Needs Analysis of Teacher Professional Development to Improve Competence

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ABSTRACT--*This study aimed to explore the needs analysis function in the implementation of teacher professional development programs so that teacher competence can be increased. Analysis was carried out on organizational, task, and career needs. The research method used was mixmethod with Self-Report Inventory instruments, interview guidelines, observation instruments, and guidelines for focus group discussions in Avicenna Junior High School by involving research samples, namely: the human resources department, principals and teachers. The results showed that the development program carried out so far was not maximally based on real needs in answering the problems of teachers in learning. This is indicated by the competency gap by a mean of 0.78. The effectiveness of teacher professional development programs is largely determined by the initial process of analyzing the development needs of teachers in solving learning problems in class. Therefore, in implementing a teacher's professional development program the first step that must be taken is to conduct a development needs analysis, specifically based on the needs of teachers.*

Keywords-- Needs analysis, Competence, Professional Teacher

I.   INTRODUCTION

A professional teacher must have the ability to carry out the main duties as an educator and instructor which includes the ability to plan, carry out, and evaluate learning outcomes. To produce an expected work, every teacher must always develop competence in carrying out the task (Bromley, 2018). With high competence, it is expected that the teaching and learning process will run well and will encourage student achievement to be high (Fauth et al., 2019; Douglas et al., 2008).

The spotlight on improving student achievement is in teacher competence. Steyn, (2010) stated that in improving the quality of learners must focus on the quality of teaching in the classroom, and more specifically on the teacher as a key to improving student performance. The effectiveness of school reform initiatives depends on the quality of teachers and the motivation of teachers to participate in training and implement innovations (Gorozidis & Papaioannou, 2014). As a result, teacher professional development (PD) has become the focus point of the initiative. One effort to develop teacher competence is through a continuous professional development (CPD) program that is promoted through teacher collective activities and training (Dedi Kurniady & Aan Komariah, 2018). However, some research showed that the CPD carried out is still not in accordance with needs (Dedi Kurniady & Aan Komariah, 2018; Andreas Schleicher, 2016)

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CPD which is an inseparable part of teacher career development and has been clearly stated in government regulations, there are deficiencies that hinder the effectiveness of the program. This is not only felt by Indonesia but also in other developing countries. Four problem themes were identified in the implementation of CPD, namely the inadequate contribution of school management to teacher CPD; teacher reluctance to participate in CPD activities; factors that prevent teachers from taking part effectively in CPD events; and inadequate knowledge provided by the CPD program (Geldenhuys & Oosthuizen, 2015).

The CPD problem has not had a significant impact on the high level of competence because CPD is not based on needs but based on existing offers or opportunities. Although there is a productive development of teachers when they participate in CPD activities. However, their participation must be based on their needs and in accordance with their competencies. Therefore, the CPD that should be followed should be grassroots starting from the planning, implementation, and evaluation of the CPD program offered (Geldenhuys & Oosthuizen, 2015). So that CPD management is needed which involves the teacher directly in the context of school-based management.

School-based management which is used as the principle of school management in Indonesia is the basis of CPD management. However, in schools there is no effective and efficient management of teacher competence improvement. This is the rationale for the assumption that the needs analysis process is not carried out in making the CPD program comprehensively, so the teacher professional development program has not been effectively achieved. Therefore, need analysis is carried out on teacher professional development at the organizational/school level, then at the task level such as subjects and other additional teacher assignments, and the personal level. By conducting needs analysis, it is expected to contribute to the effectiveness of teacher professional development and be able to determine various teacher professional development programs that are relevant and in accordance with the specific needs of teacher competence development both classically and individually.

II.   LITERATURE REVIEW

Teacher Professional Development

Professional teachers are people who have special abilities and expertise in the field of teacher training so that they can carry out their duties and functions as teachers with maximum abilities. Or in other words, professional teachers are people who are well educated, well trained and have rich experience in their fields. Therefore, in carrying out professional authority, teachers are required to have a diverse set of abilities (Moh Uzer Usman, 2017).

