

## Management of Collaborative Academic Supervision Training for School Supervisory Teams in Papua

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Draft article history  
Submitted: 01-11-2026;  
Revised: 06-19-2026;  
Accepted: 06-29-2026;

**ABSTRACT:** Improving the quality of learning in schools highly depends on the effectiveness of academic supervision implemented in a systematic and collaborative manner, particularly in regions with limited educational resources such as Papua. This study aims to describe the management of collaborative academic supervision training for school supervisory teams in Papua, focusing on the stages of planning, organizing, implementation, and evaluation. The study employed a mixed-method approach using an exploratory sequential design, involving 12 members of school supervisory teams from four schools in Sorong Regency, Southwest Papua Province, selected through purposive sampling. Data were collected through interviews, observations, tests, and questionnaires. All instruments were validated by experts and pilot-tested in the field to ensure their validity and reliability. The results indicate that the training was implemented systematically, smoothly, and through online sessions via Zoom, resulting in a significant improvement in participants' understanding, with mean scores increasing from 48.75 to 77.92 ( $p = 0.000$ ), and 83% of participants achieving the success criteria, while the training process evaluation was categorized as very good with an average score of 86.30%. These findings confirm that structured collaborative supervision training supported by digital platforms can effectively enhance supervisory competence and contribute to the improvement of instructional leadership in schools, including in remote areas.

**Keywords:** collaborative academic supervision, school supervisory team, training management.

**ABSTRAK:** Peningkatan kualitas pembelajaran di sekolah sangat bergantung pada efektivitas supervisi akademik yang dilaksanakan secara sistematis dan kolaboratif, terutama di wilayah dengan keterbatasan sumber daya pendidikan seperti Papua. Penelitian ini bertujuan untuk mendeskripsikan pengelolaan pelatihan supervisi akademik kolaboratif bagi tim supervisi sekolah di Papua yang berfokus pada tahap perencanaan, pengorganisasian, pelaksanaan, dan evaluasi. Penelitian ini menggunakan pendekatan mixed-method dengan desain eksploratori sekuensial, yang melibatkan 12 anggota tim supervisi sekolah dari empat sekolah di Kabupaten Sorong, Provinsi Papua Barat Daya, yang dipilih secara purposive. Data dikumpulkan melalui wawancara, observasi, tes, dan kuesioner. Seluruh instrumen telah divalidasi oleh para ahli dan diuji coba di lapangan untuk memastikan validitas dan reliabilitasnya. Hasil penelitian menunjukkan bahwa pelatihan dilaksanakan secara sistematis, lancar, dan melalui sesi daring menggunakan Zoom, yang menghasilkan peningkatan signifikan dalam pemahaman peserta dengan rata-rata nilai meningkat dari 48.75 menjadi 77.92 ( $p = 0.000$ ), serta 83% peserta mencapai kriteria keberhasilan, sementara evaluasi proses pelatihan dikategorikan sangat baik dengan rata-rata skor 86.30%. Temuan ini menegaskan bahwa pelatihan supervisi kolaboratif

*yang terstruktur dan didukung platform digital dapat secara efektif meningkatkan kompetensi supervisi serta berkontribusi pada peningkatan kepemimpinan instruksional di sekolah, termasuk di daerah terpencil.*

**Kata kunci:** manajemen pelatihan, supervisi akademik kolaboratif, tim supervisi sekolah.

## INTRODUCTION

Educational quality constitutes a fundamental pillar in enhancing the quality of human resources and serves as a crucial indicator of a nation's progress in the era of globalization (Ani et al., 2025; Basilio & Bueno, 2021; Suryani et al., 2024). Amid the paradigm shift toward the Industrial Revolution 4.0 and 5.0, educational institutions are increasingly required to produce graduates equipped with 21st-century skills, including critical thinking, problem-solving, creativity, communication, and collaboration (4C) (Pramasari et al., 2025; Wiyono et al., 2021). International assessments such as the Programme for International Student Assessment (PISA) consistently place Indonesia at a relatively low rank in literacy, science, and mathematics, confirming the existence of systemic issues in educational quality (Aditia & Széll, 2025; Sari et al., 2024; Yuda & Rosmilawati, 2024). These conditions necessitate the establishment of effective quality assurance mechanisms through academic supervision as a strategic instrument for fostering teacher professionalism and improving the effectiveness of the teaching and learning process (Haryanto, 2024; Owan et al., 2023; Sianipar et al., 2025; Ventista & Brown, 2023).

