

# The Use of Importance-performance Analysis in Evaluating the Teachers' Professional Development Program

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**Abstract:** This research aims at analysing the perceptions of Math teachers to teachers' professional development in the Subject Teacher Forum (STF), consisting of five indicators, namely: 1) program structure, 2) administrator's readiness, 3) teacher's needs, 4) values & motivation, and 5) institutional support. The approach used is a descriptive quantitative. The data was collected by using questionnaire with a Likert scale. The respondents are 40 Math teachers. This research population is participants of Math's STF in Junior High School in the region of Tangerang, Indonesia. The data analysis employs the Importance-Performance Analysis (IPA) tools. The research result shows that program structure, administrator's readiness, and institutional support are in the High Importance category, whereas teacher's needs as well as values & motivation belong to the category of Low Importance. Moreover, the actual performance for program structure and values & motivation are revealed in the categories of High Performance, while the administrator's readiness, teacher's needs, as well as institutional support are in the categories of Low Performance. The top priority attributes that need to be fixed in accordance to IPA quadrant map are learning models' simulation, study of learning device, program and activity's budget, availability of media/activity aids and appreciation/recognition of teacher's performance.

## 1 INTRODUCTION

A teacher is considered as a primary element and has an important role in creating a quality of education. Hence, teacher is expected to increase his/her capacity continuously so that he/she is able to become a professional educator. Teachers' competencies comprise of competencies of pedagogical, personality, social, and professional obtained through professional education (Undang-Undang RI No. 14 pasal 10 ayat 1, 2005).

Teacher's competency standards are fully developed from four main competencies, that is, pedagogic, personality, professional and social. Those four competencies are integrated in the teacher's performance (Permendiknas No. 16, 2007). A good teacher's performance determines a good learning process (Hadi, Tukiran & Yuwono, 2009).

Nationally, as far as it is concerned, teacher's competency still needs attention and improvement, particularly in the aspects of pedagogic and

professional. These are reflected from the result of Teacher's Competency Test which is carried out in a written form that has not shown the conformity with the teacher's performance in the field (Jumadi, Prasetyo & Wilujeng, 2013).

Most of the teachers who have passed the teacher's certification and have professional allowance as a professional teacher are not yet considered as good teachers (Badrun, 2011). Other research result pointed out the fact that the professional attitude of SMPN Math teachers at Jambi that has been already very good does not automatically give a positive impact on the learning result (Syafmen, 2014).

This phenomenon is also reflected from the result of Teacher's Competency Test in Junior High School in Tangerang. The teacher's score competency of pedagogic and professional releases in the mean score of 60,54 (Kemendikbud, 2019). That score is considered as fair category and still can be increased better. Meanwhile, Puspendik (2018) present the result of National Examination for Math

subject in the academic year of 2017/2018 reaches the mean score of 43,71 or in the deficient category. This problem gives an impression that serious effort of Math teachers in Junior High School in the Region of Tangerang in developing their competency as teachers generally needs to be developed.

Having paid close attention to that problem, to obtain valid information, a research must be investigated which aims at analyzing Math teachers' perception on the professional development program in the Subject Teacher Forum (STF) of Math in Junior High School in Tangerang, Indonesia. This research focus will reveal: a) the teacher's hope on the professional development program in the STF of Math subject; b) the actual performance of the professional development program indicators in the STF of Math subject; c) the attribute of professional development program in the STF of Math subject which is as a top priority of which its performance quality needs to be fixed and increased; and d) the attribute which is a power or predominance, so that its performance quality needs to be maintained.

## 2 LITERATURE REVIEW

Such efforts of coaching and development for teacher's professions have been carried out. One of the kinds is by collaborative process among peers, that is, in STF. Activities in the STF are organized for becoming a communication forum for teachers who teach the same subject in one Districts/Town. In this forum, teachers can share their experience, have a consultation, or join training and education seminar. Also, this forum is a place for teachers to discover ideas to solve problems in organizing the learning.

Teachers basically recognize such professionalism problems they face. As affirmed by the research result that teachers were acquainted with the issues of professionalism and sought to enhance their professional development. They also stressed the importance to be offered more opportunities for lifelong learning education (Ifanti & Fotopoulou, 2011).

In their profession, teachers must meet their qualification and competency which are required as a professional worker. Their qualification in the academic context is obtained through their profession education and their participation in the teacher's professional development program.

