DEFINE PHASE ON THE DEVELOPMENT OF "SELF AND PEER EVALUATION" MODELS AT THE SUPERVISION OF SCIENCE LEARNING

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Abstract

Define phase is the second phase after the analysis phase in theseries of research and development stage (R & D). *Define Phase* is the phase to determine the scope of project, planning, activities, evaluation, results, schedule, and deployment. This phase contains the defining activities prior to the proposed project. The stages of define phase activities are as follows: 1) Information on model planning that needs to be developed; 2) Establishingthe benchmarks of success potential (assessment); 3) Preparation of paedagogical sides which need attention; 4) How to deliver model products to users; 5) Determining product proposal; 6) Planning a strategy to determine the effectiveness of model. Each stage of Define Phase contains detailed descriptions of the development of Self and PeerEvaluation Models (EDTS) on the supervision of science learning. The data were analyzed using qualitative-descriptive approach. The object of this research was Self and Peer Evaluation of Science Teachers (EDTS). The subject of this research was the science teachers of the junior high school;the peer evaluation was the peer teachers; and the supervisor was the principal. The population was the State Junior High Schools in Semarang city, and the sampleswere nine State Junior High Schools in Semarang City. The suggestion of this research was the need to develop the EDTS model plan in further R & D stages, particularly in design phase.

Keyword: define phase, development, self and peer evaluation, edts models, supervision, science learning

Introduction

This article discusses one of the stages in research and development (R & D); define phase. Define phase is an R & D stage after analysis phase. *Define Phase* is the stage to determine the scope of project, results, schedule, and spread. This phase is the stage of collecting and defining various required information which includes planning, activity, evaluation and spreading until production. The above understanding is adopted from Cennarmo Model.

The phases of Cennarmo Model were originally the stages for instructional design. This instructional design process is similar to the process used in the design in other disciplines. The researcher adopted the stages in Instructional Design as a research and development stage (R & D). Instructional design is conducted through systematic planning known as "Spiral Model". This model divides R & D design cycle into five stages: *Definition, Design, Demonstration, Development, and Deliver* (Cennamo, 2005: 4-6). These five key elements form 5 (five) parts of the learning building planned systematically.

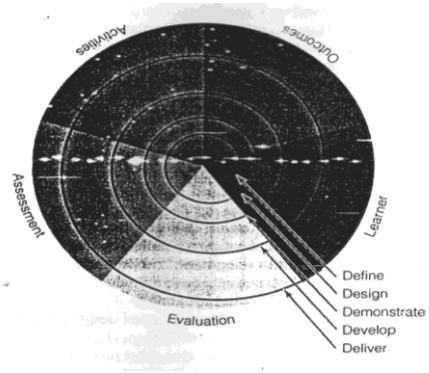


Figure 1. Details of *Definition Phase*

Cennarmo starts the instructional design from the center, thephase *definition*, and moves out through another phase. The goal is to gain more understanding of each element in each phase. The understanding of the spiral is an activity that moves into the next phases. Each of the spiral phases demands a great deal of activity resulting in substantial and meaningful decisions before moving on to the next spiral phase. The define phase activities include: a) collecting information from communicating with several related parties, including *Request for Program; b)* synthesize information and produce a tentative solution with respect to the program; c) check the validity of the

proposed solution; d) repeat this cycle until the program complies. This phase activity determines the scope of the project, its results, its schedule, and its deployment. The end of this phase generates the project proposal.

Based on the above understanding, the activities in the define phase include: a) Identifying characteristics of needs; b) determine the overall results of the information; c) establish benchmarks of potential success (assessment); d) determine product design; e) devise a strategy to determine the effectiveness of the program (evaluation). The details of the define phase phases are used to develop the Self-Evaluation model and peers (EDTS) in the Supervision of Science Learning (IPA).

