**EFFECT OF CREATIVE INDEPENDENCE PROBLEM SOLVING (CIPS)-BASED TRAINING MODULE ON PROFESSIONALISM OF RURAL INDONESIAN ELEMENTARY SCHOOL TEACHERS**

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**ABSTRACT**

Training is necessary in ensuring teachers develop the essential skills for teaching problems solving skills. A specifically designed training materials such as a module is necessary especially if it involves teachers in remote areas that tend have less resources at their disposal. Six needs were identified for developing teaching problem solving skills among rural Indonesian elementary school teachers namely, teacher mentoring, self-actualization, competency, creativity, problem solving and independence. A training module was designed based on the needs which were assessed based on the CIPS model. The aim of the study was to investigate the effects of the CIPS-based Training Module on the professionalism of elementary school teachers. The training module consists of five (5) stages; pre entering, plan, setting, action and evaluation. The quasi-experimental research was used on 63 elementary teachers from Nunukan Island and Sebatik Island, North Kalimantan, Indonesia which were assigned randomly to either an experiment and a control groups. Before the training, a pre-test was conducted followed by training using the training module for the experiment groups, and no training for the control group. A post – test was conducted toward both groups to identify the effect of the training module. The results of independent sample t-test showed that there the experimental group obtained higher mean score than the control group. In conclusion, the CIPS-based Training Module is effective in developing professionalism in teaching problems solving skills among the elementary teachers from the experiment group. The findings have implications on how elementary rural teachers should be prepared for teaching problem solving skills.

**Keyword: CIPS model, effect, training module**

**INTRODUCTION**

The fast changing knowledge in education had leads to the improvement of quality teachers in order to provide better and quality students in future.[[1]](#footnote-1) In order to produce quality teachers, teachers and school leaders should learn more effectively and creatively.[[2]](#footnote-2) Problem solving, creativity and independent learning were some of the characters that should be implement in each teacher. For examples, teachers who are creative in solving their problems and ready to learn by their own can became a good example to their students.

However, teachers have problem in their creativity as they were too attached with their curriculum. Teachers always followed the curriculum that being provided and do not ready to implement new things such as new learning strategies.[[3]](#footnote-3) The situation leads to low quality of teachers and hence affect the achievement of their students. In addition, teachers also do not have the spirit to implement independent learning as they always depend on the facilities provided to them. Therefore, a training module was developed based on CIPS model and the effect of the CIPS-based Training Module was tested on elementary teachers in North Kalimantan, Indonesia.

Education systems in Indonesia had been left behind as the government policies in Indonesia had not been implemented in an integrated manner in the border region especially in North Kalimantan. According to the Central Statistics Agency of Nunukan Region in North Kalimantan (2016) [[4]](#footnote-4), there were lack of educational facilities and infrastructure identified in the region which cause the students in the region had been left behind and the teachers were low quality.

Creative Independent Problem Solving (CIPS) Model was the combination of two (2) model which were Creative Problem Solving (CPS) and Independent Learning (IL). CIPS model was an approach in improving the learning quality through how to solve problems, creativity and independent in the process of learning. The principles for the implementation of CIPS model were flexible, focus on student’s need, efficient learning and teachers who were independent, creative and can solve problems in learning. In addition, there were four (4) characteristics of CIPS model that were creative planning and implementation, innovative and fun learning, independent teachers and continues improvement.

The training module based on CIPS model consists of five (5) stages; pre entering, plan, setting, action and evaluation. Stage 1 Pre entering was the initial process of mapping before the planning stage. Pre-entering activities include mapping students, field conditions, setting goals and exploring the learning resources according to the learning environment. Stage 2 plan consists of four (4) aspects which were i) arranged and developed lesson plan, ii) learning media (Audio, Visual and Audio visual learning media), iii) learning strategies (Problem-Based Learning Strategy, Inquiry Learning Strategy and Project-based learning strategies) and iv) developed evaluation tools. Stage 3 setting that consists of setting up facilities, media and learning environment that suitable for learning. Stage 4 action which included the 9 steps to run the model in teaching process. Lastly, stage 5 evaluation that included the evaluation in the aspects of initial mapping, planning, learning settings and implementation process. The summary of the five (5) stages of implementation of CIPS-based Training Module were shown in Table 1.

