

Evidence from Indonesia: improving practical skills in media broadcasting through project-based learning

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Abstract While Project-Based Learning (PBL) is widely recognised as an effective pedagogical approach in media education, significant gaps remain in understanding its implementation and impact in developing country contexts. Challenges such as resource constraints, industry-academia disconnects, and varying institutional capacities may limit PBL's effectiveness in preparing media broadcasting students for professional careers. This study examined these issues through a longitudinal investigation of PBL implementation at an Indonesian private university's media broadcasting laboratories. Using quantitative research analysis of student performance data across five core courses, the study reveals that PBL significantly enhances practical competencies when properly supported. Key findings show more than 60% of participants achieved top grades, with strong correlations between PBL participation and skill development. The study identifies industry-aligned projects and structured mentorship as critical success factors, while highlighting persistent challenges related to equipment access and time constraints. These results demonstrate PBL's potential to bridge the gap between academic training and industry needs in resource-constrained environments. The findings recommend that strategic investments in laboratory infrastructure, faculty development, and industry partnerships could help overcome implementation barriers and maximise PBL's benefits for media education in developing contexts.

Keywords: higher education; industry alignment; media broadcasting laboratories; practical skills; project-based learning

INTRODUCTION

Project-based learning (PBL) is increasingly pivotal in preparing university-level communication students for the complexities of modern media industries, particularly within media broadcasting laboratories. These labs, often equipped with advanced production tools (e.g., studios, editing suites, and live-streaming facilities), simulate real-world environments where students must navigate project cycles—from scripting and production to post-production and audience analytics. While Baltimore (2017) affirms PBL's role in fostering workforce-relevant skills like collaborative problem-solving and technical proficiency, higher education institutions face a critical implementation gap: how to systematically align PBL curricula with industry benchmarks while ensuring pedagogical rigour (Ahmad Tajuddin et al., 2022; Gayatri et al., 2023). For instance, in Indonesia's competitive media landscape, where broadcasters demand graduates who can immediately operate equipment, manage teams, and adapt to digital platforms, PBL's success hinges on structured mentorship, iterative feedback, and assessment metrics tied to industry competency standards—elements often overlooked in traditional lab settings. Without such intentional design, PBL risks becoming a superficial exercise rather than a transformative training ground for future media professionals.

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Media broadcasting laboratories are essential facilities in communication study programs. Around 70% of communication programs in Indonesia have integrated media broadcasting laboratories into their curricula. These laboratories are used not only for lectures but also for mid-term and final exams. Therefore, developing a project-based learning model in media broadcasting laboratories is highly relevant to improving educational quality. Typical media broadcasting laboratories are equipped with various advanced equipment (as illustrated in Figure 1) such as cameras, audio mixers, editing software, and broadcast studios. For instance, a university has a media broadcasting laboratory equipped with 4K cameras, digital audio systems, professional video editing software, etc. These facilities allow students to learn and practice using the same media technology used in the industry. This laboratory serves as a vital training hub, enabling students to develop technical proficiency, creative production skills, and critical media analysis using industry-standard broadcasting technology. By providing hands-on experience with professional-grade equipment and workflows, this facility bridges the gap between academic training and real-world media industry demands (Supriadi, 2024).



Figure 1. Typical professional media broadcasting equipment in the Master Control Room (MCR)
Source: Author Documentation (2025)

The media broadcasting laboratories are used in various practical courses, such as media broadcasting techniques, television program production, and broadcast journalism. Communication Studies students are required to take a media broadcasting practicum course that is entirely conducted in the media broadcasting laboratory. This course covers various technical and production aspects, from operating cameras to video editing. However, there are some challenges in using media broadcasting laboratories. One of them is limited time and access. Many universities have a large number of students, so not all students can use the laboratory optimally. Additionally, the cost of maintenance and equipment upgrades is also a constraint for some universities. By strategically reallocating existing laboratory capacities, universities can maximise limited media lab resources, streamline experimental teaching workflows, and enhance the integration of hands-on training (Yang, 2021).

Project-based learning involves students in long-term projects that encompass various stages, from planning to evaluation (Nurhadiyah et al., 2021; Nurhidayah et al., 2021). In the context of media broadcasting laboratories, these projects can include television program production, short filmmaking, or newscasting, which can promote students' speaking skills (Abdul, 2016). The implementation of the project-based learning model in media broadcasting laboratories involves several steps. First, the lecturer assigns projects relevant to the curriculum and industry. Second, students work in teams to complete the projects. Third, the project outcomes are evaluated based on established criteria (Guo et al., 2020).