Research Methodology

This research article uses Research and Development (R & D) method. Each phase in the define phase is analyzed in more detail. Data were analyzed by qualitative descriptive approach. The object of this research was Self and Peer Evaluation of Science Teachers (EDTS). The subject of this research was the science teachers of the junior high schools;the peer evaluation was t

and the supervisor was the principal. The population was the stete junior high schools (SMP) in Semarang city, and the sample was nine State Junior High Schools(SMP) in Semarang City,

RESULTS

Define phase is a phase in instructional design developed by Cennarmo. This phase contains the defining activities prior to the proposed project. Consequently,the content from define phase contains the information on pre-planning, determining the scope of the project, its outcomes, its schedule and its spread, to the generataion of project proposal. Based on the above understanding, the stages are as follows: 1) Information on the planning of the model that need to be prepared; 2) Establishing benchmarks of success potential (assessment); 3) Preparation of paedagogical facets which need attention; 4) How to deliver model products to users; 5) Determining product proposal; 6) Planning a strategy to determine the effectiveness of the model. Each stage of Define phase contains detailed descriptions of the development of EDTS models in the supervision of IPA (sciencea) learning.

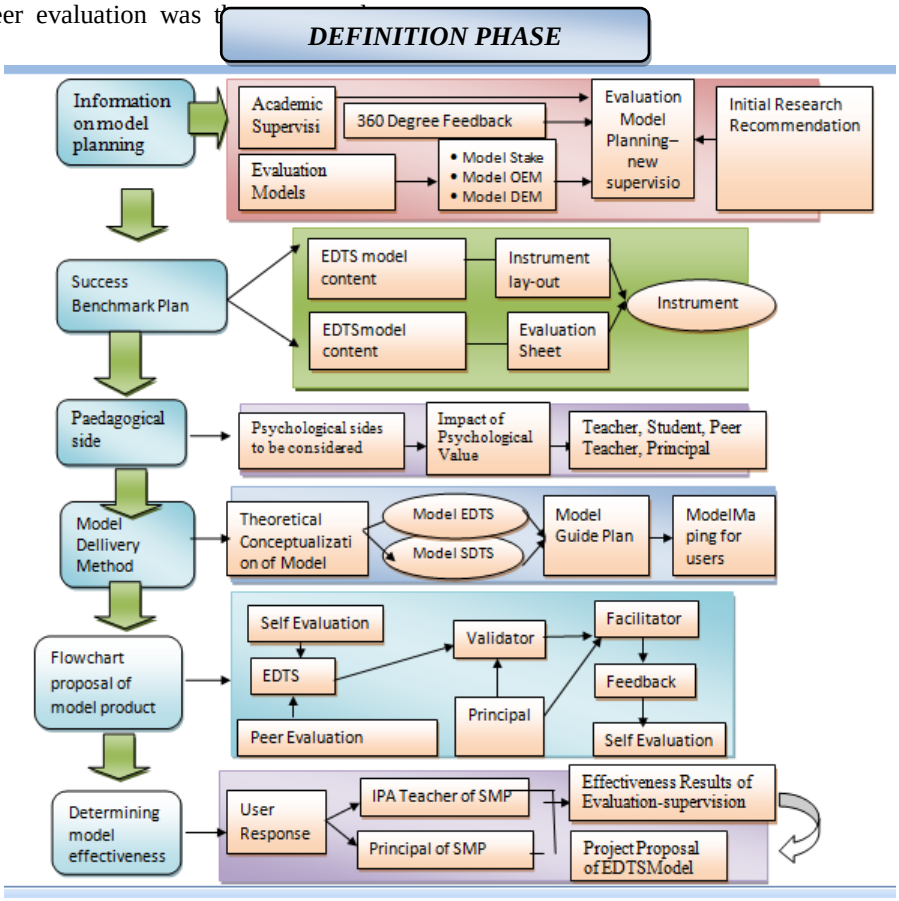


Figure 2. Details of *Definition Phase*

a. Information on EDTS Model Plan to Prepare

1).Basis for Evaluation Model

Evaluation is a process of providing meaningful and useful information as an alternative to making decisions, assessments, findings, conclusions leading to new knowledge, and capacity building in response to stakeholder needs leading to improvement as the decisions of future needs to correct the problem (Yarbrough et al, 2011). Evaluation is a process or activity selection, collection, analysis and presentation of appropriate information to determine the extent to which program objectives, product procedures, or strategy run has been achieved. It is expected to be useful for decision making and can determine some alternative decisions for the next program.

The learning evaluation model that will be developed requires an understanding of OEM Model, Stake model *(Countenance Evaluation Model), and The Descrepancy Evaluation Model* (*DEM / Provus Models*). The Organizational Elements Model(OEM),developed by Roger Kaufman,is the tool that can be used to identify different elements in a system. System is "a set of interconnected components that work together to achieve common goals" (Porter, 2005a).