A teacher who has good competency in the lesson subject, pedagogical skill, and has an

acknowledgement on the learning organization, can increase student's performance and can contribute to strengthen herself/himself in the curriculum implementation (Tanang, Djajadi, Abu & Mukhtar, 2014).

Learning organization by teachers must have a direction, value, and objective in order to reach an achievement for students. In the context of new accountability, where teachers are working and interacting among parties, with learning moral achievement is as their goals (Jumadi et al., 2013).

Teacher's cooperation, a positive school culture with good circumstance, and the acknowledgement on teacher's learning as well as the cooperation with external experts might put an influence on teacher's professional development (Postholm, 2012). Therefore, teacher's professional development needs supports on policy, moral, infrastructure, and financial that can lead teachers to be professional (Tanang & Abu, 2014).

Teacher's professional development program in the STF on Math subject in this research consists of five indicators, namely: 1) program structure, 2) administrator's readiness, 3) teacher's needs, 4) values & motivation, and 5) institutional support.

### 2.1 Program Structure

Program Structure of Math teacher's professional development in the STF of Math subject in Junior High School in Tangerang in the academic year of 2018/2019 comprises of such activities of training, seminar, and sharing session among peers. There are eleven attributes in the program structure indicators, namely: 1) the training of Information and communications technology (ICT) for teachers; 2) the workshop of the test writing; 3) the seminar of classroom action research; 4) the learning models' simulation; 5) the workshop of teaching aids creation; 6) the study of learning devices; 7) the symposium of Graduate Competency Standards; 8) the activities of Final Semester Test outline writing; 9) the development of learning devices; 10) the activities of multimedia benefitting; and 11) the activities for Olympic test writing.

### 2.2 Administrator's Readiness

The administrator's readiness determines the continuity and the activity process effectiveness in the STF of Math subject, either of training, seminar, or sharing session among peers. According to Richards and Farrell, cited by Boudersa (2016), that the teacher training also involves trying out new

strategies in the classroom, usually with supervision, and monitoring and getting feedback from others on one's practice. In one hand, the content of training is usually determined by experts and is often available in standard training formats or through prescriptions in methodology books.

The term in-service teacher training program connects any program provided to teachers already working in schools, with the explicit purpose of updating and renewing their knowledge, technical skills etc. for main training and/or enhancing their efficiency (Madani & Pourmohammadi, 2017).

Few factors that contribute to the effectiveness of in-service training are role of administrator, attitudes of teachers, training needs and strategies in conducting in-service training (Omar, 2014).

As far as the training effectiveness and efficiency are concerned, the STF administrator readiness is absolutely needed. This is in accordance to the proposition of Vaillant & Manso (2018:102): the training institution has the leadership, the authority, the budget, the personnel, the infrastructure and the resources for the preparation of teaching candidates to reach the state and institutional standards.

The indicators of administrator's readiness consist of five attributes, namely: 1) the conformity of program and activity's budget; 2) the availability of media/activity aids; 3) the availability of materials/activity's sources; 4) the socialization of activity's program; and 5) the evaluation of former activities.

### 2.3 Teacher's Needs

One of factors that contribute to the effectiveness of teacher's learning activity in the STF is a pre-experience which have been had by teachers. On the other hand, the satisfaction on the circumstance and learning activity input are in the STF. Those two things will give contribution to the achieved result from teacher's learning activity. The STF participants are teachers who have different knowledge background and teaching experience, hence, the training activities need to accommodate their needs.

Confidence and commitment have been added to Level 2 in the New World Kirkpatrick Model. These dimensions help to close the gap between learning and behavior, and to prevent the cycle of waste when training is repeated for people who possess the required knowledge and skills but fail to perform

appropriately on the job (Kirkpatrick & Kirkpatrick, 2019: 7-8).

In the STF, all teachers are facilitated to learn collaboratively in order to develop their professional. Cited by Sutopo (2013:46) that the professional development aspects according to Stronge refer to the development needs and the increase of teacher's professionalism in doing their job.

The STF administrator of Math subject must identify and consider the learning material projection which becomes as teachers' needs. These are to accommodate former teachers' experience, either knowledge or skill for them to be more creative and innovative.

Indicators of teacher's needs comprise of four attributes, namely: 1) the activity's material which can fix acknowledgement; 2) the training which can increase skill; 3) the activity that can build creativity; and 4) the conformity of activity's material with teacher's needs.

