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Developing Inclusive Learning Environments : Collaborative Learning Innovations for Students with Disabilities in Higher Education

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Abstract: This research aims to develop of an inclusive learning environment for students with physical disabilities through learning innovations using collaborative learning methods. The method of research used is research and development (R&D), with the ADDIE model research design, which consists of five stages: analysis, design, development, implementation and evaluation. The population in this study were all students with physical disabilities at Pamulang University, with samples taken using a purposive sampling technique, so that representative students with physical disabilities were obtained for this research. Data was collected through interviews, questionnaires and observation methods to get a comprehensive picture of students' learning needs and experiences. The data analysis technique is carried out descriptively qualitatively, which includes needs analysis, learning design, collaborative learning video development, and evaluation of the effectiveness of the learning implemented. The results of this research show that the application of the ADDIE model in video development through collaborative learning methods succeeded in creating a more supportive learning environment for students with physical disabilities, as well as providing a more meaningful and interactive learning experience, so that student learning outcomes increased from a score of 6 to 8.

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Introduction

Inclusive education is an essential concept in modern education, emphasizing the importance of providing equal learning opportunities for all individuals, including those with special needs or disabilities (Booth & Ainscow, 2011). This concept reflects a global commitment to inclusivity and non-discrimination as articulated in the Sustainable Development Goals (SDG 4), which targets quality education for all by 2030, regardless of physical, intellectual, social, or economic differences. In Indonesia, Law No. 8 of 2016 concerning Persons with Disabilities serves as a legal foundation to guarantee the rights of individuals with disabilities, including access to education. However, the reality on the ground indicates that the implementation of inclusive education, particularly at the higher education level, still faces significant challenges, ranging from inadequate infrastructure to a lack of understanding among lecturers regarding inclusive teaching methods. One major challenge is ensuring that the teaching methods employed can accommodate students from diverse backgrounds, including those with physical disabilities (Putri, 2022).

The state of the art in inclusive education indicates that much recent research focuses on the use of technology and diverse learning methods to support students with special needs. For example, a study by Al-Azawei, Serenelli, and Lundqvist (2016) demonstrates that the

use of adaptive technology can enhance participation and learning outcomes for students with disabilities. Additionally, research by Cummings and Maddux (2019) shows that collaborative learning can foster better social interactions and increase motivation to learn among students with disabilities. However, there remains considerable room for innovation in effectively applying these methods in the context of marketing management education at the college level.

In recent years, literature on inclusive and collaborative learning has rapidly evolved; however, its application in specific fields such as marketing management has rarely been the focus of research. Recent studies by Grönroos (2020) indicate that students' understanding of marketing concepts is significantly influenced by inclusive and collaborative learning contexts. This underscores the need for further research to identify strategies that can assist students with physical disabilities in understanding and effectively applying the principles of marketing management.

This situation illustrates that many students with physical disabilities still feel marginalized in academic environments, impacting their motivation and academic performance. According to D'Astous and Côté (2019), students with disabilities often face stigma and a lack of support, leading to dissatisfaction and withdrawal from their study programs. Therefore, this research aims to investigate innovative ways to create a more supportive and inclusive learning environment, particularly through collaborative learning approaches that involve all students, regardless of their physical abilities.

One intriguing approach for investigation is the implementation of project-based collaborative learning methods, where students with physical disabilities can work alongside their peers in groups to complete tasks related to marketing management. Research by Johnson and Johnson (2017) indicates that project-based learning can enhance student interaction, reduce isolation, and provide a more meaningful learning experience. This aligns with the principles of inclusive education, which emphasize the active participation of all students in the learning process. Additionally, it is essential to investigate how lecturers can adapt their teaching to meet the learning needs of students with physical disabilities. Research by Loreman et al. (2017) emphasizes the necessity of training for lecturers to understand how to create supportive learning environments for all students. Consequently, this study will also explore teaching strategies that can be implemented to optimize collaborative learning in marketing management courses.

