The Power of Feedback

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What is feedback?

Photograph by Chris Mayne

- **Feedback is information provided by an agent (e.g., teacher, peer, book, parent, self/experience) regarding aspects of one's performance or understanding.**

Feedback is evidence about:

- **Where am I going?**
- **How am I going?**
- **Where to next?**

Where am I going?

Nature of learning intentions/Goals/Targets

      Transparent

      Communicated

      Moves from where students are

      Includes success criteria

      Challenge

      Commitment

- **Feedback then relates to reaching success on the learning intentions – reducing the gap**

How am I going?

Providing feedback relative to the learning intention

- **in relation to some expected standard,**
- **to prior performance, and/or**
- **to success or failure on a specific part of the task.**

Information about progress

      about how to proceed.

Relative to

      Curriculum progression

      Personal Bests

      Comparative effects

Where to next?

- **enhanced challenges**
- **more self-regulation over the learning process**
- **greater fluency and automaticity**
- **different strategies and processes to work on the tasks**
- **deeper understanding,**
- **information about what is and what is not understood.**

- ***A common conception of progression***

- *The answer should never be "more"*

Feedback and teaching

- **Feedback follows instruction**

- **If the student does not know something**

    it is important to teach it.

How effective is feedback?

Photograph by Chin Chee Cheah

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Frequency of feedback

How much feedback does the typical student

get in a typical classroom

on a typical day?

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What do students think?

3. What teaching strategies were most helpful for you learning to draw? Only tick those you think helped you to improve your drawing.

⏺ Create Chart ⬇ Download

		Response Percent	Response Count
a) Practical demonstrations and examples		63.2%	60
b) Personal feedback of ways to improve		**68.4%**	**65**
c) Peer or Group feedback		27.4%	26
d) Worksheets/Handouts		9.5%	9
		answered question	95
		skipped question	0

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Climate of the class is critical

- *students only respond when they are fairly sure that they can respond correctly*
    - *which often indicates they have already learned the answer to the question being asked.*
    - *Errors, and learning from them, are rarely welcomed.*

Error must not only be tolerated, it must be positively WELCOMED

- **Reduce the risk for those making/thriving on error**
- **Seeking and accepting the errors**
- **Listen to student questions not teacher questions**

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Some questions to ask

Give examples of feedback that has best helped you in your learning; and what feedback does not help you?

What kind of feedback do you want more of?

Can you give examples of feedback that your friends/peers give you? Is it helpful, or not.

What does feedback sound like?

What does feedback feel like?

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To me Feedback sounds

Motivating	1	2	3	4	5	6
Positive	1	2	3	4	5	6
Helpful	1	2	3	4	5	6
Fair	1	2	3	4	5	6
Useless	1	2	3	4	5	6
Like good advice	1	2	3	4	5	6
Like improvement	1	2	3	4	5	6
Encouraging	1	2	3	4	5	6
Like praise	1	2	3	4	5	6
Negative	1	2	3	4	5	6
Informative	1	2	3	4	5	6
Like criticism	1	2	3	4	5	6
Discouraging	1	2	3	4	5	6

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A model of feedback

Photograph by Catherine Khalar

4 Levels of Feedback

- **Task** – how well has the task been performed; is it correct or incorrect?

- **Process** – what are the strategies needed to perform the task; are their alternative strategies that can be used?

- **Self-regulation** – self monitoring, directing, monitoring the processes and task; what is the conditional knowledge and understanding needed to know what you are doing?

- **Self** - personal evaluation and affect about the learner

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Feedback at the TASK level

This level includes *feedback about how well the task is being accomplished or performed,* such as

- distinguishing correct from incorrect answers
- acquiring more or different information
- building more surface knowledge – reteach/ multiple opportunities.

- The art is knowing **when to add in/move to feedback about the processes**

  When the student has sufficient task knowledge to begin to strategize

  Make it simple until confidence in the knowledge begins to build

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Example of feedback at the task level

"Your learning goal was to structure your recount in a way that the first thing you write is the first thing you did. Then you write about the other things you did in the same order that they happened. You have written the first thing first, but after that it becomes muddled. You need to go through what you have written and number the order in which things happened and re-write them in that order."

