Developing self-assessment instruments to measure the pedagogical competence of prospective teacher students in the school field introduction program II

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Developing self-assessment instruments to measure the pedagogical competence of prospective teacher students in the school field introduction program II

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Abstract: *Self-assessment in the second schooling field introduction program can find out how far pedagogical competencies have been mastered by student teacher candidates. However, the assessment of the second school field introduction program was dominated by field supervisors without involving the role of student teacher candidates. This study aims to develop a self-assessment instrument to assess the extent of pedagogical competence when students practice teaching in partner schools. The instrument developed adopts the development model from Plomp which consists of five phases, namely the initial investigation phase, the product design phase, the realization/construction phase, the test phase, evaluation and revision, and the implementation phase. A sample of 58 students was taken by purposive sampling. The instruments developed have been validated by evaluation experts and educational experts who are considered "Almost Perfect". The reliability index is more than 0.70, which means it meets the recommended criteria. The collected data were then analyzed through descriptive statistics. Self-assessment showed that 87% of students mastered pedagogic competence which consisted of five aspects, namely understanding students, designing lessons, implementing learning, implementing learning, and developing students' potential. Therefore, the developed instrument can be used to assess pedagogical competence because it can measure students' abilities in the second schooling field introduction program. This study also revealed that self-assessment in the second schooling field introduction program is very necessary because it is to determine the readiness of students to become teachers at school.*

Keywords: pedagogic competence, school field introduction, self-assessment instrument

INTRODUCTION

One of the main programs and activities at the Teaching and Education Faculty is the school field introduction program, which was formerly called the field experience program. This program aims to train prospective teacher students to master various competencies in the learning process in class. One of the important competencies that must be mastered by prospective teachers is pedagogic competence which consists of the ability to understand students, the ability to design learning, the ability to carry out learning, the ability to evaluate learning, and the ability to develop students' potential. Pedagogic competence is a very urgent competency and must be fully mastered by prospective teacher students because this pedagogic competence is an initial ability that can determine the continuity of learning to achieve the expected goals. Pedagogic competence is fundamental and a strategic key to achievement in school (Susanto et al., 2021); (Sopandi, W., & Handayani, 2019); (Syahrial et al., 2019).

The activity of training the pedagogic competence of prospective teacher students is one of the important factors of the programs and activities in the curriculum of the teaching and education faculty because this faculty must be able to prepare students as qualified future teachers. Training for prospective teachers requires careful planning, adequate training, appropriate and effective training strategies so that prospective teachers are able to carry out

learning well and respond to students' learning needs (Syahmaidi et al., 2021). Through this training, it is hoped that student-teacher candidates will not only learn teaching practice, but also learn how to manage classes, communicate skills, improve their abilities, and prepare learning tools. Mastery of teaching skills is very fundamental because prospective teacher students will become the nation's successors who can bring changes towards improving the quality of education through improving learning practices in the classroom. The development of pedagogic competence has great potential to increase student engagement in learning, both in primary and secondary education, as well as in further education (Lozano et al., 2017).

Based in Law No. 14 of 2005 concerning teachers and lecturers, argues that pedagogic competence is a set of knowledge, skills and, behaviors that must be owned, internalized and, mastered by teachers and lecturers carrying out their professional duties. Pedagogic competence is competence related to the ability to manage learning, student understanding, use of IT, use of learning models, curriculum development, evaluation of learning and development of students' potential in the learning process at school (Pahrudin et al., 2016); (Hartini et al., 2018). This pedagogic competence is a cornerstone of teacher success in managing learning practices in the classroom. Because, pedagogic competence is a competency that can determine the success of the learning process and student learning outcomes (Emiliasari, 2018). Therefore this competency needs to be mastered by prospective teacher students while participating in the school field introduction program. To train prospective teacher students to master pedagogic competence, previously they were provided with micro-teaching courses, after graduation, they were followed by an introduction to the field of schooling II program. For this reason, teacher training programs must be optimally developed to increase the pedagogical competence of prospective teachers (Yildis, 2018).