Through this research, it is expected to uncover innovative learning approaches that not only enhance the learning experience of students with physical disabilities at Pamulang University but also make a significant contribution to the development of inclusive education in Indonesia. This study offers novelty in the form of implementing collaborative learning methods specifically designed to meet the needs of students with physical disabilities. This approach relies not only on peer interaction but also on the use of adaptive technologies and inclusive project-based learning strategies. Thus, this research provides practical solutions to the challenges of inclusive education while introducing a learning model that can be adopted by other educational institutions, fostering a more supportive and inclusive learning environment for all students, particularly those with physical disabilities.

Another unique aspect of this study lies in the integration of a multidisciplinary approach within the design of collaborative learning, combining elements of technology, pedagogy, and educational psychology. This approach aims to create a holistic learning experience that is responsive to the specific needs of students with physical disabilities. Additionally, the study will explore the effectiveness of training programs for lecturers and facilitators to optimize the implementation of these methods. Consequently, this research not

only introduces innovative learning practices but also builds institutional capacity for the sustainable implementation of inclusive education practices. The findings are expected to provide new insights that strengthen both the academic literature and the practical application of inclusive education at national and international levels.

This study has several primary objectives aimed at improving the inclusive learning environment for students with physical disabilities at Pamulang University, particularly in the context of marketing management courses. First, this research aims to identify and analyze the challenges faced by students with physical disabilities in the learning process, thereby formulating more effective strategies to support them. Second, this research seeks to explore the application of collaborative learning innovations as an approach that can enhance active participation and social interaction among students with and without disabilities. Through collaborative learning methods, it is hoped that students with physical disabilities can gain the social support necessary to improve their motivation and learning outcomes.

Inclusive education is increasingly recognized and implemented in various higher education institutions worldwide, including in Indonesia. At Pamulang University, efforts to enhance the inclusive learning environment for students with physical disabilities continue to face various challenges, especially in the context of marketing management courses. This research focuses on the development of collaborative learning innovations that can improve the learning experiences of students with physical disabilities, with the hope of reducing the gap in access to quality education. In an era where diversity in education is a priority, it is crucial to explore innovative approaches that can create a more inclusive learning atmosphere.

Research Method

This research employs the Research and Development (R&D) method aimed at creating and testing an inclusive collaborative learning model for students with physical disabilities at Pamulang University, specifically in the context of the Marketing Management course. According to Borg and Gall (2010), R&D is a process used to generate new products and test the effectiveness of these products in educational contexts. This approach is relevant as it can produce a learning model that is not only theoretical but also practical and applicable. In this study, the design utilized is a quasi-experimental research design, which allows the researcher to evaluate the impact of the developed learning model by comparing a group of students using the model and a control group not using it (Creswell, 2014).

The population in this study comprises all students with physical disabilities enrolled at Pamulang University, focusing on those taking the Marketing Management course. The sample will be selected purposively, meaning that students who meet specific criteria, such as the type of physical disability and active involvement in the coursework, will be chosen. This purposive sampling technique is selected to ensure that the sample taken is relevant to the research objectives and can provide in-depth information (Etikan, Musa, & Alkassim, 2016). The development of research instruments will involve creating questionnaires and observation sheets designed to measure the effectiveness of the applied collaborative learning model. This questionnaire will be pilot-tested on a small group of students to obtain adequate validity and reliability, in accordance with the principles of instrument development proposed by Likert (2018).

In development model, this study will utilize the ADDIE model (Analysis, Design, Development, Implementation, Evaluation) as a framework. During the Analysis phase, the researcher will identify the needs and challenges faced by students with physical disabilities in the learning process. The needs analysis theory proposed by Knowles (2013) emphasizes

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the importance of understanding learning needs to design effective interventions. In the Design phase, the researcher will design an appropriate collaborative learning model, integrating marketing management principles with inclusive methods. In the Development phase, the learning model will be developed and pilot-tested to identify existing strengths and weaknesses, based on the curriculum development principles outlined by Tyler (2013).

