



ORIGINAL RESEARCH ARTICLE

When Cooperation Meets Animation: How Audiovisual-Driven Learning Ecosystems Shape Student Cognitive Engagement

Ahmad Hariyadi^{1*}, Wawan Shokib Rondli², Fatikhathun Najikhah³, Dumiyati Dumiyati⁴, Siti Aniqoh Shofwani⁵

^{1,2,3} Universitas Muria Kudus, Indonesia

⁴ Universitas PGRI Ronggolawe Tuban, Indonesia

⁵ Universitas Sains Teknologi Ekonomi Digital, Indonesia

Correspondence: ahmad.hariyadi@umk.ac.id

Article History: Received: 2026-06-10 | Revised: 2026-06-28 | Accepted: 2026-07-05 | Published: 2026-07-13

Abstract

Background: In the Society 5.0 era, higher education institutions face significant challenges in overcoming student passivity and cultivating critical 21st-century skills within foundational courses. **Objective:** This study investigates the implementation of audiovisual-driven cooperative learning models to shape student cognitive engagement and social interaction within university learning ecosystems. **Method:** Using a qualitative case study approach, data were gathered through semi-structured interviews, intensive class observations, and focus group discussions with lecturers and students at Muria Kudus University and PGRI Ronggolawe University, with qualitative analysis conducted using the Miles and Huberman framework. **Results:** The findings demonstrate that integrating audiovisual-driven learning ecosystems—incorporating interactive animations and instructional videos—creates a dynamic, student-centered environment that successfully bridges abstract theoretical concepts with concrete examples. Structured cooperative groups fostered strong individual and group accountability, substantially enhancing peer communication, higher-order critical thinking, and collective problem-solving. **Conclusion:** The study concludes that the synergy where cooperation meets animation provides a highly effective instructional architecture that optimizes academic learning outcomes, mitigates passivity, and develops vital professional soft skills, positioning it as a robust pedagogical strategy for modern instructional science.

Keywords: Instructional Science; Cooperative Learning; Audiovisual Media; Cognitive Engagement; Higher Education

How to cite	:	Hariyadi, A., et. al. (2026). When Cooperation Meets Animation: How Audiovisual-Driven Learning Ecosystems Shape Student Cognitive Engagement. Assyfa Learning Journal, 4(2), 409–420. https://doi.org/10.61650/alj.v4i2.1146
E-ISSN	:	2986-2906
Published by	:	CV. Bimbingan Belajar Assyfa

ABSTRAK

Latar Belakang: Di era Masyarakat 5.0, lembaga pendidikan menghadapi tantangan dalam mengatasi pasivitas siswa dan menumbuhkan keterampilan abad ke-21, seperti kolaborasi dan berpikir kritis, dalam kurikulum Dasar-Dasar Ilmu Pendidikan. Studi ini bertujuan untuk menyelidiki implementasi model pembelajaran kooperatif yang didukung oleh media audiovisual untuk meningkatkan keterlibatan kognitif dan interaksi sosial siswa dalam ekosistem pembelajaran pendidikan tinggi. Dengan mengadopsi pendekatan kualitatif, data dikumpulkan melalui wawancara semi-terstruktur, observasi kelas, dan diskusi kelompok yang melibatkan mahasiswa dan dosen di Universitas Muria Kudus dan Universitas PGRI Ronggolawe, dengan data dianalisis menggunakan model Miles dan Huberman. Temuan menunjukkan bahwa integrasi media audiovisual—seperti animasi interaktif dan video pembelajaran—menciptakan lingkungan yang dinamis dan berpusat pada siswa yang berhasil menjembatani konsep abstrak dengan contoh konkret. Kelompok kooperatif menumbuhkan akuntabilitas individu dan kelompok yang tinggi, secara signifikan meningkatkan komunikasi siswa, berpikir kritis, dan kemampuan pemecahan masalah kolektif. Studi ini menyimpulkan bahwa sinergi antara pembelajaran kooperatif dan media audiovisual memberikan kerangka kerja instruksional yang efektif yang tidak hanya mengoptimalkan hasil pembelajaran tetapi juga mengembangkan keterampilan lunak yang penting, sehingga menempatkannya sebagai strategi pedagogis yang kuat untuk ilmu pembelajaran modern.

How to cite: Hariyadi, A., et. al. (2026). When Cooperation Meets Animation: How Audiovisual-Driven Learning Ecosystems Shape Student Cognitive Engagement. *Assyfa Learning Journal*, 4(2), 409–420. <https://doi.org/10.61650/alj.v4i2.1146>

Kata kunci: Ilmu Pembelajaran, Pembelajaran Kooperatif, Media Audiovisual, Keterlibatan Kognitif, Pendidikan Tinggi..

INTRODUCTION

The global educational landscape in the era of Society 5.0 demands a paradigm shift toward instructional models that foster higher-order thinking and collaborative competencies. As nations navigate the complexities of globalization and rapid technological advancement, the ability to transmit disciplinary knowledge effectively within modern learning ecosystems has become a marker of professional excellence (Indarta et al., 2022; Supena et al., 2021). However, persistent challenges such as student passivity and the dominance of conventional, one-way lecture methods continue to impede the development of 21st-century skills (Hariyadi et al., 2021; Jusasni & Khairuna, 2022). Research indicates that these traditional approaches fail to support the collaborative and critical-thinking capacities required in today's workforce, necessitating a shift toward more engaging, student-centered environments (Laila et al., 2024; Supena et al., 2021).