The implementation of this research was on learning implementation. There are 3 (three) steps of learning implementation: (1) Planning; (2) Learning process; (3) Assessment.The Evaluation Model in accordance with the learning phases above was Stake modelincluding: *Antecedents, Transaction,and Outcomes. Antecedents* are the sources/ inputs that exist in a system to be developed, such as personnel, finances, student characteristics, and goals to be achieved, and existing conditions. *Transaction* includes activity plan and its implementation process in the field including the sequence of activities, time schedules, forms of teacher-student interaction, the way how to assess learning outcomes, etc. *Outcomes*are the results achieved by students, teacher's reaction to system, and the side effects of the system, and the impact of instructional experience (Stake, 1967: 523-540).

In addition to the evaluation stage above, the evaluation model to be developed will compare the existing standards with the reality occurred in the field. The evaluation model according to the above expectations is *The Discrepancy Evaluation Models* (DEM). This model was designed by Malcolm Provus in 1969 as an effective way to evaluate academic programs including learning programs. DEM is often called evaluation gap program.

2) Definition of Academic Supervision

supervision is conducted with the aim of improving learning. Academic supervision includes how the planning, processes, and assessment of learning are carried out by teachers so that the professional ability of teachers and the quality of learning increase (APSI, 2006). Supervisors should take advantage of opportunities, have the skills related to the content to be supervised, and have the skills to make the process of supervision meaningful and enjoyable through the provision of help and encouragement. Assistance activities can be in the form of briefing, encouraging, or co-ordinating toward better learning improvements (Lantip Diat Prasojo, 2011: 31).).

3) 360 Degree Feedback

360-degree feedback is a valuation activity of all staffs. The purpose of the 360 degree feedback program is to revitalize individual team, academic, and program. The information received from 360-degree feedback can serve as a basis for the discussion of the key behaviors that affect all participants. The participants must include all stakesholders. 360-degree feedback proactively assesses how to improve student learning outcomes throughout the academic year. The 360-degree feedback program can be an ideal evaluative tool. The National College for Teaching and Leadership says that 360-degree feedback is a brilliant way to motivate people, to help build strengths, to identify areas for development, and to achieve positive outcomes for individuals and organizations as a whole.

In Learning Evaluation-Supervision, 360-degree feedback is a system or process (teacher) to accept the assessment from the people who work around them (bosses, peers/ other teachers, subordinates/ students, and colleagues/ other staffs).The questions of 360degree feedback cover the various competencies of the teachers through assessment using a certain measurement scale and providing written comments, either by self, peers and superiors.

4) Recommendations of Preliminary Research Results

There are some preliminary research recommendations that had been conducted by researchers, i.e.: 1) it is necessary to find the alternative of other supervision forms to create a relaxed atmosphere and is not burdensome when a supervision takes place (Winaryati, E. 2011). Teachers' skills still need to be improved in order to manage a class effectively. (Winaryati, E 2012). The lack of supervisory function is related to learning, and the lack of coaching is related to

learning activities (Winaryati, E. 2013). From some of the findingsabove, it is necessary to find a solution so that the relationship between supervisor and *supervisee* can run smoothly without any obstacles. The improvement related to the concept of supervision through multirater assessment is required (based on the theory of 360 *degree feedback*).

b. Setting Benchmarks of Success Potential (Assessment)

Based on the theoretical basis above, the theoretical construct is resulted from the concept of EDTS model. As the first step, the researchers conducted the preparation of evaluation layouts. The preparation of evaluation sheets is related to the concept of EDTS model. There were 3 (three) stages of evaluation activities on planning, learning process and assessment. In order that the concept of EDTS model that had been prepared could be used by the users easily, the compiled content had to meet the needs of the users and in accordance with supervision standards that had been applied. The existing standard of supervision was compared with the reality of the execution which resulted in a gap. This study captured the gap between hope and reality. Based on the evaluation model theory used, it was related to the stages in conducting supervision resulting in the EDTS model relationship with supervision as follows:

