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Implementing the Context, Input, Process, Product (CIPP) Evaluation Model to Measure the Effectiveness of the Implementation of Teaching at Politeknik Negeri Bali (PNB)

I Nyoman Gunung [1*], I K Darma [1]

[1] *Politeknik Negeri Bali, INDONESIA*

* CORRESPONDENCE: ✉ nyomangunung@pnb.ac.id

ABSTRACT

This study aimed at finding out the level of effectiveness of the implementation of teaching at PNB viewed from the relatedness of the components of 1) context; 2) input), 3) process, and 4) product. This study used the CIPP (Context, Input, Process, Product) model evaluation method. The data were collected using questionnaire, interview guide, and related documents. The subjects consisted of students, lecturers, and the management sfaff of departments in PNB. The data were analyzed descriptively and qualitatively. The effectiveness in the implementation of the teaching programs was determined by transforming the raw scores into the Z-scores and the T-scores, which were then verified into Glickman's quadrant prototypes. The result of analysis showed that the effectiveness of the implementation of the teaching program at PNB viewed from the relatedness of context, input, process, and product falls into fairly effective category. While the obstacles in the implementation of the teaching programs at PNB include those in the components of context, input, process and product components. The outstanding obstacle occurs in the product variable.

Keywords: program evaluation, teaching, polytechnique, CIPP

INTRODUCTION

Education is one of the processes of activities which are done deliberately to the input to produce a product desired in accordance with the objective that has been set out. As a process the education has to be evaluated. The objective is to find out the effectiveness of the teaching and learning process that has been implemented.

In the educational process, evaluation is one of the important components and plays an important role in identifying success of an educational program. Basically, evaluation is meant to obtain data or information about the distance between the existing situation and the expected one. By using certain criteria. Grondlund and Linn (1990) state that an evaluation of a teaching is a process of collecting, analyzing and interpreting information systematically to determine to what extent the learning objective has been achieved. The components that need to be evaluated are the students, the teachers/ lecturers, the curriculum, infrastructures and facilities.

Evaluation is an effort to make decisions on the quality of the program achievement and the performance and ability of the students (Ebel & Frisbie, 1991). To find out the quality of the program achievement at a tertiary level, a suitable system or model of evaluation is needed so that it and provide accurate information for the stakeholders, especially the management of the institution that is optimally useful for improving the

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teaching program. Many evaluation designs and models that have been used for evaluating institutional programs or performances. One of the models that has been popular and dominant is related to an evaluation of the teaching implementation called the Model CIPP (context-Input-process product) developed by Stufflebeam *et al.* (1971) (Suharsimi, 2009).

The CIPP Model has the orientation to provide services to various models of community service programs and policies. This evaluation model has the objective to connect information, context, input and process with the product, and to show the availability of environment in the effort to achieve the objective and target of the program that is being run (Permendikbud, 2014).

The CIPP model is not only designed to evaluate certain aspects only, but can be used comprehensively to see various things related to a program with the aim to correct the program, including a development program. Up to now, there have been a lot of literature that try to implement the CIPP model evaluation model. This approach is regarded to be fairly representative in deeply exploring the implementation of a program. In the study done by Hasan, this CIPP model was used because this evaluation model can be done structurally and significantly (Hasan, 2009).

In addition, the CIPP model was used because the effectiveness of this evaluation model can be measured to obtain formative and summative results and also the ability in solving problems that occur. Based on this condition, a study that focused on the framework of the CIPP model was conducted with the aim of obtaining a framework to help in evaluating the system implementation.

