Improving Student's Learning with Correct Feedback: A Model Proposed for Classroom Utility

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Abstract: *This Paper is an extract of the monograph written to build perspective in the Indian education system about Effect of feedback on student's learning. The facts have been supported by the review of literature done on John Hattie's study which illustrates the Meta analysis conducted on different factors Effecting teaching learning process. Feedback has been found to be one of the key turning points in effecting student's learning. It is a part of global best practices that leads to student's progression along the line of Developmental Continua thus leading to a positive Effect on learning. The aim of conducting this research study is to provide recommendations to emphasize about the Effect of appropriate feedback to improve student learning. The purpose of the study is to elaborate about the global best practices regarding Effect of feedback process associated with student learning. To support the concept by description of Prof John Hattie's famous work on the power of feedback on learning, visible learning etc. To analyze the current instruments and practices regarding the use of feedback and its Effect on learning. To suggest / recommend about utilizing some method that capture and monitors better feedback about a student's learning. To recommend about beneficial utilization of the inputs / feedback and promote better learning in students.*

"Improper guidance and feedback are the single largest contributors to incompetence in the world of work, and a principal culprit at school". -- (Gilbert, 1978, p. 91)

I. BACK GROUND AND PURPOSE OF THE RESEARCH

The background and motivation of this research study goes back to the information in public domain via reports on education system monitoring in India done by ASER Centre India.

The ASER Centre approach has its roots in Pratham international's work across urban and rural India to help children acquire basic skills in reading and arithmetic. ASER Centre was established as an autonomous unit within the Pratham network as a not for profit organization. The Annual Status of Education Report (2005 to 2013) has been a large scale assessment in India which illustrates the basic reading and arithmetic level.

The findings over these years are not very encouraging. It depicts an overall low performance across the nation. The age group assessed is between 5 to 16. A household survey is also conducted apart from the learning level assessment to understand the socio economic structure and level as well as information is also gathered about enrolments. An example – The data for 2013 in public domain –

YEAR	READING LEVEL						
	State	Nothing	Letter	Word	Std1_Para	Std2_Para	Total
2013	All India	12.60%	16.30%	12.40%	14.20%	44.40%	100%
YEAR	ARITHMETIC LEVEL						
	State	Nothing	Number_1to9	Number_11to99	Subtraction	Division	Total
2013	All India	10.10%	18.80%	26.20%	19.20%	25.70%	100%

Table 1 – Exemplary data: ASER 2013

The ASER Reading test

All children in the age group 5-16 are administered a "floor level" reading test in the language of their choice (the test is available in 16 Indian languages). The highest level tested is equivalent to a Std 2 level text. Each child is marked at the highest level at which s/he can read comfortably:

- Story : Can read a longer paragraph (Std 2 level text)
- Para : Can read a short paragraph (Std 1 level text)
- Word : Can read 4 out of 5 words correctly
- Letter : Can identify 4 out of 5 letters correctly
- Nothing: Identifies fewer than 4 out of 5 letters correctly.

The ASER Math Test

All children in the age group 5-16 are administered a "floor level" test of basic arithmetic. The highest level tested is 3-digit by 1-digit division. Each child is marked at the highest level which s/he can do comfortably:

- Division : Can solve a 3-digit by 1-digit division problem
- Subtraction : Can solve two 2-digit by 2-digit subtraction problems with carryover
- Number recognition 11-99 : Can identify 4 out of 5 numbers between 11 and 99
- Number recognition 1-9 : Can identify 4 out of 5 numbers between 1 and 9
- Nothing: Identifies fewer than 4 out of 5 single-digit numbers correctly.

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One fact that comes out as a common piece of information is the poor learning levels of students in India. The reasons could be many across the vast spread of the nation as lack of awareness, social issues, economic issues and poverty, geographic, demographic, environmental and situational issues, psycho social and motivational issues, infrastructural issues, lack of good teachers, inadequate capacity building of teachers and many more yet to be discovered or enlisted.