There are many pedagogical benefits in the use of video-making at such media broadcasting laboratories, as suggested in a study conducted by Ying and Baboo (2015). It offers advantages over traditional media, such as engaging multiple senses for better understanding, visually representing complex content, and allowing adolescents to create and share videos easily, promoting constructivist learning. Another study from Gauntlett (2005) noted that adolescents, due to early media exposure, often excel with new media, highlighting the need to understand their self-representation through video. It argued that creative pedagogy allows marginalised voices to participate in constructive criticism (Aura et al., 2021; Shah, 2021; Zulyusri et al., 2023). Video-making empowers adolescents by giving them a voice and fostering a more

democratic environment. This approach is more engaging and reflective than traditional methods. The collaborative approaches involve participants in creating videos, empowering them, and shifting them from passive consumers to active producers (Buckingham, 2009). Harford and MacRuairc (2008) found that peer-videoing among student teachers bridges reflection and practice, fostering critical dialogue. Similarly, Calandra et al. (2009) noted that video editing enhances reflective practice.

However, implementing project-based learning also faces several challenges. One of them is the need for intensive guidance from lecturers. Additionally, complex projects require more time and resources, especially when students are intentionally required to do projects that need problem-solving, including the effectiveness of online learning (Abuhmaid, 2020; Aldabbus, 2018). According to Hmelo-Silver (2024), one of the biggest challenges is ensuring that all students are actively involved in the project. The effectiveness of the project-based learning model in the context of media broadcasting laboratories can be measured through several indicators, such as improved practical skills, conceptual understanding, and students' job readiness. Students involved in laboratory-based projects are expected to show significant improvement in practical skills, such as operating cameras, video editing, and content production. Since the new digital broadcasting equipment investment is relatively high for low-middle-income countries like Indonesia, it would be so substantial that policymakers would need to exercise extreme caution before committing to spending that would ultimately benefit only a few learners and fail to assist the education of disadvantaged populations (Global Education Monitoring Report Team, 2023).

Despite the widespread adoption of media broadcasting laboratories in higher education, their effectiveness in developing students' practical competencies remains uncertain. This research investigates how project-based learning (PBL) can be optimally implemented in typical laboratories, such as the radio and television laboratories located at Universitas Bunda Mulia in Indonesia (as illustrated in Figure 2), to bridge the gap between academic training and industry demands. While PBL is recognised as a promising pedagogical approach, its application in broadcasting laboratories remains understudied, particularly in structured teaching-learning processes. This study aims to demonstrate how PBL can transform laboratories into dynamic training hubs that prepare graduates for immediate workforce integration. The television studio replicates a live newsroom and other TV program environments, requiring students to apply PBL principles under time constraints akin to professional settings. As broadcasting industries rapidly digitise, such models are critical to ensuring academic curricula remain relevant.



Figure 2. Students who learned media broadcasting projects in the media broadcasting laboratory at Universitas Bunda Mulia

Source: Author Documentation (2025)

Project-Based Learning (PBL) is a pedagogical approach that emphasises learning through implementing projects relevant to the real world. Thomas (2000) states that PBL allows students to develop critical, collaborative, and creative skills. In the context of higher education, PBL has proven effective in various disciplines, including communication studies (Bell, 2010). A study by Krajcik & Blumenfeld (2005) showed that PBL could increase students' motivation to learn because it provides a real and relevant context. Students actively engage in the learning process from project planning and execution to evaluation (Diana et al., 2021; Trinaldi et al., 2022). PBL also allows students to develop project management skills, which are crucial in the workforce.

Media broadcasting laboratories are facilities used to support practical learning in broadcasting. These laboratories are equipped with tools and technology that enable students to apply the theories they learn in a real-world environment (Diana et al., 2021; Pertiwi et al., 2021). Media broadcasting laboratories typically come equipped with studios, cameras, microphones, and editing software. The use of media broadcasting laboratories in higher education has proven effective in enhancing students' practical skills. A study by Johnson and Johnson (2002) showed that students involved in such cooperative laboratory learning activities had a better understanding of media broadcasting concepts and were more prepared to face challenges in the workforce. These laboratories also allow students to work collaboratively, which is an essential skill in the media broadcasting industry.