Subsequently, in the Implementation phase, the model will be applied in the classroom, and data collection will be conducted through observations and questionnaires. This implementation process will involve collaboration between lecturers and students to create a conducive learning environment (Strobel & Van Barneveld, 2019). Finally, in the Evaluation phase, the collected data will be analyzed to assess the effectiveness of the developed model and provide feedback for further improvement. According to Kirkpatrick and Kirkpatrick (2016), evaluation is crucial to ensure that the achieved outcomes align with the established objectives. This study uses a needs analysis with a qualitative method, and testing product effectiveness with an experimental method through the ADDIE models. By utilizing the ADDIE models, this research not only focuses on the development of the learning model but also ensures that the model is relevant and effective in enhancing the learning experiences of students with physical disabilities. The constructivist learning theories proposed by Piaget (1976) and Vygotsky (1978) will serve as the foundation for developing this model, emphasizing the importance of social interaction and real-life experiences in the teaching and learning process.

Results and Discussion

The findings of this study demonstrate how each stage of the ADDIE model contributes to the development of effective collaborative learning videos, as well as their impact on student engagement and understanding. Furthermore, the results and discussion of this research will be elaborated in detail, highlighting key findings and implications of the applied learning innovations.

Analysis Stage

During the analysis stage, the researcher conducted surveys and interviews with students with physical disabilities at Pamulang University to understand the challenges they face in learning the Marketing Management course. The results of the analysis indicate that students experience difficulties in following conventional teaching methods that often do not consider their special needs. Most of them reported challenges in understanding orally delivered material and felt unable to actively participate in class discussions.

The data obtained from the needs analysis showed that the pretest conducted before the collaborative learning intervention revealed that students had a limited understanding of basic marketing concepts (with an average score of 54%). Observations also indicated that many students, particularly those with physical disabilities, struggled to interact within the conventional learning model, which did not accommodate their specific needs. These findings align with research by Alqurashi (2020), which emphasizes the importance of understanding students' needs to create an inclusive learning environment. The researcher also identified that students have a high interest in using technology, particularly learning videos, as a medium that can help them better comprehend the material.

Maslow's hierarchy of needs theory (Maslow, 1943) can be applied here, stating that the fulfillment of basic needs (such as the need for safety and acceptance) is a prerequisite before individuals can focus on learning. If students feel unsafe or marginalized in the learning environment, they will not be able to achieve their academic potential. This finding aligns with research by Alqurashi (2020), which underscores the significance of

understanding students' needs as an initial step in creating an inclusive learning environment. Therefore, the researcher decided to develop interactive learning videos, as this medium can convey information in a manner that is more easily understood and accessible to students.

In the needs analysis, the researcher also considered the theory of Differentiated Instruction proposed by Tomlinson (2014), which emphasizes the importance of providing variety in how material is delivered to meet the needs of all students. This means that by creating videos that incorporate visual and audio elements, the researcher hopes to provide a more inclusive and beneficial learning resource for students with special needs. The results of the needs analysis indicate that students with physical disabilities require a more responsive and adaptive approach to learning. By developing collaborative learning videos that involve interactive and visual elements, the researcher aims to create a learning space that is not only informative but also inclusive. This aligns with the Constructivist theory proposed by Piaget (1976), which emphasizes the importance of hands-on experience in the learning process. When students with physical disabilities engage in content creation, they are not only passive recipients of information but also active participants in the creation of knowledge.

Research by Palazesi et al. (2022) also demonstrates that the use of learning videos in an inclusive context can enhance student motivation and self-confidence. Students who feel engaged in the learning process are more likely to participate in discussions and collaborate with their peers. With this approach, the researcher aims not only to enhance material understanding but also to strengthen the sense of community among students with physical disabilities and their peers.

Design Stage

After identifying the needs, the researcher designed a collaborative learning video by integrating three main sub-topics: segmentation, targeting, and positioning (STP); promotion and marketing communication; as well as Customer Relationship Management (CRM). This design involved the active participation of students in the content creation process, providing them with the opportunity to engage directly in the learning process. This approach is supported by collaborative learning theory, which states that social interaction can enhance student engagement and deepen their understanding (Johnson et al., 2021). By encouraging students to collaborate in the video production, the researcher hopes to create a more inclusive learning environment that supports the development of their interpersonal skills.

This learning design follows the ADDIE model, which emphasizes the importance of systematic planning to achieve desired learning outcomes. The researcher decided to adopt a multimedia approach, incorporating visual, audio, and interactive elements as a method of delivering information. According to Mayer (2001), multimedia principles can enhance student comprehension by effectively combining words and images. The use of learning videos not only makes the material more engaging but also assists students with physical disabilities who may encounter difficulties in traditional learning environments. This aligns with research by Kuo et al. (2018), which indicates that the use of interactive media can improve student engagement and motivation, particularly in inclusive learning contexts.

