



Journal of Educational Controversy

Volume 6
Number 1 *Fifth Anniversary Edition, The
Education and Schools Our Children Deserve*

Article 10

2012

Five Minds Our Children Deserve: Why They're Needed, How To Nurture Them

Katie Davis
Harvard University

Howard Gardner
Harvard University

Follow this and additional works at: <https://cedar.wwu.edu/jec>



Part of the [Education Commons](#)

Recommended Citation

Davis, Katie and Gardner, Howard (2012) "Five Minds Our Children Deserve: Why They're Needed, How To Nurture Them," *Journal of Educational Controversy*: Vol. 6 : No. 1 , Article 10.

Available at: <https://cedar.wwu.edu/jec/vol6/iss1/10>

This Article in Response to Controversy is brought to you for free and open access by the Peer-reviewed Journals at Western CEDAR. It has been accepted for inclusion in Journal of Educational Controversy by an authorized editor of Western CEDAR. For more information, please contact westerncedar@wwu.edu.

ARTICLE

Five Minds Our Children Deserve: Why They're Needed, How To Nurture Them

Katie Davis and Howard Gardner

Harvard University

Abstract

We describe the five minds that should be nurtured in all children to prepare them to become both good workers and good citizens of a complex, every-changing society. In light of the central role that digital media technologies play in such a society, we explore the way in which digital media affect the development and expression of the five minds, as well as the distinct challenges of cultivating each mind in a digital era. We then delineate the types of schools we believe are best suited to meet these challenges. In conclusion, we consider the pedagogical practices required to develop the five minds and the policies and practices that powerfully affect what happens within the classroom walls.

Introduction

In this essay, we argue that schools should prepare young persons to become good workers and good citizens of the society in which they live. This bald statement invites unpacking. While we keep in mind the full range of workers, we focus particularly on persons who will become professionals, with the rights and responsibilities that come with these roles. Similarly, in speaking of citizens, we have in mind individuals who live in societies where they can vote, petition, and in other ways, large and small, influence policy. Adopting a terminology developed in the GoodWork Project, we construe *good* in terms of three *E*'s: excellence, ethics, and engagement (Gardner, 2007; Gardner, Csikszentmihalyi, & Damon, 2001; goodworkproject.org) Accordingly, a good worker is one whose work is *excellent* in quality, carried out in an *ethical* way, and experienced as an *engaging* and worthwhile enterprise. Similarly, a good citizen demonstrates her excellence through her knowledge of the rules and procedures of the society in which she lives. Her engagement is apparent in her concern for what happens in her community. Finally, she shows that she is ethical by striving to do the right thing, even when the proper course of action goes against her self-interest. In both spheres, we view the three *E*'s as forming a triple helix; as such, each *E* is essential and equally valuable in the pursuit of good work and good citizenship (see *Figure 1*).



Figure 1. Triple Helix of GoodWork

In the United States today, schools emphasize the first *E* of excellence, as evidenced by the push towards increasing scores on standardized tests in response to federal policies such as No Child Left Behind and Race to the Top. Engagement and ethics are necessarily given short shrift in this model of education; after all, they are not easily measured by a multiple

choice test.

In studying how we perceive graphic works, psychologists make a distinction between figure and ground. The figure is the part of the picture on which most viewers will focus—say, the bowl of fruit in a still life. The ground is the background color and pattern that—at least ideally—support, rather than conflict with, the area of focus.

Currently in the US and in many other countries as well, the picture of pre-collegiate education is dominated by a single figure: performance of students, teachers, schools, jurisdictions, and even entire nations on single measurements—so-called standardized tests. Almost nothing else is attended to—unless the ground supports the test scores, it is treated as if it does not exist.

We believe that this perspective is short-sighted and wrong-headed. While test scores have their place, they are far from a sufficient rationale for running an educational system, and they have little to do with the overall health of a society. As a superior standard, we propose a new figure for education: the kind of person we want to develop and the kind of society in which we would like to live and where we hope that those who come after us will live. In such a revised portrait, tests scores can have their place—but they should be part of a supporting background that yields the kinds of persons and society, the kinds of workers and citizens, to which we aspire.

In this article, we contemplate what educating for such a society would look like. We first identify the five *minds* that should be nurtured in all children to prepare them for a world that is rapidly changing, increasingly complex, and indisputably global. We then reflect on what needs to happen both inside and outside the classroom to educate for these five minds.

