International Journal of Multicultural and Multireligious Understanding

http://ijmmu.com
editor@ijmmu.com
ISSN 2364-5369
Volume 13, Issue 2
February, 2026
Pages: 438-449

Re-conceptualizing Academic Supervision through Digital Peer-Based Models: Evidence from Selected State Senior High Schools in Mataram City

Daeng Siti Hurriyah[1], Untung Waluyo[2], Dadi Setiadi[3], Fachruddin[4], Asrin[5]

School Administration Management Program
Graduate Program
University of Mataram, Indonesia

http://dx.doi.org/10.18415/ijmmu.v13i2.7361

Abstract

In this study, we analyze the limitations of traditional academic monitoring of senior high schools. This approach takes time, is frequently manual, and poorly documented. In many schools, face-to-face observation and paper-based methods remain the staples of supervision. It negatively affects teacher continuing professional development, as the results show low efficiency, no follow-up, and poor cooperation of the teachers. To redress this, the study aims to develop a new paradigm of peer academic supervision based on digital platforms, which is more efficient, transparent, and useful. The research used an research and development approach applied in three state senior high schools in Mataram City. This comprised the following studies: needs analysis, model design, expert validation, small group trials, product revision, and large group trials. The supervision model was developed in Excel Online with OneDrive. Data were collected by questionnaires, interviews, observation, and documentation. Data indicate that all participating teachers felt that digital-based supervision was needed. Of the participants, 39.3 percent reported a high need, while 60.7 percent reported a very high need. Its expert validation of 88.79% and 79.17% reflects high feasibility. The effectiveness in the large-group experiment was 87.3%. A reliability test gave a Cronbach's Alpha of 0.736, and a significant 30.58% increase in performance was found over manual supervision. The research findings suggest that enhancing teacher's performance may be obtained through the application of the digitally assisted peer academic supervision method.

Keywords: *Digital Academic Supervision; Peer Supervision; Excel Online; Teacher Professional Development*

Introduction

The rapid development of information and communication technology (ICT) has affected many aspects of education, from learning, instruction, to school administration. But in an educational context, technology is not just an aid to learning. Rather, it is part of a comprehensive system intended to plan, monitor, evaluate, and develop professionalism in education (Timotheou et al, 2023; Siyam et al, 2025). As a result, school culture is under tremendous pressure when it comes to embedding digital assistance in

schooling, which leads to efficiency, transparency, accountability, and quality of education. To this end, schoolteachers have been required not just to master content and pedagogical knowledge of content and pedagogy but also to be flexible and grow in their professional competence in a digital environment, and meet the evolving needs of teaching. Academic supervision, which is an organized process to support teachers with better instructional practices, is one key mechanism to support teacher development in schools (Victorynie, & Othman, 2022; Aisyah, 2024; Imtihan et al,, 2024). In most senior high schools, however, academic supervision remains in place using regular methods, which depend predominantly on administrative procedures and interactions and thereby cannot encourage sustainable teacher development in the digital age.

Academic supervision serves an important function as an instrument for quality pedagogical and learning work as it aims to help teachers improve their teaching, learning, professional and instructional abilities through structured and reflective opportunities. These processes might involve watching, giving feedback, reflective dialogue, assessment, and subsequent actions which can lead to improved quality of teaching and learning opportunities (Miller, 2023; Gordon, 2023). Good academic supervision allows educators to see instructional goals more clearly, to know and understand the varying learning needs of students, and to use the methods (the pedagogical and social learning strategies) most appropriately in the classroom. With frequent and targeted support, teachers are required to critically reflect on their classroom practice and incorporate feedback which is both constructive and evidence-based into continuous self-improvement. In a practical sense, academic supervision should be a professional supportive system, one that enables teachers to continue to grow, be inventive and improve, not a management device for performance assessment (Ponticell et al., 2018). However, although such strategic supervision is of great importance, the effectiveness of academic supervision is relatively low in several Indonesian schools and contributes little to improve practice, especially if the supervision processes are not systematic and continuous (Danial et al., 2022).