The evaluation model of context, input, process, and product (CIPP) was developed by Stufflebean *et al.* (1971) (Stufflebean, 2003). The CIPP model sees four dimensions: context, input, process and product dimensions. The uniqueness of this model lies in the fact that in each type of evaluation there is a decision made related to the planning and operation of a program. This model also sees that a program under the evaluation as a sustem, and the model is an evaluation model that has some advantages compared to other program evaluation models (Foroozandeh, Riazi, & Sadighi, 2008; Sukardi, 2014; Widoyoko, 2009; Zhang, 2011). The advantages are: 1) it gives a very detailed or broad picture of a project, 2) it has the potential to move in formative and summative areas of formative and summative areas, 3) it is more comprehensive or more complete in filtering information, 4) it can provide a good basis in making decisions and policies for designing a further program. Another advantage is that the CIPP evaluation model provides a comprehensive evaluation format that is comprehensive in each stage of evaluation.

The result of the CIPP evaluation model can be used as the basis to make four types of decision: (1) planning (that has an effect on the selection of objective and target of the activity, (2) structuration (that determines the optimal strategy and the design of procedures in attaining the objective), (3) implementation (that provides instruments to implement programs and improvements of the existing programs), and (4) recycling (whether an activity needs to be continued, changed or stopped).

Evaluation of the setting (context evaluation) will produce information on the needs (to what extent there are deviations that occur between what is expected and what is realized through the activity program). The evaluation of the capacity (input evaluation) stresses on the provision of information on the strengths and weaknesses of the strategy and procedure of activities selected in an effort to realize the objective that has been determined. The evaluation of the process (process evaluation) stresses on the activity that is done in the program (what), the persons appointed as the people who are responsible for the program (who), the time when the activity will be over (when). While the evaluation of the end result (product evaluation) stresses more on the extent the result that has been achieved fits well with the desired objective and whether an activity needs to be stopped, continued, etc. The evaluation of the end result (product) has the aim of relating information on the end result of the objective, the supporting capacity, setting, supporting capacity and the process that has been determined before (Stufflebean, 2003, 2007; Suharsimi, 2009). Many researchers have shown the effectiveness of the CIPP evaluation model to evaluate an education and training program (Suartika, Dantes, & Candiasa, 2013, Suharsimi, 2009; Waluyati, 2012).

The result of the CIPP evaluation model can provide much guidance on what has been done and what has not been done, which teaching process fits in with the planning of the teaching that has been designed, whether the material given by the lecturer can be understood by the students, and is suitable with the content standard of the teaching implementation.

School or tertiary educational institution is a system that is composed of the components of context, input, process, output and outcome. The context has an effect on the input, the input has an effect on the process, and the process has an effect on the output, and the output has an effect on the outcome. In a system, the sub-

systems are formed that synergically support the attainment of the aim of the objective of the program implementation (Nasution, 2001)

Politeknik Negeri Bali (PNB) is one of the vocational education institutions in Bali. . Its current vision is : to become a foremost high vocational education institution that produces professional graduates with an international competitive advantage in 2025. While one of the missions is to produce reliable human resources who are oriented to the market need in the field of engineering and business administration with tourism as its competitive advantage. In an effort to improve programs, modifications, terminations especially programs that are being implemented, there is a need to evaluate comprehensively, systematically and diagnostically the implementation and planning of the programs done by the lecturers at PNB.

This evaluation will see whether the implementation of the teaching has referred to the national standard of education that is instructed in the Regulation of the Minister of Education and Culture No. 49 of 2014 on the National Standard of Higher Education (Permendikbud, 2014). The evaluation model that fits uses the one developed by Stufflebeam on Context, Input, Process, dan Product (CIPP).

METHOD

Methodologically this study belongs to the evaluative study with method, that is, by combining quantitative method and qualitative method (Sugiyono, 2014: 26). This study used the CIPP Evaluation Model (Context, Input, Process, Product). The subjects of evaluation were the students, the teaching staff and the administrative staff of Politeknik Negeri Bali in the academic year 2017/2018.

The data were collected using the CIPP evaluation instrument that has been evaluated. The level of the content validity of each instrument was at least 0.60 and the highest was 0.90. The reliability level had the highest category. Then, the data were analyzed using a descriptive- qualitative and quantitative analysis.

