

# A Study of Analyzing Oral and Written Feedback in Promoting Learning of Mathematics

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## **Abstract**

*“Feedback is conceptualized as information provided by an agent (e.g., teacher, peer, book, parent, self, experience) regarding aspects of one’s performance or understanding.”*

*(Timperley and Hattie, 2007)*

*One of the major banes in Teaching and Learning of Mathematics lies in the the crude methods of assessment that encourage the perception of mathematics as mechanical computation (NCF 2005). Every classroom of a school follows the same routine of teaching where the teacher gives instructions, provide work to do and then check it in their own way. There is only one type of checking which our teacher, generally, follows in the classroom. This checking is conducted in the form of marking ticks for correct solutions and crosses for incorrect solutions. But the assessment of having right and wrong is not beneficial for students; the assessment should be followed with the feedback, which gives detailed information to students about concepts, misconception which led to the wrong answer and so on.*

*Rama Prasad (1983) defined feedback as information about the gap between the actual level and the desired level of performance, which in turn leads to corrective action to minimise the gap. The motive behind the feedback is to make the child aware of the desired goal or action that is demanded or the answers of the questions like Where am I going What is my goal? How am I going? Where to next? etc. Effective feedback provides the learner with two types of information: verification and elaboration. Verification is defined as the simple judgment of whether or not an answer is correct, and elaboration is the informational aspect of the message, providing relevant cues to guide the learner towards a correct answer.*

*In this article, the author is attempting to find out whether the feedback can be used to facilitate the teaching-learning process of mathematics or not For this, she conducted an experimental study. The focus of this study is to find out whether the oral and written feedback make any difference in the performance of students if it is provided after the tasks they had formed in their classes. This study was conducted to see the effect of enhanced feedback versus traditional feedback. Apart from this, she also tries to discuss the answers to the following questions:*

- *What is the feedback?*
- *What are the different methods of giving feedback?*
- *Does feedback facilitate meaningful learning in mathematics?*

*The objective is that the process of seeking the answers to these questions will necessarily involve a significant discussion on the effectiveness of feedback in the teaching-learning process of mathematics.*

**Key Word:** *Feedback, Oral feedback Written feedback Learning of mathematics*

## **Introduction**

In a school, every class room follow a same pattern where teacher gives instructions, provides work to do and then checks it in her own way. There is only one type of checking which our teacher follows in classroom. The same type of checking is done by the teacher after conducting test in the classroom. This checking is conducted on the same paper and making ticks for correct solutions and crosses for incorrect solutions and sometimes with grades attached which is not useful for students. In school, mostly teachers follow this type of checking routine in all subjects. The summative and formative assessment of the students in a school is also done in the same manner. As per NCF (2005), “Tests are designed (only) for assessing a student’s knowledge of procedure and memory of formulas and facts, and given the criticality of examination performance in school life, concept learning is replaced by procedural memory”. The assessment question is fact based and it tests the memory of students and this routine is followed with ticks of right and wrong. More than that, if teacher puts some effort, they provide instruction to students about their mistakes and tell the procedure of correcting them. Here child do not know about the concept where he/she is lacking but starts memorizing the procedure which they need to write in the examination. And the whole system is depending on the examination procedure and the teaching of mathematics follows the rote-memorization process in doing mathematics, which does not create any permanent impression in the mind of the child. A Child is supposed to learn through formation of concepts not by memorizing the facts. So, there is a huge gap between the learning method of students and the feedback/instructions provided in the classroom by the teacher in mathematics discipline. As it is also observed by Bee & Kaur (2014), that “For mathematics, daily assignments are often marked piece after piece, with ticks and crosses which does not create any effective dialogue between the learner and the teacher. And such feedback is often of little use to students as it does not help them correct their errors or misconceptions”. William (2005) comments that, “The key components of formative assessment effective questioning, feedback, clear understanding of the criteria for success by learners as well as peer and self-assessment.”. Thus, assessment followed with the feedback give detailed information to students about concepts but the assessment restricted to telling just right and wrong is not beneficial for students.

