

Research Article

# The Effectiveness of Technical Guidance on the Teaching Skills of Elementary School Teachers

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## ABSTRACT

This study examines the effectiveness of the Independent Curriculum of Technical Guidance (Bimtek) in improving teachers' teaching skills through a structured professional development program. A one-group pre-experimental design, i.e. pre-test-post-test, was used by involving 59 teachers who participated in the training. The findings showed a significant improvement in teaching competence, especially in the application of project-based learning, formative assessment, and interactive teaching strategies. The post-test results showed an average improvement of 14.83 points compared to the pre-test score, which confirms the positive impact of the training. Teachers who received mentoring and post-training coaching showed greater skill improvement than those who only attended self-training sessions. In addition, the In-On-In model has proven to be more effective in encouraging sustainable pedagogical improvement. Despite these positive results, challenges remain, such as time constraints and access to ongoing support, which affect the effectiveness of Technical Guidance in the long term. Compared to other training models, Bimtek offers a cost-effective and adaptable approach to professional development, which ensures practical and sustainable solutions to improve the quality of teaching. These findings highlight the importance of a structured and sustainable teacher training program to support the successful implementation of the Independent Curriculum in primary schools.

**Keywords:** Technical Guidance; Teaching Skills; Teachers; Elementary School

## 1. INTRODUCTION

Education in Indonesia continues to undergo changes and adaptations to improve its quality and adapt to the needs of the times. One of the strategic steps taken is the development of a curriculum that is more flexible, innovative, and competency-based to answer the challenges of the 21st century (Damanik et al., 2024; Sijabat et al., 2023). The Merdeka Curriculum is present as a solution that provides flexibility to educational units and educators in developing learning strategies that are more relevant to the needs of students. This curriculum emphasizes deeper learning, is not rushed, and provides space for students to explore their potential to the fullest. In addition, the Independent Curriculum also emphasizes strengthening character and mastering competencies that are in line with the needs of the times (Musyaffa et al., 2023; Pak et al., 2020). This curriculum change is a response to the need for an education system that is more adaptive to technological developments and global demands (Stornaiuolo et al., 2023).

However, in its implementation, there are still various obstacles faced by teachers. Based on the results of observations on September 20, 2024, it was found that many teachers experienced difficulties in implementing the Independent Curriculum due to a lack of in-depth understanding of the concept and approach. Some aspects of learning such as the application of formative assessments, the use of project-based learning models, and the use of technology in learning are still not optimal (Mauliddina & Irianto, 2023; Rohmah et al., 2024; Sonzarni & Qolbiyah, 2022). In addition, the data on teacher teaching skills pretest shows that several pedagogical aspects still need to be improved, such as perceptual skills which only reach 52%, competency delivery by 55%, mastery of material by 68%, learning strategies by 57%, and the use of learning resources which is still at 60%. These figures show that teachers still face obstacles in adapting more innovative learning methods and in accordance with the principles of the Independent Curriculum (Leuwo et al., 2024).

This condition shows that there is a gap between ideal expectations and reality on the ground. Ideally, the Independent Curriculum is designed to improve the quality of education and enable teachers to be more innovative in teaching (Damanik et al., 2024). However, limitations in training and lack of continuous mentoring have caused the implementation of this curriculum to not run optimally in various schools. One of the biggest challenges is the low self-efficacy of teachers in adapting their learning approach to the principles of the Independent Curriculum, as found in a study on the effectiveness

of independent curriculum in secondary schools in Indonesia (Rohmah et al., 2024). Therefore, a more systematic and sustainable approach is needed to improve the readiness and competence of teachers in implementing the Independent Curriculum effectively.