To become a professional teacher, besides having to meet certain needs, a professional teacher must also have several characteristics, namely: (1) Intellectual abilities obtained through education; (2) Specialized knowledge; (3) Practical knowledge that can be used directly by other people or clients; (4) Work techniques that can be communicated; (5) Capacity to organize work independently or self organization; (6) Emphasize the interests of others; (7) Code of ethics; (8) Community sanctions and responsibilities; (9) Wage system; and (10) Professional culture (Latifah Husien, 2016).

Teacher professional development program to become a professional teacher is a must. Because there are still many teachers who do not yet have the standard of ability to be considered as professional teachers when referring to some of the needs mentioned above. Professional development is a long career process in which teachers always develops teaching abilities in order to meet student learning needs.(Díaz-maggioli, 2004). In Professional Development, teachers need conceptual abilities such as principles, frameworks, and heuristics that govern

understanding, and practical tools such as strategies, methods, and practices that support teacher learning (Gore et al.,2017). Teacher professional development has several objectives, namely: (1) develops and adapts various teacher learning practices; (2) reflects the experience, research, and practice of teacher learning to meet the needs of students, both collectively and individually; (3) contributes to school professionalism, and when a practitioner interacts with the school community and external institutions; (4) relates to current educational thinking to maintain and develop good learning practices; (5) gives critical consideration to educational policies, specifically how to improve standards; and (6) improves the understanding of community development in teachers, especially information and communication technology (ICT) (Sonia Blandford, 2000).

Effective professional development considers several things, namely, the needs, interests of teachers and schools, and local government policies. Considerations include the personal and professional needs of teachers, individual learning preferences, and input on what and how they should learn (Hunzicker, 2011, Gore et al., 2017). Therefore, it is important to conduct an in-depth study of teacher professional development needs that consider the interests and needs of teachers and schools.

III.   TEACHER COMPETENCE

Teacher professional development is basically how efforts should be made in order to improve the competence of teacher learning. Where, competence is described as a complex combination of knowledge, skills, understanding, values, attitudes, and desires that lead to effective behavior (Poro, Yiga, Enon, Mwosi, & Eton, 2019). Competence as "knowledge, skills, attitudes, values, motivation and trust that people need to be successful in a job" (Kiymet Selvi, 2010). In supporting the quality of learning there are several competencies that must be possessed by the teacher, as follows: 1) professional knowledge (mastery of content and teaching methodology), 2) professional skills (pedagogy, class management, and student assessment), 3) personal characteristics (responsible, on time, etc.), 4) professional or personal ethical standards and values (produce teachers as good role models in schools and communities), and 5) professional development and lifelong learning (such as participation in professional teacher organizations and activities, and other elements that indicate a desire to improve the teaching profession)(Panggabean & Himawan, 2016)

The Government has set Teacher Competence Standards to be fully developed from 4 main competencies, namely: Pedagogical Competence, Personality Competence, Social Competence, and Professional Competence (Depdiknas, 2007). Pedagogic competence is the ability that must be possessed by teachers to the characteristics of students from various aspects such as moral, emotional, and intellectual. Personality competence, education is a planned process so that all develop through the learning process. Teachers as educators must be able to influence the direction of the process in accordance with the values that are considered good in society. Social competence, teachers in the eyes of the community and students are role models that need to be emulated and in everyday life. Social abilities include the ability of teachers to communicate, cooperate, sympathetic, and have a pleasant soul. Professional competence, which is the ability that teachers must have in planning and implementing the learning process (Depdiknas, 2008).

IV. Development Needs Analysis

Development needs analysis is a simple way to identify existing gaps in knowledge, as well as strengths and weaknesses in the process that allow or hinder effective training programs delivered (Hartoyo, 2017). Development needs analysis is a formal process that identifies needs as gaps between current results and expected results, which places those needs in order of priority based on the costs of meeting each need rather than cost, by selecting the most important needs (Kaswan, 2016). In conducting development needs analysis, development needs to be performed at three levels of analysis, namely: Organizational Analysis, Job Analysis and Individual (employee) analysis. As shown in the figure below.