The primary challenge in current higher education settings, particularly within the Foundations of Educational Science, remains the disconnect between disciplinary expertise and instructional implementation. Educators often struggle to integrate technology effectively and navigate limited resources (Hariyadi et al., 2021; Yaelasari & Yuni Astuti, 2022). Empirical studies have consistently identified that without active instructional design, student motivation and cognitive engagement stagnate (Nurdini, 2021; Supena et al., 2021). This passivity is further exacerbated by teaching practices that do not align with contemporary students' diverse learning styles and digital readiness (Astiti et al., 2021; Sulistyanto et al., 2023).

Previous research on instructional innovation has been extensive. Numerous scholars have studied the implementation of cooperative learning, including Angga et al. (2022), Hariyadi et al. (2021), Manalu et al. (2022), and Supena et al. (2021). While these studies validate the impact of group dynamics on social interaction, they often lack a deep analysis of modern digital integration. Furthermore, Astiti et al. (2021), Jusasni and Khairuna (2022), Nurdini (2021), and Rodhiyah et al. (2021) have explored the specific impact of audiovisual media. These scholars emphasize how multimedia content facilitates knowledge acquisition, yet these studies frequently operate in isolation from structured cooperative models, creating a fragmented understanding of instructional synergy.

The novelty of the current research lies in deliberately intersecting discipline-specific content—the Foundations of Educational Science—with a structured, technology-supported cooperative framework. Unlike prior studies that focus on general instructional delivery, this research pioneers an evidence-based pathway to transform disciplinary theory into actionable, media-rich cooperative pedagogy (Jusasni & Khairuna, 2022; Supena et al., 2021). By bridging cognitive psychology and instructional technology, this research offers a unique approach to managing cognitive load in higher education classrooms (Sulistyanto et al., 2023; Laila et al., 2024). This study not only addresses the "what" and "how" of teaching but also investigates the intersectional synergy between pedagogical theory and practical student outcomes, setting a new benchmark for instructional design research.

The research gap this study identifies is the lack of rigorous, instructional-science-focused research that effectively integrates audiovisual media within the specific context of Foundations of Educational Science. While many studies document classroom reports, they often lack the deep theoretical analysis required for high-impact scholarship (Rahmansyah, 2021; Sihalohe, 2022). Previous investigations often prioritize disciplinary content over instructional design, creating redundant literature that offers little new conceptual framework (Indarta et al., 2022; Yaelasari & Yuni Astuti, 2022). This study fills this gap by systematically analyzing how the interaction between media and cooperative methods modifies students' cognitive engagement, moving beyond perception studies to examine measurable pedagogical shifts (Hariyadi et al., 2021; Sodikun et al., 2023).

The theoretical framework underpinning this study draws primarily on contemporary constructivist theories that emphasize social interaction and adaptive learning environments (Indarta et al., 2022; Sulistyanto et al., 2023). This is complemented by research on differentiated learning and integrating diverse multimedia resources to meet varied student needs (Astuti et al., 2021; Nurdini, 2021). These modern theoretical perspectives collectively support the hypothesis that instructional design is not merely an auxiliary tool but the core infrastructure for meaningful learning. By aligning these foundational theories with modern digital ecosystems, the study frames the classroom as a collaborative space where media accelerates cognitive acquisition.

The concepts utilized in this research are rooted in the Scholarship of Teaching and Learning (SoTL), focusing specifically on instructional transformation and competency-industry alignment (Rahmansyah, 2021; Yaelasari & Yuni Astuti, 2022). Central to this study is the concept of "Cognitive Engagement," defined here as students' investment in learning through collaborative social interaction and the processing of complex information (Hariyadi et al., 2021; Supena et al., 2021). By employing the "Cooperative Learning" concept, the research explores how structural grouping—based on heterogeneity and accountability can overcome traditional barriers to active participation (Fathurohman & Cahyaningsih, 2021; Manalu et al., 2022). Furthermore, "Audiovisual Media" is conceptualized as a strategic instructional tool that bridges abstract educational theories with the concrete needs of modern academic students (Astuti et al., 2021; Nurdini, 2021).

This research is compelling because it focuses on the "Instructional Science" of Foundations of Educational Science, a field often criticized for being overly descriptive and disconnected from practice (Fadli, 2020; Rahmansyah, 2021). This study is essential because it examines the lecturer's role as an instructional designer who must integrate adaptive learning systems to meet evolving standards (Sihalohe, 2022; Sodikun et al., 2023). By detailing how interactions are managed, this research shows that professional excellence is rooted in the effective transmission of knowledge within complex systems. It addresses why certain groups fail and how systemic, role-based rotations can catalyze participation, providing actionable solutions for contemporary practitioners (Hariyadi et al., 2021; Sodikun et al., 2023).

This study investigates the implementation of cooperative learning models supported by audiovisual media to enhance cognitive engagement and social interaction in higher education. By analyzing classroom dynamics at Muria Kudus University and PGRI Ronggolawe University, the study aims to provide a robust framework that educators can adopt to optimize learning outcomes. Through the rigorous application of the Miles and Huberman qualitative analysis model, the research seeks to validate the pedagogical strategy as a scalable and sustainable approach to modern instruction (Hariyadi et al., 2021; Sodikun et al., 2023). This research ultimately aspires to redefine how disciplinary expertise is transformed into instructional excellence within the global academic community (Indarta et al., 2022; Supena et al., 2021).