One of the strategies that can be applied to bridge this gap is through technical guidance (technical guidance). Technical guidance is a training method that is systematically designed to improve teachers' understanding and skills in implementing the Independent Curriculum more optimally (Musyaffa et al., 2023). This training aims to provide assistance to teachers in the aspects of planning, implementation, and evaluation of learning based on the Independent Curriculum. The results of previous research show that technical guidance has a positive impact on increasing teachers' understanding of the new curriculum, increasing confidence in teaching, and encouraging the application of more effective and innovative learning methods (Damanik et al., 2024; Sijabat et al., 2023). In addition, technical guidance has also been proven to be able to overcome some impasse in teachers' understanding of the new curriculum and improve the quality of their learning planning (Musyaffa et al., 2023; Pak et al., 2020). With continuous technical guidance, teachers will receive more intensive assistance, especially in aspects of project-based learning, formative assessments, and more flexible teaching strategies (Limiansi et al., 2023).

This research focuses on the effectiveness of the Independent Curriculum technical guidance in improving teachers' teaching skills, with a limited scope to teachers who have followed the technical guidance and implemented this curriculum in their schools. This research has high relevance to various previous studies that discussed the implementation of the Independent Curriculum, but offers novelty by emphasizing empirical analysis of the effectiveness of technical guidance as a strategy to improve teachers' skills (Damanik et al., 2024; Musyaffa et al., 2023). Previous research has mostly discussed obstacles in curriculum implementation, but there are still few studies on the effectiveness of technical guidance in improving teacher readiness. Therefore, this research is expected to provide new, more specific insights related to the effectiveness of technical guidance in supporting the successful implementation of the Independent Curriculum.

The urgency of this research lies in the urgent need to improve the quality of teaching in the era of the Independent Curriculum. If there is no appropriate intervention, then the potential of the Independent Curriculum as an instrument to improve the quality of education will not be realized optimally (Sonzarni & Qolbiyah, 2022; Limiansi et al., 2023). Therefore, this study aims to provide empirical data on how technical guidance can be maximized to improve teachers' teaching skills and create more meaningful learning for students. With a more comprehensive understanding of the effectiveness of technical guidance, it is hoped that education policies related to strengthening teacher capacity in the implementation of the Independent Curriculum can be designed more appropriately and evidence-based (Musyaffa et al., 2023).

Specifically, this study aims to analyze the effectiveness of the Independent Curriculum technical guidance in improving teachers' teaching skills, identify the main challenges faced by teachers in implementing the Independent Curriculum after participating in technical guidance, and explain optimal strategies in the implementation of technical guidance in order to have a more significant impact on improving the quality of learning (Damanik et al., 2024; Pak et al., 2020). Thus, this research not only contributes to the development of theories regarding teacher capacity building strategies, but also provides recommendations that can be applied in education policies to strengthen the quality of teaching in primary schools (Sijabat et al., 2023).

The results of this study are expected to have theoretical and practical contributions. From a theoretical perspective, this research will add insight into the effectiveness of technical guidance in the context of developing teacher professionalism in the era of the Independent Curriculum. From a practical point of view, this research will provide recommendations for the government, educational institutions, and teachers in developing more effective and sustainable technical guidance strategies. Thus, this research not only provides a deeper understanding of the importance of technical guidance in improving teachers' teaching skills, but also offers concrete solutions in order to optimize the implementation of the Independent Curriculum in elementary schools.

## 2. RESEARCH METHOD

The design of this study uses a pre-experimental design. According to (Scott, 2015), pre-experimental design was chosen because there was no control group in this study. The type of design used is one-group pretest-posttest design, which is by comparing conditions before and after treatment. The one-group pretest-posttest design can be seen in [Table 1](#).

**Table 1. Research Design**

Group	Pretest (O1)	Treatment (X)	Posttest (O2)
Experimental	O1	X (Independent Curriculum Technical Guidance)	O2

### Description:

O1: Pretest results for the experimental group.

X: Treatment (Independent Curriculum Technical Guidance) for the experimental group.

O2: Posttest results for the experimental group.

