

Bringing mistakes into the curriculum

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This month, I would like to bring to you one of my favourite research papers. I never tire of reading it. Each time I go back to it, I get something more from it.

But unlike the previous research papers that I have shared here, this paper is not freely downloadable. After you read this piece, and participate in the NOW BRING IT INTO THE CLASSROOM section, you may email me if you want to read the original paper. I can help you with that, by sending you a soft copy.

As teachers, we regularly confront the mistakes made by our students: be it in their classroom participation, their class work, homework and tests/examinations. Corrections are such a routine part of a teacher's workday that they can easily turn into mechanical chores. After all, an answer is either 'right' or 'wrong', isn't it?

No, it's not so straightforward, asserts Ronald Swartz, the author of this paper. He advocates a *study of mistakes* and asks the powerful question: *How can the study of mistakes be incorporated into the learning process?* His philosophy is to view mistakes as an integral part of learning. Now that shouldn't sound at all unfamiliar to most of us, should it? After

Paper: *Mistakes as an Important Part of the Learning Process* (1976) The High School Journal, Vol. 59, No. 6, Mathematics Curriculum and Methods, pp. 246-257

Author: Ronald Swartz

all, we are accustomed to regarding mistakes as stepping stones to success, aren't we?

Or are we?

Let's take a closer look at the question: Swartz is advocating a *study* of mistakes. How often do we *study* the mistakes made by our students?

Do we, ever?

But then, *what exactly is meant* by a study of mistakes, you may well ask? Swartz declares that people are in such a rush to solve their problems that they seldom pause to understand them thoroughly. And this is precisely what he is recommending in his recommendation to study mistakes. Swartz does not claim to be making an original statement by asserting that mistakes are an important part of learning. He admits that philosophers like Stuart Mill, Russell, Dewey and Popper (among many others) have pointed out that mistakes are an inevitable part of human enquiry and activity.

The first recommendation that Swartz makes is that we expose children to the ephemeral nature of knowledge, by showing them how there are several solutions to problems which we regard today as mistaken but were regarded as correct at the time that they were first proposed. I would like to extend this to conceptual understanding as well as a knowledge of scientific facts: for instance, it was believed that blood was continuously produced in the human body, ever since the (second century AD) Greek Philosopher Galen proposed this idea. For 14 centuries, no one questioned where the extra blood went! It took a William Harvey (in the 16th century) to dare to ask this question and eventually discover



blood circulation! Doubtless we can find hundreds of other such examples, in each of the subjects that we teach.

In my view, this paragraph carries Swartz's main intent:

It is my hope that a more positive attitude towards mistakes will help children and teachers see that interests can be developed in spite of the fact that people often make errors. In short, mistakes do not have to be obstacles to progress, but at times they can instead be used as a positive force for improvement.

As teachers, we have often seen students get disheartened – and in extreme cases, permanently turned off – by their numerous mistakes in a given subject or topic. If, as he suggests above, they can be helped to see that mistakes need not impede their interest or understanding, what a release that would be! Swartz gives a set of five arguments to support his conviction that studying mistakes is worthwhile. Since I was already taken in by this idea, I did not need even one!

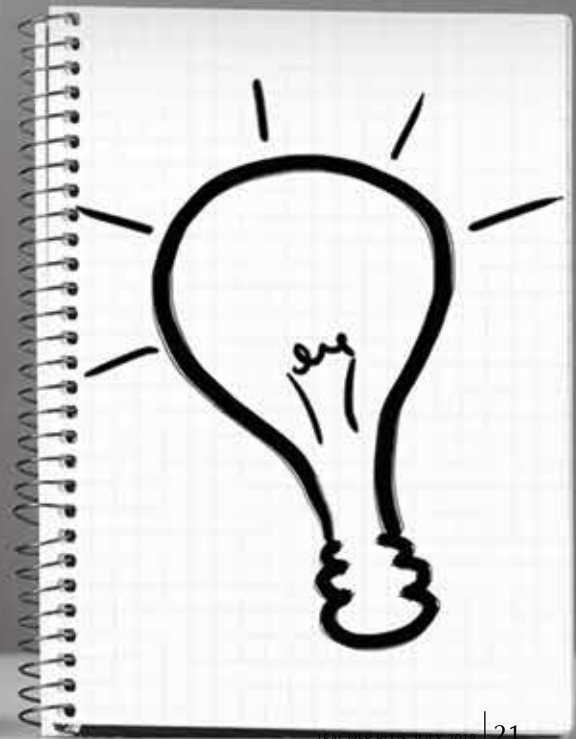
Swartz points out rightly that we do not have, as yet, any policies on incorporating mistakes into our educational programs. He hastens to assert that the curriculum is not his concern, as he is one of the few educators who believes that students should determine their own curricula. Instead, he is more focused on helping people find ways of developing and expanding their interests.