Based on the results of observations, interviews, and documentation that have been carried out, there is no specific pedagogic competence self-assessment instrument to measure the pedagogical competence of prospective teacher students participating in the school field introduction program. There is no clear assessment rubric, so the assessment is only general and does not specifically assess the pedagogic competence of prospective teacher students who are taking the field introduction course in Schooling II. Therefore it is necessary to develop self-assessment instruments for the pedagogical competence of teachers or prospective teachers on an ongoing basis (König et al., 2021).

It is hoped that in the future, this self-assessment instrument can measure and evaluate student pedagogical competence independently and honestly so that it can provide feedback from the assessment activities and can improve the quality of graduate student teacher candidates. This is in accordance with the results of research (Kerberlau-Berks, 2006), which states that self-assessment can make students realistic and more accurate in assessing themselves about expected learning goals. This self-assessment is also useful for monitoring the process and results of independent learning achievement (Abun, D., Magallanes, T., Marlene, T. N., Fredoline, J. P., & Madamba, 2021). The competence of student teacher candidates in understanding students, designing lessons, implementing learning, evaluating learning, and developing the potential of students is very important to be given as provision when student teacher candidates are involved in school as teachers. For this reason, a good self-assessment is needed which can be used to assess the pedagogical competence of prospective teacher students as a benchmark for continuous assessment in the second schooling field introduction program. Because so far the results of the assessment still depend a lot on lecturers and students have never been involved in the assessment process. Students are considered not eligible to assess their own performance because they are considered unable to decide on the assessment (Budiastuti et al., 2023); (Beumann, S., & Wegner, S, 2018); (Trisnawaty, W., Citrasukmawati, A, & Thohir, M, 2017). For this reason, it is very important to involve students as assessors in assessing their current performance.

In this regard, self-assessment of pedagogic competencies can be used by prospective

teacher students themselves, because this instrument will make it easy for prospective teacher students to identify strengths and weaknesses in mastering the pedagogic competencies they must achieve. This self-assessment is a process that requires students to identify, assess and evaluate the quality of understanding and skills during the learning process and may be improved in the future (McMillan, J, H., & Hearn, 2008); (Farisi, 2012). The use of continuous self-assessment can help student teacher candidates reflect on the achievement of pedagogical competence as a framework that describes and describes the level of teaching performance of student teacher candidates in mastering these competencies. This self-assessment also serves to collect self-information about the results of the teaching practice of prospective teacher students through measurements with clear indicators. Through this self-assessment approach, comprehensive and actual general pedagogical competencies and special skills can be found (Irina, 2011); (Mâ et al., 2013). Because the principle of this assessment must be able to encourage teache or prospective teachers to be able to carry out better learning, so that students will progress in their learning (Kartowagiran et al., 2019).

As an educational and teacher training institution that produces teaching staff, Universitas PGRI Yogyakarta has a stake in preparing quality teaching staff. Faculties have an important role in identifying the competency of student teacher candidates through training activities, as a form of reported performance (Carril et al., 2013). One of the competencies that need to be prepared from the start is pedagogic competence which is the core competency that must be mastered first by a prospective teacher. Through this self-assessment, prospective teacher students are re ed to be open and honest when carrying out the schooling field introduction program II. The results of this study will be very useful for self-assessment related to pedagogic competence in the second schooling field introduction program, which must be taken by student teacher candidates. Because assessment is the most important component in the learning process and the quality of assessment is one of the main characteristics of good learning (Supriyadi et al., 2019). For this the faculty must create good conditions for students, to develop professional skills and pedagogical competence so that students are able to develop creative and innovative ideas (Tilavova et al., 2020).

METHOD

The research method used in this research is research and development which adopts the Plomp model, with five stages, namely the initial investigation phase, th design phase, the realization/construction phase, and phases of test, evaluation, and revision (test, evaluation, and revision), and implementation (implementation). Because according to (Bright, R. L., & Gideonse, 1968) in (Budiastuti et al., 2023) this research and development can facilitate research that develops instructional objectives, strategies, teaching materials, and learning process .

The population in this study were students of the Faculty of Teaching and Education at PGRI Yogyakarta University who took the Field Introduction Program II course. The selected sample in this study w 58 student teacher candidates who were taken by purposive sampling, which came from the Elementary School Teacher Education Study Program, Early Childhood Teacher Education, Mathematics Education, History Education, Pancasila and Citizenship Education, English Education, Language Education and Indonesian Literature, Special Education, and Guidance and Counseling. The procedure for developing a self-assessment instrument is shown in Figure 1 below.