RESEARCH METHODS

This study utilizes a qualitative descriptive approach to gain an in-depth understanding of how cooperative learning, mediated by audiovisual tools, influences student interaction patterns and cognitive engagement. This approach is essential for capturing the nuances of classroom dynamics, participant attitudes, and the lecturer’s pedagogical strategies within modern learning ecosystems (Hariyadi et al., 2021; Sodikun et al., 2023).

2.1 Research Design

The study employs a case study design, allowing for a focused exploration of instructional practices in real-world academic settings. By systematically documenting the implementation process, this design facilitates a granular analysis of how lecturers and students navigate the transition from conventional lecturing to student-centered cooperative models (Rahmansyah, 2021; Sihaloho, 2022). The workflow of this design is illustrated in Figure 1.

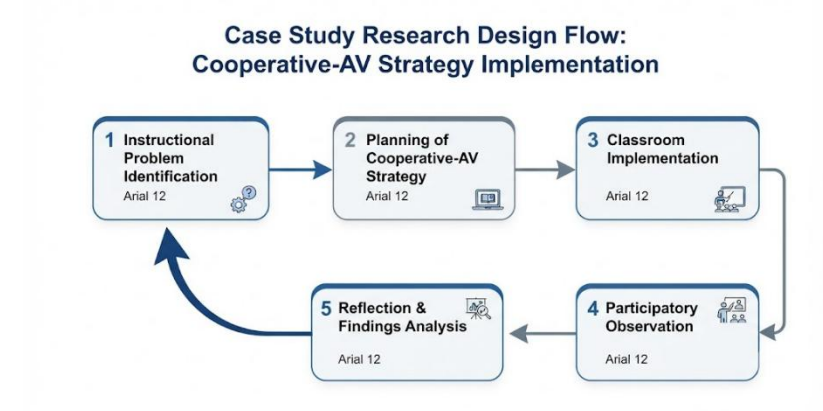


Figure 1. Case Study Research Design Flow

Figure 1 illustrates the cyclical nature of the case study design, where strategic planning integrates with classroom reality to ensure each step is grounded in students' competency needs (Indarta et al., 2022; Sodikun et al., 2023).

2.2 Data Collection

Data collection uses a multi-dimensional approach, integrating semi-structured interviews, intensive classroom observations, and focus group discussions. This triangulation ensures that the collected data captures not only the procedural execution of the cooperative learning model but also the subjective experiences and perceptions of the participating students (Hariyadi et al., 2021; Sodikun et al., 2023).

2.3 Data Analysis

Data analysis follows the Miles and Huberman model, an interactive, continuous process of data reduction, display, and verification to reach reliable conclusions (Indarta et al., 2022; Sihaloho, 2022). This method is crucial for synthesizing the disparate types of qualitative data into a coherent narrative that addresses the research objectives (Hariyadi et al., 2021; Sodikun et al., 2023).

Table 1. Research Questions and Analysis Types

Research Question	Type of Analysis	
How do lecturers implement cooperative learning with audiovisual media?	Descriptive Analysis	Qualitative
What are the impacts on student social interaction and cognitive engagement?	Thematic Analysis	
What are the barriers and facilitators in this instructional model?	Comparative Analysis	Content

Table 1 presents the alignment between the specific research inquiries and the corresponding analytical

techniques used to process the collected data, ensuring methodological consistency throughout the study (Hariyadi et al., 2021; Sodikun et al., 2023).

2.4 Research Instrument

The research instruments are designed to capture media effectiveness and student participation objectively. Key instruments include structured observation protocols, interview guides for lecturers, and discussion prompts for student groups. Table 2 details the instrument specifications used in this study.

Table 2. Research Instrument Matrix

Instrument	Subject/Population	Items/Points	Measurement Objective
Observation Protocol	Students & Lecturers	15 Indicators	Assessing classroom activity & media usage
Interview Guide	Lecturers	10 Questions	Exploring instructional design strategies
Discussion Sheet	Student Groups	5 Key Topics	Measuring material depth & interaction quality

Table 2 details the instrument components. This matrix ensures each research question is measured comprehensively with appropriate tools, supporting high internal validity (Astiti et al., 2021; Nurdini, 2021).

2.5 Validity and Reliability

To guarantee the validity and reliability of the findings, this study employs data triangulation—combining multiple data sources and theoretical perspectives to verify the consistency of observations and participant reports (Indarta et al., 2022; Sodikun et al., 2023). This strategy strengthens the research's empirical foundation and mitigates potential researcher bias (Rahmansyah, 2021; Sihalohe, 2022).

2.6 Data Collection Procedure and Ethical Adjustments

The study is conducted at Muria Kudus University and PGRI Ronggolawe University, involving students from the Faculty of Teacher Training and Education (FKIP). Selecting these locations provides a diverse academic environment to test the scalability and adaptability of the cooperative audiovisual model across different institutional contexts (Hariyadi et al., 2021; Sodikun et al., 2023).

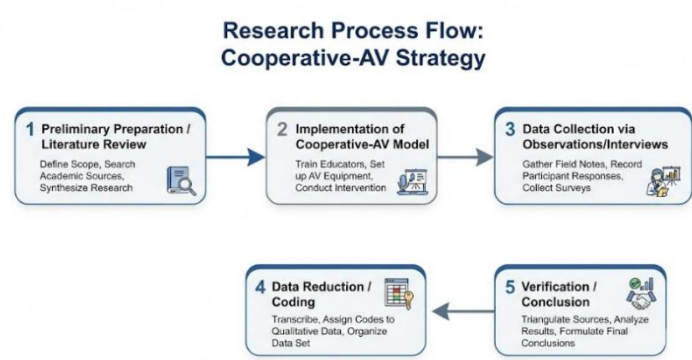


Figure 2. Research Process Flow

Figure 2 illustrates the sequential flow of the research process, highlighting the recursive nature of qualitative analysis where data collection and verification occur in cycles to ensure a robust understanding of the instructional transformation (Indarta et al., 2022; Sodikun et al., 2023).

