

Developing A Discrepancy Evaluation Model (Dem) To Optimize PEP Unnes Online Workshop Series

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Abstract—PEP UNNES has a responsibility to encourage the scientific culture and improve the quality of education in this Covid-19 pandemic era. Therefore PEP UNNES organize a series of online workshop that is open for all parties. But, to improve the quality of implementation, there must be a comprehensive evaluation. This study aimed to obtain two main things. First; Evaluate the target achievement of the PEP Unnes online workshop series. Second, provide recommendations related to the implementation of the next workshop. The approach of this study is descriptive qualitative using the basis of the Discrepancy Evaluation Model (DEM), which has five main stages. (1) Designing Criteria; (2) Program Operation; (3) Program Interim Product; (4) Program Terminal Product; (5) Program Cost-Benefit Analysis. The objects of this study were workshop participants who become members of the WhatsApp groups. According to the stage of DEM, this study concludes five points. The finding on the first stage is the lack of budget and funding strategy. The performance on the second stage is 87,5%, with 12,5% of the discrepancy. The total performance of program implantation in stage 3 is 83,4%, with the score of the discrepancy is 16,6%. The achievement of the terminal product is excellent, where 75% of the participant takes more than once, and there are 52.5% participant will remain to take the next program even they have to pay. And, the finding of the final stage is the lack of predicting the future result.

Keywords: Evaluation, Online Workshop, Discrepancy

I. INTRODUCTION

PEP (Penelitian dan Evaluasi Pendidikan) is one of the graduate programs at the Universitas Negeri Semarang, focusing on education research and evaluation. Both fields are not only to graduate an expert but also to develop knowledge widely in the education community [9]. Thus, based on this framework, PEP uses different kinds of methods, such as seminars, workshops, training, and filed work for the people widely.

In another part, as we know in the era of the co-19 pandemic, the world of education faces severe challenges. Due to social restrictions, all formal education institutions cannot conduct learning in the usual way. The teacher must present the material and make a learning assessment from a distance. And

because this is something completely new, obviously there must be many problems.

PEP, with its scientific studies, is called to be part of the solution. The realization of this calling is by holding a series of online workshops with the theme of research and educational evaluation. Even these are free, for the achievement of targets and objectives, the committee tries to provide the best service. The actual realization of these efforts is by selecting competent speakers, opening opportunities for discussion, providing excellent material, assigning, and awarding certificates.

As a series program, PEP has conducted 4 online workshops and will remain continue with other programs in the future. The topics of four online workshops as the following:

- Factor analysis for validity test
- Development of test and qualitative research instruments
- Virtual Performance assessment.
- Tips for successful research during a pandemic

In general, PEP has implemented standard procedures for those four workshops. But, from the observation, the researcher found critical issues about the standard structure of program implementation. The main point is the fact that the committee only conducts the program as usual, where there is no brief information about program design, operation, interim products, final product, and program cost analysis.

Thus, there is an indication that the issue has a relationship with the decreasing number of workshop participants, as we can find on the following chart.

Table 1: Number of Participants

Workshop	Participant
1 st	73
2 nd	129
3 rd	39
4 th	41

This research proposes the discrepancy evaluation model (DEM) as the primary method to evaluate the whole process of program implementation. DEM, developed in 1966 by Malcolm Provus, provides information for program assessment and program improvement. Under the DEM, evaluation is defined as the comparison of

actual performance to the desired standard. If a difference is found to exist between the standard and the performance, this difference is known as a discrepancy.

The concept of a standard is not new to evaluation. Without a standard -some implicit intent or expectation, or model of excellence- evaluation is impossible. The problem has been that such standards are either not made public, not shared by all relevant parties, or not made sufficiently specific and comprehensive to be useful in judging or improving instructional programs.

The DEM embodies five stages of evaluation based upon a program's natural development: program design, installation, process, product, and cost-benefit analysis. [5].

Table 1: DEM Stage

Stage	Performance	Standard
I	Program Design Input, Process and Output Dimension	Design Criteria
II	Program Operation	Program Design Input and Process Dimension
III	Program Interim Products	Program Design Process and Output Dimension
IV	Program Terminal Products	Program Design Output Dimension
V	Program Cost	Cost of Other Program with Same Product

Source: [7]

At all stages, some indicator of performance is obtained, which is compared with a standard which serves as the criterion of performance. The discrepancy will be obtained when a 100 score of the standard is reduced by the program performance achievement score on each stage of evaluation.