Traditional academic supervision is a weakness; one of the significant drawbacks of routine academic supervision is its excessive focus on compliance with administrative requirements but has less for professional development. Supervision activities, in many cases, can be performed primarily for administrative requirements set by educational authorities to include completing supervision schedules, filling out observation forms, or submitting reports (Hartanto, 2019). Supervisors generally pay more attention to checking lesson plans, teaching documents, and the completeness of the paperwork than to meaningful professional communication between the teacher and the educator surrounding instructional issues and classroom design process. Consequently, the supervisory process is procedural, technical, and routine with very reduced impact on real pedagogical practice. Time constraints as well as high workloads associated with the fact that school principals and senior teachers usually undertake supervision and administrative responsibilities (Victorynie, & Othman, 2022) make this situation even more difficult. Considering these limitations, supervision is limited; the duration of supervision is generally sporadic, is often poor in quality and short, and is often short in duration with few opportunities for further follow-up, which reduces the impact on long-term teacher professional development and quality of instruction. Another challenge with traditional academic supervision is its dependence on manual methods and paper document system of process and documentation of paper. Printed tools for classroom observation and evaluation are traditionally utilized by supervisors. They are commonly inefficient, rigid, and difficult to maintain over time (Guntoro, et al., 2016). The documentation is incomplete, spread across files, or poorly archived, which causes challenges in longitudinally tracking teachers' progress and improvement of instruction. Key supervision records can also be lost or duplicated, but, perhaps most importantly, forgotten, if not stored systematically or digitally. After supervision, follow-up attempts will be rarely taken as supervision data is difficult to obtain, analyze or re-visit for reflection and planning (Endang, 2023). Moreover, face-to-face supervision challenges the supervisors/teachers' scheduling coordination, making it difficult in the hectic-school setting where principals and senior teachers face several administrative responsibilities and external obligations (Fauzi et al., 2022). Such factors decrease the quality of classroom observation, restrict open communication, and reduce teachers' willingness to

transparently reflect on their own teaching practices, further undermining the developmental aspect of academic supervision.

Traditional supervision models are not free of technical and procedural challenges, as well as their inherent lack of collaboration and collegiality. Most supervision with educators is exerted by principals, supervisors or external inspectors, placing teachers more as recipients of evaluation instead of actual professionals in practice (Santosa, 2019). Such a tiered design leads to an inequitable power structure between the superintendents and the teachers that ends up creating fears, resistance, superficial submission. Teachers can perceive supervision as evaluative, judgmental, rather than supportive, and so may accept feedback formally but not meaningfully apply it to the classroom practice. When supervision is perceived as a form of control, teachers experience little need for honest reflection, professional discussion or instructional experimentation. Peer academic supervision, on the other hand, is about teachers with the same level of influence becoming collaborative. Peer supervisions are when teachers watch each other teaching, share learning stories, discuss classroom problems together, and together problem solve in a safe place (Handayani et al., 2021; Jamila, 2020). This attitude generates trust and professional conversation, responsibility sharing and collective improvement, which makes teachers tend to be more receptive to reflection and feedback and pedagogical innovation.

Peer-based supervision is shown to develop motivation, confidence, and professional engagement of a teacher from several Indonesian studies also as teachers are involved in monitoring supervision as they become sense of ownership for professional growth (Handayani et al., 2021). By sharing responsibility for supervision between teachers, peer supervision also mitigates teachers' reliance on school leaders thus creating a more sustainable and participatory supervision system. Nevertheless, peer supervision with the assistance of conventional and manual methods continues to suffer from weak documentation, little monitoring, time limits and lack of consistency in follow-up. Digital technology represents a potential solution to these challenges since it allows supervision activities to be carried out more efficiently, transparently and systematically (Danial, 2022; Rugaiyah, 2016). Digital-mediated academic supervision provides an accessible online platform for recording, storing and sharing supervision data that can facilitate asynchronous supervision, continuous feedback, and systematic oversight. In this regard, this study solves these problems via the use of Excel Online integrated with OneDrive to build a digital-based peer academic supervision model in three selected state senior high schools located in Mataram City. The novelty of the present study is that it integrates peer supervision with a simple and accessible online tool that teachers have in mind by making the integration process very easy to use by teachers, lowering the technical complexity and cost for implementation (Sandra et al., 2024; Siyam et al, 2025).

Therefore, considering this context, the researcher conducted the present study to identify teachers' needs in regards to the digital-based peer academic supervision, creating a concrete model of supervision that is achievable and practical to implement, to evaluate teachers' belief in the model and to explore factors that either support or hinder the implementation in senior high schools.

Method

In response, the present study used a pragmatic research paradigm integrating qualitative and quantitative methods to address the complexity of academic supervision development in school settings. This pragmatic framework was selected as the problem at hand is solved by developing a usable and applicable product rather than by testing an abstract theory. Based on this philosophy, this work focuses on the applicability, feasibility and effectiveness of developed structure in the real school experience. The qualitative and quantitative data incorporated make possible a more comprehensive understanding of teachers' needs, perceptions, and experiences of the academic supervision process, and objective assessment of the quality of the model developed, (Sugiyono, 2019).