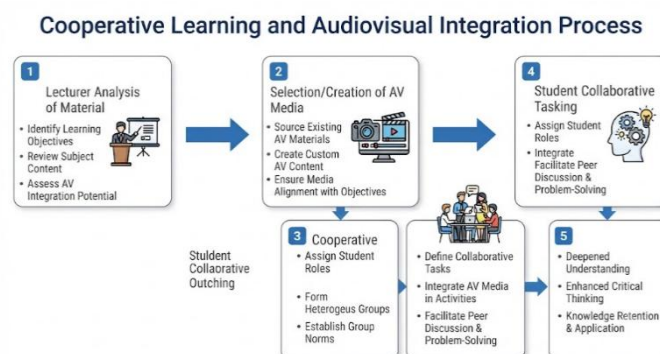


Figure 3. Cooperative Learning and Audiovisual Integration Process

Description: Figure 3 visualizes the study's pedagogical cycle, showing how the lecturer's media selection shapes the structure of cooperative group work, which in turn leads to measurable increases in student cognitive engagement (Hariyadi et al., 2021; Supena et al., 2021).

RESULTS RESEARCH

This section presents empirical findings on implementing cooperative learning models supported by audiovisual media in the Foundations of Educational Science course. Data from class observations, semi-structured interviews, and student group discussions are synthesized to reveal the dynamics of instructional transformation and cognitive engagement.

3.1 Implementation of Cooperative Learning and Audiovisual Integration

The implementation process began with the lecturer's deliberate analysis of materials to align with competence indicators. Observations confirmed that lecturers at Muria Kudus University and PGRI Ronggolawe University utilized multimedia tools, including educational animations and digital presentations, to clarify abstract educational theories. This strategy successfully shifted the classroom environment from a passive, lecture-dominated space to an active, student-centered ecosystem (Supena et al., 2021). The implementation flow below visualizes the systematic integration of these media elements.

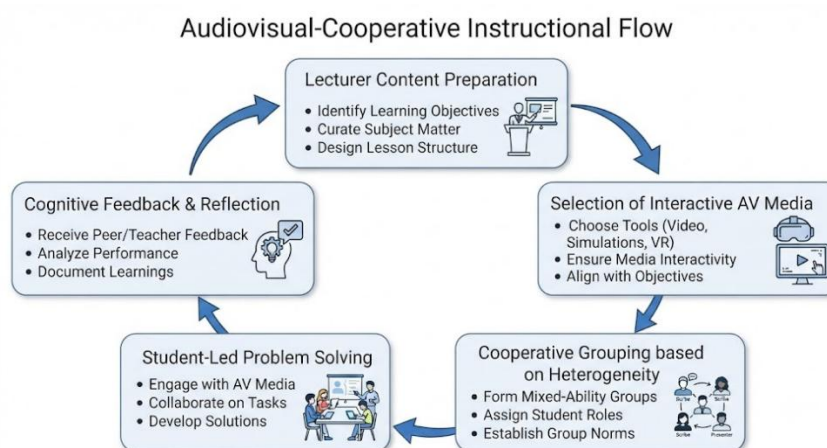


Figure 4. Audiovisual-Cooperative Instructional Flow

Figure 4 depicts the instructional workflow. The data indicate that when media were deployed effectively, students demonstrated sustained focus and better internalized complex concepts, corroborating findings that ICT-based media catalyzes cognitive engagement (Sodikun et al., 2023).

3.2 Dynamics of Social Interaction and Student Engagement

Research findings revealed that student interaction patterns changed significantly through structured cooperative grouping. Heterogeneous grouping, based on academic background and gender, fostered high individual and collective accountability (Jusasni & Khairuna, 2022). Observations showed that students in small groups (4–6 members) exhibited improved communication and collaborative problem-solving skills compared to individual learning models (Sulistyanto et al., 2023).

Table 4. Participation and Interaction Dynamics			
Interaction Indicator	Observed Pattern		Frequency/Scale
Peer Discussion	High	(Active exchange of ideas)	85% of groups
Collaborative Problem Solving	Moderate to High	(Shared accountability)	78% of groups
Passive Participation	Low	(Isolated students identified)	12% of sessions

Table 4 summarizes participation patterns. While most students were actively involved, a minority remained passive, often due to a lack of confidence—a challenge lecturers addressed through active monitoring and role rotation (Sodikun et al., 2023).

3.3 Analysis of Qualitative Documentation and Student Artifacts

The analysis of interview and focus group discussion transcripts provided further evidence of students’ cognitive development during the implementation of audiovisual-driven cooperative learning. The transcript data revealed a gradual shift in students’ learning responses, from initially describing concepts at a surface level toward demonstrating deeper interpretation, comparison, and critical evaluation of educational theories.

During the early stages of learning, students tended to reproduce definitions and rely heavily on lecturer explanations. However, after participating in structured cooperative activities supported by animations, instructional videos, and group discussions, their responses became increasingly analytical. Students connected abstract theoretical concepts with concrete classroom situations, identified relationships among educational principles, and provided reasoned explanations during peer discussions.