Table 1

CIPS-based Training Module

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| CIPS MODEL  | **Pre entering** | **Plan**  | **Setting**  | **Action**  | **Evaluation**  |
| Teacher | Teacher | Teacher | Teacher and Student | Teacher and Principal |
| Mapping students, field conditions, setting goals and exploring the learning resources according to the learning environment | Arranged and developed lesson plan, learning media, learning strategies and developed evaluation tools | Setting up facilities, media and learning environment that suitable for learning | Make an enjoy learning | Evaluation of learning process |

**RESEARCH METHODS**

This study used the quasi-experimental research design method. The sample consisted of 63 elementary teachers from Nunukan Island and Sebatik Island, North Kalimantan, Indonesia. The samples were assigned randomly to experimental (n=33) and control (n=30) groups. Before the CIPS-based Training Module being implemented to experiment groups, a pre-test was conducted towards experiment and control groups. The pre-test was given to identify the prior knowledge of the elementary teachers. Afterwards, the training module was conducted in experiment groups, but the control groups continues their own teaching and learning process without training. After the training module being implemented, a post-test was conducted toward both groups to identify the effect after the training module.

A 5-likert scale questionnaire was used to measure the effect of CIPS-based Training Module. The questionnaire consists of six (6) sections that were Teacher Mentoring, Self-actualization, Competency, Creativity, Problem Solving and Independence. The total items for each sections and the value of Cronbach’s Alpha were shown in Table 2.

Table 2

Reliability estimates (Cronbach Alpha) of Items on the Questionnaire

|  |  |  |  |
| --- | --- | --- | --- |
| No | Section | Item | Cronbach’s Alpha |
| 1 | Teacher Mentoring | 23 | .891 |
| 2 | Self-actualization | 20 | .879 |
| 3 | Competency | 13 | .894 |
| 4 | Creativity | 12 | .874 |
| 5 | Problem Solving | 12 | .896 |
| 6 | Independence | 12 | .885 |

The analysis used in this study was descriptive analysis (mean and standard deviation) and inferential analysis (independent sample t-test) to analyze the research question to identify the effect of the CIPS-based Training Module among teacher elementary school in North Kalimantan, Indonesia.

 Pilot test was conducted to test the reliability of the questionnaire that being used. Pilot test was important to make sure the questionnaire used can measured the variables that want to identify. Results of the pilot test shown that the value of Cronbach’s Alpha obtained larger than 0.80 which indicated that each constructs were good and can be used to measure variables that had been assigned.[[5]](#footnote-5) Hence, the real study proceeds to investigate the effects of the CIPS-based Training Module on professional elementary teachers.

**RESULT AND DISCUSSION**

The pre-test results indicate that both groups are equivalent based on the independent sample t-test results shown in Table 3 and therefore the post test was compared to determine the effectiveness of the training module.

Table 3

Pre-test comparison between control and experimental group

| Construct  | Levene 's Test for Equality of Variances | t-test for Equality of Means |
| --- | --- | --- |
| F | P value | t | df | P value (2-tailed) |
|
| Teacher Mentoring | *Equal variances assumed* | 6.608 | .013 | -1.423 | 61 | .160 |
| *Equal variances not assumed* |  |  | -1.377 | 38.89 | .176 |
| Self-actualization | *Equal variances assumed* | 10.831 | .002 | 1.170 | 61 | .247 |
| *Equal variances not assumed* |  |  | 1.120 | 32.04 | .271 |
| Competency | *Equal variances assumed* | 29.414 | .000 | 2.013 | 61 | .049 |
| *Equal variances not assumed* |  |  | 1.922 | 30.29 | .064 |
| Creativity  | *Equal variances assumed* | .351 | .556 | .216 | 61 | .830 |
| *Equal variances not assumed* |  |  | .213 | 52.44 | .832 |
| Problem Solving | *Equal variances assumed* | 12.129 | .001 | -.042 | 61 | .966 |
| *Equal variances not assumed* |  |  | -.041 | 34.08 | .968 |
| Independence | *Equal variances assumed* | 17.117 | .000 | -1.069 | 61 | .289 |
| *Equal variances not assumed* |  |  | -1.027 | 33.83 | .312 |

The independent sample t-test shown that the pre-test for both experimental and control group does not significant which indicated that they are at the same level of knowledge before the treatment was conducted. Hence, the training module was conducted and the effectiveness was identified.