Participants and Sampling Techniques in this study includes 59 elementary school teachers from ten schools in Gugus Nakula, Selogiri District, selected based on their low pretest scores on teaching competency. Due to the small population size, total sampling was applied, meaning all 59 teachers participated in the study (Scott, 2017)). The training program focused on improving teachers' pedagogical abilities, such as lesson introduction techniques, classroom management strategies, interactive learning methods, and lesson closure effectiveness. Instrument and Measurements to ensure the accuracy of the findings, data was collected using tests, questionnaires, and structured observations. A pretest was administered before training to assess the baseline skills of teachers, followed by a posttest to measure the improvement after training. Additionally, a 30-item Likert scale questionnaire was developed to evaluate teachers' perceptions of the training. The questionnaire assessed aspects such as the relevance of training content, variation in teaching methods, instructor communication skills, training duration, and the availability of support facilities. To complement the questionnaire, direct classroom observations were conducted using a structured rubric, evaluating key teaching competencies such as lesson introduction, classroom interaction, use of teaching aids, and lesson closure. As for the details, it can be seen in [Table 2](#).

**Table 2. Data Collection Techniques and Instruments**

Yes	Method	Description	Assessment Instrument/Category
1.	Test	Pretest: Measure initial understanding before technical guidance. Posttest: Evaluate the improvement of teaching skills after technical guidance.	
2.	Questionnaire	Method: Likert Scale.	Indicators: Suitability of the material, training method, instructor attitude, duration, facilities. Instruments: Guidelines for the assessment of teaching assistance (PLP UNS 2024).
3.	Observation	Method: Rating scale.	Rating Categories: < 70: Less 71 – 80: Enough 81 – 90: Good 91 – 100: Excellent

The validity of this test is tested using the product-moment correlation formula:

Reliability is measured using Cronbach's Alpha formula:

$$r_{xy} = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{\{N \sum x^2 - (\sum x)^2\}\{N \sum y^2 - (\sum y)^2\}}}$$

Reliability is measured using Cronbach's Alpha formula:

$$\alpha = \frac{k}{k-1} \left( 1 - \frac{\sum s_j^2}{\sum s_x^2} \right)$$

Data analysis is carried out in three stages. The first stage includes an initial analysis to test for normality and homogeneity to ensure the suitability of the data for further statistical analysis. The second stage is the analysis of the instrument, which includes the validity and reliability test of the pretest and posttest. The final stage is data interpretation, where teacher performance is calculated using the following formula:

The effectiveness of the intervention was measured using the N-gain test:

$$\text{N-Gain} = (\text{Posttest} - \text{Pretest}) / (\text{Max Score} - \text{Pretest})$$

N-Gain Interpretation Categories:

N-Gain > 0.7 → High Gain

0.3 ≤ N-Gain ≤ 0.7 → Moderate Increase

N-Gain < 0.3 → Low Improvement

Hypothesis testing is carried out using t-tests:

$$s^2 = \frac{(n^1-1)s_1^2 + (n^2-1)s_2^2}{n^1+n^2-2}$$

The significance of the results was determined by comparing the t-count value with the t-table. If t-count > t-table, then the hypothesis is accepted, indicating that the Technical Guidance for the Implementation of the Independent Curriculum has a significant impact on improving teachers' teaching skills. Assessment techniques for pretest and posttest scores in measuring teaching skills use the following formula:

$$\text{Teaching skills} = \frac{\text{Score obtained}}{128} \times 100$$

Criteria for teachers' teaching skills are presented in [Table 3](#).

**Table 3. Teaching Skill Criteria (PLP 2024)**

Score Range	Criterion
< 70	Low
71 – 80	Moderate
81 – 90	Good
91 – 100	Very Good

The results of this analysis aim to contribute to understanding the effectiveness of Technical Guidance for the Implementation of the Independent Curriculum in improving the teaching skills of elementary school teachers.

### 3. RESULTS AND DISCUSSION

#### 3.1 Descriptive Statistics and Demographic Data

Understanding the population's initial conditions is essential to determining the research's validity. At this stage, a preliminary analysis is carried out to ensure that the data meets the assumptions required for statistical analysis. Population normality and homogeneity tests are performed to ensure that the data are distributed normally and homogeneously to be suitable for further analysis. The descriptive statistical analysis shown in Table 4 presents an overview of the data obtained before and after the intervention.