Within the school ecosystem, principals play a strategic role as academic and instructional leaders who stand at the forefront of efforts to improve teaching quality (Constantia et al., 2023; Khaleel et al., 2021; Sembiring & Tijow, 2025; Siagian et al., 2025). Principals bear substantial pedagogical responsibilities to provide guidance, direction, and evaluation to ensure that curriculum standards are implemented optimally (Ikhwan & Rabbani, 2024; Misbah et al., 2024). As agents of change, school principals must possess the competencies required to motivate teachers and to cultivate a sustainable culture of professional learning (He et al., 2024; Iswadi et al., 2025; Thien & Liu, 2024). The success of an educational institution largely depends on its leadership's ability to manage resources and facilitate instructional transformation through systematically planned academic supervision (Ani et al., 2025; Beusaert et al., 2023; Rahayu & Paais, 2023).

However, the implementation of academic supervision in practice is often hindered by the weaknesses of conventional, inspection-oriented supervision models. Such traditional approaches tend to be hierarchical, top-down, and frequently trapped in fault-finding practices, commonly referred to as "snoopervision" (Gore et al., 2025; Iswadi et al., 2025; Prasetya et al., 2022; Singerin, 2021). Within this model, supervisors act as sole evaluators who deliver one-way directives, thereby creating emotional distance and tension between supervisors and teachers (Mulyanto et al., 2025). Consequently, teachers often experience pressure, anxiety, and resistance, as supervision is perceived merely as a rigid performance appraisal formality rather than as an opportunity for

professional growth (Beesley, 2024; Gore et al., 2025; Ingram, 2021; Mallon et al., 2025; Paais & Dwikurnaningsih, 2022). Furthermore, the implementation of supervision is exacerbated by heavy administrative workloads, limited time allocation, and supervisors' insufficient expertise in providing substantive and constructive feedback (Sembiring & Tijow, 2025; Suryani et al., 2024).

In response to these limitations, there is an urgent need to adopt a collaborative supervision approach and to establish well-managed supervisory teams (Emekako et al., 2025; Iswanto et al., 2024; Wei et al., 2025). The collaborative model is grounded in partnership principles, emphasizing two-way dialogue, joint planning, reflective observation, and constructive feedback (Ilahi et al., 2024; Sahudi & Ma'arif, 2024). Through collaboration, teachers are empowered to become active agents of change, capable of engaging in self-reflection and demonstrating greater confidence in implementing innovative instructional strategies (Fauzi, 2020; Prasetya et al., 2022). This approach has been shown to be effective in enhancing teachers' creativity and work motivation, as it is built upon mutual trust and shared responsibility for student success (Wiyono et al., 2021).

To address the limitations of individual supervisory capacity, the formation of well-managed school supervision teams or quality assurance teams becomes a crucial solution (Misbah et al., 2024; Paais & Dwikurnaningsih, 2022). Synergy among principals, senior teachers, and school supervisors within a collaborative team enables more effective workload distribution and ensures the sustainability of supervision programs (Pramasari et al., 2025). Through collaborative teamwork, supervisory responsibilities can be distributed more efficiently, allowing mentoring and guidance processes to be conducted regularly and with higher quality (Gallagher & Cahill, 2025; Tsamados et al., 2025). This team-based approach has proven effective in enhancing teacher creativity, work motivation, and teachers' capacity to adapt to dynamic curriculum demands (Sahudi & Ma'arif, 2024).