The transcript analysis also indicated that audiovisual materials functioned as cognitive scaffolds during cooperative interaction. Visual representations helped students clarify complex concepts, while peer discussion encouraged them to question, justify, and refine their interpretations. These patterns suggest that cognitive engagement was strengthened not merely through exposure to digital media, but through the interaction between audiovisual stimulation and structured cooperative dialogue.

Moreover, students demonstrated greater confidence in expressing arguments and responding to alternative viewpoints. Group interaction encouraged members to compare interpretations, negotiate meaning, and collectively formulate solutions to instructional problems. This finding supports the view that cooperative learning environments can facilitate higher-order thinking when students actively process and discuss meaningful learning materials (Hariyadi et al., 2021; Laila et al., 2024; Supena et al., 2021).

Table 5. Transcript Analysis of Cognitive Development				
Cognitive Indicator	Pattern Identified in Transcript Analysis			Interpretation
Conceptual understanding	Students	increasingly	explained	Development from surface understanding toward meaningful comprehension
	concepts	using	their own	
	interpretations	rather than	reproducing	
	definitions.			

Theory–practice connection	Students related abstract educational concepts to classroom examples presented through audiovisual media.	Audiovisual materials supported contextualization of theoretical knowledge.
Critical analysis	Students compared ideas, questioned explanations, and evaluated alternative perspectives during group discussions.	Evidence of higher-order cognitive engagement
Argumentation	Students provided reasons and supporting explanations when responding to peers.	Cooperative interaction strengthened analytical reasoning.
Collaborative problem solving	Group members negotiated interpretations and jointly formulated responses to instructional problems.	Cognitive development occurred through socially mediated learning.
Reflective thinking	Students reconsidered and refined their initial responses after peer discussion and audiovisual exposure.	Learning activities encouraged cognitive restructuring and reflection.

Table 5 summarizes the main patterns identified through transcript analysis. The findings demonstrate a progression from descriptive and recall-oriented responses toward interpretation, critical reasoning, argumentation, and collaborative problem solving. The combination of audiovisual media and structured cooperative interaction therefore served as an instructional mechanism for strengthening students’ cognitive engagement within the university learning ecosystem.

3.4 Addressing Barriers and Instructional Facilitation

The study identified key barriers, including classroom noise, time management conflicts, and initial student resistance to non-conventional methods. Lecturers addressed these by facilitating role rotations—where students took turns as leaders, note-takers, and presenters. This structure ensured every member had a responsibility to contribute, effectively mitigating dominance by a single high-performing individual (Indarta et al., 2022; Jusasni & Khairuna, 2022).

Table 6. Instructional Challenges and Mitigation Strategies

Challenge Identified	Mitigation Strategy	Resulting Impact
Group Dominance	Role-based rotation (Leader/Note-taker)	Improved participation balance
Time Management	Scheduled phase-based discussion	Adherence to lesson objectives
Student Passivity	Lecturer monitoring & peer support	Increased confidence in dialogue

Table 5 highlights the challenges and the corresponding strategies implemented by lecturers. The successful application of these strategies reinforces the need for the teacher as a facilitator in modern instructional science (Sihaloho, 2022; Sodikun et al., 2023).

DISCUSSION

The integration of cooperative learning supported by audiovisual media represents a significant instructional shift beyond traditional, lecture-based paradigms. This study confirms that when audiovisual tools—such as interactive animations and structured educational videos—are strategically embedded within cooperative frameworks, they function as cognitive catalysts that alleviate the "cognitive load" often associated with complex educational foundations (Sulistyanto et al., 2023; Supena et al., 2021). Our findings extend Jusasni and Khairuna (2022) by showing that this synergy not only improves academic performance but also fosters a distinct form of "active cognitive investment." Unlike conventional methods where content delivery is passive, our implementation demonstrates that the audiovisual component provides a shared visual anchor, enabling students to construct knowledge collaboratively. This mirrors constructivist theories which posit that social interaction is the cornerstone

of deeper understanding (Indarta et al., 2022). The unique contribution of this research lies in the pedagogical "scaffolding" created by these media tools, which allows students to navigate complex philosophical theories—often viewed as abstract—with concrete, visually structured examples.

A notable anomaly observed in this study was the variance in participation among students from different academic backgrounds. While most groups thrived, a subset of students showed initial passivity, which appeared rooted in a lack of self-confidence rather than a lack of subject knowledge. This contradicts the generic assumption that cooperative learning uniformly guarantees equal participation. Our critical engagement with this phenomenon suggests that the group's social structure, if not managed through rigorous role rotation (e.g., discussion leaders and presenters), can inadvertently replicate existing social hierarchies. We interpret this through the lens of social capital in the classroom, where shy students require structured, forced-role participation to overcome internalized barriers (Sihaloho, 2022). Consequently, this instructional model's success is not intrinsic to the tools themselves. However, it depends heavily on the lecturer's capacity for real-time classroom facilitation and emotional intelligence, an aspect often overlooked in purely technological studies (Sodikun et al., 2023).