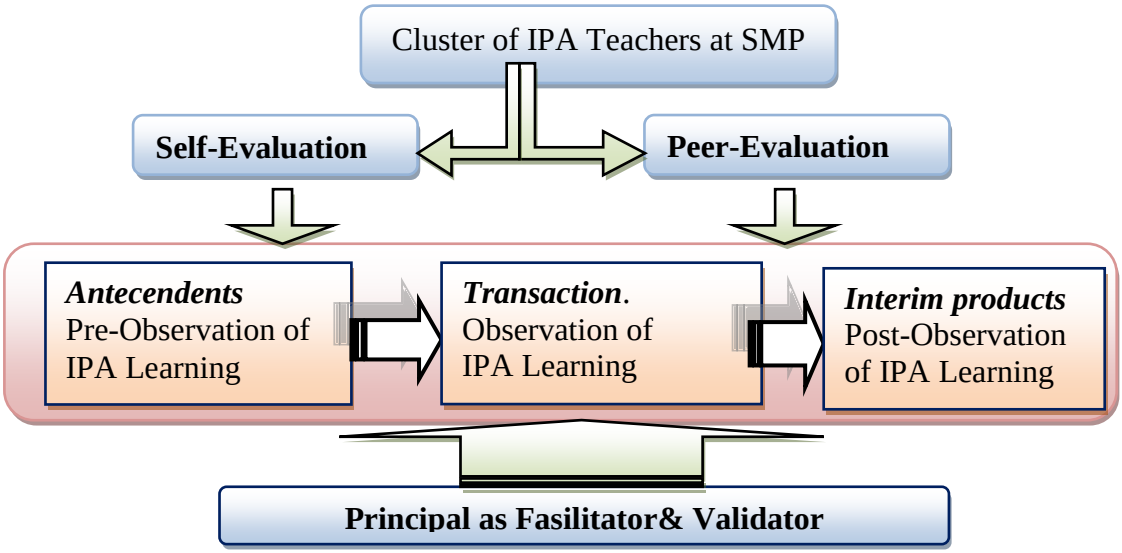


Figure 2. Association of EDTS Model with Supervision

The research was conducted through the evaluation at the stages of *antecedent, transaction, and interim products. Antacedent* is the preparations of planning and implementation of science (IPA) learning by the teachers themselves. *Transaction* is the planning and learning process of science (IPA) by the teachers themselves. *Interim product* is the availability of learning documents and their impact on student's learning outcomes. Based on the description above, the following is the determination of evaluation model selected in the form of matrix:

Assessment Matrix (in figure)		
Pre Learning Stage		
Antecedent	*Transaction*	*Interim Product*
Preparation	Planning	Planning of learning outcomes
Learning Observation		
Antecedent	*Transaction*	*Interim Product*
Readiness of learning materials	Learning implementation	Impact of Learning Outcomes
DESCRIPTION MATRIX (in description)		
*CONGRUENCIES (*suitability*)*		
Antecedent	*Transaction*	*Interim Product*
Planning	Implementation	Learning Outcomes
CONTINGENCIES (Relationship)		
Intense	*Observation*	

Table 1. Matrix of EDTS Model

c. Preparation of Paedagogical Side (Things to Consider)

The implementation of the EDTS model involves the teachers of science (IPA) and the principal. In order that the model can be implemented in the field, it is necessary to have a corresponding attention paedagogically. Based on the preliminary research results,the data obtained show that the learning supervision tends to be administration only related to learning planning (preparation of RPP), a sense of uncomfortable felt by some teachers when supervised, the feedback from the supervision of the learning implementation that had not been maximized, and the lack of understanding of some supervisors related to the content taught by the teachers.

The issues above indicate that supervision as an educational activity filled with paedagogy had not been implemented well. Pedagogy is an element related to the strategy or approach of learning conducted by the teachers that include cognitive, affective, and psychomotoric aspects. Based on the results of the FGD with the MGMP teachers of IPA for the Junior High School teachers in Semarang, the data obtained show that there were still difficulties for the teachers to create learning (including methods, media, and strategies); the tendency of the teachers to teach simply and practically, and they sometimes did not follow the latest developments well.The teachershad not implemented a maximum assessment that includes three domains.