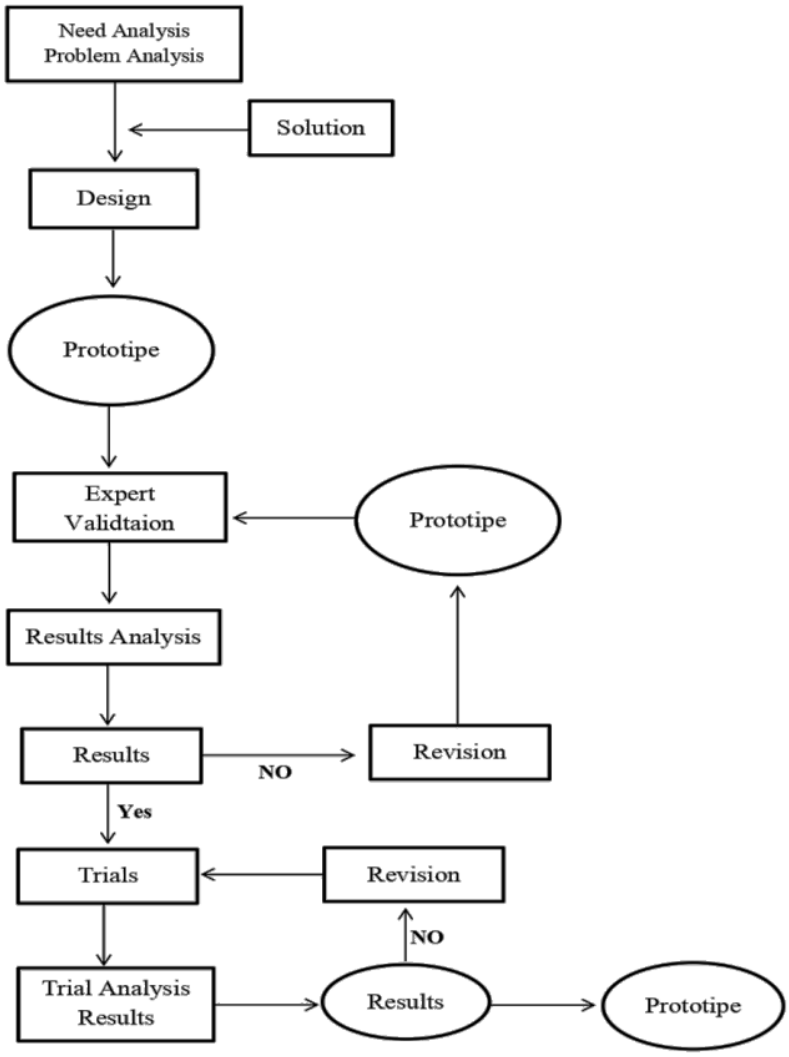

Figure 1. Procedure for preparing the self-assessment instrument

Table 1 describes the development of the pedagogic competence self-assessment instrument for prospective teacher students participating in the second schooling field introduction program. Pedagogic competency self-assessment data was collected through assessment sheets and rubrics with the categories Very Appropriate, Appropriate, Less Appropriate, Inappropriate, and Very Unsuitable.

Table 1. Pedagogic Competency Self-Assessment Instrument for Prospective Teachers

No.	Assessment Aspect	Assessment Coverage	Type of Instrument	Number of Items
1	Understanding of student	a. Pay attention to initial abilities b. understand learning difficulties c. understand the character	Self-assessment sheet	3 items
2	Learning design	a. determine learning objectives b. design lessons properly c. understand the proper method	Self-assessment sheet	3 items
3	Implementation of learning	a. managing proper learning b. implementing conducive learning c. Carry out dynamic learning	Self-assessment sheet	3 items
4	Learning evaluation	a. designing theoretical and practical assessments b. carry out test and non-test assessments c. planning remedies	Self-assessment sheet	3 items
5	Developing the potential of students	a. task reinforcement and feedback b. extracurricular assistance c. psychological reinforcement	Self-assessment sheet	3 items

Data was collected from expert judgment categorized based on the Content Validity Index (CVI), which is presented in Table 2. Meanwhile, the reliability of the instrument was measured using the Kappa inter-rater. Student teacher candidates who take part in the school field introduction program use instruments that have met the validity requirements to carry out self-assessments on aspects of pedagogic competence.