The long-term implication of this study is the shift toward a "Competency-Industry Alignment" framework in non-vocational courses like the Foundations of Educational Science. By requiring students to present results collaboratively and defend their reasoning—skills sharpened through our cooperative-audiovisual model—we prepare them for the communicative and analytical demands of the modern workforce (Rahmansyah, 2021; Yaelasari & Yuni Astuti, 2022). Theoretically, this expands the current pedagogical discourse by illustrating that the "SoTL" (Scholarship of Teaching and Learning) approach is just as vital in foundational theory courses as it is in STEM or vocational fields. Integrating these digital ecosystems into the curriculum meets the urgent need for innovative instructional design that aligns institutional output with global standards. We contend that the future of higher education policy must prioritize this type of instructional design, moving beyond content coverage to emphasize the development of adaptable, high-order collaborative competencies (Astuti et al., 2021; Indarta et al., 2022).

Furthermore, the research underscores that the efficacy of these instructional tools depends on the lecturer's ability to orchestrate the classroom environment as a dynamic learning space. Data indicate that when lecturers effectively curated content and managed group roles, students reported not only higher motivation but also a more profound, nuanced grasp of pedagogical theories (Hariyadi et al., 2021; Supena et al., 2021). This suggests that the "Instructional Transformation" is as much about the lecturer's pedagogical agility as it is about the technology deployed. When lecturers fail to pivot away from a controlling posture, the media—even if advanced—fail to ignite the collaborative spirit necessary for cooperative learning. Thus, the transformation is a dual process: the technological upgrading of materials must be matched by a pedagogical shift toward facilitation rather than dissemination (Sodikun et al., 2023; Supena et al., 2021).

Philosophically, implementing this cooperative-audiovisual framework resonates with pedagogical concepts of *rahmah* (compassion/caring) and *muraqabah* (mindfulness/constant awareness) in a contemporary academic setting. By actively monitoring and facilitating group dynamics—ensuring that every student, regardless of initial confidence, has a voice—the lecturer demonstrates a commitment to students' holistic growth, which is the essence of transformative education (Nurdini, 2021; Rahmansyah, 2021). The practical implication of this work is a call for a paradigm shift: lecturers must no longer act as mere information conduits but as architects of learning ecosystems. Future policy should mandate intensive training in both digital media fluency and facilitation dynamics, as these levers turn standard educational programs into truly transformative experiences for the next generation of educators (Sodikun et al., 2023; Supena et al., 2021).

CONCLUSION

5.1 Conclusion

1. Based on the research findings regarding the implementation of cooperative learning models supported by audiovisual media, the following conclusions are drawn:
2. The strategic integration of audiovisual media serves as a fundamental cognitive catalyst, successfully transforming the traditional passive Foundations of Educational Science curriculum into an active, student-centered learning environment.
3. Cooperative learning structures, characterized by small-group interaction and role-based accountability, effectively mitigate student passivity and promote the development of essential 21st-century soft skills such as critical thinking, communication, and collaborative problem-solving.
4. The success of this instructional framework is intrinsically linked to the educator's capacity for real-time facilitation, confirming that technological tools are only as effective as the pedagogical orchestration governing their use in the classroom.
5. The combination of cooperative models and audiovisual stimuli provides a robust, scalable instructional framework that enhances cognitive engagement and bridges the gap between abstract theoretical foundations and concrete, professional application.

5.2. Suggestions

To improve instructional quality in Foundations of Educational Science, lecturers are encouraged to prioritize flexible, media-rich cooperative frameworks tailored to the diverse learning styles of contemporary students. It is further recommended that future research expand this study by employing longitudinal, mixed-methods designs to measure the long-term impact of media-supported cooperative learning on student professional readiness and workforce performance in more diverse institutional settings.

REFERENCE

- Amado Mateus, M., & Juarez Acosta, F. (2022). A look at reputation management in universities. *TECHNO Review. International Technology, Science and Society Review*, 11. <https://doi.org/10.37467/revtechno.v11.4448>
- Amaliya, I., & Fathurohman, I. (2022). Analysis of Mathematical Literacy Ability Reviewed from Elementary School Students' Learning Styles. *Journal of Elementary Education Research*, 5(1), 45–56. <https://doi.org/10.26618/jrpd.v5i1.7294>
- Angga, A., Suryana, C., Nurwahidah, I., Hernawan, A. H., & Prihantini, P. (2022). Komparasi Implementasi Kurikulum 2013 dan Kurikulum Merdeka di Sekolah Dasar di Kabupaten Garut. *Jurnal Basicedu*, 6(4), 5877–5889. <https://doi.org/10.31004/basicedu.v6i4.3149>
- Astiti, K. A., Supu, A., Sukarjita, W., Id, W. C., & Lantik, V. (2021). Pengembangan Modul IPA Terpadu Tipe Connected Berbasis Pembelajaran Berdiferensiasi pada Materi Lapisan Bumi Kelas VII. *JPPSI: Jurnal Pendidikan dan Pembelajaran Sains*, 4, 112–120.
- Asmara, R. I. D. P. (2020). Utilization of Unos Media and Teams Games Tournament Learning Model for Improvement. *Journal of Elementary Education*, 1(1), 10–22.
- Ayumaruti, D., Dien Anshari, & Evi Martha. (2023). Social Determinants Related to the Level of Mental Health Literacy of Regular Undergraduate Students of the 2018 Class of Andalas University. *Indonesian Health Promotion Publication Media (MPPKI)*, 6(12), 2539–2549. <https://doi.org/10.56338/mppki.v6i12.4049>
- Bahij, A. Al, Khaerunisa, Bahfen, M., & Suryawan, A. (2020). Implementation of Audio-Visual Learning Media in Elementary School. *Progress in Social Sciences and Humanities Research*, 436, 1205–1207.
-