At Stage I, a description of the program's design is obtained as "performance" information. This performance is compared with the "Design Criteria" postulated as a standard. The discrepancy between achievement and standard is reported to those responsible for the management of the program.

At Stage II, the standard for comparison is the program design arrived at in Stage I. Program performance information consists of observations from the field regarding the program's installation. Discrepancy information may be used by the program manager to redefine the program or change installation procedures.

At Stage III, the standard is that part of the program design, which describes the relationship between program processes and interim products. Discrepancy information is used either to redefine the process and relationship of process to an interim

product or to better control the process being used in the field.

At Stage IV, the standard is that part of the program design, which refers to terminal objectives. Program performance information consists of criterion measures used to estimate the terminal effects of the project. At this point in time, if decision-makers have more than one project with similar outcomes available to them for analysis, they may elect to do a cost-benefit analysis to determine program efficiency.

The "Design Criteria" constitutes an underlying assumption on which all other criteria for standards are based. The "Design Criteria" has been defined so as to contain three basic elements, each of which may subsume many variables. These basic elements of any program (as described in a vast "systems" literature) are Input, Process, and Output.

Stage V represents a cost-benefit option available to the evaluator only after the first four stages have been negotiated. Notice that the use of discrepancy information always leads to a decision to either 1) go on to the next stage, 2) recycle the stage after there has been a change in the program's standards or operations, 3) recycle to the first stage, or 4) terminate the project. (Buttram, Covert, Robert W. et.al, p3).

The five stages, (Design Criteria, Program Operation, Interim Product, Terminal Product, and Program Cost Analysis), will be a guideline in determining and arranging the standard structure for program evaluation, where the PEP Committee will get vast information about program continuity, whether it stops, continues, or continue with a revise. There are also information about which part of the program must be fixed if the decision is to continue with a revise.

The final result of these reports will not only present new experience, discourse, knowledge, and skills for the PEP committee in the field of program evaluation but also provides the possibility of PEP program (workshop series) improvement for the future. There must be some critical point of implementation to be a consideration in for the next program.

At the same time, there is an expectation that this report will give critical information and be a kind of reference in conducting and evaluating a similar program. Then, by reading this report, people will get inspiration and guidelines to develop a structured plan with standardized targets and comprehensive measures of each program achievement.

II. METHODS

This research will use a mixed-method with concurrent triangulation design. Mix method is combination of quantitative and qualitative methods: Integration of data and/or results (not 2 separate studies). Mix method is a longstanding practice in

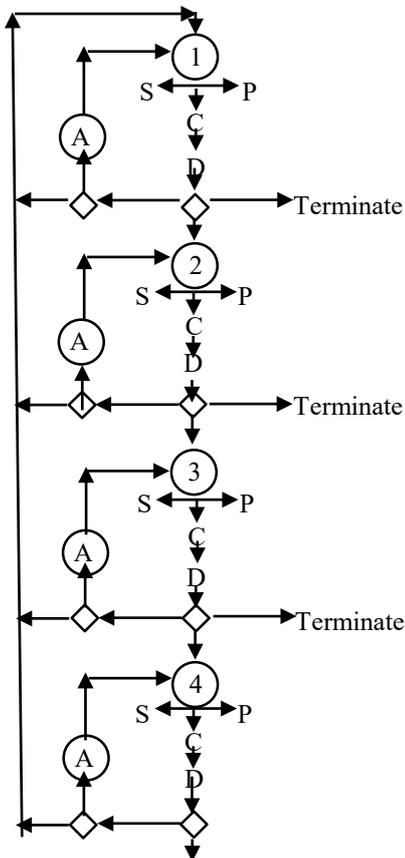
research, e.g., evaluation studies. The purpose of mixing methods:

- Better understand quantitative results, or
- Generalize qualitative findings, or
- Corroborate qualitative and quantitative data. [8]

Mixed methods is a research approach, popular in the social, behavioral, and health sciences, in which researchers collect, analyze, and integrate both quantitative and qualitative data in a single study or in a sustained long-term program of inquiry to address their research questions [1].

