Redefining Assessment Feedbacks: Pre-Service Math Teachers' Notions

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Abstract:

Background: Assessment feedback is an essential element in the teaching-learning process. Assessment feedback allows students to reflect, analyze, and assess their own learning. But it can harm students to a great extent if done wrong especially in learning Mathematics.

Materials and Methods: This research is a qualitative case study that analyzes pre-service teachers' perceptions on assessment feedback in Mathematics based on their knowledge and experiences towards the matter of interest. This study focuses on building a theory on the nature of assessment feedback, an explanatory model. Using purposive sampling, focus group discussions were conducted through interview. Fifty-four pre-service teachers specializing in Mathematics education in a certain university in Eastern Visayas, Philippines participated in this study. The researcher used thematic process and theoretical coding in analyzing the data.

Results: Four themes were identified, Feedback is Communicative, Feedback is Purposive, Feedback is a Process, and Feedback is a tool for learning.

Conclusion: Assessment feedback is a communicative and purposive process and tool for learning.

Key Word: Assessment Feedback, Mathematics, Case Study, Thematic Analysis, Theory

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I. INTRODUCTION

Assessment feedback is an essential part in the teaching-learning process. Students' understanding towards the use and function of feedback is necessary for successful accomplishment of task (Carless & Boud, 2018). It is where students participate actively in the process, make empirical decisions, respond critically, and motivate themselves towards achieving success (Carless, 2016). It allows students to reflect, analyze, and assess their own learning. But it can harm students to a great extent if done wrong (van de Ridder, 2015).

Assessment feedback is a tool for teacher-student relationship in improving learning (Sambell, 2016). Feedbacks are important no matter what kind of assessment method is used (Flores et al., 2015). It promotes self-reflection as a form of a question (French et al., 2015). And it is one of the ways of responding to math anxiety (Núñez-Peña, Bono, & Suárez-Pellicioni (2015).

The use of appropriate feedback is very dependent to some learning factors like the field of study, assessment type, assessment format, class size, student type, and the available resources (McCarthy, 2015). Interestingly, Pereira et al. (2016) found out that feedback in alternative assessment are more effective than traditional assessment. According to Ryan & Henderson (2018), teachers should be critical in giving feedback to students especially to low performing learners. Students' perception towards feedback is very critical in achieving success (Groves et al., 2015). Teachers should know their students to identify what kind of feedback is appropriate and aligned to the objectives of assessment to address the weaknesses and enhance the strengths of students (McCarthy, 2015).

Immediate action to feedback is necessary to students' success (Bosse, 2015). Study shows that successful students who respond to feedback to address difficulties perform better than others (Davis & Dargusch, 2015). According to Tormey (2015), giving descriptive feedback to students' work, deliberately discussing on how to address the task correctly, identifying success indicators, and being consistent with the feedback strategy leads to an effective feedback.

Research Problem

As emphasized by Carless and Boud (2018) and Groves et al. (2015), student's perceptions towards the roles and functions of feedback is important in successful learning. Thus, this research focuses on pre-service Math teachers' understanding on what is assessment feedback and how it is done. Indeed, feedback has an important and critical role in teaching Mathematics to students in improving learning, unlocking difficulties, avoiding math anxiety, and motivating students.

Conceptual Framework

Figure 1. Conceptual framework in building a theory on the nature of assessment feedback.
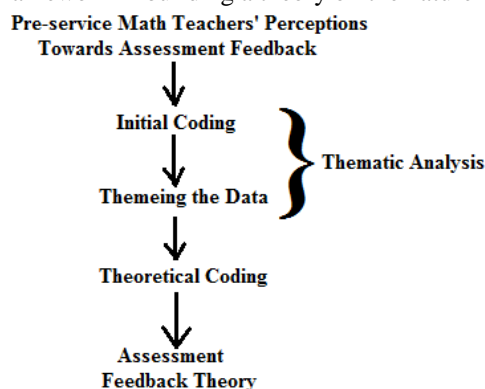
Pre-service teachers' perceptions toward assessment feedback were analyzed using thematic process to create theoretical codes. Thus, building an assessment feedback theory.

II. METHODOLOGY

Research Design

This study is a qualitative case study focused on building a theory about the nature of assessment feedback (Thomas, 2015). The data was analyzed using thematic analysis to develop themes (Braun & Clarke, 2006). The data was interpreted to develop ideas and build a theory as an explanatory model for assessment feedback.

Data Collection

This study is conducted in Eastern Visayas, Philippines. Using purposive sampling, fifty-four pre-service teachers specializing in Mathematics education in a certain university participated in this study. Using focus group discussions, the researcher gathered data through interviews. The data was verified by asking parallel questions to the participants for the consistency of answers, confirming through peers, and the observations of teacher. Students' responses were recorded and was transcribed for data analysis.

Data Analysis

The researcher used thematic analysis and theoretical coding in building an explanatory model about assessment feedback. Thus, cycles of coding was conducted to have a meaningful analysis and result.