Figure 1: Needs Analysis Process

From the figure above, the development needs assessment is carried out at three levels, namely; The organizational analysis determines the feasibility of training business, taking into account the company's business strategy, the resources available for training and development, and support by managers and colleagues for training and development activities. Individual analysis helps in identifying who needs training. Individual analysis involves (1) determination whether performance deficiencies are caused by lack of knowledge, skills, or abilities (training problems) or from motivational or job design problems; (2) identification of who needs training; and (3) determination of employee readiness for training. Also, task analysis includes identifying important tasks and knowledge, skills, and behaviors that need to be emphasized in training employees to complete their assignments (Noe, 2017). The implication is in the context of teacher professional development, development needs analysis at the organizational or school level must be consistent with efforts to achieve the school's vision and goals. Then, the analysis at the task level in the context of school development is prioritized on subjects that support the achievement of the vision and goals of the school. Furthermore, analysis at the individual level, prioritizes the highest competence gap of each teacher.

In addition, in analyzing individual needs, it is necessary to identify the characteristics of employees, in terms of abilities and skills that are still lacking in employees to be able to carry out their job duties (Donni, 2016). Therefore, it is important to do a needs analysis by measuring the difference between the current situation and the desired condition is the first and important issue in Sustainable Professional Development or staff development management (Hartoyo, 2017). Meanwhile, (Sara Bubb, 2019) stated that in conducting the needs analysis it is expected to consider several needs, namely: School Teams, Government Policies, Local Government Regulations, and Individual Needs.

V.   RESEARCH METHOD

The research method used in this study was a mixmethod, because the data requirements collected consist of qualitative and quantitative data. Mixmethod research design is a procedure for collecting, analyzing, and "mixing" quantitative and qualitative methods in a single study or series of studies to understand a research problem (Creswell, 2009). Research by using the Mixmethod method has several strengths. First, it can help to clarify and explain the relationship between variables. Second, it allows us to explore the relationships between variables in depth. Third, it can help to confirm or validate the relationships found between variables (Fraenkel, 2012).

In its implementation, this research was supported by research instruments in the form of interview guidelines, observation guidelines and questionnaires (self report inventory), and Focus Group Discussion in exploring research problems. Interview Guidelines were used to explore various policies and problems of professional development of teachers obtained from the Institutional Leadership both the foundation and the school principal. Observation Guidelines were used in collecting data in the form of teacher behavior in learning. Questionnaires in the form of Self Report inventory were used to explore the current state of competence of teachers and their expectations for the achievement of further competencies. Also, a Focus Group Discussion was conducted to explore and specify the competencies needed by teachers for development programs.

Next, in conducting the needs analysis, the calculation of the gap between the mean competence assessment that has been achieved by the teachers and with the expected ideal competence mean was performed.
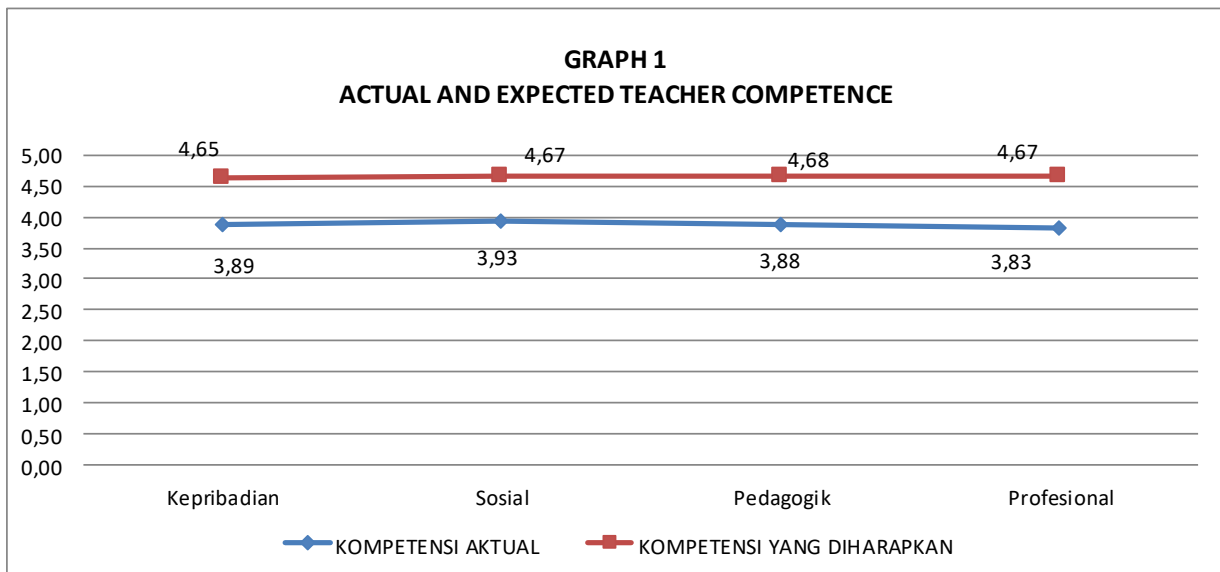
VI.   RESULTS