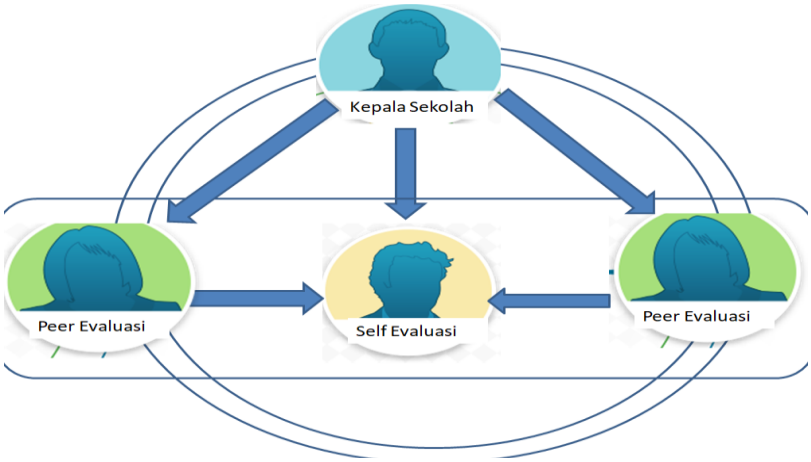


Figure 3. Self and peer evaluation

d. The Way to Deliver the Model Product to Users

The data on EDTS model is divided into two; qualitative and quantitative. The qualitative data obtained from the suggestions and opinions of FGD,by both experts and practitioners, and expert advice from the activities of expert judgmentandthe quantitative data of the assessment results by an expert *were* used to make the improvements to the EDTS model. The assessment aspects of the EDTS model included: evaluation model and its instruments. The evaluation model included completeness, content conformity, usefulness, practicality, and effectiveness. The instruments includedthe content and its language.

The Self and Peer Evaluation (EDTS) in the supervision of IPA (science) learningwas an evaluation based on the learning supervision stage and conducted by the teachers of IPA (science) themselves and the peer teachers of IPA (science). The principal acted as a facilitator and validator. The Evaluation result was the recommendation of information for supervision activity so that there will be the improvement of science learning. The EDTS model is a new evaluation model. The model was structured to make it easier for the users (science teachers and principals) to use it. Therefore, the evaluation use flowchart is simple. The following is the figure of the flowchart of the EDTS model implementation for the users.