Government and its policies are trying as much as possible to raise the standards, there are a lot of NGO's striving hard to achieve the same as well, but the concern is **what is it that would lay an impact on the poor learning levels of the students.** Is there any intervention or any magical remedy to the diagnosed problem? A developing country like India is spending huge amounts every year to raise the standards and level of learning; it is also getting lot of valuable support from major donor agencies. But with all said and done once the learning levels are measured year after year it gives a discouraging result.

In strive to understand what is it that impacts student learning and improves it, information related to John Hattie's Meta analysis and the impact of feedback on students learning came across. This became a reasonable background to research, review and author a monograph about the same. The purpose being to try and build perspective in the Indian education system about Effect of feedback on student's learning. This research paper is an extract of the same Monograph. In this era of transition and development in Indian education system there is a hope that this piece of writing will be a decent contribution to all the teachers and educationist who might like to utilize the information to improve the learning levels of their students.

II. LITERATURE REVIEW

The facts have been supported by the review of literature done on John Hattie's study which illustrates the Meta analysis conducted on different factors Effecting teaching learning process. Feedback has been found to be one of the key turning points in effecting student's learning. It is a part of global best practices that leads to student's progression along the line of Developmental Continua thus leading to a positive Effect on learning. Major focus has been kept on the Book written by John Hattie and rest other information has been tapped from online sources and research papers.

III. METHODOLOGY

A desk review of the Book Visible Learning – John Hattie and relevant research papers as mentioned below in the Bibliography has been done in order to be able to summarize the meaning and impact of feedback on student learning and also be able to write the monograph and paper which illustrates the same.

IV. INTRODUCTION - WHAT IS FEEDBACK

In its most basic form, feedback is information and is a means of communication whereby the performer, whether it is an individual or a group, receives information that guides their future actions, in order to achieve a desired outcome. Feedback can be qualitative or quantitative, positive or negative, descriptive or non descriptive and given during formative and summative assessments. The term feedback is often used to describe all kinds of comments made after the fact, including advice, praise, and evaluation. But none of these are feedback, strictly speaking. Basically, feedback is information about how we are doing in our efforts to reach a goal.

Prof. John Hattie's Meta Analysis summary

The meta analysis done by Prof John Hattie is one of the most unique and massive research ever done in the field of education. His work is more over considered to be scientific as he has utilized the methodology to calibrate and put all his studies on one scale to see the Effect of each one of them. His research span was more than 15 years, integrating and synthesizing over 500 meta analysis, 45,000 effect sizes, 180,000 studies, 50,000 individual studies which encompasses the experiences of over 230 million students. More than 100 factors effect educational achievement.

His focal point and purpose of doing this research was to find out what is it that makes a difference in classroom. There are several things as School, student, teachers and parents Effect a student but what is it that Effects his learning in a positive direction. In order to study this Effect He created a Barometer for measuring effect size. Every intervention can be compared on this barometer. A positive effect size shows a positive Effect on student's learning. An effect size of 1.0 is typically associated with Advancing learners' achievement by one year and Improving the rate of learning by 50%. His research suggests that some things definitely have a very negative and decreased Effect on student's learning as watching TV, summer holidays, ability streaming and moving schools etc. He also suggests that the most important factors for student achievement are not related to curriculum choices, the physical school environment, or even most students' circumstances at home or socio-economic status. Instead he stresses more on student teacher and teaching, innovative practices in Teaching, student teacher relationship, motivation etc.

Hattie studied six areas that contribute to learning: the student, the home, the school, the curricula, the teacher, and teaching and learning approaches. But Hattie did not merely provide a list of the relative effects of the different influences on student achievement. He also tells the story underlying the data. He found that the key to making a difference was making teaching and learning visible. He further explained this story in his book "teachers". Here is an overview of the Hattie effect size list that contains 138 influences and effect sizes across all areas related to student achievement. Any effect that goes above .40 in educational research is considered to be average, positive and effecting student's learning. Any effect that goes above .70 is considered to be important in bringing a significant Effect on learning. Feedback has been found to be one of the most important factor in determining the progress and Effect on student learning.