Descriptive analysis (mean & standard deviation) and independent-sample t-test were used to identify the effects of CIPS-based Training Module on primary school teachers in both experimental and control groups. The results of the descriptive analysis found that the mean score for each construct for the experimental group was higher than the mean score for the control group. Creativity construct obtained the highest mean scores among both experiment group (Mean = 3.75 and SD = 0.44) and control (Mean = 3.11 and SD = 0.51) groups.

Regarding the CIPS-based Training Module which were implemented on the teachers, the teachers undergoes five (5) stages; pre entering, plan, setting, action and evaluation. Consequently, teachers who had learned with the CIPS-based Training Module can improve their creativity in terms of teaching strategies which they can make an innovation and created an innovative learning media for students.[[6]](#footnote-6) In addition, teachers can also implement difference methods of teaching in each subjects and delivered the teaching materials in a better way [[7]](#footnote-7). Moreover, a creative teacher can enhance student’s achievement as the teachers aware of the need of each students and capable to create an interesting environment for students learning[[8]](#footnote-8). As a conclusion, the creativity of a teacher increased as the teachers implemented CIPS-based Training Module and could give a positive impact on students in future.

The overall findings show that CIPS-based Training Module given to the experimental group had a positive effect on primary school teachers in the Teacher Mentoring, Self-actualization, Competency, Creativity, Problem Solving and Independence constructs. The results of the mean score analysis for each construct shown in table 3 and the difference can be shown in figure 1.

Table 3

Different of Mean Score by Constructs

| Construct | Group | N | Mean | Standard Deviation |
| --- | --- | --- | --- | --- |
| Teacher Mentoring | Experiment | 33 | 3.55 | .50 |
| Control | 30 | 3.00 | .48 |
| Self-actualization | Experiment | 33 | 3.69 | .38 |
| Control | 30 | 3.02 | .46 |
| Competency | Experiment | 33 | 3.75 | .44 |
| Control | 30 | 3.11 | .51 |
| Creativity | Experiment | 33 | 3.59 | .54 |
| Control | 30 | 2.93 | .52 |
| Problem Solving | Experiment | 33 | 3.72 | .49 |
| Control | 30 | 3.08 | .53 |
| Independence | Experiment | 33 | 3.70 | .54 |
| Control | 30 | 3.06 | .51 |

Figure 1

Difference between Experiment Group and Control Group

Next, independent-sample t-test was used to identify the mean score differences for Teacher Mentoring, Self-actualization, Competency, Creativity, Problem Solving and Independence constructs for treatment and control groups after training. Independent-sample t-test was started by looking at the value of Levene’s test for equality of variances. When the p value was not significant which were greater than 0.05, then the two groups were considered from the same groups and data analysis in the first row was used.

The results of the independent t-test stated that there was a significant difference between the experimental group (Mean = 3.55, SD = 0.50) and the control group (Mean = 3.00, SD = 0.48) for the teacher mentoring construct; t (61) = 4.434, p = 0.000; there was a significant difference between the experimental group (Mean = 3.69, SD = 0.38) and the control group (Mean = 3.02, SD = 0.46) for self-actualizing constructs; t (61) = 6.242, p = 0.000; and there were also significant differences between the experimental group (Mean = 3.75, SD = 0.44) and the control group (Mean = 3.11, SD = 0.51) for competency constructs; t (61) = 5.359, p = 0.000.