Although the effectiveness of collaborative academic supervision has been widely discussed in global literature, a significant research gap remains in regions characterized by geographical challenges, limited infrastructure, and high socio-cultural diversity, such as Papua. A study by Paais & Dwikurnaningsih (2022) conducted in Sorong Regency revealed alarming conditions, where principals' academic supervision performance was still categorized as low. Supervision performance scores reached only 25% at the planning stage, 46.8% at the implementation stage, and 30% at the follow-up stage, indicating the weak function of supervision as an instrument for teacher professional development. This situation is further exacerbated by the lack of structured and sustainable training for school supervisors, who often operate under resource constraints and possess limited understanding of the principles and practices of ideal collaborative academic supervision (Almeida et al., 2022; Sembiring & Tijow, 2025; Winarno et al., 2021).

Moreover, the contextual characteristics of Papua require supervision training approaches that not only focus on improving technical supervisory skills

but are also contextual and adaptive to local socio-cultural dynamics. School supervisors are expected to possess strong interpersonal capacities to build trust, foster equitable professional relationships, and minimize teacher resistance toward supervision processes that have long been perceived as administrative control mechanisms (Barokah et al., 2025; Dimara, 2023; Werong et al., 2024). Nevertheless, empirical studies that specifically examine how the management of collaborative academic supervision training is designed and implemented to address these contextual needs remain limited.

Despite the growing body of literature on collaborative academic supervision, most previous studies have primarily focused on supervision practices and their impact on teacher performance, professional development, and instructional quality (Morales et al., 2023; Nisa et al., 2023). These studies generally emphasize supervision outcomes rather than the systematic development of supervisory competencies through structured training processes. As a result, understanding of how supervision competencies are developed through training that integrates planning, organizing, implementation, and evaluation remains limited (Rusmaniar et al., 2023; Sutrisno et al., 2026).

This gap suggests that collaborative supervision is often discussed as an instructional or leadership practice, rather than as a structured management process of capacity building. In addition, empirical studies that examine supervision training in geographically and socio-culturally challenging contexts remain limited. In particular, contexts such as Papua present unique challenges, including geographical barriers, limited resources, and infrastructural constraints, which may affect the implementation of professional development programs (Astuti et al., 2024; Ma'ruf & Sonia, 2025). Therefore, there is a need to explore how supervision training is managed in such contexts to better understand its implementation in real educational settings.

This study aims to examine the management of collaborative academic supervision training for school supervision teams in Papua, focusing on how the training is planned, organized, implemented, and evaluated. By addressing these aspects, this study seeks to provide a clearer understanding of how structured training processes contribute to strengthening supervisory competence and instructional leadership in schools, particularly in contexts with limited educational resources.

## **METHODS**

This study employed a mixed-method approach using an exploratory sequential design, combining qualitative and quantitative methods in a sequential manner (Creswell & Creswell, 2023). The qualitative phase was conducted first to explore in depth the management processes of collaborative academic supervision training, focusing on planning, organizing, and implementation stages. The quantitative phase was subsequently conducted to measure the effectiveness of the training program in improving participants' understanding. The integration of both approaches was achieved by using qualitative findings as the basis for developing quantitative instruments, ensuring that the measurement of training

effectiveness was grounded in empirical field conditions rather than being developed independently.

The study was conducted in Sorong Regency, Southwest Papua Province, Indonesia. This location was selected due to its distinctive educational context characterized by geographical constraints, limited access to professional development opportunities, and relatively low levels of academic supervision performance. These conditions make the region highly relevant for examining the management of supervision training within a challenging 3T (underdeveloped, frontier, and outermost) educational context. The participants consisted of 12 members of school supervision teams, including 4 principals and 8 teachers from four schools: SMA Negeri 2 Sorong Regency, SMA Negeri 5 Sorong Regency, SMA Keguruan Sorong Regency, and SMK Negeri 1 Sorong Regency. Participants were selected using purposive sampling based on their active involvement in collaborative academic supervision activities within their respective schools.

Data were collected through interviews and observations during the qualitative phase, and through tests and questionnaires during the quantitative phase. The research instruments included a training outcome evaluation sheet, a training process evaluation questionnaire, and interpretation criteria for evaluating training results. The indicators for assessing training outcomes are presented in Table 1, while the items of the training process evaluation questionnaire are presented in Table 2. The criteria for interpreting the training process evaluation results are summarized in Table 3. All instruments were validated by experts and pilot-tested in the field to ensure their validity and reliability (Sugiyono, 2024).