**Table 4. Descriptive Statistics of Data**

Test Method	Results
Average Pretest	67.44
Posttest Average	82.27
Average Increase	14.83
Standard Pretest Deviation	4.13
Standard Posttest Deviation	5.38

**Population Normality Test** Based on the results of the population normality test shown in [Table 5](#), all results indicate that the data is normally distributed as the p-value > 0.05.

**Table 5. Population Normality Test Results**

Class	Statistics	p-value	Conclusion
Experiment - Pretest	0.9618	0.3075	Usual
Experiment - Posttest	0.9867	0.9547	Usual

**The homogeneity** analysis in [Table 3](#) uses Levene's test with the assumption that Ho is accepted if the p-value > 0.05, indicating that the population has a homogeneous variance.

**Table 5. Population Homogeneity Test Results**

Test	Statistics	p-value	Conclusion
Pretest Homogeneity	0.0044	0.9475	Homogeneous
Posttest Homogeneity	0.9869	0.3244	Homogeneous

**Table 5.** The results of normality and homogeneity analysis showed that the data met the requirements for sampling using cluster random sampling. Furthermore, validation and reliability of the instrument will be carried out The validity test will be carried out using the Pearson Product Moment correlation method. The research instrument consists of six structured questions related to teaching skills. These questions are designed to assess teachers' competency before and after the intervention. The results of the validity test are shown in **Table 4**.

**Table 6. Instrument Validation Results**

Criterion	Question Number	Sum
Valid	1, 2, 3, 4, 5	5

**Table 6.** Showing the reliability analysis yielded an r-value of 0.86, which indicates that the instrument has good reliability. These questions are designed to measure different levels of teaching competencies, including lesson delivery, student engagement, classroom management, and assessment techniques. Pretest and Posttest Result the results of the pretest and posttest for teachers' teaching skills are shown in **Table 7**. The average teaching competency score in the experimental group was higher after the intervention.

**Table 7. Results of Pretest and Posttest Teaching Skills**

Score	Experimental Group
Pretest	67.44
Posttest	82.27

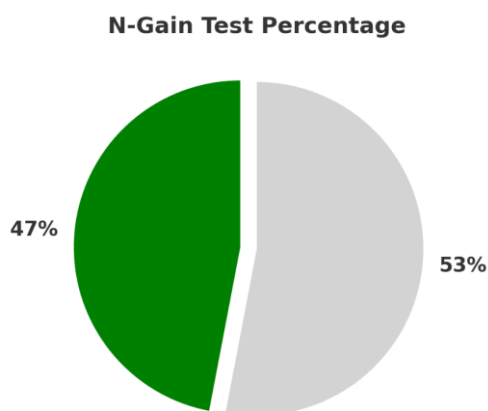
In **Table 7**. The results of the average teaching competency score in the experimental group after the intervention. To measure the effectiveness of the intervention, the N-Gain test was conducted to analyze the improvement of teachers' teaching skills. The N-Gain formula used is:

$$N\text{-Gain} = (\text{Posttest Score} - \text{Pretest Score}) / (\text{Ideal Score} - \text{Pretest Score})$$

**Table 8. N-Gain Test Results**

Class	N-Gain	Category
Experimental	0.47	Medium

As illustrated in **Table 8**, the N-Gain value of 0.47 indicates a moderate improvement in teaching competency after participating in the Independent Curriculum Technical Guidance. This result suggests that the technical guidance program effectively enhanced teachers' teaching skills by equipping them with the necessary pedagogical strategies aligned with the Merdeka Curriculum. The analysis confirms that the teachers who participated in the Technical Guidance experienced a significant increase in their ability to manage classrooms, implement interactive learning strategies, and facilitate student-centered learning. This finding supports the notion that structured professional development programs can effectively improve teachers' instructional competence, ultimately contributing to a more dynamic and engaging learning environment in primary schools. The results of the analysis showed that the experimental group experienced a more significant increase in teaching skills



**Figure 1.** Graph of N-Gain Teaching Skills

In **Figure 2**. Showing the number 47% is shown in green to show the N-Gain score of the experimental group, while 53% is shown in gray as the unreached part. The test results are shown in Table 8. The hypothesis testing criterion is that if the t-count > the t-table, then Ho is rejected and Ha is accepted.