The purpose of this design is "to obtain different but complementary data on the same topic" to best understand the research problem. The intent in using this design is to bring together the differing strengths and non-overlapping weaknesses of quantitative methods (large sample size, trends, generalization) with those of qualitative methods. This design and its underlying purpose of converging different ways have been discussed extensively in the literature. This design is used when a researcher wants to compare and contrast quantitative statistical results with qualitative findings directly or to validate or expand quantitative results with qualitative data. (Creswell, 2006, p62)

The same timeframe and equal weight between quantitative and qualitative methods will implement in the whole phase of research since the process of data collecting, display, reduction until data conclusion in the DEM stage structure. The DEM stage structure is like what we can find on the following figure:



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Figure 1: Process of Comparison Over Stages

1 (one) until 5 (five) is the symbol of the stage, and in the chart S = standard, P = program performance, C = compare process, D = discrepancy information, and A = change in program performance or standards.

The evaluation program will start by seeking a discrepancy in stage 1. If stage 1 can fulfill the minimum discrepancy standard, the process will continue to stage 2. If no, the program will be terminated. This process will be repeated until the final stage, where the researcher got the final result of the research.

As the concurrent triangulation design, both quantitative and qualitative methods are used in the same way for a whole research process since data collecting, analyzing until taking the conclusion. Data collecting is about searching the program performance, and the data analysis is about exploring the gap or discrepancy between standard and program performance in every stage. Base on the study of each step, the researcher will get the conclusion to continue, stop, or revise the program.

III. Results and Discussion

The result and discussion of this research classifies according to the process of each stage.

Stage 1

This stage, we have to look at the PEP workshop design base on the standard criteria of program design.

The program design consists of six components. 1) Need for the program –assesses what a population needs, what is available in the community, and the gap between what is needed and what is available. 2) Program objectives and outcomes –what the program is intended to accomplish for the particular target population. 3) Program principles –the fundamental norms, rules, and values that guide the program. 4) Program components – a specific set of inter-connected activities provided. 5) Budget/cost – what it will cost to implement the program. 6) Funding strategy – how the program will be funded. Can it be done within the current organizational budget? [6]

The following are the first stage standard fulfillment:

Table 2: Fullfilment of stage 1

Components	Standard	Performance
Need for the program	V	V
Program objectives and outcomes	V	V
Program principles	V	V
Program components	V	V
Budget/cost	V	
Funding strategy	V	

PEP online workshops can fulfill most of the required components, except two (budget and funding strategy). So, the discussion will focus on the question, why there is no budget and funding strategy on this program?

From further observation, the answer have been found, that is just because all the funding components (workshop speakers, internet connection, committee, and certificate) are free of charge, so the budget and funding strategy are ignored.

Thus, the final results of this stage are still acceptable, and the program evaluation will continue to stage 2.

Stage 2

Program installation is about the preparation and installation of any element that was needed to implement of program. As the online workshop, the components of program installation is consist of the following rules.

First, assemble a capable webinar coordination team. Similar to organizing any scientific meeting, hosting a regular webinar series requires the involvement of a dedicated group of people. The role of the webinar coordination team is to assist with all the planning and logistics for hosting a webinar while ensuring that the workload is borne by corporation and it's not by a single individual.

Second, share webinar organizational documents. Accessible shared space for webinar documents enables decentralized access and smooth organization of tasks and resources. Various template documents on corporate letterheads can be created as the basis for gathering information from invited webinar speakers. Data collected should include the webinar title, authors, abstract, a picture of the speaker, and their biography. An important document required is a consent release form whereby the speakers give their permission to use their submitted image for the webinar announcement, record the webinar, and acknowledge that they are the authors of the work.

Third, settle on a convenient and user-friendly webinar platform. The choice of platform for hosting a webinar is crucial. There are numerous free and

paid-for platforms available offering different features. An important point to take into consideration within resource-limited settings is that most regions are operating on very constrained bandwidth and have limited budgets, so the use of expensive webinar platforms that have high bandwidth requirements and a charge per user may not be feasible.

Forth, select theme expert presenters. The success of a good webinar hinges on the relevance of the talk to the proposed theme. As the various issues have been decided beforehand, the webinar coordination team members can reach out to other consortium members to identify speakers with relevant domain expertise. An advantage of having predetermined themes for a webinar is the flexibility to pre-identify more than one potential domain expert speaker. [4].

The following are the performance and the discrepancy on the stage 2.

