Learning from mistakes

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In his book *Black Box Thinking*, Matthew Syed argues that some organisations and fields of endeavour are better than others at learning from mistakes.

Syed names health care as an area that, historically, has been slow to learn from mistakes. Too often, he argues, healthcare mistakes are stigmatised, doctors are expected to be infallible, and systems are set up to ignore and deny errors rather than to investigate and learn from them. Data are not always collected and analysed in ways that allow learning; poor practices and mistakes go undetected; and, in the English-speaking world alone, tens of thousands of patients die each year as a direct result of medical errors.

On the other hand, Syed argues, the aviation industry has developed an admirable willingness and tenacity to investigate the reasons for failure. It has created systems and cultures that enable the entire industry to learn from individual mistakes.

The title of Syed's book is a reference to the 'black box' flight recorder. He draws a parallel with the way science progresses through a process of self-correction that depends on testing ideas, subjecting them to failure and profession-wide learning.

Syed concludes that learning from mistakes depends on:
- a willingness to learn from failure, and
- investigative skills and systems to extract and promulgate key lessons from mistakes.

Willingness to learn
A willingness to acknowledge and learn from failure is essential for all progress. Obstacles to acknowledging mistakes include the desire to protect personal reputations and deeply held beliefs. However, when evidence is avoided, hidden or ignored, learning opportunities are lost. This is true at the level of individuals and is equally true at the level of organisations, industries and professions.

Learning from failure is facilitated by a culture that accepts mistakes and welcomes the learning opportunities they provide. The fear of blame undermines the possibility of learning. Openness to learning requires personal and organisational resilience – an ability to acknowledge failure and to treat it as a learning opportunity.

Systems and skills
Learning from failure also depends on systems and skills to investigate, analyse and understand errors. As Syed notes, often this means looking beyond the obvious data to the underlying explanations or causes. Feedback on the reasons for mistakes and failures is essential to learning. But the identification of underpinning explanations usually requires well-honed skills of investigation.

Syed concludes that the paradox of success is that it is built on failure: 'every error, every flaw, every failure, however small, is a marginal gain in disguise'. Evolutionary progress depends on feedback about what is working and what is not. Without such feedback, learning is severely constrained.

How well does education learn from mistakes?
It is interesting to reflect on our attitudes to mistakes and failures in education.

To what extent are we prepared to call a government initiative that produced no measurable improvement a 'mistake'? How often do we identify educational resources and programs as 'failures'? Are we prepared to call the widespread promotion of an ineffective teaching strategy an 'error'? Do we jump too quickly to defend and rationalise our efforts as well-intentioned and perhaps not entirely unsuccessful? And how well do we learn from such missteps?

Of course, education is not the only public policy area in which initiatives are inadequately evaluated, thereby providing little opportunity for learning. Many policy initiatives are based on personal ideologies or beliefs about what should work. Many are implemented on short timelines within the constraints of political cycles and disappear with changes in governments, ministers or senior bureaucrats. But when education policies and initiatives are denied the opportunity to fail (or to succeed), governments, education systems and the profession are denied opportunities to learn.

A willingness to learn not only means allowing time for success or failure, it also means committing to investigating why initiatives have succeeded or failed. Too often in education, policies and programs are introduced with no accompanying plan to evaluate and study their impact. Learning from mistakes requires a learning culture: a commitment to a long-term agenda to learn from evidence; a willingness to evaluate, identify and acknowledge successes and failures; and agreed systems for investigating and learning from practice.

Learning from student mistakes
There are implications, too, for our attitudes to failure in the classroom. If mistakes are essential to learning, to what extent do we design teaching to produce mistakes? Or do we instead stigmatise failure by sending students the message that we do not expect mistakes and that successful learning means not making errors?

One way to minimise mistakes is to assign tasks within students' comfort zones. If tasks are relatively easy, failure is unlikely. But so too is learning. Successful learning is most likely when students are given challenges beyond their comfort zones – challenges that stretch and extend them to the point of making mistakes from which they can learn.

A first requirement then is a willingness to see mistakes not as something to be avoided, but as something to be embraced. This has implications for both teachers and students. Much teaching is focused on creating conditions for student success. But effective teaching often means providing opportunities for students to make mistakes and to learn. Students need to be assisted to welcome new challenges and to view mistakes not as reflections on their ability, but as vital steps in the learning process.

A second requirement is professional skill in analysing the reasons for student mistakes. Student errors are often superficial indicators of underlying misunderstandings or inadequately developed skills. There is no point creating the conditions for failure if there is no intention to investigate causes and provide feedback to guide learning. Skills of investigation and diagnosis are crucial to effective teaching and essential prerequisites for learning from mistakes.

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