The Five Minds Our Children Deserve

From our perspective as psychologists and educators, the best way to prepare our children to become good workers and good citizens of their society is by nurturing five distinct minds (Gardner, 2006a): the disciplined mind, the synthesizing mind, the creating mind, the respectful mind, and the ethical mind. Each mind reflects the particular cognitive skills and habits of thought that individuals need to navigate the challenges, take advantage of the opportunities, and become contributing members of a complex and ever-changing world. A distinction here may be useful between the five minds, on the one hand, and the eight (or so) intelligences that comprise Gardner's (1983) theory of multiple intelligences, on the other. The intelligences are intended to be descriptive; they constitute the several, relatively autonomous biopsychological potentials of which the human mind is comprised (Gardner, 1983; Gardner, 1993; Gardner, 2006b). Their utility will be determined by the extent to which they are supported by scientific and other empirical evidence. In contrast, the five minds represent a policy recommendation; they designate how our mental powers should be deployed in our society (Gardner, 2006a). Their utility will be determined by the success of societies that decide to embrace these minds wholly or in part.

The disciplined mind is particularly valuable in a society where knowledge has become highly specialized. The disciplined mind has mastered at least one body of knowledge and the key procedures associated with a particular discipline (such as history, psychology, or mathematics), profession (such as law or accounting), or craft (such as management or leadership). In addition to possessing such expertise, the disciplined mind is disciplined in a second sense, in its steady effort over time to improve skills and understanding. Because disciplines, professions, and crafts emerged relatively recently in human history, they do not develop in individuals naturally, as oral language does. Like the ability to read or write, disciplinary thinking must be taught in a deliberate and methodical way. For this reason, its development must be a priority of schools—from the first years on to professional training. Today, if one wants to be employed, one either becomes skilled in a discipline, profession, or craft, or ends up taking orders from someone who possesses such skills.

Judging information, making meaning of it, and conveying our understanding to others represents the domain of the synthesizing mind. Charles Darwin can stand as the quintessential synthesizer. After spending five years observing and documenting natural life during his maritime voyage on the *Beagle*, followed by twenty years reflecting on this experience, Darwin condensed the vast knowledge and insight he had acquired into relatively simple laws of evolution. His process exemplifies the strengths of the synthesizing mind. This mind is able to articulate a goal, identify a starting point, gather relevant information, and, finally, devise a strategy—in the form of a schema, narrative, taxonomy, or other system—for arraying that information in such a way that makes sense to self and to others. Metacognition—or the ability to think about one's thinking—constitutes a central trait of the synthesizing mind. The synthesizing mind assumes

particular importance in a world, like ours, that is awash in vast amounts of information, much of it of dubious or unknown value.

The creating mind has as a prerequisite the mastery of one or more disciplines. It is therefore unlikely to emerge before the ten years—or 10,000 hours—it is judged to take to master a discipline. The synthesizing mind also plays an important role, since the ability to think *outside* the box—a hallmark of the creating mind—requires the ability to understand what is *inside* the box. Armed with disciplinary understanding and a framework for making sense of what is currently known, the creating mind reaches beyond existing knowledge by posing new questions and offering new solutions. Albert Einstein, Martha Graham, Virginia Woolf, and Duke Ellington each possessed creating minds that they used to build on established disciplines, such as physics, or fashion new genres, such as modern dance, stream of consciousness fiction, or jazz. Individuals who exhibit creating minds possess robust, iconoclastic temperaments that lead them to explore their world, take risks, and learn from their inevitable failures. Unfortunately, such a temperament is not encouraged by policies that render and assess knowledge in multiple choice formats. .

One could summarize the first three minds as *depth*, *breadth*, and *stretch*. The disciplined mind represents *depth* of knowledge, the synthesizing mind represents *breadth* of knowledge, and the creating mind represents the *stretch* of knowledge. The final two minds—the respectful mind and the ethical mind—are not cognitive, in the traditional sense, but rather represent the way individuals relate to the human sphere.

