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**FEATURE**

# Grabbing students

## Researchers have identified easy ways to boost student success by increasing their engagement in learning.

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For many young children, school is an exciting place. Kids in primary grades — especially kindergarteners, first- and second-graders — are eager to absorb new ideas and information.

But how many of them still feel that way about school by the time they've grown into teenagers?

Too often, research shows, children lose that spark. Their interest in learning and desire to perform wanes, so that by high school, a significant number have checked out, viewing school as boring and frustrating and the content as irrelevant to their lives — with worrisome implications for their futures.

"For kids, motivation and engagement in school on average drops as they move from the elementary school into the secondary school system," says Jacquelynne Eccles, PhD, an education professor at the University of California, Irvine. "You see it in attendance, in getting into trouble, in drop outs from high school and also in dropping out of college."

Consider:

- Nearly half of students in Gallup's 2014 student poll report being either not engaged (28 percent) or actively disengaged (19 percent) in school. The poll of 825,000 fifth- through 12th-graders shows a clear slide as children progress in school.
- A 2014 survey by *Education Week* found that only 40 percent of the teachers and administrators who participated believed that most of their students were highly engaged and motivated. Teachers and administrators from high-poverty schools reported much lower levels than those from more affluent schools.
- Though the high school graduation rate in the United States has been increasing and reached 81 percent in 2012, a significant number of students still are not getting the diplomas considered essential for today's job market, which may put them at risk (http://www.medicaldaily.com/one-more-reason-stay-school-dropouts-more-likely-lead-lives-punctuated-crime-substance-abuse-248159) for unemployment, substance abuse and incarceration. Graduation rates are lower for some regions and groups (African American children, for example, averaged 68 percent (http://nces.ed.gov/pubs2014/2014391.pdf) in 2012). As for college, about 40 percent of those seeking four-year degrees don't complete them — one of the worst rates in the developed world, according

to an Education Trust report. Research finds student engagement plays a role in college success — or lack thereof (*The Journal of Higher Education*, 2008 (http://sasse.ufs.ac.za/dl/Userfiles/Documents/00000/89_eng.pdf) ).

- Achievement scores in math and science lag for U.S. students compared with those of other countries. U.S. 15-year-olds ranked 26th in math, 21st in science and 17th in reading when compared with peers from 64 other countries in the 2012 Program for International Student Assessment tests (http://neatoday.org/2013/12/03/what-do-the-2012-pisa-scores-tell-us-about-u-s-schools-2/) , for instance.

"I'm worried about our schools," says student engagement researcher Jennifer Fredricks, PhD, professor of human development at Connecticut College. "I think it's getting worse rather than better in a lot of indicators. Kids are bored and alienated. Too many are just going through the motions."

So what can be done? Educational psychologists have found that some relatively simple and low-cost actions can have powerful, positive effects on student engagement and motivation, turning disinterested students into eager learners.

# From mindset to flow: Current theories

Why students are disengaged and unmotivated is pretty clear, says Eccles: "They don't think they can succeed [in school]. They don't think it's important; they don't see its relevance to their lives. It creates too much anxiety. It's not taught in a way that's interesting, so it has no appeal to them."

To help turn this around, educational psychologists have developed a number of theories, strategies and approaches. They include:

**Academic mindset.** Among the most influential theories is the mindset theory of Stanford University educational psychologist Carol Dweck, PhD. She says students tend to either have a "growth" or "fixed" mindset, depending on whether they believe that such traits as intelligence are flexible or immutable. Students with fixed mindsets are deflated by bad grades or low scores because they see themselves as lacking the innate ability to perform well; they lose motivation because they see no chance of success.

By contrast, students with a growth mindset delight in learning for its own sake. If they do poorly on an exam, they might blame it on their lack of preparation and vow to do better next time, rather than taking it as a sign they can't handle the work due to intrinsic inability to master the subject.

Teachers fall into these mindsets and can unwittingly reinforce them — as can parents. One recent study by Dweck and other researchers found that the way parents praise children at ages 1 to 3 can affect their motivational outlook five years later. Children who were praised for effort were more likely to have growth mindsets and to enjoy challenges, while those who were praised for inherent abilities were more likely to see these as immutable or fixed, the study found (*Child Development* (http://www.ncbi.nlm.nih.gov/pubmed/23397904) , 2013).