Table 2. Evaluation of the Kappa Statistical Value

Value of K	Interpretation
<0	Poor agreement
0 – 0.20	Slight agreement
0.21 – 0.40	Fair agreement
0.41 – 0.60	Moderate agreement
0.61 – 0.80	Substansial agreement
0.81 – 1.00	Almost perfect agreement

Source: (Lendis, J.R., Koch, 1977)

While the data analysis technique used in this research is descriptive analysis, to find out the percentage of mastery of the pedagogic competencies of prospective teacher students who take part in the second school field introduction program. Measurement of the pedagogic competence

of prospective teacher students is presented in Table 3 below.

Table 3. Categories of Pedagogic Competency Measurement

Score Intervals	Category
$4{,}2 < \bar{x}$	Very good
$3{,}4 < \bar{x} \leq 4{,}2$	Good
$2{,}6 < \bar{x} \leq 3{,}4$	Enough
$1{,}8 < \bar{x} \leq 2{,}6$	Not enough
$\bar{x} \leq 1{,}8$	Very less

Source: (S. Eko Putro Widoyoko, 2014)

FINDING AND DISCUSSIONS

Finding

This self-assessment instrument is to measure the extent to which pedagogic competence is mastered in the second school field introduction program, which was developed from the adoption of the Plomp model. The development of this instrument follows the flow suggested by Plomp. The first step is problem analysis and needs analysis of the second schooling field introduction program. In this step, it was found that the assessment of pedagogic competence was limited to the assessment of teaching exercises carried out by tutors and supervising lecturers, while self-assessment from students had never existed. The results of the problem and needs analysis found a solution to design a self-assessment instrument for student teacher candidates participating in the second school field introduction program.

The second step is to make a prototype self-assessment instrument based on the instrument grid that has been prepared. This prototype is then submitted to a team of experts for assessment and validation. Based on the analysis of the results of expert validation, the results of the self-assessment instrument need to be revised from the linguistic aspect. In the third step, the construction process is carried out again on the prototype of the self-assessment instrument. After being revised, the self-assessment instrument became a new prototype, and re-validation was requested from the expert. Then the fourth step, the prototype of the self-assessment instrument was tested in a limited way on prospective teacher students participating in the second school field introduction program. The results of the trial were then analyzed, and the results did not need revision, so the prototype of the self-assessment instrument was then used in the fifth step, namely the implementation of self-assessment by 58 selected students by purposive sampling representing study programs at the Teaching and Education Faculty of the PGRI Yogyakarta University. To determine how far pedagogic competencies have been mastered by prospective teacher students, appropriate descriptive measurement criteria are used to describe these competencies. While the validity of the instrument was measured by the Kappa inter-rater technique.

The results of the pedagogic competency self-assessment trial show that for the aspect of student understanding with an average score of 4.33 (87%), the aspect of learning design averages 4.45 (89%), the aspect of the implementation of learning averages 4.32 (86.4%), the learning evaluation aspect averaged 4.25 (85%), and the potential development aspect of students averaged 4.40 (88%). The results of the recapitulation of the pedagogic competency assessment can be shown in Table 4 below.

Table 4. Recapitulation of Pedagogic Competency Assessment

No.	Aspect	Average	Percentage (%)
1	Student Understanding	4,35	87
2	Learning Design	4,45	89
3	Implementation of Learning	4,30	86
4	Learning Evaluation	4,25	85
5	Potential Development of Learners	4,40	88
	Average	**4,35**	**87**

Based on the recapitulation of the pedagogic competency assessment in Table 4, it can be concluded that the average value of pedagogic competence is 4.35 or 87% which can be categorized as very good pedagogic competence, which is then shown in Figure 2 below.