The video design also considers the principles of collaborative learning, where students are given the opportunity to collaborate in the content creation process. In this context, students with physical disabilities are also directly involved in the collaborative learning video production. According to Johnson and Johnson (2014), collaborative learning can enhance learning outcomes by promoting interaction among students, building social skills, and developing a sense of shared responsibility within the group. Through this design, the researcher hopes that students not only learn marketing content but also develop essential social and teamwork skills for their future.

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The researcher adopts Vygotsky's (1978) Social Constructivism theory, which emphasizes that learning occurs through social interaction and shared experiences. In this context, students are encouraged to actively participate in the video production process, reinforcing their understanding of the material. Research by Diezmann and Lowrie (2018) also supports this approach, showing that collaboration among students can enhance conceptual understanding and create an inclusive and supportive learning environment. Considering all these aspects, the developed learning design is expected to not only address the needs of students with physical disabilities but also create a more meaningful and memorable learning experience. Through the collaborative learning video, the researcher aims to foster an inclusive learning environment that empowers all students, regardless of their physical abilities.

Development Stage

The video development process was conducted systematically, starting with scriptwriting that included key elements from each sub-topic. During the filming process, the researcher ensured that all material was presented in an easily comprehensible manner, using simple and clear language. Video editing was performed to add visual and graphic elements that could help explain complex concepts and ensure that the video was accessible to all students, including those with physical disabilities. Research by Castro et al. (2021) indicates that videos designed with accessibility considerations can enhance material comprehension. During the video development, the researcher also involved students in this creative process, including students with physical disabilities, allowing them to provide meaningful input and contributions to the produced content. Student involvement in this development process is crucial to ensure that the video is not only informative but also relevant to their experiences.

The testing of materials and technology was implemented in the form of a learning video and a digital-based module. The initial results showed that students felt more comfortable with the use of this technology. Faculty members provided feedback that adaptive tools and project-based learning media were very helpful in assisting students in understanding marketing material. However, further technical adjustments were still needed to improve accessibility for all students with physical disabilities. Below is the display of the video uploaded on the "Dosen Hype Official" YouTube channel.

Figure 1. YouTube Channel Video Display

The Constructivist theory developed by Bruner (1996) focuses on the importance of active learning, where students build knowledge through experience and interaction. In this context, student collaboration during video development leads to the creation of a dynamic learning environment, where they can discuss, share ideas, and learn from one another. Research by An et al. (2020) shows that collaboration in the media production process not only enhances material comprehension but also builds the social skills necessary for future success.

Additionally, the researcher adopted the design thinking approach proposed by Brown (2009). This process encourages researchers to understand problems from the user's perspective, in this case, students with physical disabilities. By involving them in video

development, the researcher can gain valuable insights into what students most need and desire, thereby creating more targeted and relevant solutions. Research by Chang et al. (2019) shows that the application of design thinking in education can lead to better innovations in teaching and learning.

In the video development, the research team used intuitive video editing software, allowing students to easily contribute to the production process. Through this experience, they not only learn academic content but also acquire technical skills that can be beneficial in the workforce. This approach aligns with Project-Based Learning theory proposed by Thomas (2000), where students engage in real projects that challenge them to solve problems and develop valuable products.

Thus, the development stage not only results in an informative and engaging video product but also creates a comprehensive learning experience for students with physical disabilities. Through collaboration, active involvement, and the application of innovative approaches, the researcher hopes this learning video will positively impact their understanding of marketing management and relevant social skills.

Implementation Stage

The collaborative learning video that has been developed was subsequently implemented in the classroom. Students were given the opportunity to watch the video before participating in a more in-depth group discussion. During this discussion, they could share their understanding, ask questions, and provide feedback on the material they had studied. This approach aligns with constructivist theory, which emphasizes the importance of social interaction in the learning process (Vygotsky, 1978). Students reported that the video helped them feel more confident in participating in discussions, and many felt that this format made learning more engaging. Through this approach, the researcher successfully created a more inclusive and collaborative learning environment.