Combining the project-based learning model with media broadcasting laboratories can provide a more comprehensive learning experience for students. Lee and Lim (2012) discuss the importance of peer evaluation in mixed team-based project learning. In this research, the authors discuss the results of their research on what students consider important in the peer evaluation process. This study highlights the importance of effective communication, honesty, and fairness in evaluation. The research results show that students consider it important to receive constructive and fair feedback from their peers, which is also an important element in active learning pedagogy (Cattaneo, 2017).

Another study aimed to evaluate the effectiveness of the PBL model in increasing multimedia student engagement. The research conducted by Lestari and Ghazali (2017) shows that the implementation of the PBL model significantly enhances student engagement in the learning process. Students involved in PBL-based projects show increased motivation, active participation, and a better understanding of the material compared to conventional teaching methods (Aldabbus, 2018; Natty et al., 2019; Nurhidayah et al., 2021; Trinaldi et al., 2022). This study notes that students feel more responsible for their learning outcomes and are more capable of working in teams. This process not only improves students' technical skills but also soft skills such as communication, cooperation, and time management.

However, there are several challenges in implementing PBL, such as the need for careful planning, a longer time to complete projects, and the necessity for competent lecturers to facilitate the PBL process. Nevertheless, the benefits obtained from implementing PBL far outweigh the challenges faced. The PBL model is effective in increasing engagement and learning outcomes for multimedia students. However, higher education institutions need to consider the broader implementation of PBL, with careful planning and training for lecturers to optimise the learning process.

The ease with which information or content can be disseminated by the public has been greatly facilitated by social media platforms (Ifnafi & Isnaini, 2023; Subandi & Sadono, 2018). Many of these platforms feature live video streaming capabilities that enable interaction with followers, attract viewers, or serve business purposes (Appel et al., 2020; Dinansyah et al., 2024). To address this gap, it is essential to explore strategies for enhancing the practical learning environment. This could include seeking funding for updated technology, establishing partnerships with media companies for resource sharing, and integrating innovative teaching methods that maximise the use of available tools. By improving the infrastructure and resources for live streaming production, higher education institutions can better prepare their students for the demands of the multimedia industry, fostering both their technical skills and their ability to engage with contemporary media practices effectively (Atmaja et al., 2021).

This study investigates how project-based learning transforms media education in Indonesia by exploring two critical dimensions. First, it examines the practical implementation of PBL in typical university media broadcasting labs, analysing how curricula align with industry needs. Second, it evaluates the tangible impact of PBL on student outcomes, measuring both skill development and academic achievement through comprehensive performance data. Further, it tried to identify the real-world barriers and success factors that shape PBL's effectiveness, from infrastructure limitations to the crucial role of industry partnerships. Through this multifaceted approach, the research provides empirical evidence for how hands-on, project-driven learning can prepare broadcasting students for professional success while addressing the unique challenges of media education in developing economies.

METHODOLOGY

This study employed a quantitative research design. According to Creswell & Creswell (2018), this approach allows researchers to explore objective evaluation within a real-world context. This was chosen because it enables researchers to rigorously interpret the implementation of the project-based learning model in media broadcasting laboratories. The subject of this study is the use of TV and Radio Laboratories by communication science studies students at a private, national, and internationally accredited university in Indonesia, which uses media broadcasting laboratories as part of its curriculum. According to Suryadi et al. (2019), this technique allows researchers to select subjects with characteristics relevant to the research objectives. The research instruments used were taken from the class student grading and the laboratory management staff's document analysis of the laboratory use. Based on the data of the students' grading, the grading tabulation was conducted to see the overall performance of the classes that took the media broadcasting courses from the even semester of 2022-2023 until the odd semester of 2023-2024. Further examination by using IBM SPSS statistical software was conducted to measure the correlation of the grading results among the media broadcasting courses of the same classes. These correlation results were expected to give more insight into the performance consistency of the classes that implement the same PBL approach. The internal validity was strengthened through longitudinal data collection and controlled comparison of student performance in five standardised media broadcasting courses, minimising extraneous variables. As for its reliability, the study employed inter-rater reliability checks among instructors grading its PBL outputs and demonstrated high test-retest reliability through repeated practical assessments. Statistical analyses used Spearman's Rho to account for non-normal grade distributions, with all correlations tested at $p < 0.01$ significance.