The study adopted a Research and Development (R&D) design modelled on the Borg and Gall (1983) model. R&D was chosen because key objective of this study was to generate a digital-based peer academic supervision model that could be deployed in senior high schools through the adoption, validation, and testing of such model. R&D is defined as a systematic process that creates and validates educational products through its iterative steps of design, testing, and revision. This was particularly appropriate for explorations of educational innovations that seek to develop functional and context-relevant solutions (Sugiyono, 2019). The methodological approach for the research was informed by a modified Borg and Gall (1983) R&D model that addressed the specific context of the study. The ten initial steps these researchers proposed were broken down into a number of primary steps to ensure feasibility and efficiency. The stages were (1) needs analysis, (2) model design development, (3) expert validation,(4) small-group trial, (5) product revision, and (6) large-group trial. It spared the researcher the necessity of concentrating on high-impact development stages and yet remained methodologically sound.

The needs analysis stage was focused on assessing teachers' problems, expectations, and readiness in peer academic supervision and digital technology utilization. The model development phase included the establishment of a digital-based supervision framework that combines the peer supervision principles with digital resources. Experts were consulted to determine the practicality of the model, such as content about supervision and digital media design. The small-group trial was used to test the practicality and to discover technical or procedural weaknesses. A large-group trial was then performed to determine the effect of the modified model on supervision behavior.

The research was conducted in three state senior high schools in Mataram City, Indonesia. We purposively selected three teachers from each of these schools in accordance with several criteria. First, the schools employed peer academic supervision practices in a conventional, but still manual and traditional fashion. Second, the schools had teachers that engaged in professional development activity-focused activities such as teacher leadership programs, showcasing preparedness to innovate. Third, the schools were accessible to the researcher and showed diverse school contexts of Mataram City. Teachers were the participants in the study and used the developed model for the supervision. The participants in the project were teachers in needs analysis, model trials, and evaluation phases. Supervision and media experts were also included as validators to guarantee the content quality and technical features of the model. Involvement of multiple stakeholders made sure that the developed model was reviewed from pedagogical, professional and technological perspectives.

This study produced a digital-based peer academic supervision model which is based on Excel Online using OneDrive. To improve data quality and enhance the integrity of the digital system, several stakeholders were involved. The model aimed to provide a structured and systematic approach to support academic supervision throughout all phases. This digital tool enables teachers and supervisors to link to the supervision documents from the internet, share ideas and monitor follow-up together. There are multiple key building blocks to the model: supervision planning; pre-observation; classroom observation; post-observation feedback; reflection; evaluation; follow-up. An Excel Online system links through separate digital forms and sheets of each component. This integration with OneDrive provides cloud-based storage, collaborative access, and real-time updates. This design is designed for a transparent and data-sensitive design that allows legitimate users to connect easily with the data.

The data were gathered by the data triangulation in multiple techniques to add credibility. The primary data collection methods were questionnaires, interviews, observation, and analyzing documents. Questionnaires were utilized to gather quantitative data from teachers on their needs, perceptions and responses to the developed model. The questionnaires were designed on a Likert scale to address the feasibility, effectiveness, and practicality of the model using the model. Qualitative data were obtained through interviews that focused on teachers' experiences, and questions regarding challenges and perceptions of peer academic supervision and digital supervision tools in teaching. During the interviews,

semi-structured interviews were used to elicit participants' opinions openly while maintaining focus on the research questions. They examined how the model was put into practice by way of observations during supervision. For the documentation analysis, supervision records, validation sheets, and trial outcomes generated within the digital system were reviewed.

The data in this study was the result of quantitative and qualitative methods. Qualitative data collected from interviews, observations, and open-ended questionnaire responses were analyzed using descriptive qualitative analysis. The analysis comprised data reduction, data presentation and conclusion drawing to identify themes that related to teachers' needs, perceptions, supporting factors, and inhibiting factors (Miles & Huberman in Sugiyono, 2019). Quantitative data collected by questionnaires and validated instruments were analyzed with the help of descriptive statistics. Percentage scores were obtained to assess feasibility, effectiveness, and practicality of the model. Average scores were computed for validation of expert estimates and analyzed for the interpretations based on predefined feasibility criteria. Cronbach's Alpha was employed to verify the reliability of the research instruments to internal consistency of questionnaire components.

Several approaches were used to ensure the data validity. The content validity was assessed considering the expert judgement of the supervision and media experts. The relevance, clarity and appropriateness of model's elements and instruments were assessed by the experts. This feedback informed a model that we refined and improved prior to implementation. To evaluate consistency of the questionnaire instruments, reliability testing was performed. Reliability was assessed by Cronbach's Alpha, where the value of coefficient greater than 0.70 suggests well-accepted reliability. The reliability test reveals that in both reliability terms and reliability criteria, the instruments used in study conducted in this research were acceptable and also results were accurate or reliable. Ethics issues were taken into account throughout the research phase. The participation in the study was voluntary, and subjects were told about the study's objective and the procedures. The identities and responses from teachers were confidential in order to safeguard privacy. Data were collected using digital platforms and only used for research purposes by approved users. These ethical strategies ensured the study was conducted according to ethical guidelines of educational research.