### 2.4 Values & Motivation

Teachers expect their activities to STF can bring them into qualified and meaningful teachers for having better knowledge and increasing their skill. This can be facilitated by activities' program which can help them to solve specific problems they face.

Teachers expect critical thinking and creating activities to be dealt with in the Teachers' Professional Development program so that they can introduce the program in their classrooms. They expect to be strategic in improving their teaching and want to improve students' achievement (Pokhrel & Bahera, 2016).

The characteristics of training participants, the instructional satisfaction, and organizational factor from learning which is felt significantly give an influence on the perception of training participants (Lim & Morris, 2009). Sharma & Shirsath (2014) concludes that organizations having good training plans for employees can enhance the performance of employees and motivates them.

The evaluation model of Kirkpatrick's four-level in the first level is reaction. Several questions addressed to this level are aimed to identify how far the participants like to join the training and whether they feel obtaining the benefit after spending their time and effort (Luong, 2015). In this research, teacher's reaction becomes a feedback so that the teacher's achievement on the learning process in the STF activities can be recognized.

The indicators of values & motivation have three attributes, namely: 1) the conformity of resource person expertise and activity's material; 2) the conformity of activity's material and program objectives; 3) the teacher's motivation in attending the STF activities.

### 2.5 Institutional Support

The supervision and appreciation on achievement or good performance are useful for teacher's career development. In one hand, it could establish teacher's motivation and commitment to continuously increase their quality in managing learning to reach student's learning result. The higher the appreciation continuously given to the employees will give an impact on the performance increase (Prabu & Wijayanti, 2016)

Appreciation and recognition on job given by leader are as motivators which enable employees keep working on for the institution. These issues point out that employees want to be recognized on their job, so that they are motivated to do the same attitude's and will develop their performance (Ndungu, 2017).

However, on the other hand if the employees see benefits of the training and development programmes like any reward in the form of incentives or promotion they will be motivated and job satisfaction could be achieved which in turn can bring improved performance and productivity (Wahab, Hussain, Zadeh, Shah & Hussain, 2014).

The indicators of institutional support comprises of two attributes, namely: 1) the teacher's supervision in the STF activities; 2) the appreciation/recognition of teacher's performance.

## 3 METHODOLOGY

### 3.1 The Technique of Data Collection

This research is an evaluative research. The approach used is a descriptive quantitative. The data was collected by using a Likert scale to collaborate with a questionnaire, where the data source is all members of targeted population of 40 respondents. This research population is Math teachers as participants in the STF from Public and Private Junior High School in the region of Tangerang, Indonesia. The research was carried out in the academic year of 2018/2019.

The Likert scale consists of five points to measure the level of importance (1 = very

unimportant until 5 = very important) and the actual performance (1 = very unsatisfied until 5 = very satisfied) which are related to each attribute from them all (five) indicators. In the questionnaire, there are 25 items of attributes which are identified based on indicators of Math teacher's professional development program in the STF.

The instrument validity uses justification from the expert of evaluation, language expert, and STF administrator of Math subject as the ones who arrange and conduct the program. The validity test is based on the outlines that researchers develop from the program content and theoretical study. Moreover, the instrument design which had been arranged was validated by experts.

Once the expert's validation is conducted, it continues to the reliability test by using the application of SPSS version 20. The results can be seen in the case processing summary table, it is found that from the total number of 25 items of questionnaire is 100% valid. Accordingly, in the reliability statistics table, it is obtained a coefficient of Cronbach's Alpha 0,941, meaning that it is in good category. If alpha is greater than or equal to 0.6, then the result is good (Hajjar, 2014).

### 3.2 The Technique of Data Analysis

The data analysis employs the Importance-Performance Analysis (IPA) tools. The IPA model comprises of two dimensions, that is, the performance level at sumbu-X and the importance level at sumbu-Y (cartesius diagram). There are categories of importance and performance levels at four quadrants: High Importance/Low Performance (quadrant I), High Importance/High Performance (quadrant II), Low Importance/Low Performance (quadrant III), and Low Importance/High Performance (quadrant IV) (Wong, Hideki & George. 2011).

