

In this week's issue of The Brilliant Report: When, and how, to let learners struggle. Plus, a Brilliant Quote from sociologists Daniel Chambliss and Christopher Takacs, authors of the new book *How College Works*, about the key personal interactions that really make a difference for students.



ANNIE MURPHY PAUL THE BRILLIANT REPORT

A Monthly Newsletter Bringing You the Latest Intelligence on Learning

When to let learners struggle

“Let them eat cake,” said Marie Antoinette. Should teachers, parents, and managers say of the learners in their charge, “Let them struggle”?

Allowing learners to struggle will actually help them learn better, according to research on “productive failure” conducted by Manu Kapur, a researcher at the Learning Sciences Lab at the National Institute of Education of Singapore. Kapur’s investigations find that while the model adopted by many teachers and employers when introducing others to new knowledge—providing lots of structure and guidance early on, until the students or workers show that they can do it on their own—makes intuitive sense, it’s not the best way to promote learning. Rather, it’s better to let neophytes wrestle with the material on their own for a while, refraining from giving them any assistance at the start.

In a recent [study](#) published in the *Journal of the Learning Sciences*, Kapur and a co-author, Katerine Bielaczyc, applied the principle of productive failure to mathematical problem solving in three schools in Singapore. With one group of students, the teacher provided intensive “scaffolding”—instructional support—and feedback. With the teacher’s help, these pupils were able to find the answers to their set of problems.

Meanwhile, a second group was directed to solve the same problems by collaborating with one another, absent any prompts from their instructor. These students weren’t able to complete the problems correctly. But in the course of trying to do so, they generated a lot of ideas about the nature of the problems and about what potential solutions would look like. And when the two groups were tested on what they’d learned, the second group “significantly outperformed” the first.

The struggles of the second group have what Kapur calls a “hidden efficacy”: they lead people to understand the deep structure of problems, not simply their correct solutions. When these students encounter a new problem of the same type on a test,

they're able to transfer the knowledge they've gathered more effectively than those who were the passive recipients of someone else's expertise.

In the real world, problems rarely come neatly packaged, so being able to discern their deep structure is key. But, Kapur notes, none of us like to fail, no matter how often Silicon Valley entrepreneurs praise the salutary effects of an idea that flops or a start-up that crashes and burns. So, he says, we need to "design for productive failure" by intentionally managing the way learners fail.

Kapur has identified three conditions that promote a beneficial struggle. First, choose problems to work on that "challenge but do not frustrate." Second, provide learners with opportunities to explain and elaborate on what they're doing. Third, give learners the chance to compare and contrast good and bad solutions to the problems.

By allowing learners to experience the discomfort of struggle first, and the triumph of

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Brilliant readers, have you seen the struggle to learn pay off for yourself or for other people? Please share your thoughts on my blog, here.

I love to hear from readers. Please email me at annie@anniemurphypaul.com. You can also visit my [website](#), follow me on [Twitter](#), and join the conversation on [Facebook](#). Be brilliant!

All my best,



Annie

This Week's Brilliant Quote

"Most striking to us in our study of how students master the challenges of college was one particular detail—one detail, we might say, of how college actually works in helping students succeed. Time after time, in descriptions of a wide variety of situations, students told us of how encounters with the right person could make a decisive difference in their college careers. Time and again, a single dinner at a professor's home, or a single focused conversation with a professor about the student's work, seemed to have an outsized impact on the student's success—for very little effort by the professor. Human contact, especially face to face, seems to have an unusual influence on what students choose to do, on the directions their careers take, and on their experience of college. It has leverage, producing positive results far beyond the effort put into it. Indeed, personal connections are often the central mechanism and daily motivators of the student experience."—Daniel Chambliss and Christopher Takacs, *How College Works*

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