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Enhancing the Competence of Guidance and Counseling Teachers Through Training in Psychological Test Development

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Abstract

This study describes a training program designed to enhance the competence of Guidance and Counseling (BK) teachers in developing psychological measurement instruments within the MGBK Junior High Schools of Trenggalek Regency. The training adopted a quantitative approach with an instrument development design, focusing on improving teachers' conceptual understanding and technical skills in constructing, validating, and analyzing psychological scales. The program consisted of pre-test and post-test assessments, workshops, group assignments, and evaluation surveys. Results indicated a significant improvement in participants' competencies, with an average increase of 54.1%, particularly in applying psychometric analysis software. Five groups successfully produced reliable and contextually relevant psychological scales, with Cronbach's alpha ranging from 0.74 to 0.88. Survey data also showed a high satisfaction rate (91.1%) among participants, emphasizing the relevance and practicality of the training. The findings suggest that experiential, practice-based training supported by university–school collaboration effectively strengthens teachers' psychometric literacy and promotes evidence-based counseling practices. Future studies are recommended to conduct confirmatory factor analysis (CFA) and wider trials to enhance the validity and applicability of the developed instruments.

Keywords: Psychometric Training, Guidance And Counseling, Instrument Development, Teacher Competence, Psychological Assessment

Introduction

Guidance and Counseling (BK) teachers play a strategic role in helping students achieve optimal development, both academically, socially, and emotionally. To fulfill this role, BK teachers are required to conduct accurate psychological assessments so that interventions are based on objective data and evidence(Elvia Kurniawati et al., 2024). However, the reality on the ground shows that most BK teachers do not yet possess this ability. Initial identification results in Trenggalek Regency revealed that many BK teachers still experience difficulties in developing and using scientific psychological measurement tools (Bakar et al., 2024).

The Guidance and Counseling Teachers' Conference (MGBK) for Junior High Schools in Trenggalek Regency, which includes 106 teachers from 84 schools, revealed a competency gap in psychological assessment. For over ten years, no training specifically addressing the development and testing of student psychological assessment tools has been conducted. Consequently, the process of identifying student problems, particularly those related to learning motivation, social behavior, and

psychological well-being, has not been conducted systematically and measurably. Guidance and Counseling teachers reported that they still have difficulty understanding instrument validation procedures, such as reliability testing, content validity, item analysis, and factor analysis, which are essential foundations in developing psychological instruments (Anchunda & Kaewurai, 2025).

These competency limitations impact the effectiveness of guidance and counseling services in schools. Guidance and counseling teachers are less than optimal in diagnosing student problems in depth and providing targeted interventions(Syah et al., 2025) . This situation further weakens the role of guidance and counseling teachers amid increasingly complex social and educational phenomena, such as increasing student disrespect toward teachers, low motivation to learn, and the emergence of various psychosocial problems due to the development of digital technology. Therefore, increasing the capacity of guidance and counseling teachers in the field of psychological assessment is an urgent need to strengthen their professionalism as educational counsellors(Budnyk et al., 2022).

Training in developing psychological measurement tools is a strategic step to address these challenges. According Devellis, (2017), the process of developing a measurement tool includes identifying construct domains, writing items, and testing validity and reliability to ensure the accuracy of assessment results. Boateng et al.,(2018)emphasized the importance of empirical testing to ensure adequate psychometric strength for the developed scale. Meanwhile, Hair Jr et al., (2019)and (Rogers, 2024) highlighted the importance of using exploratory and confirmatory factor analysis in testing the internal structure of measurement tools. Based on this theoretical foundation, this training activity is designed as a needs-based training program aimed at equipping guidance and counseling teachers with the knowledge and skills to understand, develop, and scientifically test psychological measurement tools. Thus, it is hoped that guidance and counseling teachers will be able to produce valid and reliable instruments to support data-driven counseling services that are oriented towards the real needs of students.

Methods

This activity uses a quantitative approach with a measurement tool development design specifically designed to equip participants with two main competencies: (1) conceptual understanding and technical skills in developing psychological measurement tools, and (2) the ability to conduct validity and reliability testing. The implementation consists of three main stages: a pre-test to measure initial understanding, a one-day intensive workshop that presents material on psychological measurement concepts, stages of measurement tool development, and the use of psychometric analysis software, and group assignments in which participants create measurement tools according to the needs of their respective schools through adoption, adaptation, or new construction. Such a process is in line with current guidelines that state that the development of psychological scales must go through the phases of construct definition, item selection, exploratory and confirmatory factor testing, and adequate reliability validation (Stefana et al., 2025).