The respectful mind governs the manner in which we treat diverse groups of people in our everyday lives. Exercising a respectful mind requires more from us than tolerance of diversity and political correctness. Rather, the respectful mind engages in empathic perspective-taking as it strives to understand and respond to others' motivations and values. In this way, emotional and interpersonal intelligence form key attributes of the respectful mind. With globalization, the ability and proclivity to show respect for other groups becomes important, if not a matter of survival. We fail in this regard when we favor competitiveness over compassion, envying those who have more than we have and scorning those who have less. The corporate, top-down model of education championed today in many large jurisdictions strikes us as a decidedly counterproductive model for nurturing children's respectful minds.

The respectful mind may begin to develop from birth, provided the existence of a supportive environment. In contrast, the ethical mind requires a certain level of cognitive maturation. To take an ethical stance, in our analysis, one must be able to think in abstract terms about the rights and responsibilities associated with one's roles as worker and as citizen. In the role of worker, it is important to know and uphold the core values of one's profession. In the role of citizen, one must consider the responsibilities that accompany membership in a community, nation, and globalized world. To be sure, there may be many upstanding workers and citizens whose actions are governed less by abstract ethical principles than they are by an intuitive sense of right and wrong. Indeed, Colby and Damon (1992) and Oliner and Oliner (1988) found that moral exemplars often do not demonstrate sophisticated, moral reasoning skills. At the same time, we believe the ethical mind is important to nurture because it allows one to consider questions of right and wrong that extend beyond the interpersonal realm. Moreover, with respect to such questions, moral intuitions often do not suffice. For example, without an understanding of the role of a journalist, it is not possible to offer advice about which stories to cover and in what way. By the same token, moral intuitions will not guide citizens faced with a ballot initiative about stem cell research or climate control. Such questions assume particular importance in a complex, global society in which one's actions can so easily have consequences beyond immediate interpersonal relations.

Abstract thinking may be necessary for an ethical stance, but, alas, it is not sufficient. Research from the GoodWork Project shows that many young people, although cognitively capable of abstract thought, fail to display ethical habits of mind (Fischman, Solomon, Greenspan, & Gardner, 2004). Instead, these workers- and citizens-in-training talk about cutting corners in order to compete with their peers. They told our researchers that they would do good work "some day," once they had done what was necessary to get ahead. Needless to say, this frame of mind is one that schools and other community and familial institutions should work hard to counter. At a time when teachers have been de-professionalized in an environment where test scores are the sole coin of the realm, it is difficult to see how educators can nurture an ethical stance.

The Five Minds and Digital Media

Our scheme of five minds was envisioned some years ago. At that time, the digital media were certainly part of the landscape but did not have the prominence that they have recently acquired. Without question digital media are now central to youth's lives and will therefore influence how they develop and express the five minds. It is beyond the scope of

this article to review the full body of research pertaining to the impact of digital media on particular skills associated with each of the five minds. Nevertheless, we believe it is important to consider how the five minds are being reconfigured in the present atmosphere. To do so, we draw on findings from a project in which we have been involved—the Developing Minds and Digital Media Project (goodworkproject.org/research/dm2, 2011)—which points to distinct opportunities and challenges associated with nurturing the five minds in a digital era.

Turning first to the disciplined mind, in an environment where constant stimulation, multi-tasking, and short attention spans are normative (Weigel, Straughn, Gardner, & James, 2009), depth may well lose out to breadth. Such a context is ill-suited to the extended concentration and steady work required to master a discipline. At the same time, if one is able to surmount these challenges, digital media tools could reduce the time it takes to achieve mastery. Where once people had to expend considerable time and effort searching for and accessing the knowledge they sought, they can now quickly and easily mine the web for the same knowledge. Further, the customizability of digital media technologies ensures that individuals receive appropriate supports that match their skill-level. Apparently, for this reason, some young chess players have reached master status more rapidly than their predecessors. Thus, we see that digital media may support some efforts to achieve the disciplined mind, while it thwarts others.

The effect of digital media technologies on the synthesizing and creating minds appears equally complicated. On the one hand, tools such as search engines, bookmarks, and tags support synthesizing efforts by making it easier to locate and organize large amounts of information online. On the other hand, the Internet and the social media platforms built on it have given ordinary people access to an unprecedented quantity of information. In addition to the challenge of sorting through such a large amount of information, it is often difficult to distinguish between credible and questionable sources online (Flanagin and Metzger, 2008; Sundar, 2007). Moreover, quite a lot of questionable material exists online, since most content is not prescreened by a gatekeeper such as a newspaper editor or book publisher. Adding further to the challenge, it is easy for dubious sources to give the appearance of legitimacy by mimicking the layout of more reputable sites or linking to other more established sites.