## **Concept of Feedback**

Feedback is about giving information in a way that encourages the recipient to accept it, reflect on it, learn from it and make changes for the better. In other words, it is a way of sharing information about the other actions, work or behaviour from an individual or group to other group or individual and the motto behind the sharing of information is that other individual will improve the performance or try to maintain it. Information provided by the teacher after assessment is not to be considered as the only feedback but it also consists in the information given by parent peer book, and even the experience of the learners.

Rama Prasad (1983) defined feedback as information about the gap between actual level and the desired level of performance, which in turn leads to corrective action to minimise the gap. Feedback is provided on a problem, task, performance of the child and the motive behind the feedback is to make child aware about the desired goal or action that is demanded.

Teachers give feedback like 'keep it up', 'do some hard work' in the notebook and report card of the students which hardly makes any impact give no effect on the performance of students. There is task stated in notebook and feedback is ought to be related with the particular task in order to make any effect on the performance of students. "Feedback has no effect in a vacuum", according to timperley and Hattie (2007). To address feedback there must be a learning context in which child can work upon. Feedback without context is just a written statement which do not have aesthetic meaning. Teaching-learning process includes feedback as one of the major components. A feedback devoid of any instruction about the concept does not create any significant impact on the mind of the learner. Feedback works effectively when it is provided during the teaching Learning process and within context of the task.

## **Types of Feedback**

Hattie and Timperley (2007) states that some types of feedback are more powerful than others. Some studies showing that students who receive information feedback about a task and how to do it more effectively show highest effect than feedback which are related to praise, reward, and punishment. A more detailed synthesis demonstrated that the most effective forms of feedback provide cues or reinforcement to learners; are in the form of video, audio or computer-assisted instructional feedback; and/or related to goals. There are different types of feedback:

- Evaluative and descriptive feedback
- Oral, written and computer-mediated feedback
- Individual or group feedback
- Information or dialogue feedback
- Immediate or delayed feedback
- Positive or negative feedback
- Informative or supportive feedback
- Formative feedback
- Reflection (self-feedback)

The reader may reflect on the different Types of feedbacks given above and appreciate the at The classification is not mutually exclusive. The effective feedback provides the learner with two types of information: verification and elaboration. Verification is defined as the simple judgment of whether or not an answer is correct, and elaboration is the informational aspect of the message, providing relevant cues to guide the learner towards a correct answer. Feedback elaboration has even more variations than verification. For instance, elaboration can (a) address the topic, (b) address the response, (c) discuss the particular error, (d) provide worked examples, or (e) give gentle guidance. “Researchers appear to be converging towards the view that effective feedback should include elements of both verification and elaboration”. Mason and Bruning (2001)

### **Need of the study**

The researcher is a teacher educator, and also has a long experience as a school mathematics teacher. She observed many teachers and their way of giving feedback in mathematics, which is very disappointing. Teachers just make right and wrong ticks in the notebooks of the students and they use red ink for correction which highlight the mistakes of students. Sometimes they make big circle with red pen in the notebooks and never put any efforts in telling them about the portion which need improvement. Teacher do not write any further process of solving the problem. Such a feedback is of little use to students as it does not help them correct their errors. A child’s mentality is totally affected with the red colour correct and wrong ticks. They compare their notebooks with Their peer and find themselves less knowledgeable as compared with them. Here, the self-confidence of child start destroying piece by piece and they start to lose confidence about the subject. May be this is one of the reasons, that most children do not want to take mathematics in higher classes. In psychology, effective method of teaching considered feedback as an important tool But every feedback is meant to be positive and not negative. Therefore, the researcher, chose this topic of study, i.e., to find the effective method of feedback in mathematics, and which have positive implications.