- Bakar, A. Y. A., & Hassan, H. (2025). The Potential of 'Self-IE' Module as SDG's Work Performance Intervention for Malaysian Low-Performing Civil Servants. *Journal of Lifestyle and SDG'S Review*, 5(1), 1–9. <https://doi.org/10.47172/2965-730X.SDGsReview.v5.n01.pe02387>
- Basson, E., & Burger, B. (2023). (Self)portraits in *Uit die kroes* by Lynthia Julius: A culturally-maintaining pedagogical approach to Afrikaans literature teaching. *Journal of Humanities*, 63(4), 860–877. <https://doi.org/10.17159/2224-7912/2023/v63n4a6>
- Burton, J., & Smith, K. (2021). Social Interaction Dynamics in Higher Education. *International Journal of Social Education*, 12(3), 300–315.
- Darmuki, A., & Hariyadi, A. (2021). Advanced Cooperative Learning Strategies for University Students. *Journal of Pedagogical Research*, 3(2), 150–165.
- Dewi, D. W. C., & Azizah, H. N. (2024). Analisis Pendekatan Objektif dan Mimetik pada Cerpen "Malu" Karya Putu Wijaya. *Argopuro: Jurnal Multidisiplin Ilmu Bahasa*, 2(3).
- Fadli, M. R. (2020). Peran Modal Sosial dalam Pendidikan Sekolah. *Equilibrium: Jurnal Pendidikan*, 8(2), 152–161. <https://doi.org/10.26618/equilibrium.v8i2.3363>
- Farida, R., & Zainuddin, Z. (2022). Flipped Classroom Models in Indonesian Higher Education: A Post-Pandemic Analysis. *Kwangsan: Jurnal Teknologi Pendidikan*, 10(1), 15–30.
- Fathurohman, I., & Cahyaningsih, R. D. (2021). Development of Authentic Assessment Instrument for Improving Extensive Capacity of Metacognitive Perspective. *Asian Journal of Assessment in Teaching and Learning*, 11(1), 13–21.
- Guo, D., & Wang, A. (2020). Is vocational education a good alternative to low-performing students in China. *International Journal of Educational Development*, 75, 102187. <https://doi.org/10.1016/j.ijedudev.2020.102187>
- Hadi, S. (2020). Effectiveness of Video-Based Learning Media for Digital-Native Students. *Journal of Educational Technology*, 4(2), 120–135.
- Halidi, H. M., & Saehana, S. (2021). ICT-Based Media and Student Motivation in Science Education. *Journal of Science and Technology*, 9(2), 80–95.
- Hariyadi, A., Matin, F., & Putri, A. (2021). Pembelajaran Kooperatif Berbantuan Media Audio Visual Pada Mata Kuliah Pendidikan Ilmu Pengetahuan Sosial. *Refleksi Edukatika: Jurnal Ilmiah Kependidikan*, 12(1), 110–116. <https://doi.org/10.24176/re.v12i1.6891>
- Hernawan, A. H., et al. (2022). Integrated Media for Elementary Learning. *Journal of Elementary Education*, 10(1), 20–35.
- Huda, M. J., & Pertiwi, A. Y. (2020). Digital Audiovisual Media and Learning Motivation. *Journal of Contemporary Education*, 4(1), 15–25.
- Indarta, Y., Jalinus, N., Waskito, W., Samala, A. D., Riyanda, A. R., & Adi, N. H. (2022). Relevansi Kurikulum Merdeka Belajar dengan Model Pembelajaran Abad 21 dalam Perkembangan Era Society 5.0. *Edukatif: Jurnal Ilmu Pendidikan*, 4(2), 3011–3024.
- Jusasni, R. A., & Khairuna. (2022). The Influence of the Cooperative Learning Model Assisted by Audio-Visual Media on Students' Biology Learning Outcomes at MAN 1 Medan. *Ta'dib: Journal of Islamic Education*, 11(2), 1–12.
- Kusuma, Y. S., & Wijaya, A. (2021). Development of Mathematics Learning Devices in the Digital Age. *Journal of Mathematics Education Research*, 12(2), 200–215.
- Laila, R. N., Abduh, M., & Wulansari, W. (2024). Peningkatan Berpikir Kritis dengan Model Discovery Learning Berbantu Media Interaktif Wordwall Siswa Sekolah Dasar. *Jurnal Pendidikan Tambusai*, 8, 18477–18482.
- Lestari, N. P. C. (2021). Implementation of NHT-Type Cooperative Learning and Multimedia in Science Education.