With respect to the creating mind, it is still too early to know if, in a Web 2.0 era, digital media will usher in a golden age of creativity. Optimistically, tools like digital cameras and computer-generated imagery lower the bar to entry, allowing a greater number of people to try their hand at creating. In addition, they can pour through the wide variety of content posted on the Internet for sources of inspiration and they can readily join forces with other aspiring creators (Gardner 2011). It is also a simple process to appropriate some of this content for one's own creations. Indeed, the arts educators we interviewed noted the emergence of remix and collage as popular forms of creativity in this digital era (Weigel et al., 2009). At the same time, these educators expressed concern that creativity may be dampened when sources of inspiration are so easily appropriated in prepackaged form. Moreover, our research with middle-class American youth suggests that, on the whole, they are more careerist and less willing to take risks than their predecessors, a state of affairs that raises further concerns regarding the dampening of creativity.

Our networked world poses distinct challenges to the cultivation of the respectful and ethical minds. Digital media technologies allow us to interact with people from around the globe, including people whose experiences may be markedly different from our own. It is one thing to exercise respect within a close-knit community of like-minded people; it is quite another to show respect for individuals whose political and religious beliefs are at odds with one's own (Putnam, 2007). Yet, it is precisely in such a context of diversity that the respectful mind assumes particular importance. Without it, we become cloaked in distrust and our world fractures into a series of balkanized states.

The challenges associated with the ethical mind relate to the difficulty of determining the roles one assumes online. The distinct technical properties of networked publics and the dynamics to which they give rise underlie this difficulty (boyd, 2007). For instance, if a boy in high school posts a picture on his Facebook profile, anyone with access to his profile—which could be anyone with an Internet connection if the boy does not use any privacy settings—could easily make a copy of that content and share it, either now or in the future, with a much larger audience than the boy had originally intended it. In other words, he lacks control of who, ultimately, will see his picture. In such a context, it is exceedingly difficult to understand fully the implications of one's actions online. Yet, just as the respectful mind is crucial in a context of high diversity, the ethical mind assumes added significance in a networked world in which people take on a variety of roles as they participate in online communities. Due to the network's reach, these roles have the potential to affect a broad community. It therefore becomes necessary for individuals to consider how their actions may affect this broad community, even if they only intended them to reach a small group of close relations—put differently, to think about what it means to be a citizen in a new kind of space, namely cyberspace. Thinking beyond one's close relations may be particularly challenging for young people, for whom the ethics of roles typically do not assume relevance until adulthood. The Internet era has changed this, and we must prepare our youth accordingly for their new roles (Gardner, 2011).

Educating for the Five Minds

Having introduced the five minds, we turn now to the types of schools we believe are best suited to meet these challenges and successfully nurture the five minds in every child. We begin inside the classroom, by considering the pedagogical practices required to develop the five minds. We then look beyond the classroom walls at the policies and practices that exert a powerful influence on what happens within them.

Inside the Classroom

Children deserve to be in classrooms that encourage deep inquiry, exploration, and respectful social interactions. As educators in the progressive tradition, we do not believe there is a single optimal recipe for creating such a learning environment (Dewey, 1916; Gardner, 1989; Meier, 1995; Sizer, 1984; Sizer, 1992; Sizer 1996). The school's resources, both material and human, must be considered, as well as the particular needs and abilities of its students and the community it serves. At the same time, certain pedagogical approaches will undoubtedly be more successful than others at nurturing the five minds.

With respect to the disciplined mind, we contend that educators who individualize and pluralize will be most effective at helping their students develop their disciplinary thinking skills. The rationale for such individualization and pluralization is rooted in Gardner's theory of multiple intelligences (1983). According to MI theory, individuals do not possess a single, general intelligence but rather eight or more relatively autonomous intelligences (Gardner, 2006b). Moreover, an individual may demonstrate a particular aptitude in one intelligence but not in another. In this way, every individual possesses a distinct profile of intelligences. Individualization as a pedagogical approach requires teachers to learn as much as possible about their students' intelligences profiles and then tailor their instruction in a way that brings out students' capacities. Pluralization consists of providing students with a variety of entrypoints into key topics, concepts, or ideas. These entrypoints should draw on different intelligences, thereby increasing the likelihood that each student will be able to draw on a cognitive strength to access a particular topic. Pluralization also supports deep understanding, since looking at something from a variety of angles is likely to enhance one's understanding of it. Indeed, those capable of only one form of representation of a concept can have only a tenuous grasp of that concept.