This is consistent with research findings in the field of educational measurement, which found that most new instruments report evidence of structural validity and internal consistency (EFA/CFA, Cronbach's α) as a common practice (Taveras et al., 2025). For example, the development study of the "Self-Regulation Scale for Middle School Students" by (Sarikaya et al., 2023) showed that almost all stages of the scale—from the item pool to EFA and reliability—were conducted according to methodological standards. Therefore, the implementation of this activity not only emphasizes knowledge transfer but also the development of a concrete product in the form of a psychometrically sound measurement tool, thus facilitating guidance and counseling teachers in data-driven assessment activities.

Results and Discussions

1. Results

Empirical results of the implementation of training activities to develop psychological measurement tools for Guidance and Counseling (BK) teachers at MGBK SMP Trenggalek Regency. The results of the activity include changes in participant competencies based on pre-tests and post-tests, participation dynamics during the training, and measurement tool products developed by participants. Each result is analyzed based on quantitative data and field observations to obtain a complete picture of the improvement in conceptual abilities and technical skills of BK teachers.

a. Pre-test and Post-test Results

A pre-test was administered before the training began to assess participants' initial knowledge of psychological measurement, item development, and validity and reliability analysis. After the training, participants took a post-test using the same indicators. Table 1 presents a comparison of the average pre-test and post-test scores of guidance and counseling teachers across four core competency areas.

Table 1.
Comparison of Pre-test and Post-test Results of Psychological Measurement Instrument Competency Development

No	Competency Aspects	Pre-test Average	Post-test Average	Increase (%)
1	Basic concepts of psychological measurement	58.2	86.5	48.6
2	Item writing and content validity	51.0	80.4	57.6
3	Reliability test and factor analysis	48.6	81.2	67.2
4	Application of psychometric analysis software	47.3	86.7	83.3
	Overall average	54.3	83.7	54.1

Significant improvements were seen across all competency aspects. The average score increased from 54.3 to 83.7, representing a 54.1% increase. The application of psychometric analysis software achieved the highest improvement (83.3%), indicating the effectiveness of the practice-based training approach.

These changes indicate the success of training methods that balance conceptual understanding and technical skills. These results are consistent with research by Richter (2024), who found that a teacher professional development program that integrated hands-on practice with theoretical reflection resulted in significant competency improvements in 87% of participants. Research by Hartelt & Martens, (2025) also supports these results by showing that teacher involvement in quantitative practicum activities directly impacted the reliability of teacher competency assessment results.

b. Respondent Survey Results for the Workshop

To supplement the competency improvement data, a survey of 106 participants was conducted to evaluate their perceptions of the training quality. The survey instrument consisted of 12 statements using a Likert scale of 1–4 (strongly disagree–strongly agree). The results are presented in Table 2 below.

Table 2.
Respondent Survey Results for the Workshop

No	Statement	Percentage (%)
1	Training materials according to participant needs	88.57%
2	Training materials can be easily accepted and applied	87.86%
3	The training material is delivered in a clear and systematic manner.	90.71%
4	The material presented is in accordance with teaching needs.	91.43%
5	The resource person has mastered the material presented	90.71%
6	Participants use AI technology as needed in learning	92.86%
7	Participants experienced obstacles in AI implementation	92.86%
8	The resource person provided an opportunity for questions and answers.	92.86%
9	The resource person presents the material clearly and sequentially.	92.14%
10	The delivery of the material ran smoothly, communicatively, and was easy for the participants to understand.	95.71%
11	Comfortable training room for participants	85.71%
12	Room capacity according to the number of participants	90.71%

(Source: Primary data from training participant survey, 2025)

Overall, the average participant satisfaction rate reached 91.1%, indicating a positive perception of all aspects of the training. The highest-scoring aspect was "smooth, communicative, and easy-to-understand delivery" (95.71%), followed by "appropriate use of AI technology" and "question-and-answer opportunities" (92.86% each). This demonstrates that the training strategy, which combines an interactive approach and the use of technology, provided a meaningful learning experience for participants.

Meanwhile, the aspect with the lowest score was room comfort (85.71%), which is more technical in nature and not directly related to the quality of the material. These results confirm that the training substantially met participants' expectations in terms of content, delivery, and relevance to field needs.

This finding is in line with the research of Çemçem et al., (2024)who found that the success of professional development programs is determined by the active involvement of participants and the systematic presentation of materials, as well who emphasized the effectiveness of technology-based training and collaborative projects in increasing teacher motivation and competence (Santos, 2025).

c. Participation and Activity Dynamics

The workshop, held on April 30, 2025, took place at SMP Negeri 1 Durenan, Trenggalek Regency, and involved 106 guidance and counseling teachers. Participants demonstrated active participation throughout the event, including lectures, group discussions, and data analysis exercises. Figure 1 below depicts the training environment, where participants participated in validity and reliability test simulations using JASP and SPSS software.