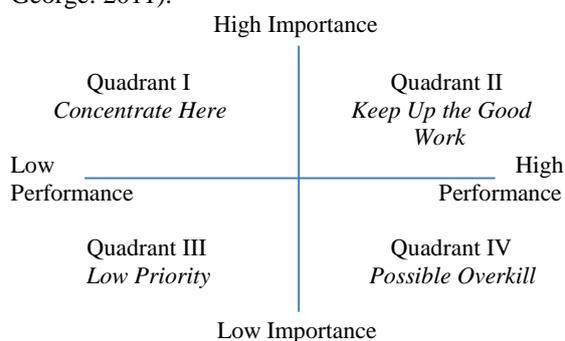


Figure 1: The original IPA framework which was developed by Martilla and James (1977), source (Wong, Philip & Fearon, 2009).

## 4 RESULT AND DISCUSSION

In accordance to the results of questionnaire for Math teacher’s professional development program in the STF that are succeeded to be collected, it is obtained that a mean score of the importance level from the whole (five) indicators which consist of 25 attributes is 4,22 (84,48%), whereas a mean score of the satisfaction level is 3,46 (69,24%). The detail analysis on the importance level and the attribute’s satisfaction level for each indicator are explained as follows.

### 4.1 Program Structure

The indicator of Math teacher’s professional development program structure in the STF in the academic year of 2018/2019 includes 11 attributes. Table 1 below presents a mean score of the level of importance and the level of performance of each attribute and a mean score of whole attributes for program structure indicators.

Table 1: Program Structure

Code	Attribute	Mean Imp.	Mean Perf.
A1	The training of ICT for teachers	4,23	3,60
A2	The workshop of the test writing	4,23	3,58
A3	The seminar of classroom action research	4,18	3,40
A4	The learning models’ simulation	4,23	3,30
A5	The workshop of teaching aids creation	4,33	3,53
A6	The study of learning devices	4,23	3,43
A7	The symposium of Graduate Competency Standards	4,33	3,73
A8	The activities of Final Semester Test outline writing	4,43	3,80
A9	The development of learning devices	4,18	3,50
A10	The activities of multimedia benefitting	4,20	3,45
A11	The activities for Olympic test writing	4,03	3,18
Mean		4,23	3,50
Percentage (%)		84,64	69,95

In line with table 1, it shows that a mean score of the level of program structure indicator importance

releases in 4,23 (84,64%) and the actual performance is 3,50 (69,95%). The amount of percentage describes that the level of importance and the actual performance of program structure indicators are higher than the percentage of the level of importance and the actual performance from a whole (five) indicators. For the level of importance is 84,64% > 84,48% and the actual performance is 69,95% > 69,24%.

It means that the hopes of Math teacher on the Math teacher’s professional development program structure in the STF belong to the category of high importance with the percentage of 84,48%. Meanwhile, the actual performance based on the level of satisfaction is in high performance category with the percentage of 69,95%.

Seeing the level of importance is as high category in this program structure, its future implication needs to allocate sources that support the program to optimize attribute’s performance for gaining maximum benefit.

These research findings point out that teachers consider the attributes contained in the program structure in STF activities have a high level of importance as they are considered to be able to increase their competence. This in line with the proposition of Tanang, Abu & Mukhtar (2014) about the importance of teacher who has a strong competence on the subject taught, pedagogical skills, and understanding of learning management so as to improve student’s performance and to contribute for strengthening teachers in implementing the entire curriculum.

In accordance to the teachers’ interests in training activities, workshops, and seminars at STF, this is in line with the opinion of Postholm (2012), that a positive school culture, a collaboration between teachers and a cooperation of teachers with external resource persons can have an impact on teacher professional development.

However, the program structure in this research has not yet included the attributes of school culture development as stated by Postholm above, so this research has not been able to reveal teachers’ perceptions about these attributes. This needs to be a recommendation for follow-up to the next relevant research.

### 4.2 Administrator’s Readiness

The administrator’s readiness indicators bring about five attributes. The following table 2 describes a mean score of the importance level and the performance level of each attribute and a mean score

of all attributes for administrator's readiness indicators.