V. THE MODEL OF FEEDBACK

The aim of feedback is to reduce the discrepancy between the current existing understanding or performance and the desired goal. A model of feedback is then proposed that identifies the particular properties and circumstances that make it effective. The model of feedback gives support to identify the circumstances under which feedback has the greatest Effect. The model begins with a continuum of instruction and feedback. The purpose of creating this feedback model is to enhance student's learning by reducing the discrepancy between current understanding and desired goal. The discrepancy can be reduced both by teacher and student. If the student increases the effort then it is a positive move to reduce the discrepancy but if the student abandons, blurs or lowers a goal then the move is in negative direction. Similarly teachers can provide appropriate, specific and challenging goals. Teachers can also assist the students and help them reach the goals through effective learning strategies.

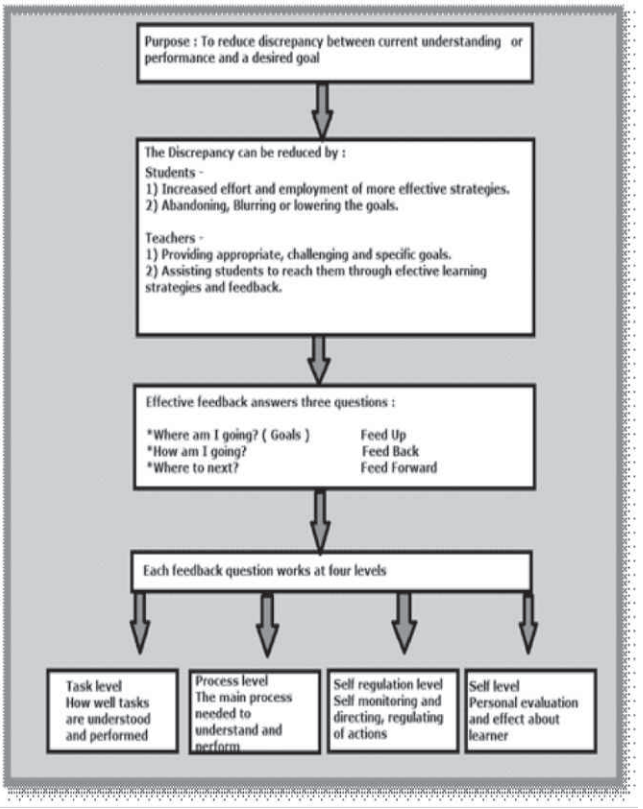

Figure 1- A model of Feedback to enhance learning : John Hattie
Based on image provided in the paper : The power of feedback, John Hattie; Helen Timpereley, Review of Educational Research; Mar 2007;77,1;Academic Research Library.

Addressing the three important questions is the most important part here.

a) Where am I going : My Goal?

For a student a specific and measurable goal could be as simple as giving a test, singing a song, noting the correct records during experiment etc. Goals direct a person towards a specific direction. Goals are specific understandings or attainments to different qualities of experience. It is very important for a student to receive the instructions from a teacher and correctly be able to locate where the goal is. If the estimation is over or under it is not achieving the goal. More challenging goals and extensive feedback lead to more involvement. Feedback allows a person to adjust the strategy as well as direction and amount of effort. Even once the goal is achieved feedback further guides the teacher and student about allocating the next challenging and achievable goal. If feedback is not given properly or goal is not defined properly then it leads to problems of over stating - under stating. It also gives opportunity to the student to reduce efforts or over state about efforts. Commitment to attain a goal is the fuel behind success.

b) How am I going?

This question needs to be addressed by a teacher. It means telling a student or giving feedback in relation to some expected standard, prior performance or success failure in a particular task.

c) Where to next?