**Expectancy-value model.** Similarly, the "expectancy-value model" of learning — developed by Eccles and colleagues — posits that students are more likely to be fully engaged in school if they expect they can do well and if they value the learning that schools provide.

So, if students think what they're learning is relevant to their lives, they give it greater value. And getting them to see the relevance of their classroom content doesn't have to be difficult, as researchers Chris Hulleman, PhD, of James Madison University, and Judith Harackiewicz, PhD, of the

University of Wisconsin–Madison, found in a recent study of high school students taking science courses.

In the study, the researchers had 262 ninth- and 10th-graders write essays about the usefulness and value of their science courses to their lives. A control group wrote summaries of their studies. The first group improved their course grades compared with controls and were more interested in taking science classes in the future (*Science* (http://www.sciencemag.org/content/326/5958/1410)

, 2009).
Harackiewicz also used writing exercises to boost students' self-confidence and feelings of self-worth. In one study, Harackiewicz and colleagues had 798 college students write about the traits they valued most, such as having a sense of honor. The act of writing these "values affirmation" essays was enough to raise grades, particularly for students who were more likely at the outset to do poorly in class, such as first-generation college students (*Journal of Educational Psychology* (http://www.ncbi.nlm.nih.gov/pubmed/25049437) , 2013).

Flow theory. Michael Jordan flying to the hoop and Jackson Pollock painting with abandon are examples of people "in the zone," according to Mihalyi Csikszentmihalyi's famous flow theory. Rutgers University psychologist David Shernoff, PhD, has applied this theory to education, showing that students who are highly engaged and motivated while challenged with tasks that are at peak difficulty level (not too hard, but also not too easy) can have that same flow experience.

"Almost all meaningful learning experiences are flow-like or episodic," says Shernoff. "Applying flow theory, I have conceptualized student engagement as a continuum," with the highest engagement occurring when concentration, interest and enjoyment are all high, in a merging of fun and challenge that can be thought of as "playful work" or "serious play."

Shernoff uses the Experience Sampling Method (ESM) to see how students are engaged at any given moment in the classroom. Students wear devices that prompt them at random times to stop and report what they are thinking and feeling (in the past, programmable wristwatches were used; today, smartphones, pagers and similar tools have taken their place). He's found that middle and high school students aren't often highly engaged in class and tend to be least engaged when listening to lectures.

Yet lectures made up a significant part of students' classroom time — 21 percent, Shernoff has found. Adding in watching education-related videos during class, one-third of their day was spent in passive activities. Only about 15 percent of class time involved interactivity, such as discussions or lab experiments (*School Psychology Quarterly* (http://www.cedu.niu.edu/~shernoff/pdf/shernoff.spq.pdf) , 2003). Shernoff also found that 40 percent of the time, students were thinking about topics unrelated to academics.

Shernoff finds that students are more likely to be in a "flow-like" state of engagement — where they are both enjoying and being challenged by what they're doing — during after-school activities (*New Directions in Youth Development* (http://onlinelibrary.wiley.com/doi/10.1002/yd.111/abstract) , 2005). These include academic or arts enrichment activities as well as extra-curricular activities such as organized sports (*Journal of Youth and Adolescence*, 2007).

Shernoff used his research into flow and engagement to come up with a conception of optimal learning environments. In these, says Shernoff, "you will see evidence both of high challenge and

supports at the same time" — instruction in which teachers spur students to stretch themselves, but also provide plenty of help.

# What works in the classroom

Fostering hands-on activities appears to boost student engagement, psychologists say. Take the case of 12-year-old Gabriel Cabezas of Norwich, Connecticut, who last year moved from a traditional public middle school to the progressive, arts-oriented Integrated Day Charter School. He saw differences right away: no letter grades, fewer tests and much less use of textbooks in favor of hands-on activities, independent work and small group projects.

"It's more interesting — definitely," says Cabezas. "At my old school, a lot of it was paper stuff, but at this school you get to do things."

One favorite activity: participating in student-led Socratic discussions in English class in which the student leading the discussion becomes Socrates for the day, complete with a fluffy fake beard. The school also allows students to choose how to demonstrate what they've learned, perhaps through a video, PowerPoint, artwork or play, rather than a traditional paper, notes teacher Melissa Dearborn.

Giving students more agency raises engagement, researchers say.