RESULTS AND DISCUSSION

The Communication Science study program has a dedicated laboratory, namely the media broadcasting laboratory. The media broadcasting laboratory is a laboratory that consists of two types of studios, namely a television studio and a radio studio. In the radio studio, students can learn about the equipment's practicalities and create podcasts. Meanwhile, in the television studio, students can practice being news anchors, cameramen, and operate the Master Control Room (MCR). Students or lecturers usually use the media broadcasting laboratory to create final project assignments as a graduation requirement to advance to a higher semester. Students are expected to make a final assignment in the form of a group project, namely producing television or radio broadcast programs in news and non-news formats. The benefit of the broadcasting lab for students is that they can become familiar with various types of equipment in television and radio studios. Apart from that, students can also learn how to create television and radio programs, as well as become news anchors, presenters, hosts, creative teams, producers, etc., so that students are ready when they work in this field.

The media broadcasting laboratory was also used when the campus held simulated PBL classes for high school students who visited the campus. The media broadcasting laboratory equipment was also brought out to hold a simulated class at high schools. The purpose of conducting the simulated class is to introduce and promote media broadcasting techniques to high school students. The media broadcasting laboratory at this university is mainly used by lecturers to conduct practical lectures and by the students to make final semester assignments or projects, therefore, the students will borrow the studio and its equipment for final semester exam assignments or projects.

This analysis was conducted based on the total use of the media broadcasting laboratory during lecture hours and outside lecture hours. Students or lecturers who wish to borrow a broadcasting laboratory can fill out the broadcast laboratory usage form, so they can obtain permission to use the laboratory outside class hours. Figure 3 shows a graph of the media broadcast laboratory usage over two years to give an overview of its laboratory's usage. Further analysis was conducted to evaluate the final grading results of the students who took the media broadcasting courses from the even semester of 2022-2023 until the odd semester of 2023-2024. The evaluation would then be beneficial to evaluate the learning effectiveness of the PBL method by utilising the media broadcasting laboratory.

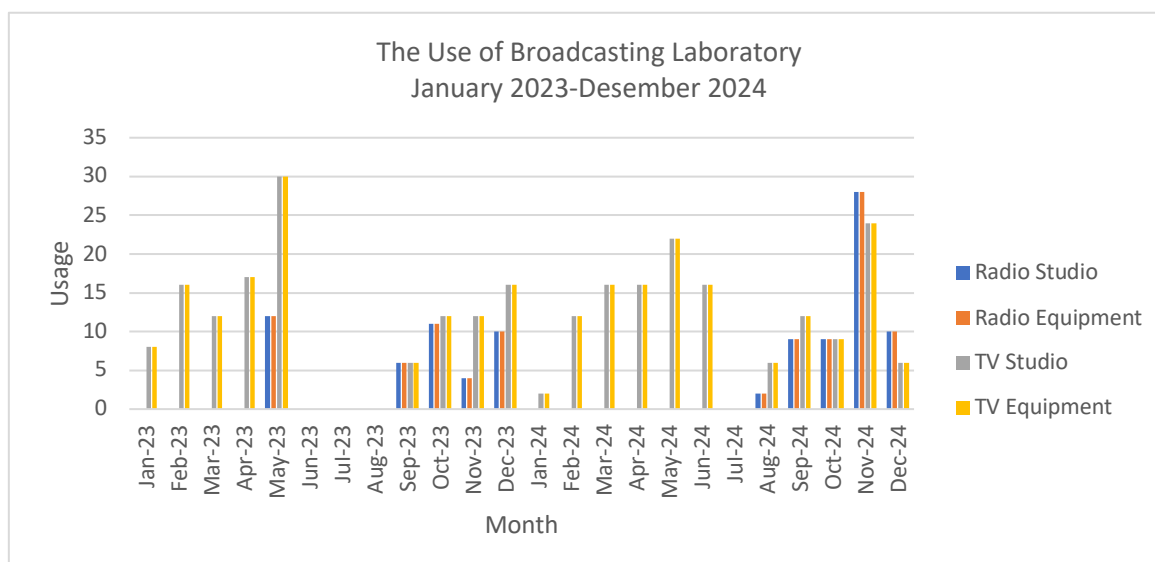


Figure 3. Media broadcasting laboratory usage from January 2023 - December 2024
(Source: Authors' processed data, 2025)

The evaluation of this study was conducted based on the students' performance (final grading) taken from five courses related to the use of media broadcasting laboratories, just a few months after the government allowed the students to enter the class after the COVID-19 pandemic outbreak. The classes were Cinematography (IKG14), Digital Broadcasting (IKG15), Radio Journalism (IKD04), Media Broadcast (IKG13), and Broadcast and Digital Programming (IKG20). The evaluation was taken by using the data from the student's performance in the even semester 2022-2023 until the odd semester 2023-2024. Correlation tests between these academic years were necessary to have better understanding about the student's performance across the academic year both in the same class or different classes.