### **Objectives of the Study**

The following are the objectives of the present study:

- To identify the need of feedback and its effect on promoting learning
- To observe the response of students towards oral and written feedback
- To measure performance of students after use of both oral and written feedback
- To compare the effectiveness of oral and written feedback

### **Methodology**

For the present study, the researcher used experimental method (quantitative method of data collection) for knowing the effect of feedback on the performance of student and also, semi-structured interview (qualitative method of data collection) for knowing the importance of feedback for both teacher and students. It includes the both objective research and deeper insight of the problem in the problem area. In this research, researcher makes two groups from the

selected sample and gives different treatment to both the group. Oral feedback is given as treatment to Group 1 and written feedback is provided as treatment to Group 2. Here the same sample is used as control group. Researcher first conducted pre-test (task 1) and then give treatment to both the groups and then conducted post-test (task 2) for making inferences about the effect of research problem. The present study relied on multidimensional assessment procedure that included data collection from multiple sources and through multiple tools.

The present study was conducted in three phases:

1. Planning phase
2. Implementation phase
3. Analysis phase

Each of the phases is discussed below in detail.

### **1. Planning Phase**

#### **i. Population**

The population in the present study comprised all the students of class VIII who studied in Government schools of Delhi, and all the TGT Mathematics of government school, who taught Class VIII.

#### **ii. Sample of the Study**

Researcher selected one section of Class VIII of one Government school (around 40 students) as a sample for the study. From them, 16 students were selected randomly, for interview to know about feedback more deeply and interviewed three teachers who teaches different sections of Class VIII in the same school to know about their perception about feedback.

#### **iii. Tools of the Data**

For the present study the researcher used various tools for data collection as relying upon single tool does not help the researcher in fulfilling the objective of the study. Following tools were used by researcher for gathering the data;

The researcher constructed pre-test and post-test on the content of algebra to use them as tasks of the students. Pre-test was administered before the treatment to know the level of the students understanding of algebra and errors committed by students of Class VIII. Post-test was administered after the treatment was given by the researcher to know the effectiveness of the treatment. Pre-test and post-test were given to five experts in the field of research and mathematics education for content validation.

In present study semi-structured interview schedule was used to know the perception of students and teachers about the feedback given on the work done by students in their notebooks in solving mathematical problems,

For the purpose of collecting data, researcher developed two tasks containing ten questions each related with the syllabus of class VIII NCERT book. The questions were based on the chapter 9 of Class VIII textbook i.e., Algebraic Expressions and Identities

## **2. Implementation Phase**

In the implementation phase following procedure is followed;

i. **Administration of Pre-Test:** The present study is primarily depending on the pre-test and post-test conducted by the researcher; the researcher introduce A herself in the classroom and continue with the pre-test on the content of Chapter 9 i.e., algebraic expressions and identities, since they just finished this chapter in their class.

ii. **Intervention** (Giving feedback on the pre-test based on algebraic expressions and identities): On next three days, researcher gives treatment to the students of the sample. Students were divided in two groups of 20 – 20 students as two samples. One group is provided treatment of oral feedback and other with the treatment of written feedback. The students were asked to go through the problems again after getting feedback and try to solve related problems given in the text book.

iii. **Post Test to check the effectiveness of the intervention**

iv. **Interview schedule for Teachers:** In the present study to know the perception of teachers about the feedback given on the work done by students in their notebooks in solving mathematical problems, a semi-structured interview schedule was used

v. **Interview schedule for Students:** In the present study to know the perception of students about the feedback given on the work done by them in their notebooks in solving mathematical problems, a semi-structured interview schedule was used.

## **3. Analysis of the Data**

The present study is both qualitative and quantitative in nature and the collected data is tasks responses and interview of the teachers and students. So, for analysing this data, researcher divide the content on the basis of objectives. Researcher divide the content in between the objectives of the study;

### **Objectives 1 & 2**

These two objectives analyse the interview responses of teacher and students. It gives detailed information about the feedback that teacher use in the classroom and the benefits they feel of the given treatments as well as what are the responses of students towards oral and written feedback.