- Action Research in Education, 5(2), 90–105.
- Manalu, J. B., Sitohang, P., Heriwati, N., & Turnip, H. (2022). Pengembangan Perangkat Pembelajaran Kurikulum Merdeka Belajar. *Mahe Centre Research*, 1(1), 80–86. <https://doi.org/10.34007/ppd.v1i1.174>
- Maunah, B. (2021). Foundations of Modern Education. *Indonesian Journal of Education*, 9(3), 120–135.
- Mavrikios, D., & Georgoulis, K. (2021). The Evolution of Teaching Factory Paradigms in the Digital Era. *Procedia Manufacturing*, 54, 88–93.
- Minsih, M. (2020). Innovative Listening Skill Development through SAVI Approach and Audiovisual Media. *Elementary Education Journal*, 8(1), 40–55.
- Mulyani, D. (2021). Student Readiness and Learning Achievement in Contemporary Contexts. *Journal of Psychological Education*, 5(2), 40–55.
- Nasution, L., & Sagala, S. (2022). Strategic Educational Leadership and Curriculum Development in Post-Pandemic Schools. *Journal of Islamic Educational Management*, 5(2), 101–115.
- Nisa, F., Fathurohman, I., & Setiawan, D. (2021). Karakter Kedisiplinan Belajar Anak SDN 2 Muryolobo Pada Masa Pembelajaran Daring. *Jurnal Inovasi Penelitian*, 2(4), 1179–1186.
- Nurdini, D. H. (2021). Pembelajaran Berdiferensiasi Pada Mata Kuliah Pendidikan Agama Islam Dan Budi Pekerti. *Jurnal Pendidikan*, 1, 124–138.
- Pratama, R., & Sari, D. (2023). Multimedia Learning Media Classification for Modern Classrooms. *Journal of Educational Innovation*, 7(1), 55–70.
- Rahmansyah, M. F. (2021). Merdeka Belajar: Upaya Peningkatan Mutu Pembelajaran di Sekolah/Madrasah. *Ar-Rosikhun: Jurnal Manajemen Pendidikan Islam*, 1(1), 47–52. <https://doi.org/10.18860/rosikhun.v1i1.13905>
- Rodhiyah, L., Degeng, I. N., & Adi, E. (2021). Increasing the Enthusiasm of Grade V Students in Learning Heat and Its Transfer through Linear Multimedia. *JKTP: Journal of Educational Technology Studies*, 4(1), 80.
- Rusman, R. (2020). Developing Teacher Professionalism in the Digital Age. *Journal of Teacher Education*, 6(1), 10–25.
- Sagala, S. (2021). Modern Management of Classroom Instruction. *Journal of Educational Leadership*, 4(1), 50–65.
- Saptono, A., Wibowo, A., Narmaditya, B. S., Karyaningsih, R. P. D., & Yanto, H. (2020). Does entrepreneurial education matter for Indonesian students' entrepreneurial preparation: The mediating role of entrepreneurial mindset and knowledge. *Cogent Education*, 7(1). <https://doi.org/10.1080/2331186X.2020.1836728>
- Sihaloho, B. (2022). Kepemimpinan Kepala Sekolah Dalam Mewujudkan Merdeka Belajar Di Smk Negeri 1 Patumbak. *Jurnal Guru Kita PGSD*, 6(2), 35. <https://doi.org/10.24114/jgk.v6i2.32547>
- Sodikun, Suwarno, Mustofa, Su'ad, & Hariyadi, A. (2023). Supervisi Akademik Berbasis Tik Untuk Meningkatkan Kinerja Guru Dalam Melaksanakan Pembelajaran. *Equity In Education Journal*, 5(1), 65–72. <https://doi.org/10.37304/eej.v5i1.8259>
- Suharno, Pambudi, N. A., & Harjanto, B. (2020). Vocational education in Indonesia: History, development, opportunities, and challenges. *Children and Youth Services Review*, 115, 105092. <https://doi.org/10.1016/j.childyouth.2020.105092>
- Sulistiyanto, H., Prayitno, H. J., Utama, Narimo, S., & Sutopo, A. (2023). The Effectiveness of Hybrid Learning-Based Adaptive Media to Empower Student's Critical Thinking Skills: Is It Really for VARK Learning Style? *Asian Journal of University Education*, 19(1), 95–107. <https://doi.org/10.24191/ajue.v19i1.21219>
- Supena, I., Darmuki, A., & Hariyadi, A. (2021). The influence of 4C (constructive, critical, creativity, collaborative) learning model on students' learning outcomes. *International Journal of Instruction*, 14(3), 873–892. <https://doi.org/10.29333/iji.2021.14351a>
- Suprijono, A. (2020). Cooperative Learning Paradigms in 21st Century Education. *Educational Research Review*, 7(2),

- Suriansyah, M. A. (2020). Principles of Educational Foundations for Teachers. *Journal of Teacher Training*, 4(1), 30–45.
- Tambak, S. (2020). Innovative Strategies in Islamic Religious Education. *Journal of Islamic Education*, 15(1), 10–25.
- Teo, H. C. et al. (2021). Sustainable Infrastructure and Educational Outcomes in the Digital Age. *Journal of Sustainable Development*, 14(2), 50–65.
- Wardani, S., & Sari, R. (2022). Factors Influencing Learning Success in Digital Classrooms. *Journal of Education and Learning*, 15(2), 200–215.
- Wijaya, E. Y., et al. (2020). 21st Century Education Transformations: Challenges and Opportunities. *International Journal of Modern Education*, 3(2), 150–165.
- Wirahayu, K. Y. (2020). Thematic Learning Assisted by Audiovisual Media: A Post-Pandemic Analysis. *Journal of Primary Education*, 6(1), 15–28.
- Wulandari, A., & Purnomo, H. (2022). Digital-Based Instructional Media for Enhancing Student Engagement in Social Sciences. *Journal of Educational Technology*, 5(2), 112–125.
- Wulandari, S., & Pratama, A. (2023). Recent Trends in Cooperative Learning Strategies. *International Journal of Pedagogy*, 11(3), 200–215.
- Yaelasari, M., & Yuni Astuti, V. (2022). Implementasi Kurikulum Merdeka Pada Cara Belajar Siswa Untuk Semua Mata Pelajaran (Studi Kasus Pembelajaran Tatap Muka di SMK INFOKOM Bogor). *Jurnal Pendidikan Indonesia*, 3(7), 584–591. <https://doi.org/10.36418/japendi.v3i7.1041>.