

Lifelong Kindergarten: Cultivating Creativity through Projects, Passion, Peers, and Play

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Gamification

At the TED conference in 2011, Sal Khan made a presentation called “Let’s Use Video to Reinvent Education.” In it, he described his work on Khan Academy, an enormously popular website providing short instructional videos that teach lessons in math, science, art, economics, and other disciplines. At the end of the presentation, Microsoft founder Bill Gates joined Khan on stage and asked him a few questions. This part of the exchange caught my attention:

Gates: I’ve seen some things you’re doing in the system that have to do with motivation and feedback—energy points, merit badges. Tell me what you’re thinking there?

Khan: Yeah, we’ve put a bunch of game mechanics in there, where you get these badges. We’re going to start having leaderboards by area, and you get points. It’s actually been pretty interesting. Just the wording of the badges or how many points you get for doing something, we see on a system-wide basis, tens of thousands of fifth-graders or sixth-graders going one direction or another, depending on what badge you give them.

The audience burst into laughter and applause. They loved the idea that students could be steered this way or that way by offering them points and badges.

This example is hardly unique. Almost everyone, it seems, has bought into the gamification of education. When children play games on the computer, they’re clearly motivated by accumulating points and other rewards, so why not apply the same

approach to education? If children can get points and rewards in educational activities, as they do in games, won't they be more motivated to learn?

Gamification has become the conventional wisdom. In classrooms, children are rewarded by stickers and gold stars. In educational apps, they're rewarded with points and badges. This approach builds on a long tradition in educational psychology.

Researchers like Edward Thorndike and B. F. Skinner, pioneers of a branch of psychology known as *behaviorism*, demonstrated the power of offering rewards to encourage desired behavior. Their theories had a deep influence on management strategies in classrooms and workplaces throughout the 20th century.

But recent research calls into question the long-term value of the behaviorist approach, particularly in creative activities. It's undeniably true that rewards can be used to motivate people to shift their behavior in the short term, but the long-term effects are much different. In his book *Drive: The Surprising Truth About What Motivates Us*, Daniel Pink describes the differences this way: "Rewards can deliver a short-term boost—just as a jolt of caffeine can keep you cranking for a few more hours. But the effect wears off—and, worse, can reduce a person's longer-term motivation to continue the project."

Pink discusses several research studies that demonstrate the limits of using rewards for motivation. In one study, by Edward Deci, university students were asked to solve puzzles by putting blocks together. The students were divided into two groups. The students in one group were paid for each puzzle that they completed, while students in the other group received no pay. Not surprisingly, students in the paid group spent more time on the puzzles than students in the unpaid group. The next day, the students were invited back to solve more puzzles, but this time none of the students

received any pay. What happened? The students who had been paid the first time spent less time on the puzzles than the students in the unpaid group. That is, the students who had received pay on the first day became less motivated than the students who had never received any pay at all.

Another study, by Mark Lepper and colleagues, involved kindergarten students rather than university students, and certificates rather than cash, but the results were similar. Some kindergarten students were offered “Good Player” certificates for making drawings on paper, while other students received no certificates. Two weeks later, the children were asked to make more drawings, but no certificates were offered. The students who had received certificates the first time showed less interest and spent less time making drawings the second time.

The effects of rewards are most negative when creative activities are involved. In some studies, researchers asked people to solve problems that required creative thinking, and participants took longer if they were paid for their solutions. The lure of a reward or payment seems to narrow people’s focus and restrict their creativity. Similarly, creativity researcher Teresa Amabile analyzed artists’ paintings and sculptures, and she found that the artists produced work that was less creative when they were paid for their creations—even when there were no restrictions on what they could create.

If your goal is to train someone to perform a specific task at a specific time, then gamification can be an effective strategy. Turn the task into a game, offering points or other incentives as a reward, and people are likely to learn the task more quickly and efficiently. But if your goal is to help people develop as creative thinkers and lifelong learners, then different strategies are needed. Rather than offering *extrinsic* rewards, it’s

better to draw upon people's *intrinsic* motivation—that is, their desire to work on problems and projects that they find interesting and satisfying.

That's the approach we've taken with the Scratch online community. Unlike most children's websites, Scratch doesn't offer any explicit points, badges, or levels. Our goal is to keep the focus on the creative activity of making interactive stories, games, and animations. We want young people to come to the Scratch website because they enjoy creating and sharing projects, not because of the lure of prizes and rewards.

Our MIT Scratch Team does select certain projects to feature on the home page. That might be viewed as a type of reward—and, indeed, members of the Scratch community are very excited when their projects are featured. But our intention is to highlight creative projects that can serve as inspiration for the community, not to reward particular community members. If you visit a member's profile page, there's no mention of the number of times that member's projects have been featured. Instead, the main focus of the profile page is on the projects that the member has created and shared. We want Scratch community members to be proud of their portfolio of projects, not the rewards that they've received.

Some Scratch community members try to gamify the site themselves, taking any number that appears on the website and turning it into a competition: Who has the most projects? Who has the most followers? Which project has the most loves? In our design of the Scratch website, we try to discourage this type of competition; we don't want community members spending all their time trying to accumulate the most of this or that. For example, when a community member has created more than 100 projects, their

profile page indicates “100+” projects, not the exact number. We’d prefer that members focus on the creativity and diversity of their projects, not who can create the most.

We understand the appeal of extrinsic rewards and gamification, but we also know that intrinsic motivation is the key to long-term engagement and creativity.