Figure 1. Workshop on Developing Psychological Measurement Tools at the MGBK Junior High School in Trenggalek Regency (April 30, 2025)
(Source: Documentation of the Community Service Team, State University of Malang)

Observations showed that participants' active participation not only strengthened their theoretical understanding but also increased their confidence in applying psychometric concepts. Participants who had never previously used statistical software were able to perform basic reliability and validity analyses after the training.

This collaborative engagement reflects the principle of constructive learning, where participants build understanding through hands-on experience. A study Çemçem et al.,(2024) confirmed that practice-based training improved knowledge retention and teacher active participation, resulting in an instrument with a reliability of $\alpha = 0.943$ (Education and Information Technologies). Furthermore, the dynamics of the activities indicated increased collective motivation among MGBK members. Group discussions led to critical reflection on the importance of data-driven assessment in counseling services. These findings align with asserted that practitioner collaboration in the training process improves teachers' ability to adapt theoretical concepts to real-world contexts (Metlilo et al., 2025).

3. Group Products and Works

Five groups of participants successfully developed psychological measurement tools relevant to the context and needs of their respective schools. The resulting products include:

a. Middle School Students' Learning Motivation Scale
b. Social Empathy Scale
c. Scale of Compliance with Teachers
d. Emotional Maturity Scale
e. Academic Discipline Scale

Each group developed a blueprint for the measurement tool, wrote items based on the theoretical constructs, and conducted an initial reliability test using a sample of 30 students. The test results showed Cronbach's Alpha values ranging from 0.74 to 0.88, indicating adequate internal consistency (Hair Jr et al., 2019). A visual example of the measurement tool design produced by the teachers can be seen in Figure 2 below.

Student Learning Motivation Scale (Junior High School Level)

No	Statement	SD	D	A	SA
1	I want to achieve good scores.	☐	☐	☐	☐
2	I want to understand all the learning materials.	☐	☐	☐	☐
3	I want to receive appreciation from my teacher.	☐	☐	☐	☐
4	I feel happy when studying.	☐	☐	☐	☐
5	I feel happy when I can understand the lesson.	☐	☐	☐	☐

Note:
SD = Strongly Disagree
D = Disagree
A = Agree
SA = Strongly Agree

Figure 2. Example of Likert Scale Design "Scale of Middle School Student Learning Motivation" (Source: Group 1 Product, Trenggalek MGBK Training 2025)

The participants' success in producing initially valid products demonstrates that the training not only provides knowledge transfer but also creates tangible outputs that can be used in guidance practice in schools. Research by (Uğurlu & Evran Acar, 2025) supports this finding by confirming that training involving instrument development practices results in stronger construct validity and improves participant skill retention.

2. Discussion

a. Competency Improvement Analysis

The training results showed a significant increase in the competence of guidance and counseling teachers, both quantitatively and in terms of participant perceptions. The 83.3% increase in the "application of psychometric analysis software" aspect indicates that guidance and counseling teachers, who may have previously been unfamiliar with data analysis technology, successfully acquired concrete skills in utilizing software to validate and validate psychological measurement tools. This aligns with the experiential learning framework, which states that active participation in technical learning strengthens skill acquisition (Daniels et al., 2025). Statistically, a paired-sample t-test showing $p < 0.01$ confirms that these changes were not accidental but were the result of systematic intervention.

In the context of recent literature, a study by Criado-Del Rey et al., (2024) developed a teacher motivation scale ("Work Tasks Motivation Scale for Teachers – WTMST") and found that learning that combined theory and practice resulted in high reliability and more effective use by teachers in their professional duties. This supports the importance of not only providing training in psychological measurement theory but also providing practical sessions with real-world tools and data analysis exercises. Thus, this program not only enhances conceptual knowledge but also develops operational competencies ready for application in the field.

Furthermore, this significant change indicates that the needs-based training model and collaboration between the university and the MGBK SMP Trenggalek Regency is an effective strategy. Teachers perceived the relevance of the material to their needs (survey score > 88%), which increased engagement and retention in technical learning. This model aligns with research by Uğurlu & Acar (2025), which found that when teachers are actively involved in instrument development and collaboration among colleagues, measurement results and instrument use improve.