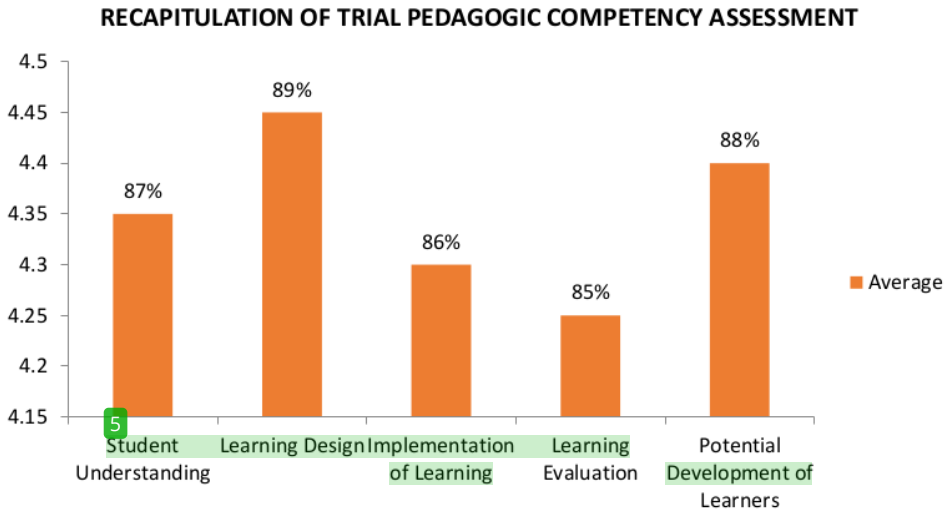

Figure 2. Pedagogic Competency Assessment Histogram

The results of students' self-assessments on aspects of student understanding are presented in Figure 3. Of the 58 students participating in the second schooling field introduction program, 89.66% were able to understand the potential of students, 86.21% understood students' learning difficulties, and understood the participants' character. students by 85.52%. This can be explained that the ability to understand student students is very good. When referring to the existing categories, students' in-depth understanding skills are very good, as shown in Figure 3 below.

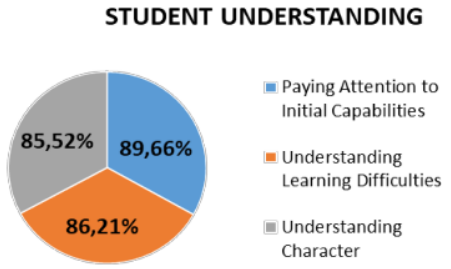

Figure 3. Diagram of Assessment of Student Understanding Aspect

While self-assessment on the aspect of learning design, four indicators of determining learning objectives obtained a percentage of 90.69%, designing learning reached 88.97%, and understanding of appropriate learning methods an achievement of 87.24%. An overview of the results of the second aspect of the self-assessment is shown in Figure 4 below.

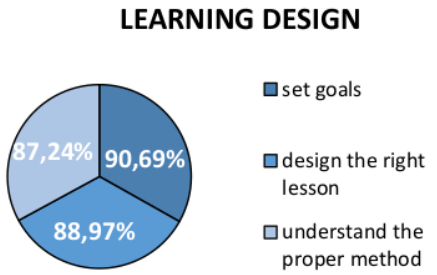

Figure 4. Learning Design Aspect Assessment Diagram

For self-assessment on the implementation aspect of learning, for the first aspect, namely optimal learning management, student achievement was 87.24%, while the implementation of the learning process reached 85.52%, and dynamic learning implementation was 85.52%. An overview of the results of the third aspect of self-assessment can be seen in Figure 5 below.

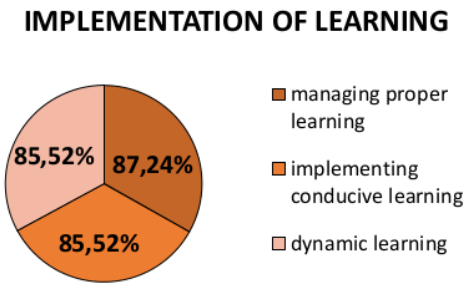

Figure 5. Diagram of the Assessment of the Implementation of Learning Implementation Aspects

For the fourth aspect of self-assessment, namely the design of learning evaluation, in the first aspect, namely the use of theoretical and practical assessment, the student score achievement was 85.52%, the use of test and non-test assessment was 86.21% while designing remedial programs, the student score achievement was 83.1%. The results of this aspect's self-assessment can be seen in the following diagram 6.