In the even semester of the 2022-2023 academic year, there are two broadcasting courses, namely IKG15 and IKG20. Based on Figure 4 below, the total number of students who got an A grade in the IKG15 course was 49% of the class. The total number of students who got a B+ grade was 17% of the class, while the total number of students who got a B grade was less than an A grade. The total number of students who got a B grade in this course was 15% of the class, fewer than students who got a B+ grade. The total number of students who got a C+ grade in this course was 5% of the class, fewer than students who got a B. Furthermore, the total number of students who got a C grade in this course was only 1% of the class, fewer than students who got a C+ grade. Finally, no student got a D grade. It indicates that the success rate of the course was good. Compared with IKG15, the total number of students who got an A grade in the IKG20 course was higher, which was 70% of the class. The total number of students who got a B+ grade was 16% of the class, which was far less than the number who got an A grade. Based on the calculation, the total number of students who got a B grade in this course was also 6% of the class. Then there were no students who got a C+ grade in that course. The result was the same with the number of students who got a C and D grade in that course, which was zero. These results showed that the performance of the class was very good.

Further examination by using Spearman's Rho correlation technique due to the monotonic relationship of the grading scores between the two similar classes in the same semester. It shows that there was a positive correlation between the two courses of IKG20 and IKG15 courses. It can be shown in the result of Table 1, as calculated by the SPSS program, that the correlation coefficient was 0.376. The interpretation of these findings is that the grading relationship was considered low but approaching a moderate relationship of 0.40. The relationship was significant, since the 0.031 coefficient was smaller than the 0.05 level (2-tailed). This relationship was not a coincidence. There is statistical evidence that performance in both courses was significantly related, although the strength tended to moderate. A positive correlation value shows that students who performed well in the first course (IKG20) tend to perform well in the second course (IKG15), and vice versa.

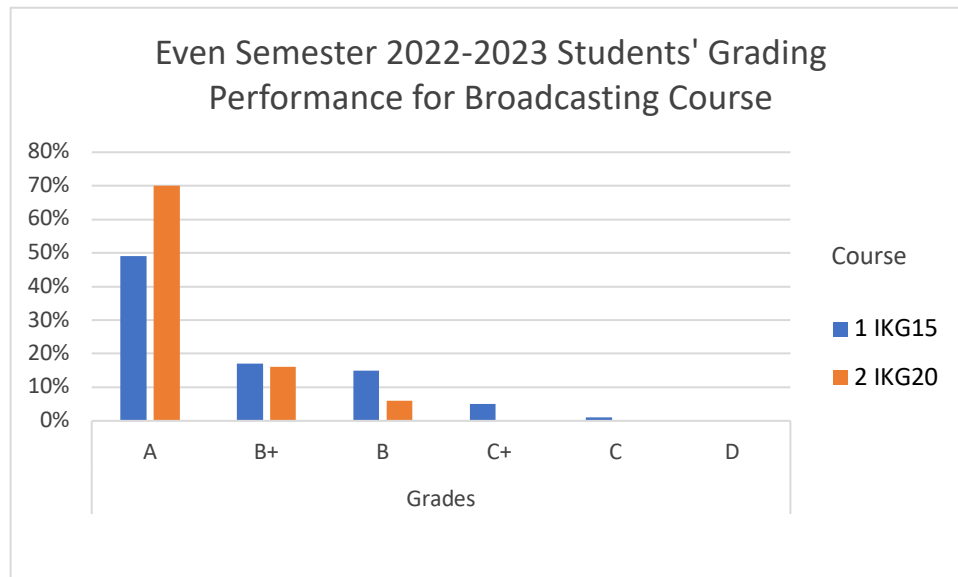


Figure 4. The students' performance in two media broadcasting courses for the even semester 2022-2023 (Source: Authors' processed data, 2025)

The four-course grades of IKG14, IKG15, IKD04, and IKG13, based on the odd semester of 2023-2024, were then analysed. According to Figure 5, as many as 59% of the total students who enrolled in the IKG14 course achieved an A grade. There were 30% of the class who received a B+ mark, which was fewer than the number of students who received an A grade. And then there were 9% of the class who received a B grade, which was the lowest grade any student in this subject had ever received. Further, 61% of the class received an A mark in the IKG15 course. As many as 38% of the class received a B+ mark, which was fewer than the number of students who received an A. And 23% of the class received a B grade, which was fewer than the number of students who received a B+ mark. There were only two individuals (3% of the total class) who scored a C+, which was the lowest grade any student had received in this course. In this course, there were no students who received C or D grades.