Findings and Discussions

The results of this study indicate that teachers in the three selected state Senior High Schools at Mataram City encounter significant challenges in the traditional academic supervision. And because these challenges are so embedded within how supervision is organized and practiced in schools they are seen as persistent and systemic rather than incidental or temporary. In an effort to better help facilitate their professional development — particularly when it comes to daily instructional improvement — teachers repeatedly requested a more efficient, collaborative, and systematic approach to supervision. One teacher said, "*There's supervision, but it's largely administrative stuff. It is never really followed up when it's done, in order to develop the instruction*" (T3). It is further reinforced by quantitative data, where all involved teachers indicated needing digital-based peer academic supervision at a high to very high level. In particular, 60.7% of teachers reported a very high need, 39.3% indicated a high need, and none of the respondents mentioned a low level of need. This homogeneous distribution indicates widespread and structural dissatisfaction with conventional supervision at the structural level, and is common across schools and contexts. No teacher evaluated the supervision provided as adequate or optimal; suggesting that conventional supervision no longer meets needs concerning professional support.

Table 1. Teachers' Perceived Need for Digital-Based Peer Academic Supervision

Level of Need	Percentage (%)	Interpretation
Very High	60.7	Strong demand for transformation of supervision
High	39.3	Consistent dissatisfaction with conventional supervision
Low	0.0	No teacher perceives current supervision as sufficient

Existing supervision practices were perceived as disconnected from their real instructional challenges because they focus primarily on completing forms rather than addressing classroom realities, teachers said. "What is seen is more about the completeness of the equipment, not how the student learning process is in the classroom" (T7). Supervision was also perceived as repetitive and lacking innovation, because the same procedures are repeated annually without leading to improvement in teaching quality. One teacher observed that "Every year the format is almost the same, but there is no real change in the way of teaching" (T9). Traditional supervision was repeatedly referred to as time-consuming and administratively heavy, leading teachers and supervisors to prioritize completion over quality. As a result, its impact on instruction was perceived as limited because supervision seldom leads to clear learning outcomes, concrete action plans, or measurable progress in teaching practice.

Table 2. Digital Supervision Devices Needed by Peer Teachers

Digital Component	**Function in Supervision**	**Identified Need**
Excel Online	Recording observation results, feedback, scoring, and reflection	Strongly needed for structured documentation
OneDrive	Cloud storage and shared access to supervision files	Needed to prevent data loss and enable collaboration
Digital Observation Instruments	Standardized supervision tools for observation and evaluation	Needed to improve objectivity and consistency
Online Feedback Forms	Recording post-observation feedback and reflection	Needed for continuity and follow-up
Internet Connectivity	Accessing cloud-based supervision system	Essential infrastructure requirement
Digital Devices (Laptop/PC)	Operating supervision applications	Required for implementation

Qualitative findings suggest that documentation and follow-up are major limitations of conventional supervision, which undermines the flow of teacher skills development. The teachers themselves found records of supervision to be spread among paper files and casual notes so that they could not easily access them and use them for reflection. "Feedback is generally only verbal feedback and then it runs out of there and after that because no notes will be resourced," one teacher explained to us. Because feedback is seldom recorded systematically, teachers can neither review previous supervision results nor track their progress over time. Every supervision session is perceived as a one-off event, not as being a component of what will ultimately be a professional learning journey. This result is in line with Endang (2023), who indicates that, without systematic documentation, supervision cannot sustain a teacher's development because it lacks continuity and evidence-based follow-up.

The face-to-face supervision was identified as the main disadvantage, as it imposes scheduling restrictions and diminishes supervision in nature. Supervisors' demands on a teacher lead to classroom observation being delayed or done in a rushed manner. Supervisors may also have to juggle conflicting

responsibilities, meetings, reporting, and administrative duties. One teacher [T5] remarked, “Sometimes our observations are only short-lived because the principal is working something more significant — a meeting, a position to fill elsewhere”. That situation makes supervision intermittent, not ongoing professional intervention. Consequently, supervision is sporadic and superficial. Teachers believe that short observation opportunities do not adequately convey the rich nature of classroom training. Time for observation is also limited, restricting meaningful consideration of practice. Due to time pressure, post-observation feedback is typically short or omitted. As a result of this, teachers have minimal instructional improvement support. Fauzi et al. (2022) point out that adequate time is critical in appropriate supervision. They also emphasize ongoing relationship building between supervisors and teachers. These are impossible to meet in traditional face-to-face supervisory settings in a hectic school environment.

