
SHOULD CHILDREN LEARN TO SOLVE PROBLEMS?

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Writing in 1909, John Dewey noted that many studies had produced a variety of curriculum materials with the result that teachers had no way to integrate them around some central aim. Dewey thought the answer was simple. He claimed that people engaged in thought in order to solve a difficulty. The most effective type of thinking was the scientific method. Although scientific thinking might seem foreign to children, Dewey argued that it was not. Children were naturally curious and imaginative, he added. These traits fit the scientific method, and they came naturally to children. In making this formulation, Dewey pointed out to teachers that they could organize the classroom activities to help children form a habit of using the scientific method to solve problems.¹

The reason Dewey looked to the scientific method as the best way of thinking was that he believed human thought derived from experience. He explained that an experience began when someone tried to do something to the environment and the person noticed how the environment responded to the action. For example, when a child stuck a finger into a flame, the child could learn that flames meant a burn. In this case, the event was an experience because the child formed a meaning of something in the environment by undergoing the results of an action. This meaning of flames could shape later activities for the child and make those experiences more fruitful.²

Dewey applied the same principle to aesthetic experiences. He claimed that artistic endeavors involved doing and undergoing. For example, when painters made brush strokes, they underwent the effects of those strokes by noting whether they fit together to create the picture they wanted. The artists acted in the same way that observant scientists recognized cause and effect. Although less obvious, the same relation of doing and undergoing took place in the observer. In this case, the doing was the observation. The undergoing took place when the observer linked the relations of the parts of the painting to form a recognizable pattern. If the viewers did not form impressions of the paintings, they did not go beyond the doing to undergo an experience.³

¹ John Dewey, *How We Think* (1910; repr., Mineola, NY: Dover Publications, 1997), vii, 12-13.

² John Dewey, *Democracy and Education* (1916; repr., New York: Macmillan Co., 1944), 139-140.

³ John Dewey, *Art as Experience* (1934; repr., New York: Capricorn Books, 1958), 5, 44-54.

Because Dewey argued that all experiences shared the characteristics of doing and undergoing, he fought against the tendency to separate art from common human life. He took this fight in two directions. One direction was that he portrayed people who wanted to do a task well and who cared for the tools and materials they used as artistically engaged. In this category, he included mechanics and industrial workers. Another direction he took was to contend that artists used everyday materials. Although Dewey defined art as the remaking of the materials of experience in an act of expression, he noted that artists did not want to replicate familiar things. If the representations became overly familiar, the artist would employ startling methods to try to make the viewer see those things in a new way. In this process, artists tried to communicate something about the life people shared.⁴

In education, Dewey treated moral development in the same way he thought about artistic interests. Moral development was a process of growth. It did not take place when a person pursued a fixed goal, such as honesty or charity. It took place when a person developed the traits associated with the scientific method: open-mindedness, single-mindedness, breadth of outlook, thoroughness, and assumption of responsibility for the consequences of ideas. These traits enabled a person to do something, to gain from life with other people, and to contribute to the community.⁵

A problem in moral development was that a person might know what to do but lack the desire to undertake it. Dewey overcame this difficulty by linking knowledge with will. Dewey claimed that education was moral training when students developed the power to share in social life. This meant students acquired a willingness to adjust to circumstances in ways that were essential to growth, and it meant a willingness to learn from all contacts of life. Dewey concluded that the desire to learn was the essential moral interest. In this way, Dewey unified the desire for knowledge with the ability to act properly.⁶

In his effort to integrate factors that many people separated, Dewey described the process of thinking as similar no matter where it took place. All experiences involved a doing and an undergoing. Because the scientific method captured this process, Dewey considered it the most effective way to think. People did not have to follow this model as a recipe or repeat the same activities. As people learned to do more things, their goals should expand and change. Further, there should be full and free exchanges among different kinds of groups for society to progress.

⁴ Dewey, *Art as Experience*, 194-195.

⁵ Dewey, *Democracy and Education*, 347-359.

⁶ Dewey, *Democracy and Education*, 360.

THINKING AS A CYBERNETIC UNIT

Most people would agree that students should learn to use the scientific method. The question is whether people should apply the scientific method to all problems. Gregory Bateson warned that this one sided approach would lead to actions that could destroy the environment. For example, in 1968, Bateson organized a conference in which the participants discussed the difficulties that arose when people directed too much effort to solve problems even when they thought carefully. The difficulties arose because the perspectives they took implied that they could control the effects of any action they took. Bateson and his colleagues warned that, in many situations, this was not possible.