**Table 9.** Teaching Skills t-Test Results

Test	t-Statistics	p-value	Conclusion
Post-test t-test	-11.7565	1.99e-17	Significant

Further results can be seen in **Table 10**.

**Table 10.** Teaching Skills t-Test Analysis Results

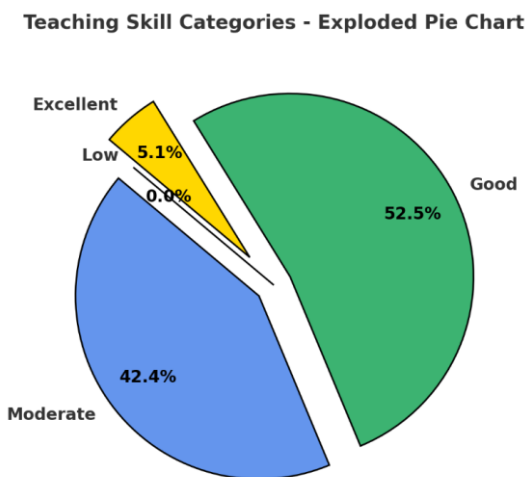
Hypothesis Test	Experimental Group
Total ( $\Sigma$ )	2557.55
Number of Subjects (N)	32
Average Score	79.92
Standard Deviation	3.80
Variance ( $S^2$ )	14.46
t-table ( $\alpha=0.05$ )	1.66
T-Count	11.76
p-value	1.99e-17
Conclusion	Significant

Based on **Table 9** and **Table 10**, the statistical test results indicate that the Independent Curriculum Technical Guidance significantly improved teachers' teaching skills. This is evidenced by the p-value being far below 0.05, confirming that the observed improvement is statistically significant. Additionally, Table 8 shows that the t-test result (t-count = 11.76) is greater than the t-table value of 1.66, with a p-value of 1.99e-17. These findings confirm a substantial enhancement in teaching competency after the implementation of Independent Curriculum Technical Guidance, demonstrating its effectiveness in improving instructional quality among teachers. To assess teachers' teaching competencies after the Independent Curriculum Technical Guidance, the following categories are used based on PLP (2024). The results are presented in **Table 10**.

**Table 11. Teaching Skill Categories**

Score Range	Category
< 70	Low
71 – 80	Moderate
81 – 90	Good
91 – 100	Excellent

Based on the posttest results, the percentage distribution of teachers' teaching skills in each category is shown in **Figure 2**.



**Figure 1. Teaching Skill Categories**

Based on **Table 10** and **Figure 2**, The results indicate that 52.54% of teachers fall into the "Good" category, while 42.37% of teachers are in the "Sufficient" (Moderate) category. Only 5.08% of teachers have reached the "Sangat Baik" (Excellent) category, and no teachers remain in the "Kurang" (Low) category.

### 3.2 Discussion

This study examines the effectiveness of the technical guidance (Bimtek) of the Independent Curriculum in improving teachers' teaching skills through a pre-experimental one-group pretest-posttest design. The results of the analysis showed a significant increase in teaching skills after teachers followed technical guidance, with an average pretest score of 67.44 increasing to 82.27, resulting in an increase of 14.83 points. The t-test (p-value = 1.99e-17, <0.05) indicated a significant difference before and after training, while an N-Gain Score of 0.47 indicated an improvement in the medium category. These findings are in line with various studies that affirm that technical training can improve teachers' pedagogic competence, both in planning, implementation, and evaluation of learning, especially in the implementation of a curriculum based on flexibility and innovation (Harsono, 2022; Widjajarto et al., 2024).

The success of technical guidance in improving teachers' teaching skills is influenced by several key factors, including a structured material delivery system, adequate training duration, and hands-on practice that allows teachers to apply new learning methods in the classroom. Previous research has shown that teachers who receive ongoing mentoring after training experience a more significant skill improvement than those who only attend one-time technical guidance (Harsono, 2022; Yulianti et al., 2022). In addition, hands-on practice-based training has also been proven to increase teachers' confidence in applying innovative learning methods and increase student participation in the learning process, which ultimately contributes to the effectiveness of the implementation of the Independent Curriculum in elementary schools (Limiansi et al., 2023; Yuhertiana et al., 2022).

