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editors: gene v glass gustavo e. fischman melissa cast-brede

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Cushman, Kathleen. (2010) *Fires in the Mind: What Kids Can Tell Us About Motivation and Mastery*. San Francisco, CA: Jossey-Bass.

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Reviewed by Daniel Greene
Stanford University

Childhood and adolescence are ideal times to find and develop a passion. In particular, teenagers seem primed to dedicate themselves to skills and hobbies that connect them to their peers, shared values, and a sense of personal meaning. As some parents cheer and urge from the sidelines, we might ask what the teens themselves think about the how and why of their work. In *Fires in the Mind: What Kids Can Tell Us about Motivation and Mastery*, Kathleen Cushman collects excerpts from interviews of 160 teenagers nationwide on “what it takes to get really good at something.” Across ten chapters, she outlines the conditions that young people identify to help them achieve mastery in everything from chess to dancing to political debate.

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The results are a relief and a wakeup call to anyone who worries about the apathy of today's youth. Cushman's teenagers offer a number of different reasons for how they chose their fields, the factors that enabled them to persist despite difficulty, and the elements of good practice. For example, one student succinctly described the sources of his passion for school orchestra: "Our expectation is to be a musician, not just get some noise out of an instrument. So when somebody's struggling, we ask for help and support one another. Our motivation is the passion for music itself – being part of an orchestra making music." The author also tasked her subjects with observing expert performance in their chosen fields, offering thoughts on the value of public performance, and contrasting self-directed learning with learning at school. Their collected wisdom is heartening as a reminder of the latent passion for meaningful work that traditional curricula often fail to access.

Cushman's summary suggests that student knowledge about expertise matches psychologists' understanding of how expertise develops. According to the students, the likelihood of starting a new skill is influenced by a short list of social factors, like family tradition, and personal factors, like a sense of fun and challenge. In order to persist in practice, students also mentioned factors like the expectations of their peers, the presence of supportive parents and coaches, and the opportunity for satisfying "flow" experiences. These have all been identified by psychologists as common important influences on the development of expertise. And while a helpful bibliography lists several authoritative sources of information about the subject, some more explicit mapping between student responses and academic literature would make clear the degree to which student reports are supported by data. For example, in Chapter 3 Cushman cites an example of a very unusual teenager: "Gymnastics practice took up most of Rachel's free time in her early teens, holding her back in other parts of her life. But when her parents urged her to discontinue the sport, she only grew more committed." (pg. 36) The academic literature on mastery learning frequently emphasizes the importance of parents in positively motivating their children, but Cushman offers the example of Rachel without mentioning that is atypical. This is a misleading omission, considering that Cushman's intended audience is a general one.

In addition, while the book emphasizes each teen's unique story of mastery, it's unclear whether the teens themselves have a comprehensive understanding of the range of potentially beneficial conditions. Indeed, Cushman even comments at the end of the book on how much her subjects had learned about expertise during her time with them. The upshot of these possible gaps in student knowledge is that students may benefit from targeted instruction on the development of expertise. Students learn most of their knowledge about developing expertise from peers and mentors within a particular community of practice. A new culture of "best practices" regarding practice itself could improve student performance and engagement in all of their learning communities. Cushman also does not point out some notable potential conditions for mastery that her subjects failed to mention—in particular, extrinsic motivators like money. Many of the teens interviewed used their skills in paid jobs and internships, but they never mention financial incentives. (A single interviewee mentions starting a hobby to improve her resumé, and then becoming intrinsically motivated to continue.) I wanted Cushman to address this absence head-on, because it can be seen as supporting an argument against extrinsic motivation. The issue is debatable, because the focus of the author's questions was on "what it takes to become really good at something," which implies that her subjects focus on internal and external *support*, as opposed to *incentives*.

Student beliefs about innate talent are also barely mentioned, with one exception: innate talent was rarely cited as a reason to initially engage in a skill. The lack of information about teens' "folk beliefs" concerning natural talent is an unfortunate missed opportunity, considering the groundbreaking research of researchers like Carol Dweck on the importance of beliefs about intelligence on persistent effort. In sum, the book would have benefitted from more direct engagement of teens in the persistent debates around motivation and mastery.

In her exploration of the differences between practice and schoolwork, Cushman wisely avoids asking students to compare the intrinsic value of the two. Instead, she elicits some enthusiastic responses on how to make schoolwork more like a community of practice towards expertise. The

key message is in reframing learning as the development of skill. All environments encourage the development of the relevant skills necessary to thrive, and the school environment neglects this by focusing on the delivery of content. As technology continues to make high-quality educational content delivery practically free, the organization of schools may need to shift focus to skill development.

According to Cushman's teenagers, the actual skills elicited by school and homework consist mostly of cramming one's memory with superficial knowledge for equally superficial tests, of copying algorithms set out in practice problems in math and science textbooks, and of learning the preferred communication styles for each teacher. All the while, they must tolerate what they see as an absence of free choice, social interaction, concrete and practical results, uninterrupted flow experience, and personal attention from teachers. Their stories form a sad and moving reminder of most people's experiences with school, and they stand in stark contrast to the students' descriptions of their extracurricular lives.

The text itself is engaging and easy to read, and it is interspersed with helpful questionnaires for students and teachers. However, I'm left wondering about the real purpose of *Fires in the Mind*. It provides weak evidence that students know all the conditions for mastery, no information about whether it is worthwhile to teach mastery conditions, and nothing about mastery itself that can't be learned from one of the many academically-grounded bestsellers listed in the bibliography. At its best it functions like a documentary film, zooming in to give a face and heart to the recipients of American public education. Stories like these may be necessary to engage a wider audience in issues of mastery and meaningful education, but only as a first step.

About the Reviewer

Daniel Greene is a doctoral student in the Learning Sciences and Technology Design program at the Stanford University School of Education. He develops educational tools for self-directed learning, and is a member of the Transformative Learning Technologies Laboratory. He lives in Palo Alto, California.

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Editors

Gene V Glass

glass@edrev.info

Gustavo Fischman

fischman@edrev.info

Melissa Cast-Brede

cast-brede@edrev.info