### *Descriptive Analysis of Teacher Competence*

This research was carried out at Avicenna Junior High School by involving several parties, namely: Head of Human Resources, Principals and Avicenna Junior High School Teachers as many as 30 people. Through the interview process with the HR Department and the principal, until now, the process of determining the needs of teacher professional development has only been emphasized on the needs of the organization. It means that the implementation of teacher development is carried out in order to fulfill the policies of the foundation which must be implemented and followed by the teachers. Meanwhile, to explore the development needs in accordance with the needs of teachers and learning problems in class can not be performed.

Therefore, in this study the researcher intended to develop an exploration of professional development needs based on the needs of the teachers. So, it is hoped, by identifying the appropriate development needs of the teacher professional development program, it can be implemented effectively. The process of exploring the need for teacher professional development was carried out on thirty junior high school teachers by using the Self Report Inventory tool in the form of a page for achieving teacher competence at this time and hopes for its development. The Self Report Inventory that was compiled is based on four competencies that must be possessed by teachers, namely; Personality Competence, Social Competence, Professional Competence and Pedagogical Competence.

After data collection process, the description of the competencies of good teachers that have been achieved until now with the teacher's expectation of achieving competencies for the future is illustrated in the two graphs below.

GRAPH 1
ACTUAL AND EXPECTED TEACHER COMPETENCE

While teachers' expectations of their competence development needs can be described as below.

GRAPH 2
ACTUAL AND EXPECTED TEACHER COMPETENCY GAP
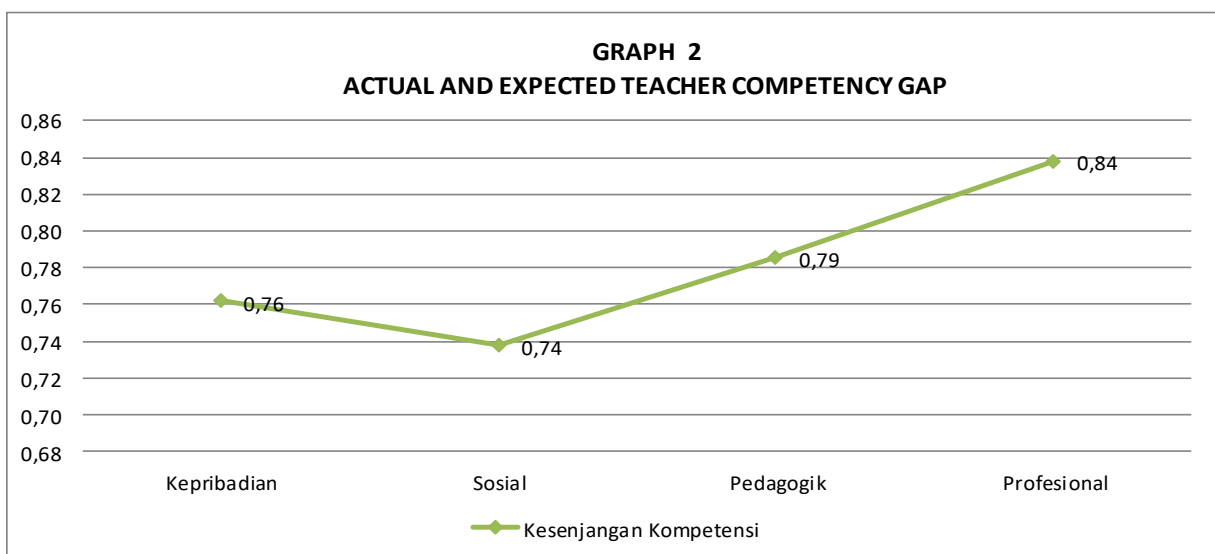
The graph above shows the results of the teacher's self-evaluation of competencies through self-report inventory. First, Personality Competence in the two graphs above show that there was still a mean gap of 0.76 between the actual and expected personality competence (Table 1).