A student would always like to know where he should go to next. He needs a specific direction and goal. If the student has been able to achieve the previous goal then too he needs to know where to next and if he has not been able to attain the goal then he needs to know where he is and how can he move forward to be able to reach the goal. Instruction is often sequential: teacher's provide first hand information, tasks, learning intentions. Students attempt the task, this leads to some subsequent consequences. After which the teacher gives more information, instructions, tasks. With this bulk of information and expectation the student asks: where to next? It is the power of feedback which can specifically address this question. The guidance and direction hence provided leads to further possibilities of learning. These may include enhanced challenges, further moved goals, more self regulation, fluency, deeper understanding, modified strategies and process to be able to understand what is not understood. This is feeding forward and such questions can have the most powerful Effect on learning.

These three kinds of feedback : Feed up, Feed back and Feed forward work together in an integrated manner.

The focus of Feedback : The four levels

There are four levels of Feedback and the level at which the feedback is given determines its effectiveness. These are termed as Task level, Process level, Self regulation level and self level Feedback respectively.

The table on the next page describes briefly about the different Levels of feedback and also illustrates their focus and effectiveness with examples. This table has been constructed with the information gathered from the desk review of John Hattie's work on impact of feedback on student learning.

Table -2 Different Levels of feedback

TABLE : LEVELS OF FEEDBACK				
S.NO:	LEVEL OF FEEDBACK	FOCUS	EXAMPLE	EFFECTIVENESS
1	Feedback at Task Level	Whether the work done is correct or incorrect	You have written the essay correctly but you need to put some merits and demerits in order to make this essay appear more unbiased.	Considered to be effective only when strategy level modification is required
2	Feedback at Process Level	The process followed to complete the task	You have drawn the diagram correctly but if you would have put identification numbers and described the parts in index using a black pen then it would have appeared more neat and clean.	Considered to be More effective
3	Feedback at Self Regulation Level	To develop greater skills in self evaluation and increase confidence	You already know the formula to solve this equation,check whether you have put the values correctly in place of the formula.	Considered to be More effective
4	Feedback at Self Level	Often unrelated to performance and more directed to self	That is an intelligent response, Oh ! you are such a bright student, Well done and keep it up.	Considered to be least effective

Different students have different learning needs. Similarly they need different styles of feedback. Novices and Beginners need feedback based on content knowledge, assurance and corrective feedback. Process feedback is beneficial for proficients. Immediate learners have acquired basic concepts but need help in linking ideas and relationships, assurance on strategies, suggestions and alternative strategies. At more advance level for highly competent student's feedback takes the form of elaborated concepts supporting the self regulated or more conceptual learning such that the sincere efforts to extend and apply knowledge are actively recognized.

There is another view point laying emphasis on the importance of Feedback; that information assimilated through personal discovery can be shallow, insecure and incomplete. Information communicated through instructions, interpersonal contacts, direct social modeling and verbal transmission, can be durable, more securely available, more strongly validated than knowledge constructed through an individual's unaided inductive processing.

VI. RESULT - MODEL FOR CLASSROOM UTILITY

This process of Teaching Learning with a conjunction of descriptive feedback after assessment can be linked to classroom based research to map the progress of each student.

1) The normal teaching learning process happens in a classroom.
2) The teacher decides what to assess and how to assess.
3) Extensive and descriptive rubrics are created for the same.
4) After the students give the test their performance is assessed objectively.
5) Give a descriptive feedback to the student which states where he is, why he is there and what can he do to move ahead and progress in learning.
6) Give the student some time and opportunity to understand, improve and progress in terms of learning.
7) Map the progress against his previous records for e.g. marks.

VII. CONCLUSION

In due course of teaching learning process whenever a student is assessed (Formative or summative) the purpose must not be only assessing what a student does or does not know. Rather the approach should be to know and also share the information with the student about what he knows, how much he knows, how he has performed, where does he locate himself or herself, where he has to reach and most importantly how he has to reach there. The key to share this information is via appropriate feedback.

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