Teachers perceived peer academic supervision positively as the result of a more collegial process of peer academic supervision than a top-down job style. Peer supervision was perceived to be more supportive than teacher supervisor because peer supervision is rooted in equality, not hierarchy. Peer feedback had more resonance — it flowed from a shared setting in the classroom. Teachers believed their peers did a better job of reflecting on their instructional struggles and student qualities. As one teacher observed, “With colleagues, the conversation is more open, because we both know what is going on in the classroom” (T2). And with a common understanding of how each other was and was not doing we were able to create a comfortable medium for discussion. Peer supervision generated an environment for open conversation without a threat of a formal sanction decision. Teachers were more prepared to address their weaknesses and ask for help. The supervisory relationship grew around the notion of sharing ideas and problem-solving together. Teachers were driven to step up, not monitored by what they did and did not do. This finding is consistent with Handayani et al. (2021) that emphasize collegiality as a fundamental strength of peer supervision. Jamila (2020) also points out the shared responsibility to enhance the level of teaching. But teachers recognized that peer supervision needs to have an appropriate framework to keep its benefits.

Table 3. Teachers’ Perceptions of the Digital-Based Peer Academic Supervision Model

Aspect Assessed	**Teacher Perception**	**Supporting Evidence**
Practicality	Easy to use and time-saving	Reduced paperwork and automatic data processing
Relevance	Aligned with classroom realities	Peer-based feedback perceived as contextual
Comfort	Less pressure compared to top-down supervision	Collegial and non-evaluative atmosphere
Transparency	Clear supervision results	Open access to feedback and records
Usefulness	Supports teaching improvement	Feedback linked to reflection and follow-up

Teachers reported that informal peer supervision discussions were rarely systematically documented. Almost all feedback is given orally and not recorded for future reference. This makes it difficult for teachers to track progress over time. “There are discussions, but they are never recorded, so it's hard to know if there are changes afterward,” said one participant (T6). The supervision results rely heavily on memory without written documentation. When daily teaching activities resume, important recommendations may be forgotten. Such a situation undermines accountability for teachers involved in supervision. Without a formal follow-up mechanism, teachers are less motivated to use feedback. Also, without documentation, reflective practice is limited as well. Teachers cannot compare past and present performances to assess improvement. This means that supervision lacks continuity and long-term impact. It relates to Guntoro’s et al., (2016) point about supervision management. He argues that all models of supervision require structured systems to ensure both consistency and effectiveness.

The limitations were directly addressed by incorporating digital technology into the developed supervision model. Digital tools improved structure, documentation, and continuity of supervision practices. Teachers found the digital peer academic supervision model practical and efficient. This perception was a function of less manual paperwork. Digital documentation made supervision records consolidated and accessible in one system. One teacher commented, “With Excel Online, all supervision notes are neatly stored and can be accessed anytime” (T4). The integration of Excel Online and OneDrive allowed flexible access to supervision data. Teachers were able to access feedback without the need for face-to-face meetings. Follow-up actions were easier to scrutinize, and records could be kept systematically. Digital systems also minimized the risk of losing supervision documents. Teachers indicated increased clarity as to strengths and weaknesses. They could see trends over multiple cycles of supervision. This perception aligns with the views of Ponticell et al.,(2018) observation that supervision should be systematic and objective.

The structured supervision stages of the digital model were invaluable to teachers. These sections provided a clear roadmap from planning to follow-up. It made the supervision process clearer for teachers at each step. The digital system guided them through planning, observation, feedback, and reflection. One teacher commented, “The learning is clear, so supervision does not stop at observation only” (T8). This structure reduced confusion about supervision procedures. Teachers felt more confident participating in supervision activities. The supervision process became more structured and efficient. Reflection was mandatory, not optional. Teachers were encouraged to analyze teaching practices systematically. Supervision was no longer just evaluation but also a learning-oriented process. Instead, it became a work learning process. This outcome supports Hartanto’s (2019) supervision cycle model, which promotes continuous professional development.

Transparency and accountability in supervision practices were enhanced through digital documentation. Teachers mentioned that the feedback was clearly written and easy to understand. This digital documentation reduced the ambiguity of the supervision results. Feedback was accessible to teachers at any time. These accesses allowed teachers to consider recommendations independently. As one participant described the experience, "Because the notes are open, I feel I have to follow up" (T9). Clear documentation also increased teachers' sense of responsibility. Teachers felt accountable for following improvement plans. Shared access also minimized misunderstandings between supervisors and teachers. Expectations were more explicit and measurable. Teachers could track their progress over time. Transparency fostered trust in the supervision process. This finding supports Ponticell’s et al. proposition (2018) view that transparency is crucial for effective supervision.

