and colors	97%	The use of color supports readability, is not excessive, and the size and typeface are easy to read.
2	Media Presentation	98%	Use of images or illustrations relevant to the material
3	Familiarity	100%	Media supports the effective execution of tutorials

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4	Fit for purpose	100%	The media used is in accordance with the learning objectives
5	Picture and sound	95%	The image is clearly visible, and the sound in the supporting video is audible.
	Mean	**98%**	

After the teaching material product is declared materially feasible by a media expert, then the teaching material is tested by the tutor through a limited trial. The limited trial was carried out with 30 tutors. The results of the limited trial are shown in Table 5.

Table 5. Results of the limited field Trial

No	Indicator	Score	Comments
1	Readability of the teaching materials	100%	Teaching materials can be read clearly
2	Teaching material content with tutor assignments	98%	The content of the teaching material is in accordance with the tutor's duties
3	Clarity of teaching materials	97%	The tutorial steps contained in the teaching materials are very clear
4	Uses	100%	Teaching materials are very helpful to tutors in conducting webinar tutorials.
5	Display	95%	The display is already quite good
	Mean	**98%**	

Discussion

The results in Table 3 show that the content suitability aspect received the highest score in the assessment conducted by subject-matter experts. These findings show that the developed teaching materials align with the learning objectives and the tutor's needs for implementing tutorials. The suitability between learning objectives, material content, and learning activities is one of the main characteristics of quality teaching materials because it can help users understand and apply the material more effectively (Chao et al., 2025; Nicolaou, 2021). The assessment of material experts also shows that the material presented has been systematically arranged, relevant, and able to support the optimal implementation of learning (Choppin et al., 2022; Suarmika et al., 2023). Thus, the developed teaching materials are considered to have met the feasibility criterion for use in learning.

The results of this study are in line with the research conducted in (Nazifah et al., 2021; Pratidina & Novaliyosi, 2024) which states that teaching materials designed with systematic steps are able to increase creativity and support an effective learning process (Pecson & Sarmiento, 2025). However, previous research generally emphasized improving student learning outcomes in primary and secondary education and in face-to-face classrooms. (Carrete-Marín et al., 2024; Li et al., 2026) . In contrast, this study emphasizes strengthening tutors' competence at the university level to carry out tutorials independently and systematically in an open and distance education environment. The teaching materials developed not only help tutors understand the tutorial material but also support tutors' ability to manage tutorial activities in a more directed, creative, and independent manner. (Nurhayati, 2022; Sujana & Krisnayanti, 2022; Susatio et al., 2022). These findings show that

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tutor-based teaching materials have an important role in supporting the implementation of tutorials in practical courses.

In addition, research presented in (Marizal & Asri, 2022; Wang et al., 2024). Explained that teaching materials developed through the right stages of development can help users carry out the learning process more effectively. However, most previous research focused on developing text-based teaching materials and did not integrate many multimedia elements, such as video, audio, and synchronous tutorial guides, needed to implement webinar tutorials. Therefore, this research contributes to the development of tutor teaching materials that are not only oriented to the content of the material, but also integrate multimedia elements and tutorial needs in distance learning (Carrete-Marín & Domingo-Peñafiel, 2022; Mhlanga, 2024)

The results of the media experts' assessment, as shown in Table 3, indicate that the developed teaching materials also meet the media feasibility criterion. The assessment includes media elements such as the selection of typefaces, the use of colors, images, and the presentation of materials, videos, and sounds, which receive good ratings. These findings show that the display of teaching materials has been designed in a communicative, attractive manner and supports users' ease of understanding. This condition is in line with research conducted by (Abdala, 2024; Susanto et al., 2021). The current trend in the development of digital teaching materials emphasizes the importance of visual quality and media interactivity in supporting learning effectiveness. Students, in general, are more interested in teaching materials that are simple, systematic, and interactive, making them easier to use in the learning process. Therefore, the developed teaching materials not only ensure the content's feasibility but also have media quality that supports the effectiveness of tutorial implementation in distance learning.

The findings are strengthened by the results of a limited trial conducted directly with the tutor, who served as the user. The results in Table 5 show that readability and usability achieved the highest percentages and perfect scores. The tutor stated that the teaching materials are clear and very helpful for conducting webinar tutorials. In addition, the content-suitability aspect received a score of 98%, indicating that the teaching material aligns with the tutor's duties and needs in implementing the tutorial. The clarity of the interactive teaching material also received a high score of 97%, with the tutor noting that the tutorial steps were easy to understand and systematic. Meanwhile, the display aspect received a score of 95%, indicating that the design of the teaching materials is considered quite attractive and supports the comfort of use. The results of this trial show that the developed teaching materials are not only theoretically feasible, as assessed by experts, but also practical and easy for tutors to use in implementing tutorials in a distance education environment.

Previous research in the field of distance education has generally focused on learning effectiveness, the impact of distance education implementation, and the use of learning media at the primary and secondary education levels. Studies on the development and use of teaching materials in higher education, especially to support the implementation of practical courses in distance education, remain relatively limited. Therefore, the contribution of this research is in the development of needs-based teaching materials specifically designed to support tutors in practical courses in open and distance higher education. The teaching materials developed not only serve as a pedagogical guide for implementing tutorials, but also support the strengthening of tutors' technical competence in managing tutorial activities more systematically and effectively.

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However, this study still has limitations, especially in the scope of the trial. Therefore, further research is needed by implementing and testing teaching materials on a larger scale, involving more tutors and a wider range of practical courses. This step is important for obtaining a more comprehensive picture of the effectiveness, practicality, and sustainability of using teaching materials to support the quality of educational tutorials.

Conclusion

The developed interactive teaching materials were deemed feasible and practical based on assessments by material and media experts and on tutors' test results. Thus, this teaching material is feasible to implement to provide optimal support for the distance learning process. This research strengthens the finding that the availability of teaching materials is indispensable at the higher-education level, especially in distance education. This study confirms that the availability of appropriate interactive teaching materials can improve tutors' work efficiency in managing the classroom and optimize the quality of guidance provided. This study contributes to open and distance higher education by developing interactive teaching materials that strengthen tutors' pedagogical and technical competencies in conducting webinar tutorials for practical courses.

Recommendation

It is recommended that future research conduct larger-scale product trials involving a more diverse sample size to obtain a more comprehensive picture of the effectiveness of these developed materials. In addition, future researchers and curriculum developers are advised to develop similar interactive teaching materials for other courses by tailoring them more specifically to the distinct characteristics and learning needs of each subject, thereby continuously supporting tutors' effectiveness in distance higher education.

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