Entitling the topic of the conference the effects of conscious purpose on human adaptation, Bateson wrote a memorandum explaining the issues. They would consider three cybernetic or self-governing systems: individual humans, human society, and the ecosystem. These systems contained networks that kept themselves in balance through loops that worked in ways similar to governors on steam engines. That is, when the process accelerated, the governor reduced the fuel and the process slowed. Bateson added that societies operated by similar rules. For example, when the United States prohibited the legal production of alcoholic drinks, bootleggers began to supply illegal liquor. When the bootleggers made too much alcohol, the police limited their production. The dangers arose when people thought they could solve problems by taking direct steps; they overlooked the wider effects of those simple procedures.⁷

As the conference began, Barry Commoner illustrated the difficulties that resulted when policy makers overlooked the wider effects of the solutions they adopted. In Lake Erie, the natural system in which bacteria converted nitrogen into a form that plants could change into protein broke down because people overwhelmed the bacteria with extra waste. To help the bacteria, municipalities built sewage treatment plants to treat and release the waste into the lake. The result was the plants released a substance that turned into algae protein. This brought on algae blooms that fouled the lake with decaying matter and depleted the oxygen that other living things required.⁸

Not only did Bateson warn that the effort to solve problems could cause problems, he disagreed with Dewey that the scientific method explained all human activities. For example, Dewey described art as an experience; however, Bateson suggested that art represented a way of knowing distinct from problem solving. According to Bateson, artists sought to integrate the

⁷ Mary Catherine Bateson, *Our Own Metaphor: A Personal Account of a Conference on the Effects of Conscious Purpose on Human Adaptation* (1972 repr., Washington, D.C.: Smithsonian Institution Press, 1991), ix-17.

⁸ Mary Catherine Bateson, *Our Own Metaphor*, 37-40.

various levels of knowledge, many of which were unconscious. For example, people could describe what they saw; they could not explain how the mechanisms within their bodies had provided them with those images. Art represented an effort to communicate those unconscious patterns of knowing and showed them to be part of the external world. For Bateson, this distinguished art from conscious thought. Bateson noted that art tried to integrate the various aspects of life while conscious thinking isolated the aspects of life to solve problems that existed within them. To show how art offered integration, Bateson described a well-made and complex Balinese picture that integrated in symbolic ways sex, social life, and death.⁹

For Bateson, the way people constructed their societies reflected the complicated patterns he came to call cybernetic systems. When Bateson conducted fieldwork among the Iatmul in New Guinea, he developed the idea of people stuck in a system that moved by its own logic. Among the Iatmul, an important celebration was the *naven*. The most important *naven* was for a boy who killed an enemy for the first time. The ceremony was complicated. The men dressed shabbily as women, but the women wore the best men's clothing available. When the women acted as an audience for the men, the men carried on as exhibitionists. Bateson realized the actions of each sex were part of a pattern: the men and the women responded to each other. Bateson gave the name *schismogenesis* to this pattern of behavior. It was a pattern because the interaction of the men and the women created rules that they followed.¹⁰

Bateson found similar cybernetic patterns among alcoholics. He based his conclusions on the belief that drinking corrected something specific in the alcoholic's pattern of thinking. He developed this idea because Alcoholics Anonymous (AA) could stop the uncontrollable drinking. Bateson argued that AA corrected the same thing that the drinking had altered. AA required alcoholics to admit they were powerless in the face of drink. This must be related to the pattern of thinking that led alcoholics to drink. Bateson decided that, before joining AA, alcoholics saw themselves as facing a choice between sobriety and drunkenness. The problem was that the choice implied both alternatives. The fight with the bottle exacerbated the tendency of alcoholics to view themselves in symmetrical competition with other people. In some cases, they were proud that they could drink the most. When family members tried to help them, they could not accept the complementary roles and withdrew. Nonetheless, the traditional view of drinking alcohol as a communal pastime offered release from the constant competition of symmetrical relationships. The theology of Alcoholics Anonymous recognized that alcoholics could not solve

⁹ Gregory Bateson, "Style, Grace, and Information in Primitive Art," in *Steps to an Ecology of the Mind* (Chicago: University of Chicago Press, 1972), 128-152.

¹⁰ Gregory Bateson, *Naven: A Survey of the Problems Suggested by a Composite Picture of the Culture of a New Guinea Tribe Drawn from Three Points of View*, 2nd ed. (Stanford, CA: Stanford University Press, 1958), 6, 175.

their own problems. As a result, it released them from the dangers of symmetrical competition.¹¹

Although Bateson had applied his ideas of ecology to a wide variety of subjects, he said that he did not realize how they fit together until he gave the Alfred Korzybski Memorial Lecture in 1969 to the Institute of General Semantics. Beginning the lecture by claiming affinity with Korzybski's efforts to understand the impact of formal logic on natural history, Bateson argued that Korzybski's statement that a map is not a territory captured an age-old debate of whether the patterns of the world were more important than its substance. When Bateson applied this statement to consideration of the fundamental unit of the mind, he claimed that mental processes depended on differences. In perceiving something, the mind selected an elementary unit of information. Since there were many differences among something and the things in its surroundings, the mind chose the difference that made a difference. The problem was that differences are abstract matters. The mind perceives the difference between wood and paper as differences in the reflection of light or the production of sound. The mind made a map of the differences among the things it perceived. These perceptions followed rules of cybernetics. He gave as an example someone chopping a tree. In using an ax, the person gauged his actions through differences in nerves and muscles as well as changes in the tree's stump and the flight of the ax. These formed circuits through which the person modified his or her actions to suit the task. The problem was that most people separated the person cutting the tree, the tree, and the ax while Bateson made mind synonymous with the entire system divided into levels.¹²