Table 2: Administrator's Readiness

Code	Attribute	Mean Imp.	Mean Perf.
B1	The conformity of program and activity's budget	4,28	3,43
B2	The availability of media/activity aids	4,40	3,05
B3	The availability of materials/activity's sources	4,33	3,68
B4	The socialization of activity's program	4,33	3,50
B5	The evaluation of former activities	4,18	3,58
Mean		4,30	3,45
Percentage (%)		86,00	68,90

In accordance to table 2, it can be seen that a mean score of the importance level of administrator's readiness indicator is 4,30 (86%) and the actual performance releases in 3,45 (68,9%). The amount of percentage points out that the level of importance of administrator's readiness indicator is higher than the percentage of the importance level as a whole (five) indicators (84,64% > 84,48%). Meanwhile, the percentage of the actual performance is lower than the percentage of all performance levels (five) indicators (68,9 < 69,24%).

The findings explain that Math teacher's hopes on the administrator's readiness on Math teacher's professional development program in the STF defines as high importance category with 84,64% of its percentage. Whereas the actual performance based on the satisfaction level is in the category of Low performance with the percentage of 68,9%.

Notifying the high category of teachers' hopes and the low category of attribute performance of administrator's readiness, its implication is that the STF administrator in the future needs to invite stakeholder in the program's organizing and planning design.

The findings of this research indicate that the administrator's readiness attributes are considered by teachers to have a high level of importance, so it has implications for the teachers' positive attitude. This is in line with the opinion of Omar (2014), that several factors that contribute to the effectiveness of training in positions are the role of administrators, teachers' attitudes, training needs, and strategies in conducting the training.

Likewise, these findings are consistent with the propositions of Tanang & Abu (2014), that professional teacher development needs support on policy, morals, infrastructure, and finance that can lead teacher to be professional.

However, the STF administrators need to increase the level of teacher's satisfaction with the performance of administrator's readiness attributes that are currently considered low by teachers. They are the level of satisfaction with the suitability of the program and activity budget, the availability of media and activity materials, the existence of program activities, and the evaluation of previous programs.

### 4.3 Teacher's Needs

The indicators of teacher's needs consist of four attributes. Table 3 below tells that a mean score of the importance level and the performance level of each attribute and a mean score of all attributes of teacher's needs indicators.

Table 3: Teacher's Needs

Code	Attribute	Mean Imp.	Mean Perf.
C1	The activity's material which can fix acknowledgement	4,08	3,65
C2	The training which can increase skill	4,15	3,40
C3	The activity that can build creativity	4,20	3,25
C4	The conformity of activity's material with teacher's needs	4,20	3,53
Mean		4,16	3,46
Percentage (%)		83,13	69,13

Table 3 explains that a mean score of the importance level of teacher's needs indicators shows 4,16 (83,13%) and the actual performance releases in 3,46 (69,13%). The amount of percentage points out that the level of importance and actual performance of teacher's needs indicators is lower than the percentage of all importance and performance level (five) indicators. The level of importance defines about 83,13% < 84,48% and the actual performance brings about 69,13% < 69,24%.

The above explanations describe the teacher's hopes on the activities held by the STF on Math subject in the low importance category with the percentage of 83,13%. This is due to the lack of needs' fulfillment and less accommodating the

experience had by teachers. While the actual performance based on the satisfaction level is in the low performance category with the percentage of 69,13%.

Its future implication is that Math STF administrator needs to pay close attention and to identify teacher’s needs and experience that had been had by teachers for becoming a core consideration in the activities’ material arrangement.

Accordingly, these research findings are in line with Strong's statement quoted by Sutopo (2013: 46) that aspects of professional development refer to the need for developing and enhancing teachers’ professionalism in doing their work. Hence, it is a common thing that the attributes on the teachers’ needs indicator are considered less important. This is because they are deemed not to meet their needs and accommodate previous experiences.

The low expectation of teachers for the attributes of teachers’ needs and the low performance of these attributes, it is necessary to increase efforts to accommodate the teachers’ needs based on the experience they already have. Thus, the STF administrators can improve performance in carrying out activities related to these attributes.

#### 4.4 Values & Motivation

The indicators of values & motivation reflect on three attributes. The following table 4 serves the information of a mean score of the importance and performance level of each attribute and a mean score of all attributes of values & motivation indicators.

Table 4: Values & Motivaion

Code	Attribute	Mean Imp.	Mean Perf.
D1	The conformity of resource person expertise and activity’s material	4,28	3,75
D2	The conformity of activity’s material and program objectives	4,08	3,53
D3	The teacher’s motivation in attending the STF activities	4,13	3,33
Mean		4,16	3,53
Percentage (%)		83,17	70,67

Table 4 above indicates that a mean score of the importance level of values & motivation indicators is 4,16 (83,17%) and the actual performance is about 3,53 (70,53%). The amount of percentage shows that the importance level of values & influence indicators

is lower than the percentage of the importance level as a whole (five) indicators (83,17% < 84,48%). In the other hand, the percentage of the actual performance is higher than the percentage of a whole performance level (five) indicators (70,67 > 69,24%).