Tabel 3: Fullfilment of Stage 2

Installation Element	Workshop								
	1		2		3		4		
	P	D	P	D	P	D	P	D	
Team									
Coordinatio n	87,3	12,7	93,1	6,9	70,5	29,5	95,8	4,2	
Webinar Platform	85,8	14,2	90,1	9,9	74,7	25,3	90,5	9,5	
Expert Presenter	91,9	8,1	98,2	1,8	75,8	24,2	95,8	4,2	
Organizatio nal Document	86,7	13,3	95,0	5,0	70,5	29,5	90,5	9,5	

P= Performance; D = Discrepancy

Table 3 shows that most of the elements of the installations are on an excellent performance. The total of performance average for all online workshop series is on 87,0. So, the committee is not needed to halt the process and ready to continue on stage 3.

Stage 3

Interim product is an achievement dealing with the intermediate goals and objectives of the program. At its basic level, monitors, the sequential accomplishment of enabling objectives (those objectives which must be achieved to meet the final goals of a program).

While, at a higher level, process evaluation seeks both to clarify the relationship between intended processes and the accomplishment of objectives and to gain knowledge of intervening factors. As such knowledge is gained, more detailed enabling purposes are posited, tested, and documented. Meanwhile, a precise record of connections between program events and interim effects builds eventually providing persuasive "proof" of the program's value.

Interim product or intermediate objective of the PEP online workshop series is the participant needs fulfillment and satisfaction. In other words, interim

goals of this program are the meeting between what the workshop present and the participant necessity.

The result of the analysis of this stage can be found on the following table.

Table 4: Interim Product

Interim Product	Workshop							
	1		2		3		4	
	P	D	P	D	P	D	P	D
Necessity Fulfillment	87,5	12,5	94,3	5,7	75,8	24,2	89,5	10,5
Participant Satisfaction	85,0	15,0	88,5	11,5	63,2	36,8	85,3	14,7

P = Performance D = Discrepancy

Table 4 shows that most of the program intermediate goals are on an excellent performance. The total of program achievement average for all the PEP online workshop series is on 83,4. So, the evaluator is ready to continue the evaluation process to stage 4.

Stage 4

Installation and process evaluation are instrumental in Improving and stabilizing developing programs. Once stability has been achieved, then product evaluation is appropriate. The final objectives of the program are assessed at this point, using variables isolated during process evaluation. An advantage of conducting process and product evaluation is that if final program-objectives have not been met, it is then possible to determine what went wrong and often find evidence of other more successful 'activities within the program.

Stage 4 is the analysis of the program's final objective. The process is about redefining the program goals and ensuring the program continuity through some different kinds of evaluation methods.

There are two primary questions about program continuity. How many times have you joined PEP's online workshop? Second, If you have to pay, will you join the next workshop program?

The answer to the first question can be summarized in the following chart:

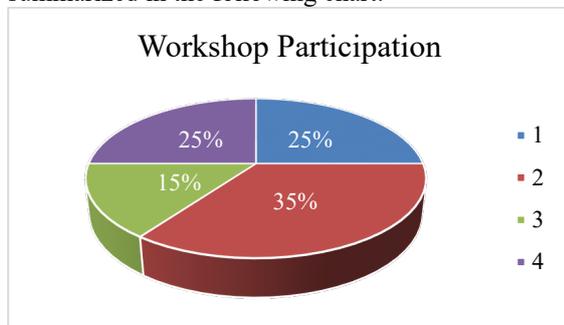


Figure 1

This chart shows that the percentage of the participant who joins more than one workshop is 75%, as the total from 35% (twice), 15% (thrice) and 25%(for times). Nevertheless, there are still 25% of

participant who just participate in once time and it must be get more attention from the committee by researching deeply with interview or other method.

And the answer to the second question can be understood from the summarizing on the following pie chart:

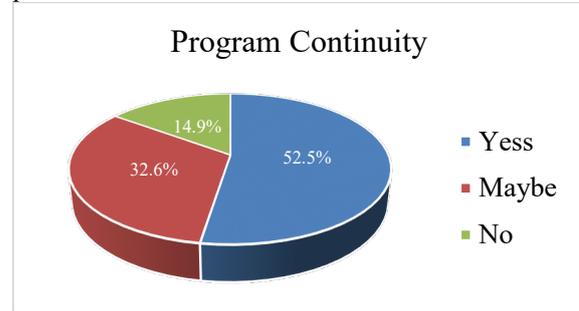


Figure 2

This figure shows that the participants who clearly did not continue the next program are only 14,9%. There are 52,5% participant want to continue the program even there is a cost, and 32,6% of the participants are on "still wait and see" status. Most of them will decide to participate in the next program if the price and the topics are suitable for their need.