Qualitative data were analyzed using the interactive model proposed by Miles and Huberman, which consists of data reduction, data display, and conclusion drawing/verification (Miles & Huberman, 1994). This analysis was guided by a conceptual framework of collaborative academic supervision and training management, allowing the findings to be interpreted in relation to key dimensions such as planning, organizing, implementation, and evaluation processes. Quantitative data were analyzed using descriptive statistics and a paired sample t-test conducted with SPSS software to examine the effectiveness of the training program in improving participants' understanding. The integration of qualitative and quantitative findings was used to provide a comprehensive interpretation of how training management contributes to strengthening the capacity of school supervision teams.

**Table 1.** Item Key for Evaluation of Training Results

Aspect	Item Numbers
Educational Supervision	1, 2, 3, 8, 13
Academic Supervision	10, 11, 12, 16
Collaborative Approach in Academic Supervision	4, 5, 6, 7, 9, 14, 18, 19
Teachers' Pedagogical Competence	15, 17, 20

**Table 2.** Item Key for Evaluation Questionnaire on Training Process

Aspect	Item Numbers
Trainer Performance	1, 2
Training Facilities	3, 4
Training Information	5, 6
Training Schedule	7, 8
Training Material	9, 10, 11, 12
Evaluation Instruments	13, 14, 25

**Table 3.** Criteria for Interpreting the Training Process Evaluation

Percentage	Criteria
81% - 100%	Very Good
61% - 80%	Good
41% - 60%	Fairly Good
21% - 40%	Poor
< 20%	Very Poor

## RESULT AND DISCUSSION

### Planning Stage

The planning stage began with a needs analysis conducted through interviews with members of supervisory teams from four schools. The results of the interviews indicated that the training participants required a refresher program focusing on the concepts and principles of academic supervision, with particular emphasis on collaboration between school principals and teachers in improving instructional quality. In addition, participants expressed the need for training materials that combined theoretical explanations with practical examples relevant to their school contexts.

Observation results showed that members of the supervisory teams were actively involved in the development of the training design. They contributed input related to the structure of the training materials, the sequence of activities, and the learning approaches to be used in strengthening their understanding of collaborative academic supervision. Based on these inputs, the training plan was developed, including the preparation of training guidelines, instructional materials, and the scheduling of activities. Further observations revealed that some participants were located in areas with limited internet connectivity. To accommodate this condition, training information was disseminated in advance, and a verification process was conducted to ensure the readiness of devices and the virtual meeting platform to be used during the training implementation.

The planning stage was conducted over a period of six days, covering the needs analysis, preparation of training materials, dissemination of program information, and arrangement of technical requirements.

### Organizing Stage

The organizing stage focused on role distribution, scheduling, and the development of the training structure. Based on interview results, participants

stated that conducting the training in an online format was the most feasible and practical option due to the geographical distance between schools. The online format was also considered efficient as it facilitated coordination and allowed full participation from all involved members.

Observation results indicated that the organizing process included the establishment of a clear activity structure. The assigned roles consisted of a master of ceremony/moderator, opening speaker, facilitators, and individuals responsible for delivering the opening and closing prayers. All role assignments were reconfirmed prior to the implementation of the training to ensure technical readiness. The structure of the activity and the assigned roles are presented in Table 4.

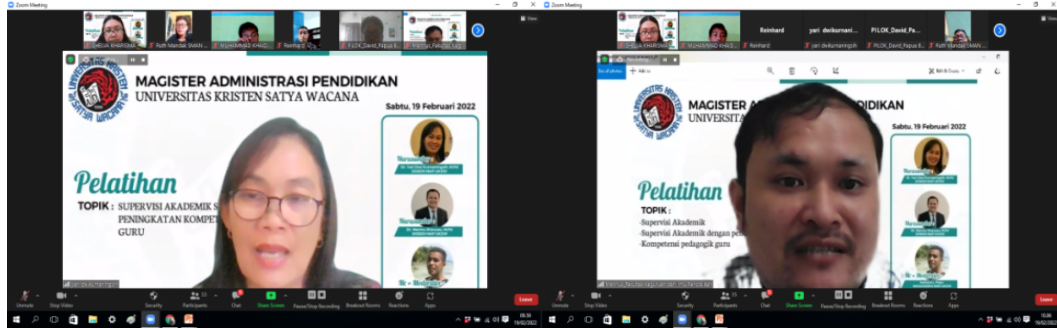
**Table 4.** Structure and Roles in the Collaborative Academic Supervision Training