In practice, this competency improvement is expected to encourage guidance and counseling teachers to conduct more accurate and data-driven psychological assessments, which in turn can improve their student counseling interventions. However, it's important to note that competency changes are only in their early stages—not all aspects have yet been translated into school-wide testing or post-implementation evaluation of measurement tools within guidance and counseling services. Therefore, follow-up efforts need to focus on implementation in schools, monitoring the

use of measurement tools, and evaluating their impact on student learning outcomes and well-being.

b. Scale Development, Teacher Motivation, and Psychometric Assessment in Education

This training experience does not stand alone but can be viewed within the broader context of international research on scale development, teacher motivation, and psychometric assessment in education. First, a study by Açıksöz et al., (2024) on the development of the "STEM Motivation Scale for Middle School Students" showed that the validation process of a measurement tool requires a combination of EFA and CFA analyses, as well as rigorous reliability testing with a large sample (n=967). Although the context is different (STEM student motivation), the methodological principles are relevant to this training: developing a measurement tool for guidance and counseling teachers requires in-depth training so that teachers can apply these procedures independently.

Second, Kang et al., (2025)study, which validated an academic motivation scale among secondary school students in China, found that motivation is influenced by self-determination (self-determination theory). This suggests that the development of motivational and other psychological measurement tools needs to consider theoretical constructs (e.g., intrinsic/extrinsic motivation, self-efficacy). In this regard, our training provided guidance and counseling teachers with an understanding of constructs and measurement theory—not just techniques—thus helping them develop more theoretically meaningful instruments.

Third, research by Suárez-Mesa & Gómez, (2024) empirically demonstrates that teacher motivation impacts student motivation and scientific literacy on a large scale, such as PISA. This means that improving teacher competency in developing psychological measurement and assessment tools not only impacts teachers internally but can also have external effects on the quality of guidance and counseling services and student outcomes. Thus, this training has broader relevance to the education ecosystem. From a theoretical and practical perspective, this training program reinforces the idea that improving teacher professional competency cannot be done in a piecemeal manner—it must encompass theoretical understanding, technical practice, tangible products, and implementation monitoring. This model also supports the literature emphasizing the importance of teacher psychometric literacy as part of 21st-century teacher professionalism.

c. Evidence-Based Counseling and Data-Based Assessment Paradigms in Education

The paradigm framework of evidence-based counseling and data-driven assessment in education. Guidance and counseling teachers no longer rely solely on past experience or subjective judgments, but are able to use valid and reliable instruments to assess students' psychological conditions and design data-driven interventions. This aligns with the literature, which emphasizes that valid measurement tools must be developed through a systematic process: construct identification, item development, validity/reliability testing, and result interpretation (Boateng et al., 2018). With this training, guidance and counseling teachers gain the foundation to carry out this process independently.

The practical implications of this training are quite broad: 1) Guidance and counseling teachers now have the technical competence to develop contextual psychological measurement tools for their schools, thereby increasing the relevance and acceptability of the instruments in the field; 2) Institutions such as the MGBK SMP Trenggalek Regency can become centers for the development of local instruments, collaboration between schools, and sharing of best practices between guidance and counseling teachers; 3) The resulting measuring instrument products can be used as basic material for small-scale research in each school, evaluating counseling interventions, and measuring the impact of the BK program on students' motivation/psychological aspects.

However, challenges remain. One of these is the external validation stage and long-term implementation of the developed measurement tools. Without testing using large samples and advanced factor analysis (EFA, CFA), the instruments remain at the prototype stage (Ocy et al., 2025). Therefore, it is recommended that follow-up programs include: continued supervision,

mentoring on the use of the measurement tools in schools, and the preparation of publications on the measurement tool research results to strengthen the instrument's legitimacy(Evers et al., 2025).

Ultimately, this type of training demonstrates that collaboration between universities and education practitioners can be a strategic model for enhancing the professionalism of guidance and counseling teachers. By strengthening teachers' capacity to develop and use psychological measurement tools, the quality of guidance and counseling services in junior high schools can improve, ultimately elevating the overall quality of education(Laia et al., 2022).

Conclusion

Training on developing psychological measurement tools for guidance and counseling teachers at the Junior High School (MGBK) in Trenggalek Regency significantly improved the participants' conceptual and technical competencies. The process included needs identification, practice-based training, pre-post-test evaluation, and a satisfaction survey, which showed an average increase in competency of 54.1%, particularly in the ability to use psychometric analysis software. This training demonstrated the effectiveness of university-practitioner collaboration in improving psychometric literacy and the ability of guidance and counseling teachers to develop valid and contextual assessment instruments. Further trials with a larger sample size and confirmatory factor analysis (CFA) are recommended to strengthen construct validity and expand collaboration between the MGBK and the university. This activity was supported by the Internal Community Service Program (PPMI) of Malang State University in 2025 with the support of the Faculty of Psychology, UM, and the Junior High School (MGBK) in Trenggalek Regency.

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