Table 1: Gap of Personality Competence

INDICATOR	KPRIA	KPRID	KKPRI
I always follow the rules at school	4,10	4,73	0,63
I practice worship according to my religion with steadfastness	4,23	4,87	0,63
I actively participate in community activities	3,33	4,17	0,83
I remain calm in accepting criticism from others	3,60	4,50	0,90
I do behavior that can be emulated by students	4,00	4,77	0,77
I attended school on time	4,13	4,70	0,57
I make sure students follow the rules that apply in school	3,80	4,80	1,00
Mean Score	**3,89**	**4,65**	**0,76**

Description: KPRIA-Actual Personality Competence; KPRID-Expected Personality Competenc; KKPRI-Gap of Personality Competence

Second, Social Competence in the two graphs above show that there was still a mean gap of 0.74 between the actual and expected social competence (Table 2).

Table 2: Gap of Social Competence

INDICATOR	KSOSA	KSOSD	KKSOS
I am able to treat students according to their needs	3,80	4,63	0,83
Saya mampu memperlakukan siswa secara adil	4,17	4,73	0,57
I am able to communicate with other teacher colleagues at this school	4,03	4,67	0,63
I am able to communicate with the education staff at this school	4,07	4,73	0,67
I am able to communicate with students' parents	3,93	4,70	0,77
Saya mampu mempengaruhi siswa untuk mengikuti aturan yang saya terapkan	3,83	4,63	0,80
I am able to speak in public	3,70	4,60	0,90
Mean Score	**3,93**	**4,67**	**0,74**

Description: KSOSA-Actual Social Competence; KSOSD-Expected Social Competence; KKSOS-Gap of Social Competence

Third, Pedagogical Competence in the two graphs above show that there was still a mean gap of 0.79 between the actual and expected pedagogical competence (Table 3).

Table 3: Gap of Pedagogical Competence

INDICATOR	KPEDA	KPEDD	KKPED
I understand the characteristics of students	3,87	4,67	0,80
I master the theory and principles of learning	3,70	4,57	0,87
I have the ability to develop curriculum	3,50	4,50	1,00
I have the ability to manage teaching and learning activities	3,93	4,70	0,77
I perform student development	3,80	4,63	0,83
I am able to communicate with students	4,27	4,83	0,57
I am able to make student evaluation and assessment material	4,03	4,70	0,67
I make sure my students understand the material they have learned	3,97	4,80	0,83
Mean Score	**3,88**	**4,68**	**0,79**

Description: KPEDA - Actual Pedagogical Competency; KPEDD - Expected Pedagogical Competency; KKPED - Gap of Pedagogical Competency

Fourth, Professional Competence in the two graphs above show that there was still a mean gap of 0.84 between the actual and expected professional competence (Table 4).