No.	Role/Responsibility	Name/Affiliation
1	Master of Ceremony and Moderator	Reinhard Leonardo Paais
2	Opening Remarks	Drs. Mohamad Sanmas, M.Pd (High School Supervisor)
3	Facilitators	Dr. Yari Dwikurnaningsih, M.Pd and Dr. Marinu Waruwu, M.Pd
4	Opening Prayer	Ruth Mandak, S.Pd (Vice Principal for Curriculum, SMA Negeri 2 Sorong Regency)
5	Closing Prayer	Maria Supami, S.Pd.K., M.Pd.K. (Teacher, SMA Keguruan Sorong Regency)

### Implementation Stage

The training was conducted online using the Zoom platform. Based on interview results, participants stated that the activity provided an updated understanding of the concept of academic supervision and highlighted the importance of collaboration between principals and teachers in improving instructional quality. Participants also reported that the training contributed to strengthening their understanding of supervision stages and supported reflective thinking in the implementation of supervisory practices.

Observation results indicated that the training session was conducted in an orderly and interactive manner. Participants remained attentive throughout the activity and actively participated in the discussion. During the session, participants shared opinions and experiences related to the implementation of academic supervision in their respective schools. The facilitator guided the learning process by linking theoretical concepts with practical school-based examples, allowing participants to relate the material to their professional context. The implementation of the training is illustrated in Figure 1.



**Figure 1.** Online implementation of the Collaborative Academic Supervision Training via Zoom

The training consisted of several systematically arranged stages designed to facilitate the delivery of materials in a structured sequence. These stages were organized to support the presentation of both conceptual understanding and practical application of academic supervision. The sequence of activities is presented in Table 5.

**Table 5.** Sequence of Activities in the Collaborative Academic Supervision Training

No.	Activity Component	Description
1	Opening Session	Included prayer, welcoming remarks, and reading of the training guidelines.
2	Presentation of Collaborative Academic Supervision Model	Provided an overview of the developed supervision model, emphasizing shared roles between principals and teachers.
3	Pre-Test	Measured participants' initial understanding of academic supervision concepts.
4	Core Material Presentation	Covered four main topics: educational supervision, academic supervision, collaborative approaches, and teachers' pedagogical competence.
5	Discussion and Q&A	Allowed participants to share experiences and explore practical strategies for implementing supervision in their schools.
6	Post-Test	Evaluated participants' knowledge improvement after the training.
7	Process Evaluation Form	Collected participants' feedback regarding training content, delivery, and overall implementation.
8	Closing Session	Included final reflections, closing remarks from the facilitator, and a closing prayer to formally end the training session.

## Evaluation Stage

### Evaluation of Learning Outcomes

The test items developed to evaluate the results of the academic supervision training consisted of 20 questions distributed to participants via Google Forms. Prior to their use in the training, the items were tested for validity and reliability. A pilot test was conducted with 30 teachers from SMK Negeri 1 Baras, West Sulawesi Province, using the same instrument. The results of the item validity test using SPSS version 26 are presented in Table 6.

**Table 6.** Results of the Validity Test

Item	r-count	r-table	Description
Item 1	0,487	0,349	Valid
Item 2	0,515	0,349	Valid
Item 3	0,603	0,349	Valid
Item 4	0,546	0,349	Valid
Item 5	0,464	0,349	Valid
Item 6	0,455	0,349	Valid
Item 7	0,510	0,349	Valid
Item 8	0,492	0,349	Valid
Item 9	0,559	0,349	Valid
Item 10	0,540	0,349	Valid
Item 11	0,531	0,349	Valid
Item 12	0,635	0,349	Valid
Item 13	0,582	0,349	Valid
Item 14	0,454	0,349	Valid
Item 15	0,504	0,349	Valid
Item 16	0,554	0,349	Valid
Item 17	0,506	0,349	Valid
Item 18	0,546	0,349	Valid
Item 19	0,556	0,349	Valid
Item 20	0,559	0,349	Valid

The validity test results in Table 6 indicate that all developed items met the validity criteria, as each item's r-count value was higher than the r-table value at a 5% significance level. Following this, a reliability test was conducted using Cronbach's Alpha to examine the consistency of the instrument. The results of the reliability test are presented in Table 7.