The characteristics of data obtained were different, thus before they were analyzed they were transformed into T-scores, calculated using the following formula.

Score-T = 50 + 10Z and $Z = \frac{x-M}{SD}$ (Sujana, 1989)

The quality of the score in each aspect consisted of positive and negative aspects calculated using T-score. If the T score > 50 was positive or high i (+), and T< 50 was negative or low. The result of each aspect was counted by adding the positive score (+) and the negative score (-). If the number of the positive scores was greater than or the same as the negative score, the product was positive (+). If the number of the positive scores was less than that of the negative scores, than the product was negative (-) or $\Sigma+ \geq \Sigma- = +$, if $\Sigma+ < \Sigma- = -$ (negative).

To determine the level of effectiveness of the program of the teaching implementation at PNB was done by analyzing the context, input, process, and product variables through Glickman's quadrant model that consists of four quadrants. The quadrant analysis will describe some statuses of the effectiveness of the teaching implementation at PNB.

RESULT

This evaluation study was conducted on 172 respondents including the Chair of the Department and Study Program, Staff, Lecturers, and 337 Students. There are four main problems evaluated, namely: 1) contex, 2) input, 3) process and 4) the results of the learning program (product). The description of the distribution of the characteristics of the measurement results of each variable is presented in a summary of descriptive analysis in **Table 1**.

In **Table 1** it can be explained that the context variable tends to be the measurement results centered at 104.72. This means that on average, the overall measurement score of the respondents is 104.72, the midpoint is 105.0, the most commonly obtained is 104, the smallest is 76, the highest is 116, the distance between the highest and the smallest is 27, the average deviation of the measurement from the average 4.40, and variation 19.38. Ideal maximum and minimum scores of 140 and 28. The proportion of the ideal maximum score achievement is 74.8% and high categorized.

Table 1. Summary of Descriptive Analysis of Variable, Context, Input, Process and Product Measurement Results

Statistic	Context	Input	Process	Product
N	172	172	172	337
Mean	104.72	142.41	118.15	3.58
Median	105.00	140.00	119.,00	3.570
Mode	104	137	112	3.50
Std. Deviation	4.40	8.28	7.20	0.19
Variance	19.38	68.58	51.79	0.03
Range	27	46	35	0.96
Minimum	89	121	99	3.04
Maximum	116	167	134	4.00

Table 2. Recap of the Calculation of the Frequencies of the Context, Input, Process, and Product Variables Simultaneously

Variable	Frequency of the category		
	Σf (+)	Σf (-)	Result
Context	89	83	+
Input	78	94	-
Process	104	68	+
Product	166	171	-
Sum	437	416	+ - + -
Level of effectiveness asil	**effective enough**		

Note : T ≥ 50 of its component score (+); T < 50 of its component score (-);
T = 50 + 10Z and $Z = \frac{x-M}{SD}$ (Sudjana, 2012).

The results of measurement of input variable tend to focus at 142.41. That is, on average the measurement results overall score of respondents is 142.41, the midpoint is 140, the most commonly obtained is 137, the smallest is 121, the highest is 167, the distance between the highest and the smallest is 46, the average deviation of measurement results from an average of 8.28, and a variation of 68.58. Ideal maximum and minimum scores of 170 and 34. The proportion of the ideal maximum score achievement is 83.8% and high categorized.

The measurement results of the process variable tend to focus at 118.15. That is, on average the overall score of the respondent's score is 118.15, the midpoint is 119.00, the most commonly obtained is 112, the smallest is 99, the highest is 134, the distance between the highest and the smallest is 35, the average deviation of the measurement results from average of 7.20, and variation of 51.79. Ideal maximum and minimum scores of 148 and 28. The proportion of the ideal maximum score achievement is 79.83% and high categorized.