Table 1. Correlations Output for even semester courses 2022-2023

		IKG20	IKG15	
Spearman's rho	IKG20	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.	
		N	33	
	IKG15	Correlation Coefficient	.376*	1.000
		Sig. (2-tailed)	.031	.
		N	33	33

Source: Authors' processed data by SPSS (2025)

Further analysis showed that 36% of the IKD04 class received an A grade. Subsequently, 38% of the class total received a B+ mark, which was higher than an A. Then, 5% of the class received a B grade, which was a lower grade than the B+ grade received by students. There were only 3% of the class who received a C+ grade, which was a lower mark than that of the students who received a B. Similar to the C grade, 3% of the class received that grade. For this course, no students received a D grade, which indicates the learning effectiveness in this course.

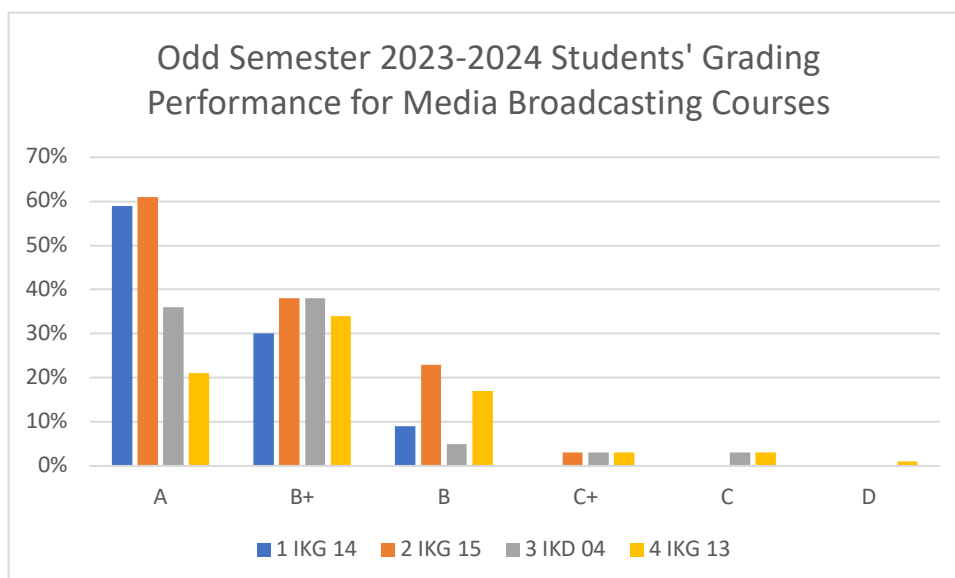


Figure 5. The students' performance in four media broadcasting courses for the odd semester 2023-2024
 Source: Authors' processed data (2025)

In the subsequent course, IKG13, 21% of the total class received an A mark. Then it was discovered that more students received a B+ mark than those who received an A, with 34% of the class receiving a B+. Subsequently, fewer students received a B+ mark than those who received a B, totalling 17% of the class. Then, compared to the students who received a B mark, only 3% of the class who got a C+ grade were undoubtedly fewer in number. Similarly, 3% of the class received a C grade, which was equal to the number of students who received a C+ grade. The lowest grade possible in the course is a D, which was earned by only one student, or 1% of the total class population. In summary, across these four courses, A and B+ grades were most common, with Cinematography (IKG14) and Digital Broadcasting (IKG15) courses having the highest percentages of A grades. The Radio Journalism (IKD04) and Media Broadcast (IKG13) courses show a wider distribution of grades, with the Media Broadcast course having the lowest percentage of A grades and the only instance of a D grade.

Further test by using Spearman's Rho correlation technique towards the grading scores between the same students in the same class, but different semesters of the IKG14 and IKG15 courses. It shows in Table 2 that there was a positive correlation between the two courses, as it is indicated by the SPSS calculation of the correlation coefficient of 0.674. It also shows a moderate and tends to be a strong correlation statistically. Students who do well in one course tend to do very well in similar courses as well, although in a different semester. There was a significant correlation between performance in both courses. A similar teaching method, in this case PBL, was one of the important factors. This trend was consistent and quite strong across the sample.