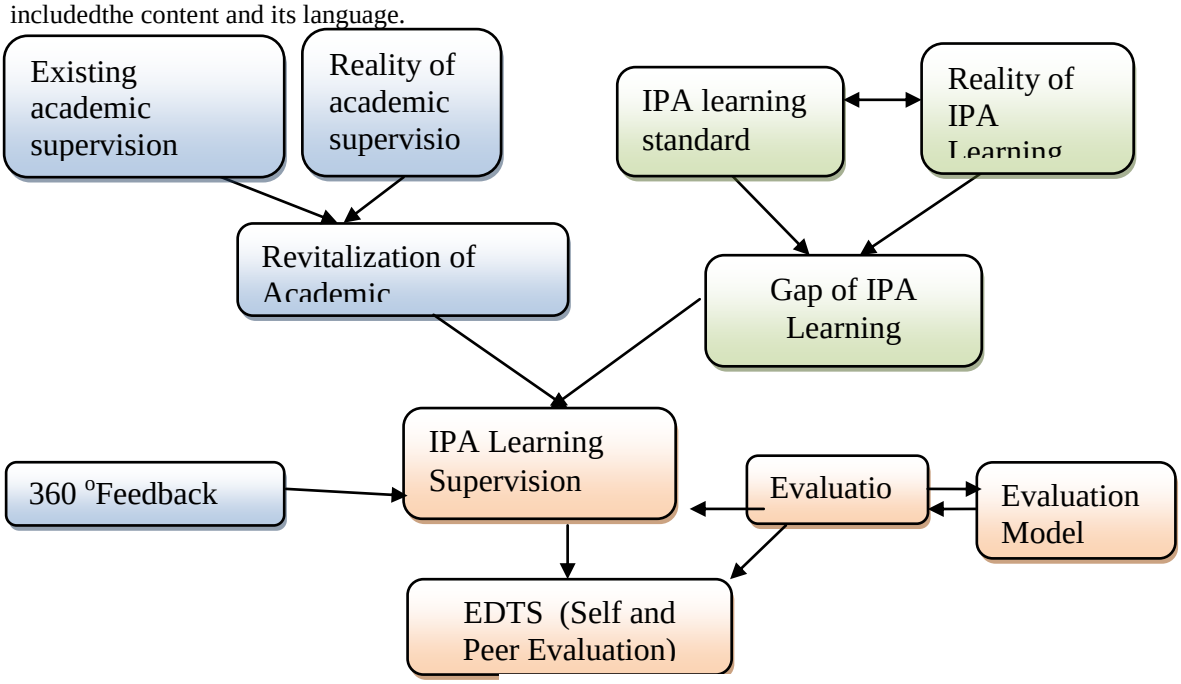


Figure 4. Concept Design of EDTS Model

Source: Eny Winaryati, 2012b)

e. Determining the Flowchart of Project Proposal/ Model Product

The core of the definition of evaluation is a process of **providing** meaningful and useful information as an alternative decision. Then, the definition of academic supervision provides an affirmation, as an activity of guidance assistance towards **improvement** so that it will **improve the quality of learning process.** The relationship between evaluation and supervision is that the result of evaluation activity through the ANTRANINPRO model generates information. This information is used as a policy-making by the superior and foothold for teachers to make improvements in learning. The following is the illustration of the supervision evaluation model (figure 5).

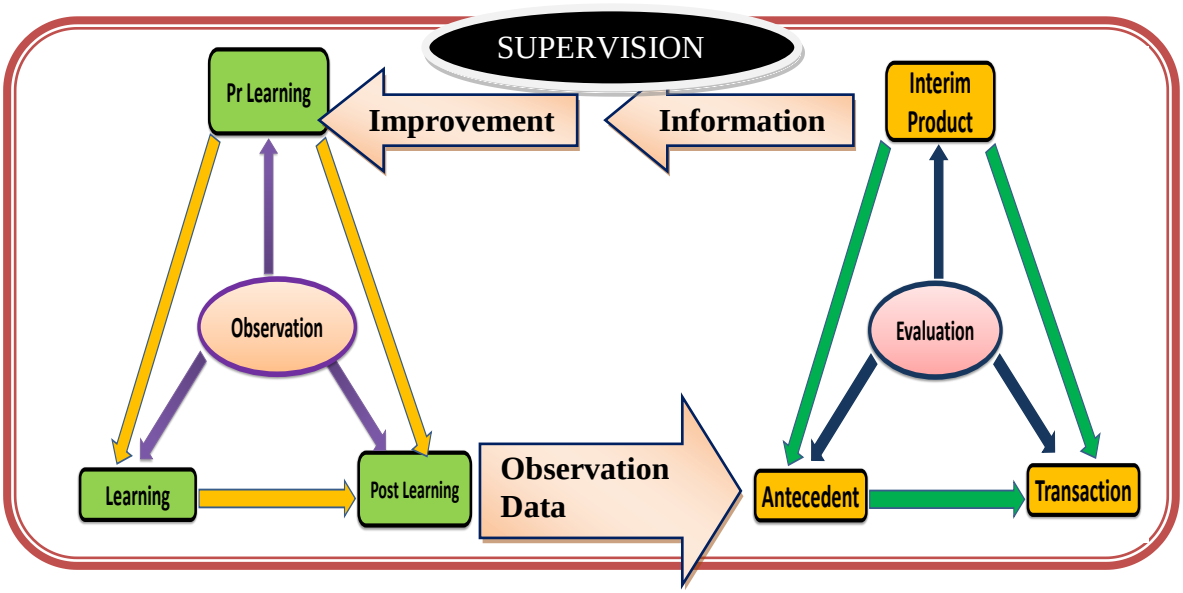
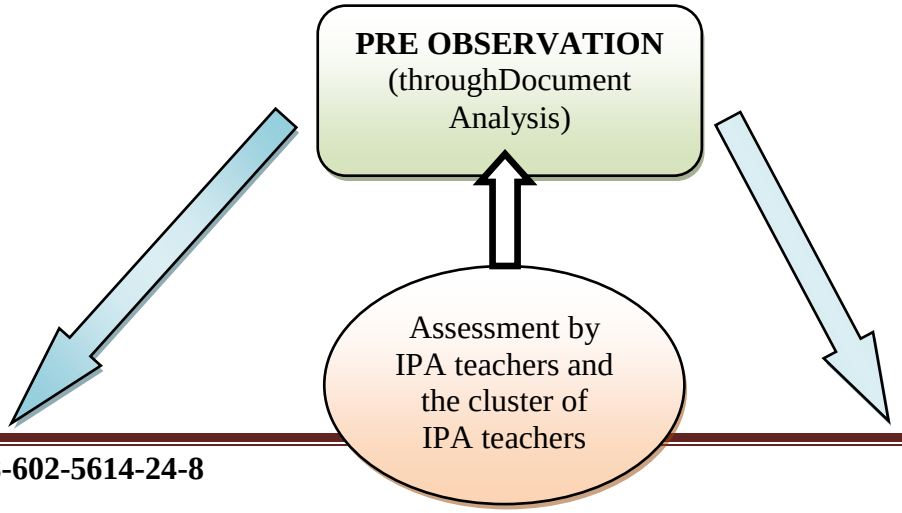


