

The roses of success (Note †)

Sometimes success can be detrimental to learning while failure can be good. Recently, I was watching a group of Scouts build a raft. The children, between 10 and 14 years of age, were having difficulty with their knots and lashings, and were about to miss the race; one of the parents kept trying to build the raft for the Scouts, but the Scout Leader stopped the parent, allowing the Scouts to build the raft themselves, with some minor assistance. The raft was finished late and the children missed the race.

What was the educational outcome in this story? If the raft had been finished “successfully” and on time, the children would have learned that when the going gets tough, someone will take the responsibility to rescue them; they would not have learned self-reliance; their skills and ability would not improve. Ultimately, the Scouts did get their raft in the water, and didn’t seem to mind too much that they missed the race. In fact, the launching and use of *their* raft was cause for self-satisfaction, pride and joy, even though the raft was unstable and fell apart in the water as the knots came undone. By failing to complete the raft in time, the Scouts realised the necessity to work harder at their knot-and-lashing skills, and they developed the motivation to do better in the future. What appeared as a disaster to the parent, laid the foundations for future success.

“From the ashes of disaster grow the roses of success
For every big mistake you make be grateful
That mistake you'll never make again
Every shiny dream that fades and dies
Generates the steam for two more tries
So there's magic in the wake of a fiasco!”

[From *Chitty Chitty Bang Bang*,² words and music by Robert and Richard Sherman] ‡

Usually, educators and students focus on building confidence through successful completion of learning tasks, which is summarised by Lev Vygotsky in terms of a zone of proximal development.³⁻⁵ A positive feedback loop is established if learners are successful in mastering new ideas and skills; a nurturing learning environment is associated with low-risk incremental developments in knowledge and skills, than by high-risk large leaps, that might push learners beyond their abilities.

The problem is that the limits of the zone of proximal development are defined by what a learner is capable of achieving with assistance; these limits are rather vague and often exceed what the learner (or a well-meaning parent or other person) *perceives* to be the limits. If teachers, trainers and instructors never challenge students to the fullest extent of their abilities, then students would be guaranteed to always succeed. While this builds confidence, it might also ensure overconfidence, slow progress and boredom.

We should not avoid the risk of failure; science is all about the possible risk of failure. Testable hypotheses have the potential to fail an experimental or computational test; ideas that are not testable are considered to be outside the realm of science.⁶⁻¹¹ The occasional failure shows the limits and scope of an idea’s validity and enables us to advance scientific and other ideas.¹² We should minimise the risk of failure.

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‡ Academy Award (“Oscar”) winning songwriter, Robert Sherman, died in 2012, as this column was being written.

In his younger days, my father, Patrick, was a keen bridge player. (Bridge is card game, in which players bid or promise to win a particular number of rounds or tricks, based on the knowledge of seeing their own cards and the information conveyed via other player's bidding; the highest bid becomes the contract that the highest bidder has to fulfil through the play of the cards. On one occasion, his friends and he broke the world record for marathon bridge playing.^{13,14}) He taught me that bridge, or any competitive endeavour, involves doing our best. Bridge players, who always win their contract, are bidding too conservatively; playing to our fullest potential means that we may occasionally lose a contract.

There is a need to find the balance between challenge that extends students, and over-extension. The former results in greater and true confidence and ability, while the latter leads to catastrophic failure and crises of confidence. Like that scout leader, we want our students to develop their skills and knowledge to the fullest extent. Education, like life and like all scientific endeavour is about taking responsible risks safely. When we cultivate the roses of success that grow from the ashes of disaster, we must not forget that roses have thorns, or that the occasional setback or failure is just as important for learning as a succession of successes.

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