The above remarks describe teacher’s perception on the activities’ score in the STF of Math subject as well as its influence to fulfill teacher’s hopes in the low importance category with 83,17%. This is due to material and sources of activities which lacks values and is less important for teacher’s self-development. Meanwhile, the actual performance based on the satisfaction level is in high performance category with the percentage of 70,67%.

As the fact shows that the level of performance attribute of values & motivation places high category, the condition seems to be not expected by teacher. Its future implication defines that it needs improvement on the material’s conformity and sources of activities in order to have a positive effect for teacher’s self-development.

Pointing out the findings, the teachers’ reaction indicates that the values and motivation are to be less important or not very desirable. This is because the teachers feel that they are not benefiting from those attributes. Similar to Luong's statement (2015), regarding the reaction of the trainees, it can be seen how far the trainees like to attend the training and whether they feel they get benefit after spending their time and efforts.

Likewise, the low teacher expectations or perceived lack of importance of the values and motivation attributes, this statements are also in accordance with Lim & Morris (2009), that the characteristics of trainees, instructional satisfaction, and organizational factors of learning that are perceived to significantly influence perceptions of trainees.

That fact shows that teachers feel that they are not benefiting from the activities of the values & motivation attributes, namely the suitability of the resource persons with the activity material and the suitability of the activity material with the program's objectives. Therefore, the quality of activities at STF needs to be as a concern in improving the implementation of teacher professional development programs for the next STF.

#### 4.5 Institutional Support

The indicators of institutional support consist of two attributes. Table 5 below presents a mean score of

the importance and performance level of each attribute and a mean score of institutional support.

Table 5: Institutional Support

Code	Attribute	Mean Imp.	Mean Perf.
E1	The teacher's supervision in the STF activities	4,05	3,38
E2	The appreciation/recognition of teacher's performance	4,40	3,05
Mean		4,23	3,21
Percentage (%)		84,50	64,25

In line with table 5, it can be seen that a mean score of the importance level of institutional support indicator is 4,23 (84,50%) and the actual performance releases in 3,21 (64,25%). The amount of percentage shows that a mean score of the importance level of institutional support is higher than the percentage of a whole importance level (five) indicators (84,50% > 84,48%). While the percentage of performance level is lower than the percentage of all performance levels (five) indicators (64,25 < 69,24%).

It means that Math teachers' hopes on the institutional support of Math teacher's professional development program in the STF is in high importance category with 84,50%. Meanwhile, the actual performance based on the satisfaction level is in Low performance category with the percentage of 64,25%.

Defining a high teacher's hope and a low performance attribute of institutional support, its future implication is that Principal and Education Service Officials need to increase their support to the teacher's professional development program in the STF to create a good teacher's performance.

The findings of this research show high teacher expectations of the attributes of institutional support, namely the existence of teacher supervision in STF activities and rewards or recognition of teachers' performance. This is in line with the results of research conducted by Prabu & Wijayanti (2016), that the higher the continuous appreciation of employees will have an impact on increasing their work performance.

Teachers have high expectations for the existence of rewards or recognition of teachers' performance, this is also in line with Ndungu's statement (2017), that employees who want to be recognized for the work performance, they will be motivated to repeat the same attitude and will improve their performance.

Therefore, the principal and the Head of Official Education should increase the supervision of the teachers' professional development program at the STF, by providing incentives or promotion for their performance. According to Wahab, Hussain, Zadeh, Shah & Hussain (2014), the provision of incentives or promotions will motivate employees, so that job satisfaction can be achieved, which in turn can bring the increased performance and productivity.

#### 4.6 The Results of Importance-Performance Analysis

The results of quadrant analysis map attributes which exist in the area of quadrant I, II, III and IV and its implication on those results. Attributes in each quadrant can be seen in Figure 2.