Digital and peer supervision collaboration also enriched professional dialogue. Teachers felt more at ease having reflective discussion. Its approach was peer-based which gave even greater comfort to the teachers. Digital systems kept a record of those conversations and decisions so you could reflect more in depth. As one teacher stated, “The discussion is more focused on learning, not on administration” (T1). Instructional strategies were talked about more openly by teachers. Supervision discussions were no longer dominated by administrative considerations. Asynchronous communication between teachers was possible by digital tools. Teachers could offer feedback at different times. This flexibility relieved time pressure in discussions. Quality of reflection improved as teachers had time to think carefully. Professional conversation became more fruitful and focused. This result agrees with Handayani et al. (2021) focus on collaboration and trust in peer supervision.

Several supporting factors resulted in the successful implementation of the digital supervision model. Teachers’ fundamental digital literacy was critical. Most teachers were already familiar with online documents and digital tools. This familiarity lowered the resistance to implementing the new system. As a teacher remarked, “Because we are already used to using online documents, we did not have much difficulty” (T14). Implementation also was supported by a collaborative school culture. Teachers were accustomed to sharing ideas and working together. Support from leadership also acted to reinforce

the process. Time and encouragement were given to innovation by school leaders. Access to internet and devices was facilitated by the school. Supervisory schedules were adjusted to accommodate the new model. These scenarios facilitated the transition from manual to digital supervision. This corresponds with Rugaiyah's (2016) statement about readiness and institutional support.

However, there were several implementation challenges that still remained. Stable internet proved to be a major issue from a technical standpoint. Teachers experienced difficulty accessing the system during peak usage times. One teacher noted, "If the network is slow, access is also hampered" (T3). This situation did occasionally disrupt supervision activities. Adapting to the digital format was not without its hiccups. Some of the teachers required some time to get familiar with the system features. Pressure on workload grew in early implementation stages. Teachers were forced to juggle teaching duties with system learning. Such a situation caused some participants to experience temporary stress. Yet teachers still acknowledged the benefits of the model. Such challenges bolster Guntoro's et al. (2016) argument for gradual adaptation. Sustainability demands ongoing assistance and flexibility. "Supervision becomes lighter and more meaningful for improving teaching methods" (T5).

Table 4. Supporting and Inhibiting Factors in Implementing the Digital Supervision Model

Category	Factors Identified	Description
Supporting Factors	Teacher digital literacy	Teachers are familiar with basic digital tools
	Collaborative school culture	Teachers accustomed to peer discussion
	Leadership support	School leaders provide permission and facilities
	Accessible platform	Excel Online perceived as familiar software
Inhibiting Factors	Internet instability	Network issues disrupt access
	Initial adaptation difficulty	Some teachers need guidance
	Workload pressure	Learning system while teaching

Through expert validation and field trials, the developed model was found to be feasible, effective, and practical, which provides us with powerful evidence that the model works in practice. Supervision experts noted high feasibility of the model, which means the content of the supervision matches the academic supervision standards and teacher professional development objectives. The content they were aware was consistent with academic supervision precepts, including reflective practice, structured feedback, and follow-up. Also, media experts gave the digital design a feasible rating, which they perceived as realistic that the platform was user-friendly and appropriate. The method was found to be user-friendly in that the platform was in a familiar Excel format and facilitated good navigation. It was adequate for schools because one needs no expensive software and high technical skillsets. In small-group trials, teachers were able to implement the model successfully after initial explanation and practice. From that initial structure of support, teachers adapted quickly, indicating that the learning curve was manageable. Large-group trials illustrated high efficacy as the model was applicable across a larger population and more widespread application. It also showed statistical improvement over traditional supervision, meaning not only acceptable, but impactful. This improvement illustrates Danial's (2022) claims that digital-based supervision enhances time efficiency and promotes instruction enhancement. Digital-based supervision removes paperwork and improves data access, increasing efficiency. These opinions are augmented with evidence-based evaluation because validation and trials give practical evidence, not just opinions. This combination of expert review and field trials demonstrates strong feasibility and relevance of the model.