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Feedback at the PROCESS level

Feedback specific to the processes underlying the tasks or relating and extending tasks.

Such feedback concerns information about

- **relationships among ideas**

- **students' *strategies* for error detection**

- **explicitly learning from errors**

- **cue the learner to different strategies and errors**

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Feedback
at the Process Level

"You are stuck on this word and you have looked at me instead of trying to work it out. Can you work out why you may have got it wrong, and then you try a different strategy?"

"You are asked to compare these ideas – for example you could try to see how they are similar, how they are different – how do they relate together.

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Feedback at the Self-regulation level

- **The way students monitor, direct, and regulate actions towards the learning goal.**

The capability to create internal feedback and to self-assess

- the willingness to invest effort into seeking and dealing with feedback information

- the place of self-assessment

- the degree of confidence in the correctness of the response

- the attributions about success or failure

- the level of proficiency at help-seeking.

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Feedback
at the self-regulation level

"I am impressed by how you went back to the beginning of the sentence when you became stuck on this word. But in this case it didn't help. What else could you do? When you decide on what it means I want you to tell how confident you are and why"

"You checked your answer with the resource book [self-help] and found you got it wrong. Any ideas of why you got it wrong [error detection]. What strategy did you use? Can you think of another strategy to try and how else could you work out if you are correct?"

Self-regulation strategies

Strategy	Example	ES
Organizing & transforming	*Making an outline before writing a paper*	.85
Self-consequences	*Putting off pleasurable events until work is completed*	.70
Self-instruction	*Self-verbalizing the steps to complete a given task*	.62
Self-evaluation	*Checking work before handing in to teacher*	.62
Help-seeking	*Using a study partner*	.60
Keeping records	*Recording of information related to study tasks*	.59
Rehearsing and memorizing	*Writing a mathematics formula down until it is remembered*	.57
Goal-setting/planning	*Making lists to accomplish during studying*	.49
Reviewing records	*Reviewing class textbook before going to lecture*	.49
Self-monitoring	*Observing and tracking one's own performance and outcomes*	.45
Task strategies	*Creating mnemonics to remember facts*	.45
Imagery	*Creating or recalling vivid mental images to assist learning*	.44
Time management	*Scheduling daily studying and homework time*	.44
Environmental restructuring	*Efforts to select or arrange the physical setting to make learning easier*	.22

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Feedback at the SELF level

Ever present and almost useless (and can be counter productive)

- **Praise** that directs attention away from the task to the self

  "Good girl"

    - rarely about the task

    - contains little task-related information

- **Praise** directed to the effort, self-regulation, engagement, or processes relating to task/performance

    "You're really great because you have diligently completed this task by applying this concept"

Feedback – Instructional fit

- **New material** **Task**

- **Some degree of proficiency** **Process**

- **High degree of proficiency** **Regulation**

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Vignettes re Feedback

Teacher:

- How would you describe the steps to carry out an experiment on how temperature affects the dissolving of sugar in water?

Student 1:

- First, I would prepare two beakers of water at different temperatures. Then, I would take a teaspoon of sugar and add it into each beaker. The sugar will dissolve faster in the hotter beaker of water.
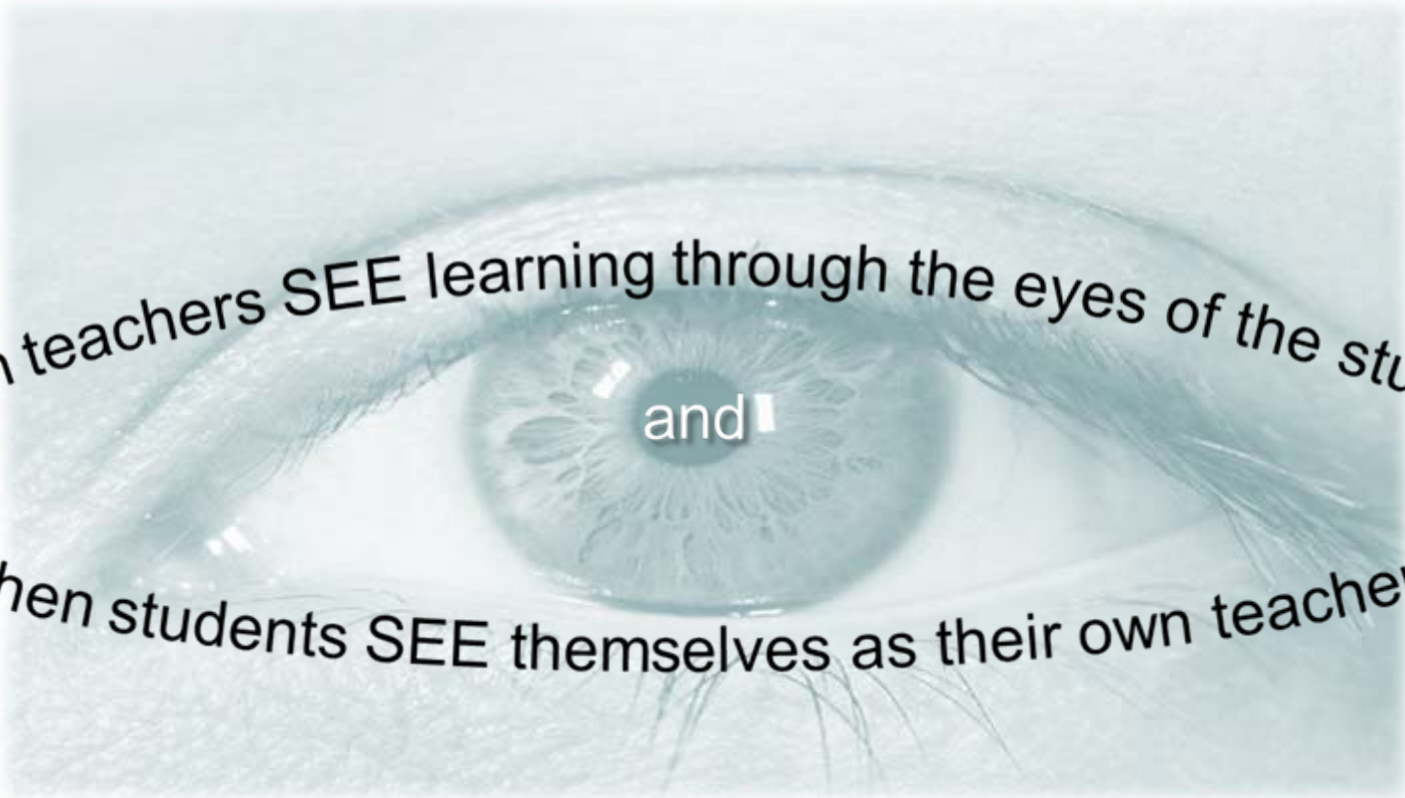
Student 2:

- I would measure equal volumes of water into two beakers. For one beaker, I will keep it at room temperature. The other beaker of water will be heated to boiling at 100 ⁰C. Then, I will add equal amounts of sugar and stir until all the sugar has dissolved. The boiling water will dissolve the sugar faster.

Student 3:

- I would have five beakers, each containing 100 mL of water. I would keep the temperature of each beaker of water at 20 ⁰C, 30 ⁰C, 40 ⁰C, 50 ⁰C and 60 ⁰C. Then, I add 1 g of sugar to each beaker and stir until all the sugar has dissolved. For each beaker, I will time how long it takes for the sugar to dissolve. Then, I will plot a graph and this will show that the hotter the water, the shorter the time for dissolving the sugar.