**Table 7.** Results of the Reability Test

$r_{alpha}$	$r_{critical}$	Criteria
0,864	0,600	Reliable

Table 7 shows that the reliability coefficient of the test items is  $r_{alpha} = 0.864$ , which is higher than  $r_{critical} = 0.600$ . Therefore, it can be concluded that all

items developed are reliable and meet the requirements for use in the research process.

In principle, the academic supervision training or refresher program was developed using the *one-group pretest-posttest design* method. This design involves only one experimental group without a comparison group, beginning with a pretest ( $O_1$ ), followed by the treatment ( $X$ ), and ending with a posttest ( $O_2$ ). The distribution of pretest and posttest scores of the training participants is presented in Table 8.

**Table 8.** Distribution of Pretest and Posttest Scores of Training Participants

No	Initials	Pretest	Posttest
1	FL	60	75
2	RM	55	80
3	DV	45	65
4	KW	60	90
5	MN	25	70
6	IS	40	80
7	RR	60	80
8	KS	55	85
9	MS	45	85
10	ST	40	70
11	KL	35	65
12	MH	65	90
<b>Total Score</b>		<b>585</b>	<b>935</b>
<b>Average</b>		<b>48.75</b>	<b>77.92</b>

The data in Table 8 show that the average pretest score of the participants was 48.75, while the posttest score increased to 77.92. The distribution of participants' posttest scores indicates that 83% of participants (10 participants) achieved scores  $\geq 70$ , while the remaining participants scored below 70.

To examine whether there was a statistically significant difference between pretest and posttest scores, a paired sample t-test was conducted using SPSS. Prior to the analysis, data normality was tested, and the results are presented in Table 9.

**Table 9.** Results of the Normality Test

Class	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Pretest	.195	12	.200*	.933	12	.412
Posttest	.176	12	.200*	.922	12	.299

a. Lilliefors Significance Correction

\*. This is a lower bound of the true significance

Table 9 presents the results of the normality test using both the Kolmogorov–Smirnov and Shapiro–Wilk tests. Given that the sample size was relatively small ( $<50$ ), the interpretation was based on the Shapiro–Wilk test. The

significance values for the pretest and posttest were 0.412 and 0.299, respectively, both exceeding 0.05. These results indicate that the pretest and posttest data were normally distributed. Based on these results, a paired sample t-test was conducted to examine whether there was a statistically significant difference between pretest and posttest scores. The results of the paired sample t-test are presented in Table 10.

**Table 10.** Results of the Paired Sample t-Test on Participants' Pretest and Posttest Scores

Variable	Mean	N	Std. Deviation (SD)	Correlation ( r )	Sig. (Correlation)	t-value	Sig. (2-tailed)
Pretest	48.75	12	12.271				
Posttest	77.92	12	8.908				
Difference (Posttest-Pretest)				0.681	0.015	8.226	0.000

Table 10 shows that the mean pretest score was 48.75 with a standard deviation of 12.271, while the mean posttest score increased to 77.92 with a standard deviation of 8.908. This indicates a substantial improvement in participants' understanding after the training intervention. The correlation analysis reveals a strong and positive relationship between pretest and posttest scores ( $r = 0.681$ ,  $p = 0.015$ ), indicating that participants who initially had higher scores also tended to show consistent improvement. The t-test result further shows a t-value of 8.226 with a p-value of 0.000 ( $< 0.05$ ), confirming a statistically significant difference between the two means.

#### Evaluation of Training Process

The training process evaluation questionnaire that had been developed was previously reviewed by the supervisor and deemed appropriate to be distributed to the training participants. The recapitulation of the average evaluation results for the academic supervision training process is presented in Table 11.