Thematic Analysis

The researcher used thematic analysis by Braun & Clarke (2006). After the transcribing the data, data familiarization was done. Some responses were reviewed to make a clear interpretation by asking again the participants. The first cycle of coding includes initial coding, descriptive coding, In Vivo coding and process coding. Initial codes were reviewed for consistency and reliability. Themes were generated by looking at the relationships of the different codes. Then, it was followed by illustrating the codes through diagrams.

Theoretical Coding

After themeing the data, post coding and pre-writing followed as suggested by Saldana (2009). Improvements such as revisions on the codes and themes were done to improve the consistency and meaningfulness of the result. The researcher did not assume pre-existing ideas. Thus, presuppositions were avoided. Though it is not possible to think about existing theories about assessment feedback, the researcher made sure that interpretation should come from the data given by the participants.

III. RESULTS AND DISCUSSION

Using thematic analysis, the researcher identified the following themes:

Theme 1. Feedback is Communicative

Assessment feedback can be behavioral, written, or spoken response coming from the teacher communicated to the students and vice versa. It a dialogue between the teacher and students. Below are some of the responses from the participants:

"For me, feedback is any response from a teacher with regard to students' performance or behavior (Student A).*"*

"In addition, feedback in education is not just the teacher giving comments to the students but also the students need to have feedback about the teacher (Student B).*"*

"If he did well, I will tap his shoulder to confirm that he is on the right path (Student C)."
"Instead of putting zero, I will be writing in his paper the things he needs to do (Student D)."
"If I will be a math teacher someday, I will be conducting a one-on-one dialogue in delivering my feedback (Student E)."

Theme 2. Feedback is Purposive

Assessment feedback should be aligned with the objectives of assessment. It should direct and motivate students in accomplishing the task. Furthermore, it should be clear and specific on the task not on the students. Below are some of the responses from the participants:

"Me, as future math teacher, the first thing I will do is to set and have a clear view on what are the objectives we wanted to meet (Student F)."
"Feedbacks should motivate students in accomplishing the task (Student G)."
"Teachers should focus on the task not on the students (Student H)."

Theme 3. Feedback is a Process

Assessment feedback involves planning. Teachers should be critical in choosing the appropriate feedback by considering different factors like the objective of the activity, students' background and sensitivity, and the kind of assessment. Assessment and feedback should go hand-in-hand with each other. Furthermore, giving feedback is a step-by-step process. Just like assessment it should be done before, during, and after the lesson.

"...teachers should consider the different kinds of learners (Student I)."
"It depends on the approach of the teacher (Student J)."

Theme 4. Feedback is a Tool for Learning.

Assessment feedback should promote learning. It should be motivational in nature directed for improving students' performance through self-assessment and sense of fulfillment.

"It should motivate students to perform well (Student K)."
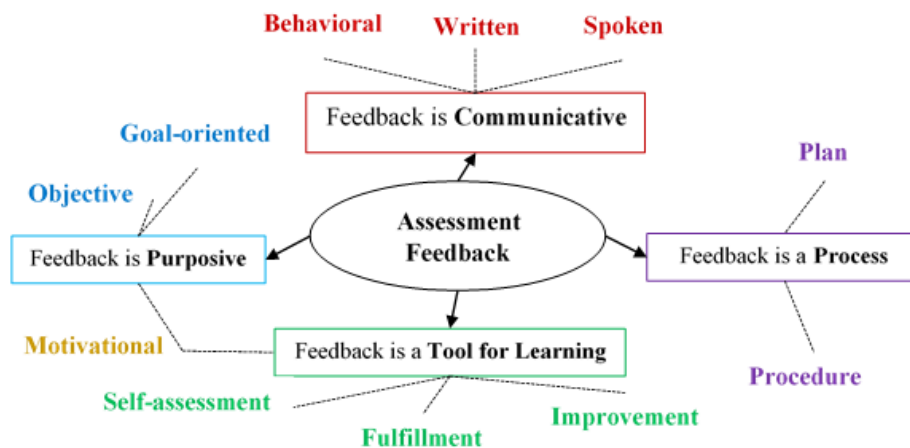*"...I will be assessing myself as to what part I need to improve (Student L)."*
"If a got a perfect score, I will be proud of myself and be consistent with my performance (Student M)."

IV. CONCLUSION

Assessment Feedback Theory

The central core of this study is assessment feedback.

Figure 2. "Assessment feedback is a communicative and purposive process and tool for learning."

As shown in Figure 2, the researcher defined assessment feedback as a communicative and purposive process and tool for learning. The Assessment Feedback Theory considers the different themes. Thus it should cater the conditions set by the different themes mentioned above.

Recommendations

This study is limited only to the perceptions of pre-service teachers specializing in Mathematics education in a certain university in Eastern Visayas, Philippines. In order to have a more comprehensive analysis, participants across different fields of specialization should be considered. Also, the use of advanced methodologies in text processing are recommended to have rich and meaningful interpretations of data.

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