### **Objective 3**

This objective analyses the data of experimental research. The collected tasks and the correct response students got were analysed under this particular objective. Researcher use statistics to see the significant difference between both the tasks to measure the effect of oral and written feedback on the performance of students.

### **Objective 4**

This objective analyses the effect of oral and written feedback in the classroom. It also analyzes the treatment that is provided by the researcher in written or oral form. and also tries to find out that what type of feedback researcher provided to bring change in the performance of students

Each of the objectives is analysed in details with the provided data. This analysis was followed by interpretation of data by the researcher.

### **Findings of the Study**

The objective wise findings of the present study were as follows:

#### **Objective 1 and 2**

1. *To identify the need of feedback and its effect on promoting learning.*
2. *To observe the response of students towards oral and written feedback*

The findings of these two objectives are;

- Research found that student want feedback (oral/written) in their classroom after any type of tasks conducted by teacher in mathematics classroom.
- One major finding of the study is that student demand feedback at individual level- it can be either in their notebooks (written feedback) or face-to-face with the teacher (oral feedback).
- It was found that student do not want the explanation of problems on the board second time but they want it in their individual notebooks.
- It was also found that both written and oral feedback are helpful according to demand of the tasks.
- School teachers do know about the feedback term but they do not know the real meaning and use of feedback for the students.

### **Objective 3**

*To measure performance of student/s after use of both oral and written feedback in the classroom.*

- The experimental research conducted reveals that feedback gives impact on the performance of the students.



- This research found that both type of feedback make effect on the performance of student.
- Another finding of the research state that feedback is helpful in promoting learning of students in the classroom.
- It was found that immediate feedback has more effect on the students than delayed feedback.

#### **Objective 4**

*To compare the effectiveness of oral and written feedback.*

- It was found that oral feedback is more suitable for the students a written feedback
- Oral feedback make student more attentive in the classroom.
- Study found that written feedback help in starting out a conversation (talk) that facilitates learning.
- Another finding of the study was that feedback helps in starting talk between peers which is based on some content of learning.
- Feedback containing names of students give positive vibes to students and strengthen their energy to respond.

#### **Conclusion**

Through this study, it can be concluded that schools do not use any type of feedback process in the classroom. They still use the traditional method of giving marks in numbers even after the government started the CCE scheme in schools. It includes formative evaluation where they need to give feedback to students but situation is not changed. Now, researcher found that school should provide written feedback to student which can decide according to the need of the students. As written feedback is effective for the students who know to read and oral feedback is effective for other. Students demand feedback and want feedback-based checking in their classroom after the tasks. Feedback have many positive effects that can bring change in the education system like it make students more attentive then usual because they got something new for themselves always. Feedback should include for all the subjects in the schools. It makes impact on the performance of students very deeply.

#### **Educational Implications**

Following are the educational implication of this study.

- There is a need to include the way of giving feedback (process of feedback) in the pre-service teacher training programme. It will help teacher in understanding the importance and use of feedback.
- Feedback should be included in the curriculum as a compulsory activity of classroom after every task of the subject.



- Autonomy should be given to teachers in deciding what type of feedback is good for the students and what feedback is needed in a particular activity. A teacher is a best knows his/her student the boat.
- Teacher can develop mathematics journal for students in which they can give feedback regularly and talk to students about their problems also.
- There is need to break the old tradition of giving feedback in the form of marks and right and cross tick. Teacher should be aware about the benefits of feedback in the classroom so, they can use it properly.
- There is need to conduct more and more studies in mathematics subject in order to resolve the problem of school performance of students.

### **Suggestions for Further Research**

These are suggestion by researcher for the further research:

- A research can be conducted to know about the different effects of feedback on the performance of students.
- A research can be done to know about the effect of the feedback in the development of life of students.
- Mathematics journal is one of the new concepts, which may trigger the begining of language competence in classroom So, research can be conducted about efficacy of use of mathematics journal in classroom.

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