Next, there was a significant difference between the experimental group (Mean = 3.59, SD = 0.54) and the control group (Min = 2.93, SP = 0.52) for the construct of creativity; t (61) = 4.979, p = 0.000, there was a significant difference between experimental group (Mean = 3.72, SD = 0.49) and control group (Mean = 3.08, SD = 0.53) for problem solving constructs; t (61) = 4.963, p = 0.000 and finally there was a significant difference between the experimental group (Mean = 3.70, SD = 0.54) and the control group (Mean = 3.06, SD = 0.51) for the Independence construct; t (61) = 4.772, p = 0.000. Overall, the experimental group achieved higher mean scores than the control group.

In short, it was found that CIPS-based Training Module provided to the experimental group had a positive effect on primary school teachers for Teacher Mentoring, Self-actualization, Competency, Creativity, Problem Solving and Independence constructs. A summary of the analysis can be found in table 4.

Table 4

*Independent-sample t-test*

| Construct  | Levene 's Test for Equality of Variances | t-test for Equality of Means |
| --- | --- | --- |
| F | P value | t | df | P value (2-tailed) |
|
| Teacher Mentoring | *Equal variances assumed* | .145 | .705 | 4.434 | 61 | .000 |
| *Equal variances not assumed* |  |  | 4.443 | 60.817 | .000 |
| Self-actualization | *Equal variances assumed* | .047 | .829 | 6.242 | 61 | .000 |
| *Equal variances not assumed* |  |  | 6.183 | 56.244 | .000 |
| Competency | *Equal variances assumed* | .002 | .961 | 5.359 | 61 | .000 |
| *Equal variances not assumed* |  |  | 5.321 | 57.554 | .000 |
| Creativity  | *Equal variances assumed* | .861 | .357 | 4.979 | 61 | .000 |
| *Equal variances not assumed* |  |  | 4.987 | 60.731 | .000 |
| Problem Solving | *Equal variances assumed* | .173 | .679 | 4.963 | 61 | .000 |
| *Equal variances not assumed* |  |  | 4.945 | 59.184 | .000 |
| Independence | *Equal variances assumed* | .487 | .488 | 4.772 | 61 | .000 |
| *Equal variances not assumed* |  |  | 4.783 | 60.867 | .000 |

The positive effect of CIPS-based Training Module had increase teacher’s skills in term of creativity, independent, competency, teacher Mentoring, problem solving and self-actualization. According to Dobbins, teachers were very limited in their creativity, but when they implemented the training module, their skills increase.[[9]](#footnote-9) Hence, it helps teacher to implement more attractive activities in their teaching and learning process[[10]](#footnote-10). The CIPS model that was adapted in the training module enhanced teacher’s creativity in terms of teaching strategies such as diversity of teaching methods [[11]](#footnote-11), innovation in learning media, creating interactive environments for students learning and able to deliver teaching materials in a better way.[[12]](#footnote-12).

Next, problem solving for each teacher also improved as they went through the CIPS-based Training Module. The teachers capable to guide their students in solving their problems in learning process and give a fair assessment towards their students.[[13]](#footnote-13) They can also solve barriers in teaching such as learning media and resources to teach their students[[14]](#footnote-14). Hence, students were ready and motivated as their teachers able to solve their problems easily.

In addition, independent skills of elementary teachers also increase after they implemented the CIPS-based Training Module. When teachers were independent in their teaching process, hence they were more aware in creating new strategies and solving problems using their own ways. Independent teachers improve the quality of their achievement and produce quality students in future[[15]](#footnote-15). Teachers can also become independent in planning their teaching process and able to decide on their own how to make their teaching became interesting using learning material suitable for the students. Overall, the training module had given a great impact towards the teachers and for the students in future.

**CONCLUSIONS**

The study set out to determine if a CIPS-based Training Module would improve teacher’s professionalism in teaching of creativity, problem solving and independent skills among teachers. The findings indicate that elementary teacher’s competence in teaching problem solving is enhanced upon using the CHIPS-based training module. This finding indicates that CIPS-based Training Module has had a positive effect on elementary teachers from all aspects namely, of Teacher Mentoring, Self-Actualization, Competence, Creativity, Problem Solving and Independence. Hence, in future this CIPS-based Training Module should be implemented in a longer time to make sure the effects became more impacts towards teachers and students.

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