The results of the measurement of product variables tend to focus on 3.58. This means that on average the overall score of the respondent is 3.58, the midpoint is 3.570, most commonly obtained is 3.5, the smallest is 3.04, the highest is 4.0, the distance between the highest and the smallest is 0.19, the average deviation from the average 0.19, and variation 0.03. Ideal maximum scores of 4.0. The proportion of the ideal maximum score achievement is 89.5% and very high categorized.

DISCUSSION

The result of data analysis shows that the context variable had a positive category. The input variable had a negative category, the process variable had a positive category, and the product variable had a negative category. The recap of the result of the calculation of frequencies of each variable is shown in **Table 2**.

Based on **Table 1**, it is apparent that for the context variable, the number of positive frequencies (+) is greater than that of the negative ones (-), the result is positive, for the input variable the number of its positive frequencies (+) is greater than that of its negative variables (-), the result is positive, for the process variable, the number of its positive variables is greater than that of the negative ones (-), the result is positive (+) and for the product variable, the number of its positive frequencies is smaller than that of its negative variable (-), the result is negative. Thus, on the whole, it produces positive- negative - positive - negative (+ - + -). To determine the level of the effectiveness of the implementation of the teaching program at PNB, the data of the

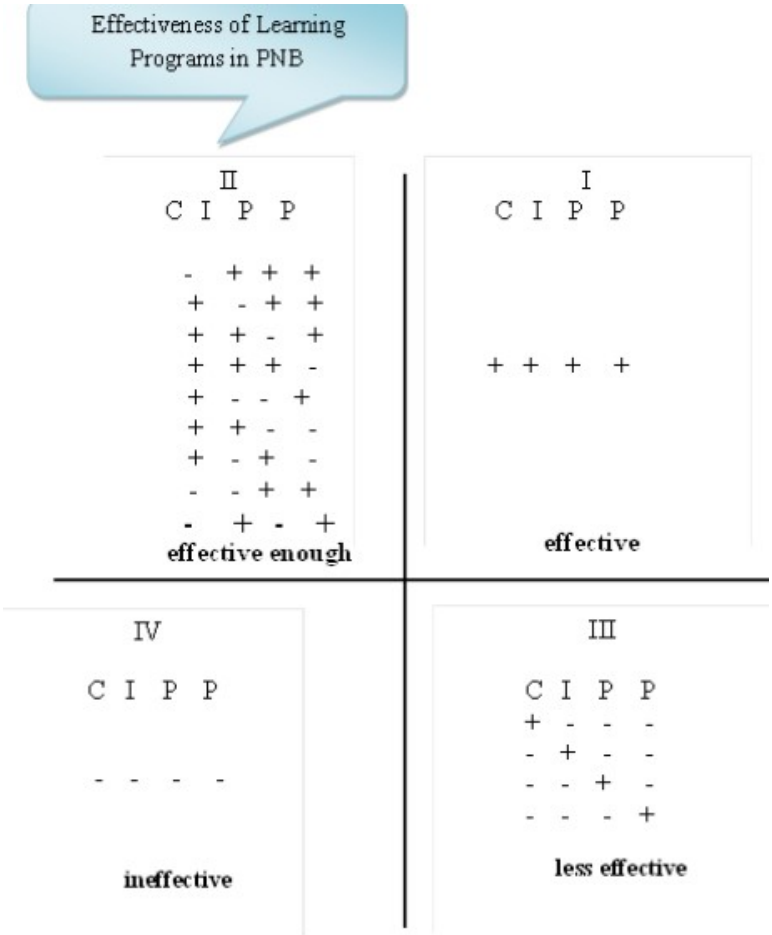

Figure 1. Effectiveness of Learning Programs in PNB

results of measurement of each of the context, input, process and product variables is verified into Glickman's quadrants in **Figure 1**.

The result of data verification of the result of the calculation of each variable is as shown in **Figure 1**, the position of the CIPP score with the + - + - pattern lies in Quadrant II. This position shows that the condition of the implementation of the program falls into the effective enough category. Thus, it can be concluded that the level of effectiveness of the implementation of the teaching program at PNB viewed from the relatedness of the context, input, process, and product variables is effective enough.