The current climate of standardized testing does not encourage teachers to individualize or pluralize their instruction. Their primary mandate is to get their students to fill in the correct answer on a multiple-choice or short-response test. In such a model of education, there is little room to explore the reasoning behind a particular answer or learn to pose good questions that can lead to deeper insight. To be sure, standardized testing has its appeal. Tests provide a ready way to evaluate and sort students and, increasingly, judge the effectiveness of teachers. In contrast, individualization and pluralization pose challenges to assessment; after all, individualized and pluralized instruction is best evaluated through individualized and pluralized methods of assessment. Such methods take time to develop and administer, and, in a classroom of 30 or more students, the logistics can quickly become overwhelming.

Digital media technologies can prove useful in this regard. Technological advances have made it possible to present material and provide feedback that are tailored to individual learners and provide them with a variety of ways to demonstrate their understanding. At the same time, we are mindful that technology, in the form of vibrating cell phones, web surfing, and constant sensory bombardment, can be distracting to the disciplined mind. It is therefore important that technological interfaces be incorporated carefully into the classroom so that they do not undermine students' ability to engage in deep, sustained thought.

Many of the strategies used to nurture the disciplined mind can also be used to develop the synthesizing mind. For instance, the child who is presented with multiple entrypoints into a topic or idea is wellpositioned to draw connections and identify common themes across diverse forms of representation. One way to expose students to a variety of representational forms is through projects and theme-related curricula. For example, a high school class studying Napoleon's 1812 invasion of Russia might read about the failed campaign in a history book, listen to Tchaikovsky's *1812 Overture* (1880), examine paintings depicting the event, and read passages from Tolstoy's *War and Peace* (1869). This approach allows students to consider the event from multiple angles, creating an integrated picture of what happened and its historical significance. With today's powerful digital tools, such a project could be undertaken quite readily with a computer and an Internet connection. A search engine such as Google could be used to locate an array of materials on a topic, and a web platform such as a wiki could be used to organize the information in a way that helps students to detect

patterns and summarize important themes. Of course, as noted earlier, digital media also pose distinct challenges to efforts at synthesis. Not all information found on the web is of equal quality, and students need help distinguishing between the good and the bad.

Both in the United States and abroad, few schools, particularly at the secondary level, support the type of project-based work and theme-related curricula conducive to developing the synthesizing mind. Students' days are segmented into discrete periods, with a single subject serving as the focus of each period. Students' biology class remains separate from their English class, which does not relate in any discernible way to either their history or geometry classes. Separate standards are delineated for each subject, with separate assessments crafted around those standards. Such a singular focus does not encourage exploration of the common themes that may run through several subjects, nor does it support the transfer of knowledge from one subject to another. Given this state of affairs, it is perhaps unsurprising that, by middle childhood, individuals are less likely to produce metaphors—a hallmark of the synthesizing mind—than they were as preschoolers (Winner, 1988). At this young age, children are prone to seeing connections among the disparate stimuli that cross their senses and expressing their observations through metaphors. Instead of quashing this tendency, we should be using it as a basis with which to nurture increasingly sophisticated forms of synthesis. Work that is interdisciplinary or multi-disciplinary can promote the capacity to synthesize, though it is important to note that such work is most likely to be of high quality if the students have some initial grounding in the constituent disciplines (Boix-Mansilla & Gardner, 1999; Gardner & Boix-Mansilla, 1994).

Like the synthesizing mind, the creating mind suffers from efforts to rein in children's natural tendency to explore their world. The pressure on schools to show adequate yearly progress on standardized tests—or risk being shut down if they do not—discourages the kind of risk-taking and tolerance of failure that distinguish the creating mind. Educators feel they can ill-afford the luxury of allowing their students to pursue avenues of learning that will not, ultimately, show up on the test.