Table 5. Feasibility and Effectiveness of the Digital-Based Peer Academic Supervision Model

Evaluation Aspect	Result	Interpretation
Expert validation (supervision)	88.79%	Highly feasible
Expert validation (media/TIK)	79.17%	Feasible
Small-group trial	80.9%	Feasible and practical
Large-group trial	87.3%	Highly effective
Reliability (Cronbach's Alpha)	0.736	Acceptable reliability
Performance improvement	30.58%	Significant improvement over manual system

Supervision was felt meaningful, manageable, and effective, because teachers noted how significantly the digital model eased the administrative burden. Digital forms significantly reduced paperwork since teachers didn't need to print, copy, and store many paper documents. Files were centrally stored in one place accessible without hassle and documentation became easier to manage. This saved teachers from working over their heads with administration — teaching could be more focused on making improvements in instruction. Time previously spent on administration was redirected to reflection, reading feedback, and planning for improvement. Supervision became more meaningful to teachers as they had clear improvement areas to gaze at and metrics to monitor progress. This finding is consistent with Victorynie, & Othman (2022) who note that supervision should place a first focus on quality teaching and professional growth. Supervision must focus on the quality of the teaching, rather than formal compliance, they argue. Supervision should not be dominated by administrative tasks, because this is a distraction from the improvement of instruction.

Conclusion and Recommendations

The current study argues that traditional academic supervision in senior high schools is no longer sufficient to promote teachers' professional development in educational settings. The results imply that supervision is frequently viewed as administrative, hierarchical, and weak in documentation and follow-up. These factors hinder supervision's capacity as a learning mechanism. Supervision for teachers is perceived as a time-consuming process, isolated from the actual practice of teaching in classrooms, and more concerned with procedural compliance than the effectiveness of instruction. As such, supervision fails to generate sustained reflection, meaningful feedback, and continuous professional growth.

The research presented here shows that a digital-based peer academic supervision model can be a realistic solution to these issues. The model works well in moving the supervision process from a highly procedural and individualistic process to a more collaborative, systematic, and learning-oriented process; thanks to the integration of peer supervision principles with accessible digital technology. Peer supervision is viewed by teachers as more supportive and relevant because it is grounded in shared instructional experiences and collegial trust. Peer supervision, when implemented around a digital platform, is more formalized, transparent, and accountable. Digital documentation enhances continuity in that teachers are able to look back on feedback, monitor progress, and implement follow-up actions over time.

The results suggest that the digital model promotes efficiency and lowers administrative load even more. Centralized documents, transparent stages of supervision and flexible access result in far more time for teachers and supervisors to spend improving instruction rather than wasting time with paperwork. The trust and teacher ownership of professional growth are encouraged through transparency and shared access to records of supervision. Supervision performance improved significantly during field-based trials indicates the fact that this model is not only practical and feasible, but also significantly improves

supervision quality. However, the study also identifies challenges related to internet stability, initial use of digital tools, and overall strain on teachers. Such challenges remind us that this is not going to work if we don't have good infrastructure, make necessary adaptations, and continue to support. In order to maintain the quality of digital supervision, leadership commitment and a collegial school culture are crucial for the implementation of digital supervision.

These conclusions lead a single integrated school perspective to articulate several academically grounded and context-sensitive recommendations. Schools should promote digital-based peer academic supervision, albeit slowly as a complementary rather than as a replacement of existing systems of supervision that are aligned with institutional readiness, teacher digital competence, and available resources, and use the model to reinforce professional learning rather than add to workload pressures. School leaders will need to strategically invest themselves into ongoing institutional support processes — reliable digital infrastructure, targeted capacity development around digital supervision practices, flexible supervision scheduling that does not infringe upon teachers' instructional responsibilities, and the facilitation of collaborative and reflective supervision culture. Future research should explore the implications for teachers' instructional practices, reflective competence, and professional growth of digital-based peer academic supervision in the long run, and conduct sustainable longitudinal designs to document changes over time. Subsequent studies will also investigate how the model may be flexible over time; for example, in different educational levels and in different schools, especially those where technological access varies, and perform multiple assessments on other digital systems to determine their fit to scale, usability, and cost-effectiveness. On the whole, we believe that digital peer academic supervision should not be viewed only as a technological device, but as a pedagogical and organizational innovation that can be implemented to transform professional learning away from compliance-based supervision toward collaborative, reflective, and sustainable professional learning practices.

References

Aisyah, H. L. (2024). Role of principal's supervision in improving teacher's competency. *PPSDP International Journal of Education, 3*(2), 438–450.

Borg, W. R., & Gall, M. D. (1983). *Educational research: An introduction* (4th ed.). Longman.

Danial, A. R. (2022). Digital-based academic supervision to improve instructional quality in secondary schools. *Journal of Educational Supervision*, 6(2), 115–128.