Figure 5. The Series of the Stages of Observation –Evaluation -Supervision

f. Planning the Strategy to Determine the Effectiveness of SDTS Model

The EDTS model was developed to optimize the implementation of existing supervision. The EDTS model is to conduct the assessment based on the stages of the learning supervision that occurs. As a new model, before the initial examination and before the model developed further, the following is an overview of the EDTS model flowchart in the IPA learning supervision:



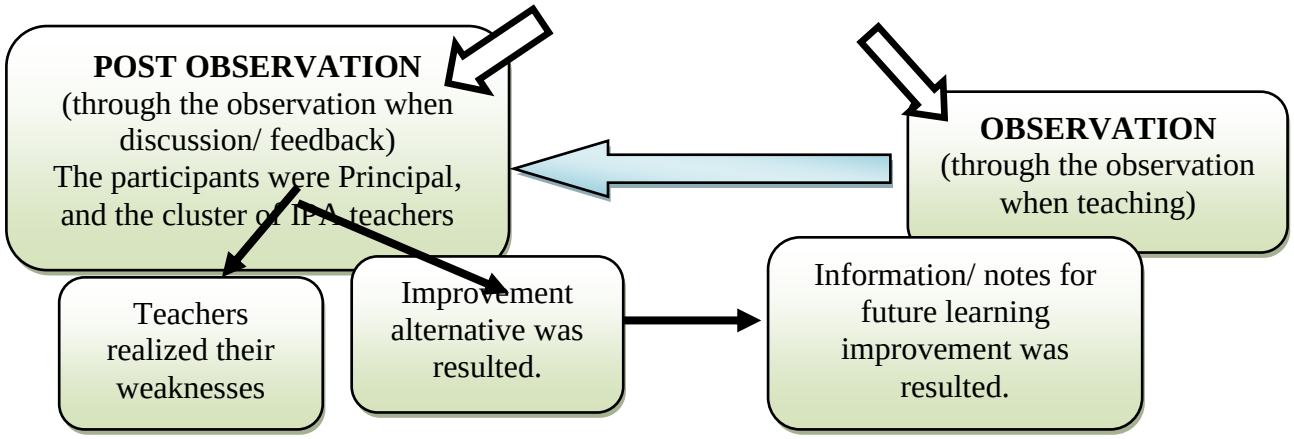


Figure 6. Flowchart of the Implementation of Self and Peer Evaluation in IPA Learning Supervision

1.	**PRE OBSERVATION**.
	The science teachers themselves and the teachers of the same cluster made observations through **document analysis** including the preparation and planning of the science teachers
2.	**OBSERVATION**
	The cluster of IPA Teachers made observations through the **observation** of the implementation of learning by science teachers, with regard to their instructional skills, the ability to implement science lessons, teacher'sskills in managing the classes, and the teacher knowledge on the development of their students.
3.	**POST OBSERVATION**.
	a) The teachers submitedthe data from the pre-observation and observation activities to the principal. b) The principal analyzed the data from the teachers. c) The cluster of teachers and the principal conducted discussion as a feedbackactivity related to how the plan fits with the implementation, the learning response, and theimpacts of the feedbackon the improvement of learning. d) The role of the principal in the discussion forum as a facilitator. e) From the discussion, information / records were generated. f) The information was used by the science teachers to improve learning in subsequent activities.