"In their theory of self-determination, Ed Deci and Rich Ryan propose that people need to have autonomy to be strongly motivated," says Allen Wigfield, PhD, professor of human development at the University of Maryland. "The way that gets translated into practice in school is giving kids choices about material they are using or activities they are doing."

Other evidence-based ways to boost classroom engagement include:

- Create personal connections. In a study conducted 20 years ago at a California middle school, Russell Rumberger, PhD, of the University of California at Santa Barbara, oversaw an intervention in which marriage and family counselors were hired and trained to develop close relationships with students at severe risk of dropping out. The time-intensive approach cut the dropout rate in half. But after the program ended, graduation rates slipped back to pre-intervention levels.

Rumberger says that it can be hard for school districts to find money to hire more educational counselors and tough for overburdened teachers to find time for intensive, one-on-one mentoring.

Still, a positive student-teacher relationship can be key to engagement, says Fredricks.

Integrated Day Charter School helps form teacher-student relationships with home visits from the teacher, which take place for every student, says Dearborn, adding, "You walk into their home and often they've baked a cake and the student wants to show you their room." The experience allows for much more personal relationship-building than takes place in classrooms alone, she says, and also gives teachers insights into "where the student is coming from," helping teachers be more responsive to individual student needs. "To me, that's the key to relationship-building in school," she says.

- **Focus on mastery.** At most schools, if a student does poorly on a test or paper, the grade is recorded and that's that. A mastery-based system handles this differently, with the focus on making sure the content is learned rather than on grading. Phoenix Middle School in Worthington, Ohio, for example, requires students to revise work they haven't mastered — even if that means working over the summer.

"Our dream is that in revising content, they feel more confident, and that's their intrinsic motivation to continue to succeed," says teacher Beth Cullinan.

A mastery focus also seems to help the content stick with the students, according to research by Eric Anderman, PhD, chair of the department of educational studies at Ohio State University. In one study of teens learning about health topics, he found that when teachers approached the material in the context of test preparation, students were less engaged and less likely to retain what was taught. But if teachers gave a message focused on the content — "This is very important stuff and we want you to learn it" — students retained more information (*Journal of Research on Adolescence* (http://onlinelibrary.wiley.com/doi/10.1111/j.1532-7795.2011.00751.x/abstract) , 2011).

Cheating is another problem that can be lessened with a mastery focus, says Anderman.

"What we find over and over again, when students are in classrooms where teachers really emphasize mastery of content and you give kids opportunities to master the materials, you get very little cheating — contrasted to classrooms where the teacher just says you're going to have a test on Friday and you'd better know [the material]."

- **Don't compare kids.** Teachers should not point out ability differences, adds Anderman. "Star charts" on walls showing which kids know their multiplication tables, for example, can do more harm than good. "They make the smart kids feel really good and everyone else feel bad, especially kids who are not on it," he says.

Comparing students' grades and scores within a classroom also misses the point that students need to be motivated by their own growth, not others'. "We want students to focus on where you were last month and where are you now and can you see that growth? That's motivating," says Tim Urdan, PhD, educational psychology professor at Santa Clara University.

- **Build experiences of success.** Anderman favors giving students small, bite-sized chunks of material to master one bit at a time so they won't be discouraged and can see themselves as successful learners. So, for instance, in a first-year Spanish course, teachers shouldn't focus on the end goal of being able to read and hold conversations in Spanish, but rather point to a task they will master that week — say, counting to 20 in Spanish.

"This is an incredibly powerful tool with motivating kids and we really need to work more with teachers getting them to understand that setting short-term goals and showing kids they can reach those goals can go such a long way," he says.

Karen Harris, PhD, education professor at Arizona State University, has developed another way to enable students to feel successful — an instructional model called Self-Regulated Strategy Development (SRSD) (http://www.thinkSRSD.com) that has been primarily used for writing instruction but also has been applied to other content areas. SRSD, says Harris, incorporates concepts such as developing self-efficacy and a growth mindset; active involvement in discussion and thinking; providing challenging but doable writing goals tailored to students' writing levels; mastery-based progression through instruction; and development of self-regulation of the writing process.

With the SRSD model, teachers help students learn how to do something — such as write a story or an essay — much the way a master teaches an apprentice, through modeling, interactive learning and gradual release of control. Mnemonic aids and other tools also are used.

