Educational Crowdsourcing

By Glen Bull

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Crowdsourcing refers to a process that draws on the talents of a diverse group to accomplish a task or goal. James Surowiecki's 2005 book *The Wisdom of Crowds* popularized the notion that under certain conditions diverse groups can collectively solve problems that even experts might find challenging.

The following year *Wired* magazine contributing editor Jeff Howe coined the term *crowdsourcing* to describe the process of outsourcing a task or problem to a crowd. For example, InnoCentive (http://www.innocentive.com) provides a site on which a corporation can post a problem to be solved, together with a reward or incentive for the first person or team to solve the problem. Prizes offered typically range from $10,000 to $100,000.

Innovation and Diversity

In a number of cases, scientists and problem solvers from diverse backgrounds are solving problems that have eluded companies' internal research teams. Companies do not pay unless the problem is satisfactorily solved, extending their capabilities without adding additional overhead.

The problems posted on InnoCentive are typically complex ones that require specialized expertise or scientific knowledge to solve. An Amazon beta project, the Mechanical Turk, offers problems within the capacity of anyone to solve. For example, a typical task might involve tagging a set of images (i.e., assigning appropriate cataloging terms).

The original *Wired* magazine article is available on Jeff Howe's Crowdsourcing blog at http://crowdsourcing.typepad.com. A shorthand definition provided on the blog defines *crowdsourcing* as "the application of Open Source principles to fields outside of software." Crowdsourcing frequently involves financial incentives, but can encompass volunteer efforts as well.

Exploration of crowdsourcing solutions is taking place in fields as varied as the electronics industry, biotechnology, the creative arts, and journalism. Could crowdsourcing be applicable to the field of education?

Upon first consideration, the answer appears to be that it might be applicable under the right conditions. Millions of volunteers contribute to education and schools in many different ways. These individuals come from all walks of life—parents, retired educators, businessmen who would like to give something back to the community, etc. Many of these individuals would be willing to participate in an educational crowdsourcing project if a mechanism were provided.

Research Findings

Crowdsourcing has now become the focus of a serious field of academic research. Some of the initial findings might be helpful in understanding conditions under which crowdsourcing might be effectively implemented in education. A professor in the Harvard Business School, Karim Lakhani, published some of his conclusions in the May 2007 issue of *Harvard Business Review.* He based his findings on an analysis of solutions submitted in response to challenges posted on InnoCentive.

1. ***Rewards are necessary but insufficient.*** Participants were initially attracted to the site by the rewards—financial, in the case of commercial ventures. However, the enjoy-

ment of solving a puzzle or novel problem seemed to play an important role as well. There did not seem to be a correlation between the size of a reward and the likelihood that the problem would be solved.

2. ***Knowledgeable experts are still important.*** The engineers inside the company played a crucial role in determining which problems should be broadcast, and in identifying the best solutions.

3. ***Diversity matters.*** In many cases the problems were ultimately solved by individuals with differing backgrounds who were able to apply methods from their own fields. Lakhani concluded that innovation often occurred at the intersection of disciplines, observing that "the more diverse the problem-solving population, the more likely a problem is to be solved."

Assignment Zero

The editors of *Wired* magazine decided to apply the methods of crowdsourcing to learn more about crowdsourcing in Assignment Zero. This project linked volunteer citizens with experienced journalists for investigative assignments. Several hundred volunteers participated, ultimately producing 80 interviews and seven articles. The interviews provide perspectives from James Surowiecki, Alpheus Bingham (the co-founder of InnoCentive), Karim Lakhani, and many others.

Jeff Howe ultimately described Assignment Zero as a "satisfying failure"—a failure because it did not fulfill the expectation of producing dozens of finished articles, but satisfying because the process yielded insights into lessons that may lead to more successful ventures in the future.

Many of the lessons appear to relate to availability of knowledgeable experts and organizers to manage a project. Initially the onslaught of more than 500 volunteers overwhelmed the organizers. This was compounded by the fact that some of the editors were not experienced with the Internet or online organization, according to David Cohn, one of the project leaders. Another organizer, Tish Grier, commented in a blog posting, "One of the first things I noticed … was the inability of many of the journalists to understand the importance of organizing and staying in constant contact with volunteers."

In a summation in *Wired* magazine, Jeff Howe concluded, "The plain fact is that in the future, journalists will have to develop these skills if they want to succeed in a future in which their readers are also their writers... . The crowd does not contribute in a vacuum. They do so as part of a community of other contributors."

Another key lesson can be derived from the fact that many of the topics identified by the organizers failed to attract volunteers, according to Howe. In other words, the work that can be accomplished lies at the intersection of the needs of the organizers and the interests of the volunteers.

The project was also hampered by some technical issues. Some participants appeared to find the Web site layout and organization confusing, although this was updated and revised as the project progressed.

Despite the problems encountered in this online experiment, the result was one of the largest compendiums of information about crowdsourcing available on the Web—a useful resource that must be counted a success despite the problems encountered in compiling the repository. These resources are made available under a Creative Commons license so students are free to analyze, remix, and write their own stories to create their own synthesis and conclusions.

The Challenge to Education

What might be concluded about opportunities to apply these concepts to education? One commonsense observation is that the topics that citizen volunteers may wish to teach will not always naturally align with the areas of greatest need in schools. For example, a thriving community of amateur astronomers exists who doubtless would be willing to assist schools, but astronomy is typically a small portion of the overall science curriculum.

A corollary is that educators will be crucial in identifying project directions and working with volunteers in an educational crowdsourcing initiative. In an interview with Randy Burge, Alpheus Bingham comments that one of the most crucial elements in crowdsourcing is to "get a problem into right 'chunk-sizes'" and sequence a series of tiers of increasing complexity. In education, the task is to identify areas that present the greatest difficulty to students, and structure requests for assistance from volunteers in ways that they can make contributions.

Jeff Howe's observation that in the future journalists will have to become experienced in electronic collaboration with their readers in order to be successful might apply equally well to educators. If we wish to join other disciplines that are taking advantage of the wisdom of crowds, we will need to become increasingly adept in learning how to collaborate in this manner.

Wired magazine provided leadership for an interesting experiment in journalism. Educational associations such as ISTE and SITE would be natural leaders for a "highly satisfying failure" in educational crowdsourcing. Assignment Zero set the bar high. Our challenge is to conceive and implement an equally satisfying experiment in education. ■