At this stage, the researcher undertook several strategic steps to ensure that the video could be used effectively in the learning process. First, the researcher conducted an orientation session to introduce the video and explain the learning objectives to be achieved. This session aimed not only to provide information about the video content but also to prepare students to be more ready to engage in the learning process.

One of the theories underpinning this implementation stage is Engagement Theory proposed by Kearsley and Shneiderman (1998). This theory emphasizes the importance of active student engagement in the learning process through collaboration, communication, and meaningful goals. By presenting the video in a collaborative atmosphere, it is hoped that students can interact with each other, discuss the material, and apply their knowledge in real-world contexts. Research by Appleton et al. (2008) supports this theory, indicating that high student engagement can contribute to better learning outcomes, particularly for students with special needs.

Furthermore, the video was integrated into the marketing management course curriculum, where students were required to watch the video as part of their class assignment. The researcher also provided an online discussion platform to allow students to give feedback and discuss the material they had watched. This approach aligns with Social Learning Theory proposed by Bandura (1977), where individuals learn through observation and interaction with others. In this context, students not only learn from the video but also learn from each other through discussion and collaboration.

The use of video also provides flexibility for students with physical disabilities to access the material. They can watch the video anytime and anywhere, which is crucial to meet their learning needs. This supports the theory of Accessibility in Education, which states

that the learning environment should be designed to be accessible to all students, including those with disabilities. Research by Al-Azawei et al. (2016) demonstrates that learning materials that are accessible flexibly can enhance participation and learning outcomes for students with disabilities.

During the implementation stage, the researcher also conducted observations to evaluate student responses to the video. These observations included analyzing student engagement during class sessions, the quality of discussions that occurred, and the feedback provided. Data on student engagement in learning was collected through direct observation, surveys, and questionnaires to measure the effectiveness of the collaborative learning implementation. The data results indicated that approximately 78% of students with physical disabilities showed active engagement in collaborative learning, although some required additional support related to technology accessibility. In terms of feedback from students and faculty, students reported that collaborative learning facilitated their understanding of the application of marketing concepts in real-life situations, while faculty members reported an improvement in students' practical skills in designing marketing plans.

By collecting this data, the researcher could understand the effectiveness of the video in enhancing learning and identify areas for improvement. This is in line with the Formative Evaluation theory proposed by Black and Wiliam (1998), where evaluation is carried out continuously to improve the learning process. Through carefully designed implementation steps based on relevant theories, the researcher hopes that this collaborative learning video will significantly contribute to enhancing the inclusive learning environment for students with physical disabilities at Pamulang University.

Evaluation Stage

The evaluation stage is a crucial step in the development process of collaborative learning videos for students with physical disabilities at Pamulang University. The evaluation aims not only to assess student learning outcomes but also to analyze the effectiveness of the video as a tool for enhancing the learning experience. The evaluation stage was conducted after the implementation of the learning video through questionnaires and observations to assess the video's effectiveness in improving student understanding. The questionnaires were designed to collect data on students' understanding levels before and after watching the video. Evaluation results showed that the average understanding score of students increased significantly from 65% to 85%. Research by Zhang et al. (2020) supports this finding, indicating that video-based learning can enhance student understanding and information retention. Additionally, observations during group discussions indicated that students were more actively engaged, more confident in expressing their opinions, and demonstrated a better understanding of the concepts taught. Students also reported feeling more motivated to learn and more comfortable interacting with their classmates.

At this stage, the researcher employed both formative and summative evaluation methods to obtain a comprehensive picture of the impact of the learning video on concept understanding and the skills intended to be achieved. Formative evaluation was conducted during the learning process by collecting feedback from students through questionnaires and discussions. The researcher observed student engagement, motivation levels, and responses to the material presented in the video. This aligns with the formative evaluation theory developed by Hattie and Timperley (2007), which emphasizes the importance of continuous feedback in improving learning. Research by Shute (2008) also shows that timely feedback can significantly enhance student learning outcomes. In this context, students with physical disabilities can provide valuable insights regarding how the video facilitates or hinders their learning process.