Endang, C. K. (2023). Identification of problems in the implementation of follow-up academic supervision by headmaster. *ICCCM-Journal of Social Sciences and Humanities***, 2**(6), 16–20. https://doi.org/10.53797/icccmjssh.v2i6.3.2023

Fauzi, F., Sudirman, S., & Fahruddin, F. (2022). *Pelaksanaan supervisi akademik berbasis teknologi informasi dan komunikasi (TIK)* [Implementation of academic supervision based on information and communication technology (ICT)]. (JPAP) Jurnal Praktisi Administrasi Pendidikan, 6(1), 10–16.

Gordon, S. (2023). Supervision, Teaching, and Learning in Successful Schools: A Hall of Mirrors. *Journal of Educational Supervision*, 6 (3). https://doi.org/10.31045/jes.6.3.1

Guntoro, D., Sumaryanto, T., & Rifai, A. (2016). *Pengembangan model supervisi akademik berbantuan e-supervision berbasis web* [Development of a web-based e-supervision-assisted academic supervision model]. *Educational Management*, 5(2), 122–128.

Handayani, L., Madjdi, A. H., & Suad, S. (2021). *Pengembangan model supervisi akademik berbasis rekan sejawat di SMP negeri se-Kecamatan Bae Kabupaten Kudus* [Development of a peer-based academic supervision model in public junior high schools in Bae Subdistrict, Kudus Regency*]. Jurnal Studi Guru dan Pembelajaran*, 4(2), 317–334.

Hartanto, R. (2019). *Supervisi akademik berbasis refleksi untuk peningkatan profesionalisme guru* [Reflection-based academic supervision for improving teacher professionalism]. Rajawali Pers.

Imtihani, A., Waluyo, U., & Hakim, M. (2024). Implementation of academic supervision of school supervisions in the era of independent learning at MA Raudlatusshibyan NW Belencong. International Journal of Multicultural and Multireligious Understanding, 11(4), 114–126

Jamila. (2020). *Pengembangan model supervisi akademik berbasis kolaboratif (studi pada pengawas sekolah menengah pertama Dinas Pendidikan Medan)* [Development of a collaborative-based academic supervision model: A study of junior high school supervisors in Medan Education Office]. *Jurnal Manajemen Pendidikan Dasar, Menengah dan Tinggi* (JMP-DMT), 1(1), 26–36.

Miller, L. S. (2023). Supervision to Support Reflective Practices. *Journal of Educational Supervision*, 6 (1). https://doi.org/10.31045/jes.6.1.1

Ponticell, J. A., Zepeda, S. J., Lanoue, P. D., Haines, J. G., Jimenez, A. M., & Ata, A. (2018). Observation, feedback, and reflection. In S. J. Zepeda & J. A. Ponticell (Eds.), *The Wiley handbook of educational supervision* (Chap. 11). Wiley. https://doi.org/10.1002/9781119128304

Rugaiyah, R. (2016). *Pengembangan model supervisi klinis berbasis informasi dan teknologi* [Development of an information and technology-based clinical supervision model]. Jurnal Cakrawala Pendidikan, 35(3), 421–431

Sandra, M., Dwikurnaningsih, Y., & Waruwu, M. (2024). *Pengembangan model supervisi blended pada layanan bimbingan dan konseling untuk meningkatkan kinerja guru* [Development of a blended supervision model in guidance and counseling services to improve teacher performance]. G-Couns: Jurnal Bimbingan dan Konseling, 8(3), 1466–1477

Santosa, H. (2019). *Pengantar supervisi akademik* (1st ed.; C. Triatna & W. Prayitno, Eds.) [*Introduction to academic supervision*]. Direktorat Jenderal Guru dan Tenaga Kependidikan.

Siyam, Y., Siyam, N., Hussain, M., et al. (2025). Evaluating technology integration in education: A framework for professional development. *Discover Education*, 4 (53). https://doi.org/10.1007/s44217-025-00053-0

Sugiyono. (2019). *Metode penelitian pendidikan: Pendekatan kuantitatif, kualitatif, dan R&D* [Educational research methods: Quantitative, qualitative, and R&D approaches]. Alfabeta.

Timotheou, S., Miliou, O., Dimitriadis, Y., Sobrino, S. V., Giannoutsou, N., Cachia, R., Monés, A. M., & Ioannou, A. (2023). Impacts of digital technologies on education and factors influencing schools' digital capacity and transformation: A literature review. *Education and Information Technologies*, 28 (6), 6695–6726. https://doi.org/10.1007/s10639-022-11431-8

Victorynie, I., & Othman, A. B. (2023). Academic supervision practices integrated into the school supervisor support programs: Teachers' point of view. *International Journal of Asian Education, 4*(4), 381–392 https://doi.org/10.46966/ijae.v4i4.362

Copyrights