Table 4: Gap of Professional Competence

INDICATOR	KPROA	KPROD	KKPRO
I master the material that supports the subjects	4,27	4,87	0,60
I can structure the material so as to facilitate the delivery of subjects	4,07	4,87	0,80
I use various learning methods to support the delivery of material	3,77	4,77	1,00
I develop tools to maximize the delivery of material according to students' learning styles	3,90	4,77	0,87
I participate in every development activity carried out by the school	4,00	4,73	0,73
I apply the results of the training that I get in the learning activities	3,87	4,60	0,73
I conduct Classroom Action Research in developing the Learning activities	2,93	4,07	1,13
Mean Score	**3,83**	**4,67**	**0,84**

Description: KPROA-Actual Professional Competence; KPROD-Expected Professional Competence; KKPRO-Gap of Professional Competence

From the graphs and data table above, the biggest competence gap between the actual and expected was in the professional competence, then pedagogical competence, personal competence and social competence.

Needs Analysis of School, Task, and Personal Levels

Needs analysis at organizational/school level showed that the teacher professional development needs are adjusted to the needs in the effort to achieve the School Vision, where Vision of Avicenna School is "Actualize school with leadership character, based on science & technology, care for the environment, and has high achievements". The need for Teacher Competence Development is a priority in increasing competence in personality competence and professional competence. This is also supported by quantitative data that still show a mean gap of personality and professional competence were 0.76 and 0.84. Through the FGD, according to the teacher's perspective, teacher must have a good personality competence because the teacher's role is not only delivering subject matter, but also life values, the teacher is a model figure, and prominent attitudes and personalities become role models for students, such as disciplinary behavior, how to communicate and interact, etc.

Needs analysis at task level showed the same thing at the organizational level, the priority of competency development was carried out on achieving the School Vision, so that the development of science and technology based teachers, such as science, Mathematics, physics, biology, and informatics subjects become priorities. This is also shown by inventory data wherein for science and technology-based teachers still showed a gap between actual and expected competence with an average gap of 0.84 (Table 4). With an average gap of 0.84, it means that professional competence on a scale of five had a high enough gap (Ayu et al., 2014). This gap is shown in several indicators that still need to be improved, namely: The ability of teachers to conduct classroom action research, the ability of teachers to master learning methods, the ability to prepare learning media, and the ability to present learning material systematically. So, this has an impact on the achievement of national exam scores in the group of mathematics and natural science subjects which were still relatively low, namely; Mathematics Subject with an average score of 62.77 and Science Subjects with an average score of 65.90. Based on the results of the FGD with the representatives of the teachers, it was obtained that in the perspective of schools and teachers, this achievement was still low and still needed to be improved, in the view of the teachers, this was due to the Higher Order Thinking Skill-based national examination questions. On the other hand, teachers are still faced with limited knowledge and abilities in providing learning with criteria based on Higher Order Thinking Skills. For this reason, science-based competency development programs especially related to the development of learning based on Higher Order Thinking Skills also need to be improved. Besides teachers need to master Mathematics and Natural Sciences subject groups.

At personal level, based on the results of competency inventory data between actual competence and expected competence, showed that professional competence had the highest gap level with a mean value of 0.84, where the eman gap value is due to several competence indicators (ability of teacher in conducting classroom action research, ability of teacher to master learning methods, the ability to prepare learning media, and the ability to present learning material systematically) was still high. Meanwhile, based on the FGD with teachers, there needs to be a professional competency development program because teachers must always follow the dynamics of the development of science and technology, because of innovation in learning, challenges in understanding the characteristics of students according to their development. This shows the need for various development program interventions that can improve professional competence. Furthermore, pedagogical, personality, and social competencies were at a low gap level on a scale of five (Ayu et al., 2014). Where, the mean gap value for the three competencies were 0.79, 0.76, and 0.74. Nevertheless, there are still a number of indicators that need to be

improved, such as; Pedagogical competence, namely the ability to develop learning curriculum, mastery of principles and theories of learning, evaluation of learning, and the ability to develop learners still showed a high gap. Furthermore, on several indicators of personality competence which shoed high mean gap value and needs to be improved, namely: Ability in fostering student discipline, participation in community activities, readiness to receive input and criticism, and the ability to display exemplary behavior. Meanwhile, in social competence some indicators that still showed a high enough gap were; communication skills, the ability to treat students according to the age of growth, and the ability in student development.