"Nothing succeeds like success," Harris says. "If you want children to be motivated to learn, you have to show them how to learn — to support them as they learn powerful strategies."

In her work, Harris has found that as early as third grade, many children's attitudes about writing — and themselves as writers — are already formed, and not in a good way. "As writing becomes more complex, if they're not taught well and given the tools they need, they can see other kids getting it and they're not, so they think something's wrong with them," she says. This can then lead kids to turn off to learning before they hit fourth grade.

In one recent study looking at 51 second-graders who were at risk for failure in writing, those who received SRSD intervention improved not only their writing performance but also their intrinsic motivation for learning. The interventions consisted of small-group instruction for three 20-minute sessions a week (*Contemporary Educational Psychology* (http://dx.doi.org/10.1016/j.cedpsych.2014.02.003) , 2014).

Another study found gains after SRSD intervention in academic engagement and writing achievement for second-graders who were identified as having both writing and behavioral problems (*Journal of Research on Educational Effectiveness* (http://dx.doi.org/10.1080/19345747.2011.558987) , 2011).

# Technology: The great engager?

While no single device or piece of software is a magic bullet, some psychologists see great promise in technologies like tablets and smartphones — tools that kids are familiar with, see as relevant to their daily lives and, most important, find engaging. A Harris poll conducted for Pearson (http://www.pearsoned.com/wp-content/uploads/Pearson-K12-Student-Mobile-Device-Survey-050914-PUBLIC-Report.pdf) in 2014 of 2,252 fourth-through 12th-grade students found that 75 percent of high-schoolers use smartphones (as do 44 percent of elementary students and 58 percent of middle-schoolers). Tablet use is more skewed toward younger grades, with highest use among elementary students at 66 percent; 58 percent of middle-schoolers use one, while 42 percent of high-schoolers do.

"The way the newer generation learns is so different now," says Shernoff. "They learn in engaged ways, with their own tools, online, with handheld devices. I think they will stay engaged if that is embraced and supported, and if they are taught how to take it to the next level." For example, he would like to see more students taught how to code and develop their own apps.

Adaptive software, such as that found in math programs like ReflexMath or Dreambox Learning, can adjust the tasks presented to students based on their individual responses. This allows for personalized learning with instantaneous feedback — something teachers are hard-pressed to provide when trying to instruct 25 to 30 students simultaneously.

"There is great potential with technology for more individualized instruction, personalized feedback and giving optimally challenging problems," says Urdan.

Shernoff has worked with an engineering professor at Northern Illinois University, Brianno Coller, PhD, to study the impact of using video games (http://www.niu.edu/assessment/committees/CAN/PresentationsPapersArticles/coller-shernoff-strati-2011-advances-in-engineering-education.pdf) to teach engineering principles. Coller designed a road-racing game in which students create their own race cars — a task that required the students to learn the

principles being taught in the course. Students who participated in the game-taught class were more engaged and better mastered the material than a control group that learned via traditional textbooks and lectures.

"I think technology can be a huge tool for individualizing instruction," says Harris, adding that it needs to be directed by a teacher and used thoughtfully to meet kids' needs, with learning objectives in mind.

Fredricks also sees both the potential for technology and areas of concern. She cautions that educators need to take care that technology in the classroom doesn't turn into students spending too much time staring at screens alone, rather than interacting with other students and teachers. A lack of such direct communication could impair the ability of kids and teachers to form the relationships that are crucial to engagement.

Better direct communication is needed in another area if students are to be engaged: between researchers and policymakers. Too often, education experts haven't explained to policymakers why certain approaches are more successful than others, says Wigfield.

"There's kind of a three-way disconnect among the motivation researchers and the policy people, the teachers and the administrators," says Wigfield, noting that sometimes the practices advocated by policymakers "go against the principles we are talking about, like giving more choice."

Another issue is the pervasive focus on high-stakes testing in K-12 education, say Wigfield and other educational experts. "Getting students to score at a certain level on tests often means administrators don't want to think about things like engagement as a way to get there," says Wigfield. Instead, the focus is on "pounding those skills into kids' heads" to boost all-important test scores.

Researchers need to find ways to work collaboratively with policymakers, school administrators and teachers to figure out how to use research findings to improve engagement, says Wigfield. By working together, researchers and educators can truly effect change, turning research discoveries into practical solutions to better engage and motivate children in the classroom.

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