Viewed from the context component of the teaching program implementation at PNB in general, the implementation was effective. This condition was shown by the mean score of the context variable of 104.4. The proportion of the achievement of the ideal maximum score = 89. 05 %, falling into the very high category. The difference between the number of positive frequencies (+) and the negative ones (-) in the T- score produces a positive (+) score. The effectiveness of the implementation of the teaching program at PNB was caused by the context variable component, that is, the vision and mission as well as the learning environment at PNB. Each of the components shows a strong correlation (the average = 0.5) with the context variable. Thus, from the context of the aspect of course planning, the vision and mission as well as the learning environment at PNB are not the obstacles in the implementation of the teaching program at PNB.

Viewed from the input component, the implementation of the teaching program at PNB in general has been done ineffectively. The difference between the number of positive frequencies (+) and that of the negative ones (-) in the T-score produces a negative (-) result. The implementation of the teaching program at PNB is less effective, because only one input component has a positive (+) score, that is, human resource, while the others such as curriculum, Semester Course Planning and infrastructure and facilities produce a negative result (-). Thus, viewed from the input, the aspects of curriculum, Semester Course Planning, infrastructure

and facilities became obstacles in conducting the teaching program at PNB, while human resources aspect did not become an obstacle in the implementation of the teaching program at PNB.

Viewed from the process component, the process of implementing the teaching program at PNB in general has been effective, the difference between the number of the positive frequencies (+) and the negative ones (-) in the T-score results in a positive frequency (+). The effectiveness of the implementation of the teaching program at PNB was effective because there was only one process component produced a negative score (-), that is, evaluation/ assessment, while the others such as content and the teaching and learning activaties were positive (+) Each of the components showed a strong correlation with the process variable. Thus, viewed from the process aspect, assessment became an obstacle in conducting the teaching program at PNB, while the others did not become obstacles.

Viewed from the product component, the implementation of the teaching program at PNB in general was ineffective. The difference between f(+) and f(-) in T-score produces a negative score (-). The measurement was limited to the academic achievement in the form of the student's GNPs. Academically, the students' learning achievement did not support the effectiveness of the result of the implementation of the teaching program at PNB. The product variable component as a whole did not support the effectiveness of the result, but there was still an opportunity to be optimized. The percentage of the students with the GPA below 3.58 (49.23%) lower than that of the students with GPA above average (50.74%). The rate of students' graduation has a weak support to the effectiveness of the teaching. In the CIPP model evaluation the relation among context - input-process influence each other and influence the product. Effective context, input, and process tends to give an effective result/ product. However, the effectiveness of each component is inseparable from the support from its substance (Nasution, 2001).

CONCLUSION

1. The implementation of the teaching program at PNB viewed from the context falls into the effective category, from the *input*, it is not effective, from the process it falls into the effective category, from the product it is not effective. The level of effectiveness of the implementation of the teaching program at PNB viewed from the relatedness among context, input, process, and product it falls into the effective enough category.
2. The obstacles in the implementation of the teaching program at PNB include those in the context input, process and product components. The obstacles in the context variable includes: the teaching plan and the learning environment. In the input component the obstacles are the curriculum, semester course planning, infrastructure and facilities. The obstacle in the process component is the assessment system. While the obstacle in the process component is the assessment system. While the obstacle in the product component includes the academic quality that is caused by the obstacles that occur in the context, input and process variables.

SUGGESTIONS

1. The PNB institution management need to instruct the teaching staff to reconstruct their respective course teaching plans, to equip the infrastructure and facilities that support the creation of an effective and joyful teaching situation.
2. The teaching staff are expected to be able to improve ability in designing semester course plans, implementing an assessment system that can give a more realistic description of the attainment of the teaching objectives.

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Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

I Nyoman Gunung – Politeknik Negeri Bali, Indonesia.

I K Darma – Politeknik Negeri Bali, Indonesia.

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