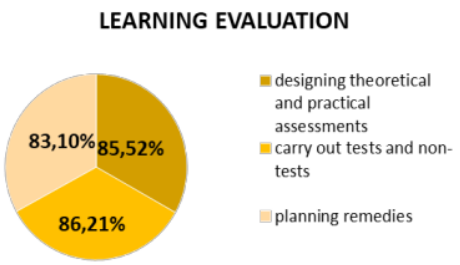

Figure 6. Learning Evaluation Aspect Assessment Diagram

The fifth aspect in students' self-assessment of the potential development of students, on the indicators of providing reinforcement and task feedback, student achievement was 90%, extracurricular assistance was 86.55%, and psychological stimulation reinforcement was 87.59%. The results of this self-assessment can be shown in Figure 7 below.

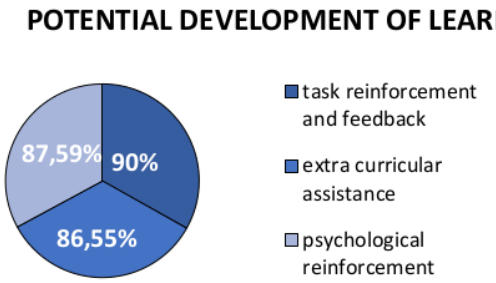

Figure 7. Diagram of Assessment of Potential Development Aspects of Learners

Discussion

The preliminary investigation stage is the stage of needs analysis or problem analysis. At this stage, data and information in the field are collected and identified according to related problems. The need for the teaching and education faculties is an instrument for self-assessment of pedagogical competence in an introductory field school II program that has never existed. The assessment so far is the assessment of teaching practices carried out by tutors and supervisors. For this reason, it is necessary to design competency development and special assessments, so that candidates educators realize to have new competencies (Andryukhina et al., 2016).

Furthermore, at the design stage, the design of a pedagogic competence self-assessment instrument was prepared with five aspects, namely the competence to understand students, the competence to design learning, the competence to carry out learning, the competence to evaluate learning, and the competence to develop students' potential. From each aspect, it is developed into fifteen indicators. The aspects assessed in the pedagogic competence assessment in students' understanding consist of three assessment indicators, namely understanding students' initial abilities, understanding students' initial difficulties, and understanding students' character; aspects assessed in lesson planning include three assessment indicators, namely determining learning objectives, designing appropriate learning, and determining appropriate learning methods; while the aspects assessed in the implementation of learning include three assessment indicators, namely managing to learn, carrying out the learning process, and dynamic learning. The aspects assessed in the pedagogic competency assessment in evaluating learning include three assessment

indicators namely; determining the appropriate type of evaluation, fully using test and non-test evaluations in a comprehensive manner, and designing and implementing remedial programs. While the aspects assessed in the pedagogic assessment in developing students' potential include three indicators, namely providing reinforcement and task feedback, accompanying students in extra-curricular activities, and providing psychological motivation to students.

In construction, a set of self-assessment instruments was developed to measure the pedagogic competence of prospective teacher students participating in the second school field introduction program. This stage includes designing the form of a self-assessment instrument, incorporating the substance of each aspect of the assessment, and identifying indicators for each of these aspects. One very important thing is the need for an assessment sheet for each indicator in the instrument development rubric, to check whether this self-assessment instrument needs revision or not. This self-assessment is effective for measuring self-ability and improving self-quality (Andrade, H., & Du, 2007); self-assessment allows students to be able to assess themselves and their shortcomings (Lias, N., Lindholm, T., Pahjanoksa-Mantyla, M., Westerholm, A., & Airasiknen, 2021); This self-assessment can also evoke a positive attitude of students (Zammi, M., Susilaningsih, E., & Supardi, 2018).

At the development stage, the construction of the self-assessment instrument was validated by three experts in the field of educational evaluation, language, and teacher education. The results of the validation test of the self-assessment instrument with the Content Validity Index (CVI) to find out how much the content validity coefficient of the expert judgment shows that the CVI value is 0.91 (almost perfect). These results have shown that the developed self-assessment instrument already reflects indicators of pedagogic competence, especially in the second schooling field introduction program.

The next step is a test or evaluation of selected students from participants in the second school field introduction program. Based on the recapitulation of the pedagogic competency assessment in Table 4 above, it shows that the average value of the pedagogic competence of prospective teacher students participating in the second school field introduction program is 4.35. This means that 87% of the 58 students in the selected sample can be categorized as a student's pedagogic competence in the very good category.