Another examination by using Spearman's Rho correlation to examine the grading scores between the same students in the same class, in the same semester of 2023-2024, who took IKG13 and IKD02 courses. It shows in Table 3 that there was a positive correlation between the two courses, as it is indicated by the SPSS calculation of the correlation coefficient of 0.590. It also shows a moderate to strong correlation statistically. Students who do well in one course tend to do very well in similar courses as well. There was a significant correlation between performance in both courses, as indicated in the 0.000 value of significance (2-tailed). This trend was consistent and quite strong across the sample.

Based on the findings above, the study shows that there have been coherent results in terms of positive grading of the media broadcasting courses that implement the PBL model from the even semester of 2022-2023 until the odd semester of 2023-2024. The implementation of the project-based learning model in media broadcasting laboratories involves several stages: planning, execution, and evaluation. In the planning stage, students work in groups to plan the broadcasting project they will undertake. They identify the project goals, determine each member's roles, and create an implementation schedule. In the execution stage, students apply

the theories they have learned in real projects. They use the equipment and technology available in the media broadcasting laboratories to manage their projects. Students also work collaboratively to complete tasks such as scriptwriting, filming, and video editing.

Table 2. Correlations output for across semester courses of even 2022-2023 and odd 2023-2024

		IKG14	IKG15	
Spearman's rho	IKG14	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.000	
		N	33	
	IKG15	Correlation Coefficient	.674**	1.000
		Sig. (2-tailed)	.000	.
		N	33	33

Source: Authors' processed data by SPSS (2025)

Table 3. Correlations Output for odd semester courses 2023-2024

		IKG13	IKD02	
Spearman's rho	IKG13	Correlation Coefficient	1.000	
		Sig. (2-tailed)	.000	
		N	43	
	IKD02	Correlation Coefficient	.590**	1.000
		Sig. (2-tailed)	.000	.
		N	43	43

Source: Authors' processed data by SPSS (2025)

According to Thomas (2000), PBL allows students to develop critical, collaborative, and creative skills. In the context of media broadcasting laboratories, students can apply the theories they learn in real projects, which enhances their understanding of the taught concepts. However, this model also has drawbacks. One identified weakness is the need for more time and resources. According to Bell (2010), PBL requires careful planning and good coordination, which can be challenging for lecturers and students. Moreover, media broadcasting laboratories require advanced equipment and technology, which may not be available in all educational institutions.

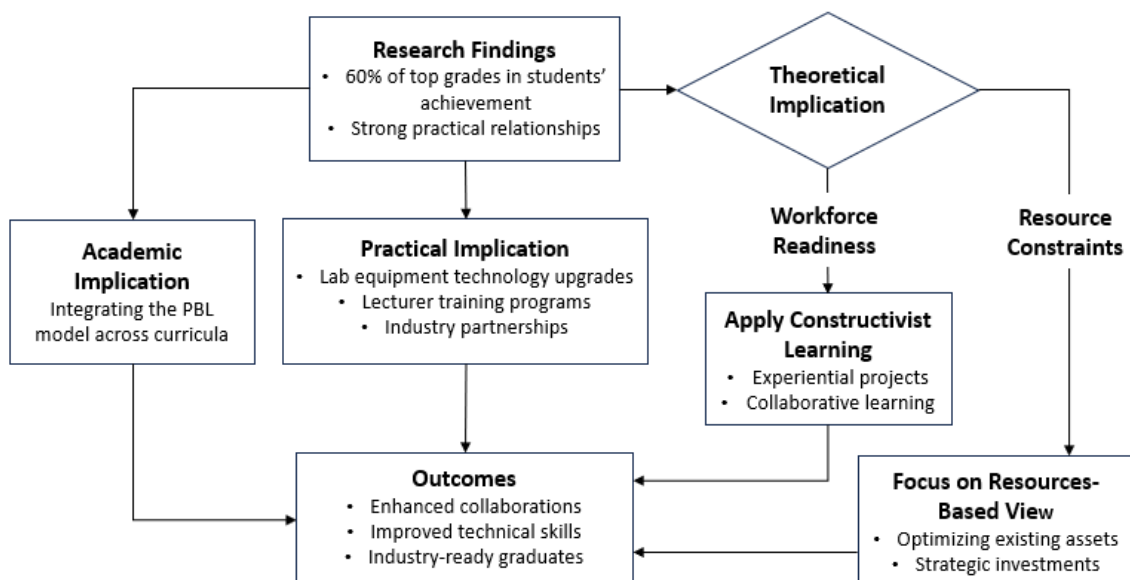


Figure 6. Research implications for PBL in media education
 Source: Authors' data (2025)