The effectiveness of technical guidance in improving teachers' teaching skills is determined by the relevance of the training materials, delivery methods, and post-training support. Teachers who feel that the technical guidance materials are in accordance with their needs are more likely to adapt the Independent Curriculum, especially in the application of

project-based learning and formative assessment. The In-On-In model proves to be more effective as it provides hands-on experience and ongoing feedback. Teachers who received mentoring after technical guidance showed a more significant improvement in skills compared to those who only attended short training (Sánchez-Cabrero et al., 2021; Smolkowski et al., 2022). Post-training support also plays an important role in the sustainability of teacher upskilling. Access to learning communities or mentoring helps teachers implement innovative learning strategies and manage classrooms more effectively. Research shows that technical guidance combined with coaching and individual mentoring is more impactful than one-time training, as it allows for adjustment of learning methods based on real conditions in the classroom (Ma et al., 2022; Smolkowski et al., 2022). Therefore, technical guidance needs to be designed not only as a theoretical session, but also involves hands-on practice and ongoing mentoring to ensure its impact is more optimal.

Compared to other training models, technical guidance (Technical Guidance) is more effective in improving teachers' teaching skills because it combines theory with hands-on practice. Self-learning-based training, such as online modules or video tutorials, is often less effective due to the lack of interaction and direct feedback, so teachers have difficulty adapting new methods independently. Conventional workshops, although they provide broader theoretical exposure, tend to have less impact because they are one-time without follow-up assistance. Meanwhile, coaching and mentoring offer more personalized and ongoing mentoring, but the implementation takes longer and costs more. Research shows that the combination of Technical Guidance with the In-On-In model and mentoring is more optimal in improving teaching skills because it provides hands-on experience, reflection, and post-training support, allowing teachers to be more confident in implementing the Independent Curriculum in the classroom (Ma et al., 2022; Sánchez-Cabrero et al., 2021; Smolkowski et al., 2022).

The effectiveness of technical guidance in improving teachers' teaching skills is determined by the quality of the material, post-technical mentoring, and the duration and model of training. It is easier for teachers to understand and implement the Independent Curriculum if the technical guidance material is directly linked to classroom practice, while continuous mentoring allows teachers to more effectively implement new learning strategies (Abad Robles et al., 2020; Ceneda et al., 2020; Rahman et al., 2024). Research shows that the combination of mentoring and coaching is more effective than one-time training, as it provides teachers with the opportunity to evaluate and adjust the methods applied (Sunder & Prashar, 2021). In addition, In-On-In-model-based training is superior to short training, as it creates a comprehensive learning cycle from theory, practice, to reflection (Ceneda et al., 2020). The practical implication is that technical guidance needs to be designed more systematically and sustainably so that its impact is more optimal in improving teacher competence. Theoretically, these findings reinforce that hands-on practice-based training and long-term mentoring are more effective than conventional models. Further research is recommended to explore professional development strategies that are more adaptive to the needs of teachers in the field (Sunder M & Prashar, 2023).

#### 4. CONCLUSION

Technical guidance (Bimtek) of the Independent Curriculum has proven to be effective in improving teachers' teaching skills through a systematic training approach, based on direct practice, and supported by continuous mentoring. The application of the In-On-In model allows teachers to not only understand concepts theoretically, but also implement innovative learning strategies such as project-based learning and formative assessments in a real-world classroom environment. In addition, training combined with mentoring and coaching has a more significant impact than the one-time training model without follow-up. However, the effectiveness of Technical Guidance is still influenced by factors such as the quality of the material, the duration of the training, and the continuity of support after the training. With a more adaptive and needs-based approach for teachers, Technical Guidance can be a flexible and efficient strategy in supporting the successful implementation of the Independent Curriculum and improving the quality of teaching in a sustainable manner. The implications of this study emphasize the need to strengthen teacher professional development programs that are more systematic, structured, and sustainable to support educational transformation in elementary schools.

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