While we are unsure about the effect that digital media technologies will ultimately have on the creative process, we do believe they have a role to play in supporting the creating mind. We referred earlier to findings from our research indicating that today's youth are more risk-averse than their predecessors. Though it is unclear whether digital media have contributed to this development, it is possible they could be used to help reverse it. After all, failure may seem less frightening when one can simply press an "undo" button. One veteran arts educator told us that her high school students used to approach photography in a cautious manner, since the process of developing a reel of film was time-intensive and costly. The introduction of digital cameras removed these obstacles, allowing students greater flexibility to experiment with the types of pictures they take. Also promising are new art forms supported by digital media technologies, such as remix and collage, though, in these instances, it is crucial that teachers discuss with their students the distinction between inspiration, wholesale borrowing, and plagiarism.

In the ideal, a classroom is not simply a collection of students but rather a community of learners who explore their world together and look out for each other. Alas, at this time, the American model of education mirrors the individualistic culture in which it is based. Standardized tests fit well in this culture; they serve as a ready way to quantify students' achievement and sort them on this basis. While the emphasis on individual achievement and competition may prepare our youth for certain kinds of occupations, it is unlikely to nurture their respectful mind. To do so, classrooms must become spaces where students experience what it means to belong to and care for something larger than them. Indeed, Callan (1997) describes classrooms as "practice polities," where students learn to trust and respect people beyond their families and thereby gain practice in good citizenship. Teachers play a critical role in this practice polity. They are the first non-family members with whom most students engage at length, and our research revealed that teachers rank among the most trusted professionals (Gardner, Benjamin, & Pettingill, 2006). The behavior they model in their classrooms is therefore likely to set the tone for the social interactions that take place among their students in school and perhaps beyond.

Much of our recent work has involved developing curricular materials intended to help teachers nurture their students' ethical mind. The GoodWork Toolkit comprises a series of powerful dilemmas that emerged during our interviews with aspiring and seasoned professionals (goodworktoolkit.org, 2010). Teachers use these dilemmas as a basis for a class discussion of the merits, challenges, and facilitators of good work. More recently, we have turned our attention to the digital realm. As we discussed earlier, due to the ambiguity surrounding the roles one assumes online, digital media technologies pose distinct challenges to the ethical mind. To support teachers' efforts to promote their students' ethical habits of mind online, we teamed up with Henry Jenkins' New Media Literacies research team to create an ethics casebook for the digital realm. Titled "Our Space: Being a Responsible Citizen of the Digital World" (The GoodPlay Project & Project New Media Literacies, 2011), the casebook draws on our research findings and includes activities and resources that high school teachers can use to engage their students in thoughtful conversations about the ethical dimensions of

their digital media use. We are encouraged by the positive response that the materials in the casebook have elicited from the teachers and school administrators with whom we have shared them.

Beyond the Classroom Walls

Many factors outside teachers' control impact their ability and inclination to nurture the five minds in their students. As we have alluded to throughout this piece, policies such as No Child Left Behind and the climate of testing they have engendered place pressure on teachers to improve their students' test scores at all costs. When schools' funding and teachers' salaries are tied to scores on standardized tests (whether absolute or valued added), teachers have an enormous incentive to focus their instructional time on preparing students to perform well on those tests. This focus would not bother us if the tests were valid and varied, and if they adequately assessed the skills and habits of mind that we have described here. To create such assessments, we must broaden how we define and where we look for evidence of learning. Rather than relying on multiple choice tests, we should allow students to demonstrate their learning in a variety of ways, such as through portfolios, oral presentations, and multi-media productions. Using diverse assessment formats will also improve their validity by making it difficult for teachers and students to "game the system." Finally, we should take seriously the venerable practice of teams of inspectors visiting schools, giving textured feedback to the staff, and making concrete suggestions for improvement. It is no accident that many of the best educational systems—public as well as private, tertiary as well as primary or secondary—make use of skilled inspectors. And good schools existed in many places around the globe well before the Educational Testing Service was founded in the middle of the last century.

Reforming our current approach to educational assessment, while it would constitute a promising materialization, is not enough to ensure that our children develop the five minds they deserve. As in any profession, teachers need to receive sufficient external supports to do their jobs well. Research into the causes behind the high rate of teacher turnover suggests that too many teachers do not feel they are supported adequately (Johnson & Birkeland, 2003). Researchers on the Project on the Next Generation of Teachers conducted a series of interviews over a two-year period with 50 new teachers in Massachusetts. They sought to learn what made some of the teachers stay in their positions while others either transferred to different schools or left the profession entirely. The researchers found that teachers' decisions to stay or leave depended predominantly on the degree to which they felt successful with their students. This sense of success, in turn, was largely dictated by the nature of the work teachers were asked to do and the resources at their disposal.