This research has several important implications for the development of higher education, especially in communication studies, as illustrated in Figure 6. First, the findings show that the project-based learning model can enhance students' practical skills and conceptual understanding. Therefore, higher education institutions can consider integrating this model into their curricula. Second, this research highlights the importance of using media broadcasting laboratories in learning. These laboratories provide facilities to apply the theories learned and

allow students to develop project management skills, which are crucial in the workforce. Higher education institutions can consider enhancing their laboratory facilities to support project-based learning. Third, this research shows that the project-based learning model requires good planning and coordination. Therefore, lecturers and students need training to manage the projects they work on. Higher education institutions can provide the necessary training and resources to support the implementation of this model. Fourth, the findings reinforce constructivist learning theory by demonstrating how hands-on PBL in media broadcasting labs enhances skill acquisition through experiential, industry-aligned projects. It also refines the Resource-Based View (RBV) in education, emphasising that PBL success hinges on both tangible resources (equipment) and intangible assets (training, partnerships). These insights collectively advance theories linking pedagogy, resource allocation, and workforce readiness in media education.

CONCLUSION

The study demonstrates that Project-Based Learning (PBL) effectively enhances students' practical skills and conceptual understanding in media broadcasting laboratories. Despite challenges like resource constraints and the need for lecturer training, PBL fosters collaboration, creativity, and industry readiness. This pedagogical approach has been instrumental in enhancing students' practical skills, conceptual understanding, and job readiness. Media broadcasting laboratories, equipped with industry-standard technology, have provided students with invaluable real-world experience, thereby increasing their competence and confidence in their abilities. The findings reveal that over 60% of participants achieved top grades, demonstrating strong correlations between PBL participation and skill development. The collaborative nature of PBL has further fostered essential soft skills such as communication, teamwork, and problem-solving. Future research should explore PBL's applicability across diverse educational contexts to further validate its benefits.

Based on these conclusions, several recommendations can be made to improve the implementation of PBL in media broadcasting education. Firstly, it is essential to expand access and availability to media broadcasting laboratories. This can be achieved by extending laboratory hours and scheduling more flexible lab sessions to accommodate all students, thereby ensuring that every student has adequate time and resources to complete their projects. Secondly, universities should invest additional funding to maintain and upgrade broadcasting equipment regularly. This would ensure that students have access to the latest technology, keeping their skills relevant and up to date. Thirdly, investing in continuous professional development for lecturers is crucial. By ensuring that faculty members are well-equipped to guide and support students through complex projects, the effectiveness of PBL can be significantly enhanced. Additionally, establishing stronger partnerships with media companies for internships and project collaborations would provide students with opportunities to apply their skills in real-world settings and gain valuable industry insights. Fourth, implementing a robust evaluation framework that includes peer reviews, self-assessments, and instructor feedback is recommended to continuously monitor and improve the effectiveness of PBL in media education. And lastly, the findings validate constructivist learning theory, showing how hands-on projects and social collaboration facilitate knowledge construction. They also extend cognitive apprenticeship concepts through structured mentorship in authentic media workflows, while refining the Resource-Based View by emphasising both tangible and intangible educational resources. These theoretical advances, combined with practical improvements in lab access and lecturer training, may provide a replicable model for media education.

However, it is important to acknowledge the limitations of this study. The findings are based on a specific institution's broadcasting program and may not be directly applicable to other programs or institutions with different contexts or resources. Additionally, the high cost of maintaining and upgrading media broadcasting equipment poses a significant challenge, particularly for institutions with limited financial resources. The time-intensive nature of PBL also requires substantial investment from both students and faculty, which may not be feasible in institutions with high student-to-faculty ratios or constrained academic schedules. Moreover, the effective implementation of PBL relies heavily on the availability of skilled and experienced lecturers who can provide adequate guidance and support, which may not be available in all institutions. Lastly, the effectiveness of PBL in media broadcasting education is highly dependent

on access to advanced technology and equipment, which may not be consistently available across all educational settings. Incorporating qualitative feedback from students or lecturers (e.g., interviews or surveys) could provide richer insights into the challenges and successes of PBL implementation.

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