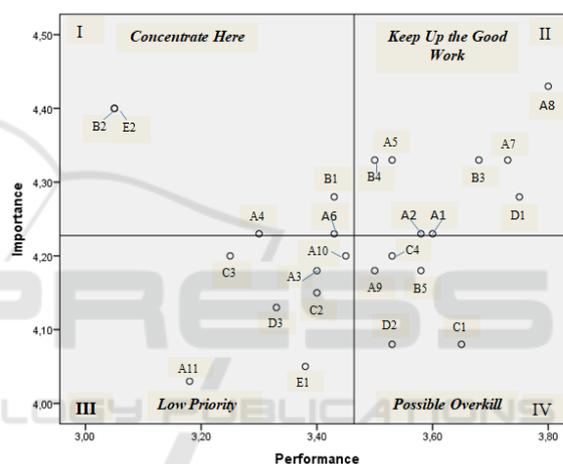


Figure 2: IPA diagram of the Teachers' Professional Development Program in the STF attributes.

The intersection in IPA diagram uses a mean score of the importance level of 4,22 and a mean score of the performance level of 3,46. The followings are the explanations about the analysis of the importance level and the actual performance attribute in each quadrant.

In quadrant I, *Concentrate Here*, participants of Math STF assume attribute as an important thing, but the performance level perception is below average. Therefore, further development effort must be focused on in this case. There are five attributes that belong to this quadrant.

- The learning models' simulation (A4)
- The study of learning devices (A6)
- The conformity of program and activity's budget (B1)
- The availability of media/activity aids (B2)

- The appreciation/recognition of teacher's performance (E2)

In quadrant II, *Keep Up the Good Work*, is considered as a very important issue and its performance is defined as a very satisfied matter from the Math STF participants' perspective. All attributes in this quadrant are as power, or predominance, so that their performance needs to be maintained and increased. If the performance cannot be maintained, it enables the risk falls into the quadrant of *Concetrate Here*. There are eight attributes included in this quadrant.

- The training of ICT for teachers (A1)
- The workshop of the test writing (A2)
- The workshop of teaching aids creation (A5)
- the symposium of Graduate Competency Standards (A7)
- The activities of Final Semester Test outline writing (A8)
- The availability of materials/activity's sources (B3)
- The socialization of activity's program (B4)
- The conformity of resource person expertise and activity's material (D1)

In quadrant III, *Low Priority*, the Math STF participants assume the level of actual performance attribute is low, very unimportant and not very expected. Hence, it does not need to prioritize or to give more attention to attributes in this quadrant. There are seven attributes that belong to this quadrant.

- The seminar of classroom action research (A3)
- The activities of multimedia benefitting (A10)
- The activities for Olympic test writing (A11)
- The training which can increase skill (C2)
- The activity that can build creativity (C3)
- The teacher's motivation in attending the STF activities (D3)
- The teacher's supervision in the STF activities (E1)

In quadrant IV, *Possible Overkill*, there are attributes which are considered as very

unimportant and expected, however, their actual performance is assumed to have a high satisfaction, as this is considered excessive. The performance development on these attributes will only lead to sources' waste. There are five attributes that belong to this quadrant.

- The development of learning devices (A9)
- The evaluation of former activities (B5)
- The activity's material which can fix acknowledgement (C1)
- The conformity of activity's material with teacher's needs (C4)
- The conformity of activity's material and program objectives (D2)

## 5 CONCLUSIONS

Math teachers' professional development program on STF comprises of five indicators, namely program structure (11 attributes), administrator's readiness (5 attributes), teacher's needs (4 attributes), values & motivation (3 attributes), and institutional support (2 attributes). From all (five) those indicators, there are 25 attributes in total.

In accordance to the data that is collected, processed, and analyzed by using IPA tools, there are several conclusions are drawn as follows:

- The research result shows that program structure, administrator's readiness, and institutional support are in the High Importance category, whereas teacher's needs as well as values & motivation belong to the category of Low Importance.
- The actual performance for program structure as well as values & motivation are in High Performance category, whereas administrator's readiness, teacher's needs, as well as institutional support belong to the category of Low Performance.
- The attributes that are as top priorities need to be fixed and increased in line with an IPA quadrant map. They are learning models' simulation, the study of learning devices, the conformity of program and activity's budget, the availability of media/activity aids, and the appreciation/recognition of teacher's performance.
- The attributes that are as power or predominance, of which their performance quality need to be maintained. They are the training of TIK for teachers, the workshop of

the test writing, the workshop of teaching aids creation, the symposium of Graduate Competency Standards and the activities of Final Semester Test outline writing.

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