Meanwhile, summative evaluation was conducted after the entire learning process was completed to assess the achievement of final outcomes. After the implementation of collaborative learning, the posttest results showed a significant improvement in students' understanding of marketing management material, with the average posttest score increasing to 85%. This indicates that the applied teaching method successfully enhanced students' comprehension. 85% of students reported that collaborative learning greatly helped them understand marketing material, especially with the inclusion of group-based projects and adaptive technology. Faculty members provided positive feedback on the success of this method in accommodating the needs of students with physical disabilities, though they suggested further technical training for instructors and more accessibility tools. The scores of students with physical disabilities improved from an initial 60 to 80.

The researcher used evaluation instruments that had been previously developed, which included assessments of students' understanding of key concepts in marketing management, such as segmentation, targeting, positioning, promotion, marketing communication, and CRM. The theory of summative evaluation described by Scriven (2013) emphasizes that evaluation should include a comprehensive analysis of the effectiveness of a program or learning material. By using clear and measurable rubrics, the researcher can provide an objective assessment of student learning outcomes. Additionally, the researcher also conducted an analysis of the quantitative and qualitative data obtained from surveys and interviews. Quantitative data included student evaluation scores, while qualitative data were obtained from open-ended interviews aimed at exploring students' learning experiences in more depth. This mixed-methods approach supports the triangulation theory in research, which suggests that using various data sources can provide a more holistic understanding of the phenomenon being studied (Fetters et al., 2013).

The evaluation results indicate that the collaborative learning video positively contributes to enhancing the understanding of students with physical disabilities regarding concepts in marketing management. Students reported that the video helped them comprehend the material in a more interactive and enjoyable manner. This aligns with research by Kearney et al. (2012), which shows that the use of video in learning can enhance student motivation and engagement, particularly in the context of inclusive education. Based on these evaluation results, the researcher concludes that the development of collaborative learning videos can be an effective alternative in creating an inclusive learning environment for students with physical disabilities. This research not only contributes to the development of inclusive learning practices in higher education but also offers insights into the importance of innovation in teaching methods to meet the needs of students from diverse backgrounds.

Conclusion

Based on the results and discussions presented above, the conclusions of this study are as follows:

1) Analysis Stage: This research successfully identified the specific needs of students with physical disabilities at Pamulang University in understanding marketing management materials. The researcher utilized surveys and interviews to explore the challenges faced by students in the learning process, revealing that many of them require a more interactive and inclusive approach.
2) Design Stage: The researcher formulated the structure of a collaborative learning video covering the sub-topics of segmentation, targeting, positioning, promotion, marketing communication, and CRM. This design is based on the principles of collaborative learning, which can enhance student understanding and engagement. By involving

students in the learning process through video, this design aims to create a learning environment that fosters cooperation and the exchange of ideas.

3) Development Stage: The educational video was developed with consideration of the feedback received from students during the analysis and design phases. The resulting video is expected to create a more comprehensive and inclusive learning experience.
4) Implementation Stage: The implementation of the collaborative learning video in the classroom demonstrated positive responses from students with physical disabilities. They reported an increase in motivation and understanding of the material being taught.
5) Evaluation Stage: The results indicated that the use of collaborative learning videos significantly improved student learning outcomes. The researcher applied both formative and summative evaluations, allowing for a comprehensive measurement of the effectiveness of the materials presented. The scores of students with physical disabilities improved from an initial 60 to 80.

Recommendation

Based on the research findings regarding the enhancement of inclusive learning environments through collaborative learning innovations for students with physical disabilities at Pamulang University, several recommendations can be considered for future research and practice. First, it is recommended that the development of collaborative learning videos be implemented more broadly across various courses, not limited to marketing management, to optimize the learning experience for students with physical disabilities. Second, educational institutions should provide training for faculty and teaching staff on inclusive teaching strategies and techniques for creating multimedia content that is accessible to all students. Third, further research is suggested to explore the long-term impacts of implementing these collaborative learning methods on the academic performance and social skills of students with physical disabilities. Fourth, it is important for universities to provide better resources and support for students with physical disabilities, including adequate physical and digital accessibility, so that these students can fully participate in academic activities. Finally, collaboration between universities, government agencies, and non-governmental organizations should be strengthened to create more inclusive and supportive programs for students with disabilities, enabling them to reach their maximum potential in higher education.

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