The particular school-site factors affecting new teachers' sense of success included the availability of curricula and resources, the size of teachers' workloads, and the support they received from their principals and colleagues (Johnson & Birkeland, 2003). Several teachers described excessive teaching loads that left them with insufficient time to prepare adequately for their classes and grade student work. Some teachers said they were even assigned to teach subjects in which they had not received training. The availability of robust, flexible curriculums and basic material resources, like a working copy machine, were also cited as frustrations. Further, unhappy teachers described a working environment in which they felt unsupported by their colleagues. For those teachers working in "veteran-oriented professional cultures," for instance, an atmosphere of privacy and professional autonomy made it difficult for new teachers to establish mentoring relationships with veteran teachers. "Novice-oriented professional cultures" were little better, since the collective inexperience of the faculty meant there were few mentors to be found. Principals proved vital in setting the tone of the professional cultures in their schools. In many cases, principals discouraged teacher collaboration, modeled disrespectful behavior to both teachers and students, and failed to treat their teachers like professionals. With respect to this last point, teachers regretted the lack of opportunities to develop their skills and advance in their career by assuming leadership roles. Indeed, they claimed that the low pay they received bothered them primarily because it signaled that their work held little value.

These findings align with our own research investigating the experiences of 40 teachers from high schools in economically disadvantaged communities (Fischman, DiBara, & Gardner, 2006). Collectively, they point to several conditions that are needed at the school level to support teachers in their classroom-level efforts to nurture students' five minds. These conditions include adequate material resources, an appropriate workload that matches teachers' skill sets, opportunities to collaborate with and receive mentorship from colleagues, and prospects for professional advancement. Of particular relevance to the respectful mind, principals must strive to create a school-wide culture of respect by modeling the type of caring, compassionate behavior they hope to see in their teachers and students. Such an atmosphere is neither insured nor prevented by whether a school is public or private, charter or pilot, part of a national system or one based on local funding and norms. Much of the current arguments about these issues are more than a little reminiscent of the fabled rearrangement of the deck chairs on the Titanic.

Conclusion

Educating for the five minds is challenging in any context. Cultivating a disciplined mind requires persistent effort over an extended period of time. To produce an effective synthesis, one must be able to sift through and organize large quantities of information in a systematic way, identify meaningful patterns, and communicate one's insights to others clearly and concisely. Creativity is risky; it involves stretching what is known and submitting one's creations to the judgment of others. Respect and ethics require the ability to consider perspectives other than one's own and a willingness to go against one's self-interest to fulfill role-related responsibilities. While we acknowledge the challenge of educating for these minds, we believe that schools can meet this challenge by adopting the pedagogical practices described in this article. To achieve success, however, it is critical that teachers receive adequate supports. On a broader level, we must critically examine the current educational *zeitgeist*. We must ask whether it is possible to educate for the five minds in a context where test scores are increasingly driving educational decisions. We need to reverse the current figure/ground pattern. The new figure—a far more promising starting point—is a shared vision of the kind of society in which we want to live and the kind of citizens who should inhabit that society.

Acknowledgment

Our studies of youth in the digital age have been supported generously by Judy and Jamie Dimon, and by the John D. and Catherine T. MacArthur Foundation.

