The First Cycle of The Reflective Pedagogical Paradigm (RPP) Implementation in The Introduction Probability Theory Course

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Outline

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Introduction

1. The most difficulties experienced by students was doing horizontal mathematising, i.e. the translating process from the daily problems to the appropriate mathematical symbol.

2. In general, if a student has been able to translate the word problems into mathematical symbols, then the student would be able to solve the problem.

3. The difficulties faced by the students had a bad impact, i.e. the low graduation rate.

Research Questions

1. What steps developed by the teacher to teach about the probability of the event by using RPP?

2. What were the students' achievements after they followed a teaching and learning process by using RPP?

Pedagogy Reflective

- Pedagogy was the efforts made by teachers in assisting students in their growth and development.

- Pedagogy was closely related to the beliefs and vision of teachers about a personal ideal figure to be formed through a teaching and learning process.

Five educational principles in the RPP

1. Context
2. Experience
3. Reflection
4. Action
5. Evaluation

Context

1. The student context.
2. The concept and initial understanding of students.
3. The economic, social, political, cultural, and media context.
4. The university environment.
5. The educational context in Indonesia

Experience

- to create situations that could make the students could gather and remember the experience they had to sift the facts, feelings, values, understanding, and intuition that they had known that relate to what they were learning

Reflection

- To dig the student experience in-depth and extensive, and to take meaning for their personal life, and life together.

- Memory, understanding, imagination and feelings were used to grasp the meaning and values of the basic material being studied.

Action

- To do a good action that was still at the level of inward or was already at the level of physical activity after they reflected on their learning experience.

Evaluation

- To see the element of experience, reflection, and action.

- To evaluate the students' progress on competence, conscience, and compassion.

THE RESEARCH METHODOLOGY

- The type of study was qualitative research.
- The subject of this research was all the students (38) taking the Introduction Probability Theory course on Class C.
- The study consisted of three cycles.
- The researcher would only be limited exposure about the learning process that occurred in the first cycle along with the results achieved by the students in the first cycle.

The learning process about the experience that occurred in the first cycle was as follows

1. Students were required to solve some problems.
2. Some students presented their solution.
3. The other students critisize their answer.
4. Class discussion and made conclusions.

The first case related to the addition principle

- Two judges of the mathematics Olympic would be chosen from four candidates. Three judges of the physics olympiad would be selected from six candidates. How many ways that could be done to choose mathematics or physics olympiad jury?

The second case related to the multiplication principle

- How many ways that could be done to pick a jury for the mathematics olympiad and the physics olympiad?

The first case was about the permutation

- How many even numbers consisted of three digits that could be formed from 1, 2, 5, 6, and 7 when each number could only be used one time?

The second case was about the repeated permutation

- How many even numbers consisted of three digits that could be formed from 1, 2, 5, 6, and 7 if every number may be used more than once.

The third case was about the permutations containing the same element

- How many letters that could be formed from the word MATEMATIKA?

The fourth case was about the cyclic permutations

- How many sitting arrangements that could be formed if there were two persons who would be sat on a around table/

- How many sitting arrangements if there were three persons who would sit?

- How many sitting arrangements if there were four persons who would sit?

- How many sitting arrangements if there were five persons who would sit?

- How many sitting arrangements if there were n persons who would sit?

The fifth case was about the combination

- In a meeting attended by two persons, how many handshakes occurred if everyone who have followed the meeting had to shake hands?
- How many handshakes occurred if the meeting was attended by three persons?
- How many handshakes occurred if the meeting was attended by four persons?
- How many handshakes occurred if the meeting was attended by 10 persons?
- How many handshakes occurred if the meeting was attended by 100 persons?
- How many handshakes occurred if the meeting was attended by n persons?

Banyak orang	Banyak salaman yang terjadi	Hasil Penjumlahan
2	1	1
3	2 + 1	3
4	3 + 2 + 1	6
5	4 + 3 + 2 + 1	10
6	5 + 4 + 3 + 2 + 1	15
7	6 + 5 + 4 + 3 + 2 + 1	21
8	7 + 6 + 5 + 4 + 3 + 2 + 1	28
9	8 + 7 + 6 + 5 + 4 + 3 + 2 + 1	36
10	9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1	45
11	10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1	55
12	11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1	66
13	12 + 11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1	78
14	13 + 12 + 11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1	91
15	14 + 13 + 12 + 11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1	105
…	…	…
n	$(n - 1) + (n - 2) + (n - 3) + \ldots + 1$	$(n-1+1) \times ((n-1)/2) = (n \times (n-1))/2$

The learning process about the action that occurred in the first cycle was as follows

1. Students were required to solve some problems as execise after they constructed the concepts.
2. Some students presented their solution.
3. The other students critisize their answer.

The learning process about the reflection that occurred in the first cycle was as follows

1. Students were asked to make a reflection about the material already learned by them by creating a concept mapping.

Results

1. Results of the reflection made by students could be classified into three groups, namely (1) the concept were not complete and relationships between concepts were made not appropriate, (2) the concept were not complete or relationships between concepts were made not appropriate, and (3) the concept were complete and relationships between concepts were made appropriate.

2. There were 12 students in the first group, 15 students in the second group, and 8 students in the third group. It meant 27 students who were not complete in writing concepts learned by them and / or have not been precise in describing relationships between concepts learned by them.

The Evaluation Scores

The score test	2,4	3	3,2	3,4	3,6	3,8	4	4,2	4,4	4,6	5	5,4	5,6	5,8
The number of the student	3	1	1	1	5	1	3	3	3	1	4	1	1	1

The score test	7,4	7,8	8	8,2	8,4	8,5	10
The number of the student	1	1	1	1	1	1	3

Conclusions

1. The steps of the teaching and learning process by using RPP were (a) knowing the initial concept and knowledge of the students about the permutation and combination concept, and about the probability concept, (b) giving experiences and doing actions about the counting principle, permutation and combination, the problems relating to the counting principle, permutation and combination, experiment, sample space and events, the notion of the probability of the event and the definition of the axiomatic probability, the probability properties, independent and conditional events, and the conditional probability, (c) doing a reflection, and (d) evaluating.

2. 29 students or 85.29% got the score under 7.

3. The greatest difficulty of the students were in the process of mathematical horizontal, i.e. changing matter in the form of a story into the language of mathematical symbols. As a result, they have difficulty in performing vertical mathematical process, ie the process using mathematical concepts to solve problems that have been presented in mathematical symbols.