**Table 11.** Mean Results of the Training Process Evaluation

Aspect	Mean (%)	Category
Trainer Performance	89.17	Very Good
Training Facilities	88.33	Very Good
Training Information	84.17	Very Good
Training Schedule	80.83	Good
Training Materials	89.17	Very Good
Evaluation Instruments	86.11	Very Good
<b>Average</b>	<b>86.30</b>	<b>Very Good</b>

Table 11 shows that the overall mean score of the academic supervision training process evaluation was 86.30%, which falls into the “Very Good” category. Among the evaluated aspects, Trainer Performance and Training Materials obtained the highest mean score of 89.17%, followed by Training Facilities (88.33%), Evaluation Instruments (86.11%), Training Information (84.17%), and Training Schedule (80.83%).

## **Discussion**

Enhancing the competence of supervisory teams is a crucial step in ensuring the quality of education in schools, given that the quality of a nation’s education system can rarely exceed the standards of its supervisory system (Basilio & Bueno, 2021; Maritim, 2024). The main findings of this study indicate a significant improvement in participants’ understanding, providing statistical confirmation that the training intervention effectively transformed supervisors’ comprehension of teachers’ professional development tasks. This phenomenon aligns with theoretical perspectives asserting that pedagogical competence and professionalism are not acquired instantaneously, but rather through continuous and systematic learning processes (Asmare, 2025; Munawir et al., 2025; Norjani et al., 2022; Noviyanti et al., 2024).

The success in improving participants’ understanding scores is closely linked to the paradigm shift introduced in the training materials, namely the transition from conventional supervision models to a collaborative approach. In line with participants’ aspirations for renewed perspectives on principal-teacher collaboration, this model emphasizes partnership and collegiality between supervisors and those being supervised (Oliveira & Jones, 2024; Pramasari et al., 2025). In this context, supervisors no longer act as inspectors who merely search for mistakes (snoopervision), but rather as mentors who provide teachers with autonomy to reflect and independently identify their own areas for development (Emekako et al., 2025; Gore et al., 2025; Wiyono et al., 2021). Such collaborative practices have proven effective in reducing teachers’ anxiety, enhancing self-confidence, and fostering a more inclusive and dynamic learning environment within schools (Sahudi & Ma’arif, 2024; Warman et al., 2022).

Nevertheless, the implementation of collaborative supervision in the contemporary era must adapt to geographical challenges and the rapid development of information technology. The decision to conduct the training online via the Zoom platform represents a strategic response to the distance between schools and reflects the demands of 21st-century education to integrate technology into school management (Pamenang et al., 2022; Susanti, 2022). Despite technical constraints such as network instability that occasionally disrupted the sessions, coordination efficiency was still achieved. This confirms that the utilization of technology can expand access to educational supervision, particularly in resource-limited regions, provided that it is supported by adequate digital infrastructure and thorough technical preparation (Syofian et al., 2024; Wei et al., 2025).

Another dimension that strengthened the success of this program is the high level of participant satisfaction, which reached the “*Very Good*” category. Participants expressed strong appreciation for the relevance of the training materials to the real-world contexts they encounter in the field, where theory was directly connected to their daily professional responsibilities. This satisfaction serves as an important indicator of program sustainability, as successful supervision requires full commitment and active engagement from all stakeholders involved (Sahudi & Ma’arif, 2024; Tampubolon, 2023). The support of competent facilitators, along with the availability of valid and reliable evaluation instruments, further ensures that the guidance provided is not merely an administrative formality, but is grounded in accurate data to support future improvements in teacher performance (Halimah et al., 2025; Widatin et al., 2025).

Although the findings are positive, it is important to acknowledge that the implementation of this training was still constrained by several practical limitations. The online delivery mode, while effective in overcoming geographical barriers, occasionally reduced interaction intensity due to unstable internet connectivity, and the relatively short duration of the program also limited deeper exploration of advanced supervisory practices. These findings are consistent with previous studies indicating that the implementation of digital-based supervision still faces challenges related to interaction quality and technological infrastructure (Gunawan et al., 2025; Nurtamami, 2024; Rasdiana et al., 2024).