He then goes on to viewing mistakes as suggested solutions to a given problem situation, emphasizing that the context of a mistake is very significant and it is vital that we relate a mistake to a certain situation or problem. By this, he does not mean that a mistake is relative to a person's *personal* context or point of view; instead, he means that *judgments about mistakes* are relative to specific problem situations.

For instance, he cites the example of whether or not it is right to kill a person – in two different situations: one when that person is aiming a gun at us, and the other, when the person has been convicted of murder. Clearly, the answer in both cases need not be the same.

Next, he suggests that we carefully choose the problem areas in which we are likely to make *new* mistakes. Some mistakes are more serious than others, in that they are likely to have serious consequences which other mistakes need not. For example, when a child errs about the shape of the earth, it is unlikely to have a serious consequence as would the child mistaking a bullet to be stoppable by his hand. So mistakes can sometimes cause irreparable harm and close the doors to all future learning. It is vital, therefore, that before trying out new solutions to a problem situation, we first understand the likely risks and consequences of our proposed solutions. Schools should therefore have certain rules in place for children to test out solutions to new problems, so as to safeguard them from irreparable harm.

This gives rise to the importance of being open about our ideas and lending them to free and unfettered criticism. Too often, people tend to be secretive about their ideas and thus deprive themselves of valuable counter points of view. By exposing our views to others, we allow the process of learning



from mistakes to be set into motion. We can prevent others from making the same mistakes, as they see or hear about ours, and we can also learn to delink mistakes from *the people who make them*. This will set the 'mistake maker' free from ridicule, a consequence which is often the greatest deterrent to free and open sharing of mistakes. By 'objectifying' a mistake, we can talk of mistakes without always referring to the person who made that mistake. While we would ideally like to reach the stage of not finding it at all humiliating to own up to a mistake, we now need to objectify mistakes as we travel towards that goal.

Our energies should be focused on *avoiding future mistakes* rather than regretting past ones or fearing new ones, Swartz asserts. He is careful to correct any (mistaken!) impression that the reader may have by now, that he encourages constant mulling over past mistakes. On the contrary, he stresses that he is actually advocating a sincere effort to *understand* past mistakes, while bearing in mind that *there is nothing that we can do to change the past*. By making a sincere effort to understand the circumstances under which we made that past mistake, he suggests that we may well prevent ourselves from making the same mistake again.

Finally, Swartz recommends that children study subjects from a historical perspective, as that will automatically expose them to errors made down the ages, and show them that mistakes are a natural part of progress. Countering the oft-repeated complaint of lack of time to do such an exercise, Swartz declares that by limiting children's exposure only to the so-called worthy ideas down the ages, we give them the mistaken notion that there is always

only ONE RIGHT ANSWER to everything. This is a severely limiting belief and it prevents open and free expression as well as unfettered learning.

Does all of this sound too obvious – even trite – to you? If it does, then do run through my suggestions in the



textbox below, and see if that makes the whole idea more contextual. I look forward to your responses, as always!

Now bring it into the classroom!

1. Survey a set of corrected answer sheets in your subject and classify the types of errors commonly made, e.g. spelling, grammatical, lacking conceptual understanding, careless, computational, forgot-to-read-the-question-carefully, forgot-to-proof-read-the-answer-sheet-before-turning-it-in, etc.
2. Plan a class that allows your students to *scrutinize their corrected answer sheets and come up with their own explanations for their individual errors*. Why did they write as they did? Ask them to cite any reason: however absurd.
3. Then, compare their reasons with yours (in step 1 above).
4. Throw open the floor for discussion that will help *resolve any inconsistencies in the way you analyzed their errors and they did*.
5. What does this tell you about the way their minds work? About your own interpretations/assumptions/biases?
6. See if any students would like to set goals for themselves about certain errors that they wish to conquer over a specific time frame.
7. Suggest specific strategies for step 6 above, so as to support them in this exercise.
8. Return to this exercise after that time frame and monitor student progress, if any.

Please do share your responses to these suggestions at thinkingteacher22@gmail.com.

The author is Founder Director of Thinking Teacher (www.thinkingteacher.in), an organization that networks with teachers across the country. Thinking Teacher aims to awaken and nurture the reflective practitioner within each teacher. By taking (action) research out of the classroom, Thinking Teacher develops the (action) researcher in the teacher. And then, by bringing research into the classroom – as in this series – Thinking Teacher's goal is to help build deep inquiry and rich learning into the teaching process. The author can be reached at [<neeraja@thinkingteacher.in>](mailto:neeraja@thinkingteacher.in).