References

- Boix-Mansilla, V. & Gardner, H. (1999). On interdisciplinary lenses and interdisciplinary work. In S. Wineburg and P. Grossman (Eds.), *Interdisciplinary curriculum: Challenges to implementation* (pp. 17-38). New York, NY: Teachers College Press.
- boyd, d. (2007). Why youth heart social network sites: The role of networked publics in teenage social life. In D. Buckingham (Ed.), *Youth, identity, and digital media* (pp. 119-142). Cambridge, MA: MIT Press.
- Callan, E. (1997). *Creating citizens: Political education and liberal democracy*. Oxford: Oxford University Press; New York, NY: Clarendon Press.
- Colby, A. & Damon, W. (1992). *Some do care: Contemporary lives of moral commitment*. New York, NY: Free Press-Macmillan, Inc.
- Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. New York, NY: The Macmillan Company.
- Fischman, W., DiBara, J.A., & Gardner, H. (2006). Creating good education against the odds. *Cambridge Journal of Education*, 36(3), 383-398.
- Fischman, W., Solomon, B., Greenspan, D., & Gardner, H. (2004). *Making good*. Cambridge, MA: Harvard University Press.
- Flanagin, A.J. & Metzger, M.J. (2008). Digital media and youth: Unparalleled opportunity and unprecedented responsibility. In A.J. Flanagin and M.J. Metzger (Eds.), *Digital media, youth, and credibility* (pp. 5-27). Cambridge, MA: MIT Press.
- Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York, NY: Basic Books.
- Gardner, H. (1989). *To open minds: Chinese clues to the dilemma of contemporary education*. New York, NY: Basic Books.
- Gardner, H. (1993). *Frames of mind: The theory of multiple intelligences* (10th anniversary ed.). New York, NY: Basic Books.
- Gardner, H. (2006a). *Five minds for the future*. Boston, MA: Harvard Business School Press.
- Gardner, H. (2006b). *Multiple intelligences: New horizons*. New York, NY: Basic Books.

Gardner, H. (Ed.). (2007). *Responsibility at work: How leading professionals act (or don't act) responsibly*. San Francisco, CA: Jossey-Bass.

Gardner, H. (2011). *Truth, beauty, and goodness reframed: Educating for the virtues in the 21st century*. New York, NY: Basic Books.

Gardner, H. & Boix-Mansilla, V. (1994). Teaching for understanding within and across the disciplines. *Educational Leadership*, 51(5), 14-18.

Gardner, H., Benjamin, J.S., & Pettingill, L. (2006). An examination of trust in contemporary American society. Cambridge, MA: Center for Public Leadership, Harvard Kennedy School.

Gardner, H., Csikszentmihalyi, M., & Damon, W. (2001). *Good work: When excellence and ethics meet*. New York, NY: Basic Books.

goodworkproject.org/research/dm2 (2011). Cambridge, MA: Harvard University, Project Zero.

goodworktoolkit.org (2010). Cambridge, MA: Harvard University, Project Zero.

Johnson, S.M., & Birkeland, S.E. (2003). Pursuing a "sense of success": New teachers explain their career decisions. *American Educational Research Journal*, 40(3), 581-617.

Meier, D. (1995). *The power of their ideas: Lessons for America from a small school in Harlem*. Boston, MA: Beacon Press.

Oliner, S. & Oliner, P. (1988). *The altruistic personality: Rescuers of Jews in Nazi Europe*. New York, NY: Free Press.

Putnam, R. (2007). E Pluribus Unum: Diversity and Community in the Twenty-first Century, The 2006 Johan Skytte Prize Lecture. *Scandinavian Political Studies*, 30(2), 137-174.

Sizer, T.R. (1984). *Horace's compromise: The dilemma of the American high school*. Boston, MA: Houghton Mifflin.

Sizer, T.R. (1992). *Horace's school: Redesigning the American high school*. Boston, MA: Houghton Mifflin.

Sizer, T.R. (1996). *Horace's hope: What works for the American high school*. Boston, MA: Houghton Mifflin.

Sundar, S.S. (2007). The MAIN model: A heuristic approach to understanding technology effects on credibility. In A.J. Flanagin and M.J. Metzger (Eds.), *Digital media, youth, and credibility* (pp. 73-100). Cambridge, MA: MIT Press.

Tchaikovsky, P. I. (1880). *1812 Overture*. (op. 39; Ouverture solennelle L'Ancé 1812.)

The GoodPlay Project & Project New Media Literacies (2011). *Our space: Being a responsible citizen of the digital world*. Cambridge, MA: Harvard University, Project Zero; Los Angeles, CA: University of Southern California.

Tolstoy, L. (1865/2006). *War and peace*.

Weigel, M., Straughn, C., Gardner, H., & James, C. (September 2009). Multiple worlds: Adolescents, new digital media, and shifts in habits of mind (GoodWork Project Report Series No.63). Cambridge, MA: Harvard University, Project Zero.

Winner, E. (1988). *The point of words: Children's understanding of metaphor and irony*. Cambridge, MA: Harvard University Press.