VII. DISCUSSION

Teacher professional development is defined as teacher learning: how they learn and how they apply their knowledge in practice to support student learning (Postholm & Postholm, 2012). Teacher competence development is a manifestation of efforts to improve teacher professionalism in carrying out learning activities. In an effort to improve teacher professionalism, the teachers need to be improved in competence, so that the expected impact can contribute to improve the quality of education, especially student achievement. Teacher Competence Development Program is an effort to improve teacher professionalism in carrying out their work.

To develop an effective teacher professional development program, it is necessary to involve teachers in the entire development process including exploring the needs of teachers in relation to the learning problems faced. Therefore, in order to develop effective Teacher Professional Development, program objectives must meet the needs and expectations of program participants. Program participants must be considered as partners during the process of planning their own learning experiences, implementing practices, providing feedback, and evaluating programs (Lee & Lee, 2005).

Teacher professional development based on organizational needs is important, but individual needs is more important to undergo the professionalization process because the substance of the study and the learning context always develop and change according to the dimensions of space and time, teachers are required to always improve their competence (M Hosnan, 2016). One way that can be taken in developing teacher professionalism based on teacher needs is to look at the gap between actual and expected competence (Guskey, 2010).

One program that can be followed by junior high school teachers in order to develop professionalism is by following continuous professional development, which aims to develop teacher competencies that are carried out according to needs, which gradually and continuously to improve professionalism (M Hosnan, 2016). Continuous professional development generally consists of self-development, scientific publications and innovative works. These three programs become an integral part that must be followed by teachers in order to improve their professionalism in carrying out the profession as a professional teacher.

Therefore, by looking at the gaps in the four competencies (1) Professional competence showedthe highest gap of 0.84, (2) Pedagogical Competence showed a gap of 0.79, (3) Personality competence showed a gap of 0.76, and (4) Social competence showed a gap of 0.74, the development of teacher competence can be performed by involving teachers in a continuous professional development program as needed and gradually and carried out continuously. After being deepened and analyzed specifically through focus group discussions, there were several competency development programs with the highest level of need, such as; Ability to conduct Classroom Action Research, Ability to Develop Learning Curriculum, Ability to Develop Higher Order Thinking Skills Based

Learning, Classroom Action Research, Communication Ability, and so on. Development Needs are carried out in sequence from the highest level of needs to the lowest level of needs (Table 5).

Table 5: Priority of Competence Development

INDICATOR	GAP	RANK
Professional Competence		
I conduct Classroom Action Research in developing learning activities	1,13	1
I use various learning methods to support the delivery of material	1,00	2
Personality Competence		
I make sure students follow the rules that apply in school	1,00	2
I remain calm in accepting criticism from others	0,90	3
Pedagogical Competence		
I have the ability to develop curriculum	1,00	2
Social Competence		
I am able to speak in public	0,90	3

Teacher professional development is a strategic program that needs to be performed continuously. With the professional development that is followed by the teacher will have an impact on better student achievement. This is indicated by the results of research that showed students with teachers who participated in teacher professional development had better learning outcomes than students with teachers who did not participate (Hyler & Gardner, 2017; Balta & Eryılmaz, 2019).

In addition, it is necessary to consider other forms of collaborative professional development. A collaborative form will encourage teacher professional development programs to be effective in changing attitudes, beliefs and teacher learning practices. Continuous collaborative professional development effectively brings positive changes in teacher practices, attitudes or beliefs. Teacher development brings improvements in student learning, behavior or attitudes, and in bringing positive changes in teacher behavior and attitudes in the classroom (Svendsen, 2016).

VIII. CONCLUSION

Teacher professional development is an effort to improve the competence or ability of teachers in carrying out their duties. Effectiveness of teacher professional development, one of which is also influenced by the effectiveness of the analysis of professional development needs, both at the school level, task and individual teachers. Of the three levels of development needs analysis, analysis at the individual level was the most influential on the effectiveness of the teacher professional development program. Because it would directly influence the practice of learning in the classroom, both attitudes and student learning outcomes. The teacher development needs analysis process can be performed by comparing actual and expected competence. Where, this gap becomes the basis for the implementation of the teacher professional development program.

IX.   ACKNOWLEDGMENT

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