This study contributes to the growing body of literature on collaborative supervision by providing empirical evidence of its effectiveness in enhancing supervisory competence within digitally based training contexts, particularly in the development of school leadership. This contribution strengthens previous findings that emphasize collaborative, technology-based supervision as an important approach in enhancing educational leadership capacity through continuous professional learning (Rahmi et al., 2026; Siswanto et al., 2026). Therefore, future programs are recommended to adopt a blended learning model that integrates both online and face-to-face learning, extend the training duration, and strengthen ongoing mentoring and digital infrastructure to improve sustainability and long-term impact. These recommendations are aligned with global trends in professional education development, which increasingly emphasize digital transformation, blended learning, and continuous capacity building as key strategies for improving the quality of school supervision systems (Rahmi et al., 2026; Shah et al., 2024).

To sum up, this study confirms that strengthening the managerial capacity of school principals and supervisory teams through collaboration-based training is a key factor in improving instructional quality. When supervisors possess a deep understanding and are able to provide constructive feedback, this generates a positive ripple effect on teachers’ work motivation and, ultimately, on students’ learning outcomes (Ani et al., 2025; Wiyono et al., 2021). Therefore, training programs for school supervisory teams are strongly recommended for broader implementation, supported by consistent policy commitment from educational authorities, in order to ensure the development of a sustainable culture of quality

within schools (Gani et al., 2024; Sayidiman et al., 2025; Tampubolon, 2023; Warman et al., 2022).

## **CONCLUSION**

This study demonstrates that the management of collaborative academic supervision training was implemented systematically through four interrelated stages: planning, organizing, implementation, and evaluation. The planning stage was conducted over six days and included participants' needs analysis, collaborative development of the training design, and preparation of technical infrastructure to anticipate connectivity constraints, reflecting the importance of contextual readiness in digital-based training programs. During the organizing stage, clear role distribution was established, and Zoom was selected as the primary platform to facilitate remote coordination among schools. The implementation stage was carried out in an interactive and structured manner through the delivery of materials, discussions, and reflective question-and-answer sessions that connected theoretical concepts of pedagogical competence and academic supervision with practical field experiences. The evaluation stage showed that the training was not only effective in terms of learning outcomes but also in process quality, as indicated by a significant improvement in participants' understanding from 48.75 to 77.92 ( $p = 0.000$ ; 83% success rate) and a process evaluation score of 86.30%, which falls into the "Very Good" category.

More importantly, these findings suggest that a systematically designed collaborative supervision training model—integrating careful planning, clear role distribution, technology-based coordination, and continuous evaluation—can enhance both the effectiveness and efficiency of supervisory capacity-building programs. This highlights the main contribution of this study to the literature on educational leadership development, particularly in demonstrating how structured training management can operationalize collaborative supervision in digitally mediated contexts. Therefore, this model can serve as a scalable reference for the development of academic supervision training programs for school supervisory teams across various regions in Indonesia, especially in contexts that require flexible yet structured digital learning approaches.

## **ACKNOWLEDGMENT**

The authors would like to express their sincere gratitude to the Department of Education and Culture of Sorong Regency, Southwest Papua Province, as well as to the school supervisors, principals, and teachers of SMA Negeri 2 Sorong Regency, SMA Negeri 5 Sorong Regency, SMA Keguruan Sorong Regency, and SMK Negeri 1 Sorong Regency. Their active participation throughout the training program and their willingness to serve as research participants and primary data sources made a significant contribution to the successful implementation of the training and the completion of this study. The authors also gratefully acknowledge all individuals who provided technical and administrative support during the preparation, implementation, and completion of this research.

### Authors' contribution

R.L.P. contributed to the conceptualization of the study, methodology, development of the training materials, development of the research instruments, investigation, formal analysis, data interpretation, writing of the original draft, data visualization, and manuscript revision and editing. Y.D. contributed to the development of the training materials, investigation, data collection and validation, and manuscript review and editing. M.W. contributed to the development of the training materials, investigation, supervision, research coordination, and manuscript review and editing. All authors contributed to the discussion of the findings, approved the final version of the manuscript, and agreed to be accountable for all aspects of the work.

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