Stage 5

Benefit-cost analysis provides a framework for exploring a variety of issues, its primary goal is to estimate the extent to which the aggregate benefits of a policy exceed its costs, often comparing alternatives to identify which option (if any) is likely to be most economically efficient. Benefit-cost analyses are rarely the sole determinant of policy decisions given that some impacts cannot be quantified, policymakers and stakeholders care about equity as well as efficiency, and policy choices are often constrained by law and other factors [3].

In order to provide an accurate picture of existing possibilities, CBA must be as comprehensive as possible, calculation of not only money expenditure, but also what economists term 'opportunity costs' is required. When resources are invested in a certain way, they are not invested in other ways, yet having invested them differently might also have yielded benefits.

On the other side of the equation are the benefits. Here it is required that all relevant benefits be identified, valued, quantified, converted into a single scale, and then aggregated and compared. Ideally, the calculation of benefits should take into account all private and social outcomes, both economic and non-economic. [2].

Some fundamental problems with using CBA to inform the decisions are valuating outcomes, reliance on a single scale to produce a unique value, and predicting future results. [2].

As previously stated, the PEP online workshop programs are entirely free for all the possible costs. So the principle of "valuating outcomes" and "a single scale to produce a unique value" is automatically fulfilled.

But, there will be a problem with predicting future results. The researcher did not find any policy about the possible changing of the condition.

IV. CONCLUSION

DEM is a powerful tool to evaluate the whole process of the PEP online workshop program implementation. The DEM present a structured evaluation method to the PEP program.

The following are the complete result of the analysis since the first stage.

1. Most of the components in stage 1 can fulfill the need of the ideal standard of program design. The finding on this stage is only the lack of two final component (budget and funding strategy). And since the program is free of charge, these two components are not be a problem.
2. The evaluation result in stage 2 is an excellent achievement. The number of 87,5% of performance and 12,5% of discrepancy has a lot of meaning about how great the program been installed.
3. The achievement of the intermediate goals is most convincing. The total performance of program implantation in stage 3 is 83,4% with number of discreapcy is 16,6%. Those numbers show how good the acquirement of program interim product.
4. The achievement of terminal product is a great thing. The participant who joins more than one workshop is 75%. There are 52.5% participant want to continue the program even they have to pay and 32,6% of the participants will join with some thought.
5. Since all the program is in free of charge, so the evaluation on this stage just highlights the lack of predicting the future result.

From those conclusions, the PEP online workshop program can be continued with a minor revision. And the primary point of revision is about the funding strategy and predicting the future result.

REFERENCES

- [1] Creswell, John W. (2013). Steps in Conducting a Scholarly Mixed Methods Study. *Discipline-Based Education Research (DBER) Group.* (48), 6.
- [2] Gilead, Tal, (2014). Education and the Rationale of Cost-Benefit Analysis. *British Journal of Education Studies*, 62(4), 373-91.
- [3] Robinson, Lisa A. and Hammitt, James K. (2013). Skills of the trade: valuing health risk reductions in benefit-cost analysis. *Journal of Benefit-Cost Analysis.* 4(1), 107–130.
- [4] Fadlilmola, Faisal M., Sumir Panji, Azza E. Ahmed, Amel Ghouila, Wisdom A. Akurugu, Jean-Baka Domelevo Entfellner, Oussema Souiai, Nicola Mulder. (2019). Ten simple rules for organizing a webinar series. *PLoS Comput Biol.* 15(4), 2-5.
- [5] Said Meldasari, Madhakomala R., Idris Fahmi. (2019). Discrepancy Evaluation Model For Human Resources Health Placement Evaluation At The Puskesmas. *Journal of Environmental Treatment Techniques.* 7(4), 3
- [6] Skuza ennifer, Boyce, Sherry (2016) Program Design & Development Resources. *UWTYR.* 8.
- [7] Buttra, Joan L. & Covert, Robert W. (1978). The Discrepancy Evaluation Model A Systematic Approach for the Evaluation of Career Planning and Placement Programs. *ERIC Clearinghouse,* 2-3.
- [8] Pluye, Pierre. (2013). The mixed methods appraisal tool assessing the methodological quality of qualitative, quantitative, and mixed methods research. *PCNE Working Conference.* 3-4.
- [9] Prodi Penelitian dan Evaluasi Pendidikan (PEP). (2018). *Borang Evaluasi Diri.*