Through several stages of development, this assessment instrument can be used by students to conduct a self-assessment of pedagogic competence in an honest and independent second schooling field introduction program. The results of the self-assessment of pedagogic competence in Table 4 show that for aspects of student understanding with an average score of 4.33 (87%), aspects of learning design an average of 4.45 (89%), aspects of learning implementation with an average of 4, 32 (86.4%), the evaluation aspect of learning averaged 4.25 (85%), and the aspect of developing potential learners with an average of 4.40 (88%). From these five aspects, it can be concluded that 87% of the 58 students participating in the second schooling field introduction program were very good at mastering their pedagogical competencies.

In the assessment of the first aspect, namely the aspect of student understanding presented in Figure 3, it shows that of the 58 students participating in the second schooling field introduction program, 89.66% were able to understand the potential of students, 86.21% understood students' learning difficulties, and understand the character of students by 85.52%. This can be explained that the ability to understand student students is very good, with an average of 87.12%, based on the existing categories. Even though there are still around 12.87% of students who have not been able to understand the potential of students in learning.

Self-assessment on the second aspect, namely the aspect of learning design, for indicators of determining learning objectives the percentage of student achievement was 90.69%, designing learning was 88.97%, and understanding appropriate learning methods with an achievement percentage of 87.24%. If the average self-assessment of this second aspect is taken, the student achievement is 87.58%, which means that there are still 12.42% of students who have not been able to make a comprehensive learning plan.

For self-assessment on the third aspect, namely the implementation of learning, for the first aspect, namely optimal learning management, the percentage of student achievement was 87.24%, while the implementation of the learning process reached 85.52%, and the implementation of dynamic learning was 85.52%. If the average is calculated, the competence in the implementation of learning students get a percentage score of 86.09, which can be explained that there are still 13.91% of students who have not been able to carry out the learning process in a conducive manner.

Meanwhile for the fourth aspect of self-assessment, namely the design of learning evaluation, in the first aspect, namely the use of theoretical and practical assessment, the student achievement score was 85.52%, the use of test and non-test assessment was 86.21%, while designing remedial programs, the achievement score students by 83.1%. The results of this self-assessment when averaged, the student achievement is 84.94%, which can be interpreted that there are still around 15.06% of students who do not understand the design of learning evaluation.

While the fifth aspect of student self-assessment is the aspect of developing students' potential, in the indicators of providing reinforcement and assignment feedback, student achievement is 90%, extracurricular assistance is 86.55%, and psychological stimulation reinforcement is 87.59%. The results of this self-assessment when averaged, the student competence in the fifth aspect is 88.04%, which can be explained that there are still around 11.96% of students who have not been able to optimally develop student potential.

Based on the self-assessment of prospective teacher students participating in the second schooling field introduction program, it was found that 87% of students had mastered pedagogic competencies, while 13% of students still had to learn more so that during the implementation of the schooling field introduction program they could master all aspects and assessment indicators, especially in competency assessment pedagogic.

The results of this study indicate that self-assessment instruments for pedagogic competence in the second schooling field introduction program need to be applied to train students to self-evaluate regarding students understanding abilities, learning design, learning implementation, learning evaluation, and aspects of developing students' potential. Equally important are supervisors, tutors, and managers of the school field introduction program periodically reviewing self-assessment instruments that are in line with developments in science and technology, so that faculties and universities can prepare graduates of qualified prospective teaching staff who have high competitiveness.

CONCLUSION

This study produced a self-assessment instrument to measure pedagogic competence in the second school field introduction program. The self-assessment instrument includes five aspects of assessment, namely student understanding, learning design, learning implementation, learning evaluation, and developing student potential. This pedagogic competency assessment instrument involves students participating in the second schooling field introduction program as assessors who objectively assess what has been done during teaching practice in the second schooling field introduction program. Because so far the assessment has been carried out by tutors at partner schools and supervising lecturers. For this reason, this self-assessment instrument needs to be carried out on an ongoing basis so that its level of effectiveness can be determined periodically. Implementation and socialization on a wider scale need to be carried out so that students participating in the second schooling field introduction program can optimally prepare for learning practices in schools.

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