An overview of the EDTS model plan above was made before the actual model had been developed. Then, a study was conducted to examine the responses of the science teachers and principals whether the EDTS model is feasible to develop or not. The data were obtained through the assessment of the instrument filled by the subjects. The instruments consisted of three variables; pre-observation stage (9), observation stage (9), and post-observation stage (18). The research used a Likert scale with the ratings of six categories. The scoring scores are: score 1 (strongly disagree), 2 (disagree), 3 (quite agree), 4 (agree), 5 (strongly agree), 6 (strongly agree very much).

Based on the interpretation of the assessment results, all assessment data by both teachers and principals for all regions (Rembang and Demak) are in VERY GOOD category (the highest rating). It indicates that the model users(teachers and principals)gave a high response.

Based on this assessment, it can be concluded that the EDTS model can be followed up with development research and implemented (Winaryati, E. 2011).

The assessment data above was supplemented by the principal's notes on the EDTS model. The positive responses were much more comparable to the responses of suggestions, either by science teachers or principals. Every teacher and principal gave positive responses. Based on the clustering of the respondents and suggestions, the data show that there are 55 teacher responses and 31 principal responses, and only 5 suggestions were considered regarding the EDTS model when implemented. The data obtained were labeled, edited, grouped, and summarized.

The principals' response tend to have a higher rating than the science teachers'. The high response of the principal is possible because it gives advantages to the principal due to reduced workload. Therefore, the principals strongly supported the implementation of the EDTS model. Although the teacher's average assessment is lower, it does not mean that the EDTS model does not provide benefits to the teachers. This EDTS model also provides opportunities for better learning (Winaryati, E, 2012).

The research results show the data response on the effectiveness of the EDTS model by the science teachers and principals of the SMPs (the junior high schools) in Rembang and Demak districts, as follows:

1) EDTS was more effective when compared with traditional supervision because it involved many parties.
2) Teachers were not nervous/ afraid of being supervised because they were supervised bytheir peers making them more flexible. It made the teachers more comfortable in teaching, more motivated, and higher self-confidence.
3) It encouragedteachers to find out their weaknesses and shortcomings, and quickly got the feedbacks to be addressed and acted upon immediately.
4) It established openness among science teachers and principals, so they could exchange ideas on the issues in giving opinions.
5) It generated alternative improvement notes to move on to the next better lessons.
6) Teachers' knowledge increaseddue to the interactive discussion between peers and the ease of addressing the problems faced by the KBM (teaching and learning activities).
7) The supervision activities were programmed better and more systematic as they included pre-observation, observation and post-observation.
8) The teachers were able to exchange opinions on the materials, methods and models which were appropriate to the materials, and they could generate new ideas on the methods of learning science.
9) The peers understood IPA (science), so the supervision was performed more objectively, the class atmosphere was natural, and it was not made up (modified) so that the learning was more fun and communicative.
10) The EDTS provided information as well as solutions in dealing with the problems faced.
11) The principals' jobswere easier because without them the supervision went on. The results of the assessment was not the school principals' monopoly.
12) The EDTS was more "promising" for improving teacher training in learning toward truly professional teachers.
13) The results of the supervision were more objective because the teachersunderstood the learning materials.
14) The traditional supervision tend to overload the principal, while the EDTS was more communicative.
15) The EDTS further assured teachers to be more democratic in determining their progress.
16) The teachersgot the feedback from the observing teachers.

CONCLUSIONS AND SUGGESTIONS

Conclusions:

1) *Define Phase* is a phase that contains defining activities before project proposal is generated.
2) The stages of define phase activities are as follows: 1) Information on the model planning that needs to be developed; 2) Establishing the benchmarks of success potentials (assessment); 3) Preparation of paedagogical facets which need attention; 4) the ways how to deliver the model products to users; 5) Determining the product proposal; 6) Planning a strategy to determine the effectiveness of the model.
3) The recommendations of the Define phase contain detailed descriptions of the development of Self and Peer Evaluation (EDTS) Model in the supervision of IPA (science) learning. The peer evaluation

was performed by the peer teachers, and the supervisorswere the Principals.

Suggestion:

The development of the project proposal into the design of EDTS model

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