Visible Teaching – Visible Learning

When teachers SEE learning through the eyes of the student

and

When students SEE themselves as their own teachers

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Evidence about effects of Feedback
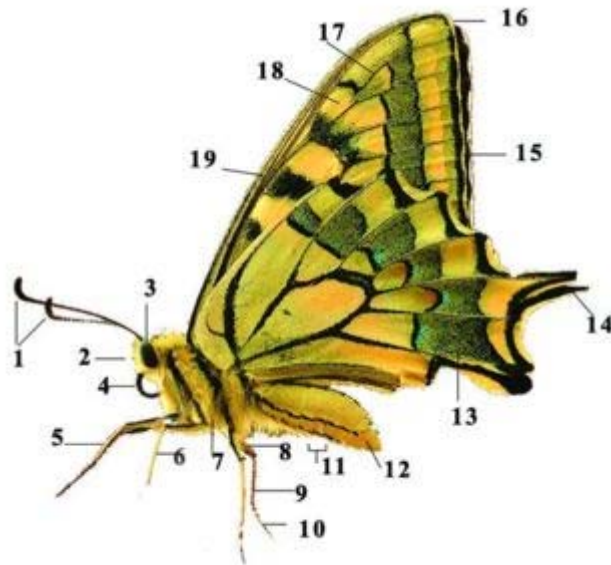
Evidence about the effects of feedback

Photograph by Karolos Trivizas

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Summary of effect-sizes relating to types of feedback

(adapted from Kluger & DeNisi, 1996)

Moderator		No.	ES
Correct feedback	'Tis correct	114	.43
	'Tis incorrect	197	.25

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	No	380	.28

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FB designed to	Yes	49	-.14
discourage student	No	388	.33

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Praise FB	Yes	80	.09
	No	358	.34

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No. of times FT was provided	Lots	97	.32
	Little	171	.39

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No. of times FB was provided	Lots	97	.32
	Little	171	.39
Goal setting	Difficult goals	37	.51
	Easy, do your best goals	373	.30

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Feedback has its greatest effect when a learner expects a response to be correct and it turns out to be wrong. Such 'high-confidence' errors promote the greatest study in an attempt to correct the misconception.

Feedback that attributes performance to effort or ability increases engagement and performance on tasks.

Student self-belief about success or failure can have more impact than the reality of that success or failure.

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From Paul Brown, Perth

Thus …

- **Provide correct feedback** .43

- **About previous attempts** .55

- **Related to more difficult goals** .51

- **That does not discourage** .33

- **or threaten their self-esteem** .47

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Ideas ...

- Target Setting
- Performance and Mastery learning and feedback
- The power of error

The simplest prescription for improving education must be…*providing information about what a student does and does not understand, and what direction the student must take to improve.*

- Ask **a student to <u>tell</u> you what they think you are trying to say to them**

- *When giving written feedback teachers should highlight three successes in the student's work and one area where some improvement is needed*

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Types of Feedback – Shute, 2008

No feedback

Verification Knowledge of results or outcome, right/wrong, overall % correct.

Try-again e.g., repeat-until-correct feedback

Error-flagging Location of mistakes, error-flagging highlights errors in a solution, without giving correct answer.

Elaborated Providing explanation why a specific response was correct, and allows learner to review part of the instruction.

Attribute isolation Presents information addressing central attributes of the target concept or skill being studied.

Topic-contingent Provides learner with information relating to the target topic currently being studied; e.g., re-teaching material.

Worked Examples Provide worked examples and scoring rubrics as part of learning

Response-contingent Feedback that focuses on the learner's specific response. It may describe why the answer is wrong and why the correct answer is correct.

Hints/cues/prompts Feedback that guides the learner in the right direction (e.g., strategic hint on what to do next or a worked example or demonstration). It avoids explicitly presenting the correct answer.

Bugs/misconceptions Elaborated feedback that requires error analysis and diagnosis. It provides information about the learner's specific errors or misconceptions (e.g., what is wrong and why).

Informative tutoring Verification feedback, error-flagging, and strategic hints on how to proceed (correct answer not usually provided)

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PURPOSE → To reduce discrepancies between current understandings / performance and a desired goal

The Discrepancy Can Be Reduced By:

Teachers
Providing appropriate challenging and specific goals
OR
Assisting students to reach them through effective

Students
Increased effort and employment of more effective strategies
OR
Abandoning, blurring or lowering the goals

EFFECTIVE FEEDBACK ANSWERS THREE QUESTIONS

Feed Up
Where am I going?
(The Goals)

Feed Back
How am I going?

Feed Forward
Where to next?

Each Feedback Question Works at Four Levels:

Task Level
How well tasks are understood / performed

Process Level
The process needed to understand / perform tasks

Self-Regulation Level
Self-monitoring, directing and regulating of actions

Self Level
Personal evaluations and affect (usually positive) about the learner