RECENT APPLICATIONS OF THE DIFFERENCES BETWEEN DEWEY AND BATESON

Although many people know of Dewey and Bateson, their ideas seem out of touch with contemporary concerns. A debate that took place during the 1990s illustrate that the question of whether people should apply the scientific method to social problems remains important. On the one side, C. A. Bowers claimed that people should determine the value of educational reforms by considering whether they reduced the ecological crisis. On the other hand, Peter McLaren argued that teachers should work to solve the problems of social inequality.

Although Bowers acknowledged that inequities among ethnic groups, social classes, and sexes demanded attention, he warned that the efforts to reduce those problems could exacerbate ecological difficulties. To explain his concern, Bowers quoted from Gregory Bateson's essays showing how cultural

¹¹ Gregory Bateson, "The Cybernetics of Self: A Theory of Alcoholism," in *Steps to an Ecology of the Mind* (Chicago: University of Chicago Press, 1972), 309-337.

¹² Gregory Bateson, "Form, Substance, and Difference," in *Steps to an Ecology of the Mind* (Chicago: University of Chicago Press, 1972), 454-471.

practices disrupted the natural ecology. These things happened when people thought of themselves as separate from the world; they denied the truer picture of a person acting in relationship with other things or people in the environment. In this regard, Bowers repeated Bateson's views that people abused the environment because they ignored the connections among people and things. To change these cultural patterns, Bowers urged people to change their guiding metaphors. For example, instead of proclaiming that science fueled progress, they should adopt metaphors showing how science helped people understand the relationships that united the things in the world.¹³

In a series of exchanges, Bowers focused on the work of Henry Giroux and Peter McLaren, who favored critical pedagogy. Bowers accused them of ignoring the facts of interdependence by perpetuating the myth of the emancipated individual. Although Bowers acknowledged that Giroux and McLaren challenged the cultural patterns related to problems of social class and race, he claimed that Giroux and McLaren denied the ecological notion of community that recognized the interdependence of life forms. According to Bowers, this oversight came from the desire Giroux and McLaren had for educators to help people to utilize the rational processes they had, to form egalitarian communities, and to share the things they controlled. When cultural pedagogy located the rational process in individuals, it denied the wider view that humans were part of a larger exchange of information that extended beyond individuals to include the universe. Under this wider view, personal control was not possible.¹⁴

In a lengthy rebuttal, McLaren accused Bowers of ignoring the crucial issues of domination and doing little to bring together new voices around issues of schools and public life. McLaren argued that critical pedagogy helped people learn how to work toward social justice. In this process, they became social reformers. McLaren added that since Bowers did not approve of efforts that taught people how to overcome the problems of social inequality, he suffered from a sort of moral ambiguity that supported the existing power structures.¹⁵

Bowers responded to McLaren. He claimed critical theorists did not realize how they advanced the modern outlook that contributed to the ecological crisis. To support his view, Bowers quoted other authors who accused McLaren of belonging to an enlightenment tradition that opposed

¹³ C. A. Bowers, *Education, Cultural Myths, and the Ecological Crisis: Toward Deep Progress* (Albany: State University of New York Press, 1993), 1, 2, 154-168.

¹⁴ C. A. Bowers, "Some Questions about the Anachronistic Elements in Giroux-McLaren Theory of a Critical Pedagogy," *Curriculum Inquiry* 21, no. 2 (1991), 239-252, retrieved from <http://www.jstor.org/stable/1179946>

¹⁵ Peter McLaren, "The Emptiness of Nothingness: Criticism as Imperial Anti-Politics," *Curriculum Inquiry* 21, no. 4 (1991): 459-477, retrieved from <http://www.jstor.org/stable/1180177>

cultural traditions. Under this enlightenment view, educators conceived their central mission to be teaching students to doubt their beliefs and to trust their own judgments based on observations. The enlightenment aim was to widen opportunities and spread well-being by promoting a type of rational problem solving. Bowers disagreed. He wanted schools to teach students to recognize the value of traditional societies that sought to maintain sustainable lifestyles. He did not think it advisable to teach students to interrogate political traditions to see if they promoted social equality. This might extinguish many valuable cultural practices.¹⁶

With the publication of *Educating for Eco-justice and Community*, Bowers expanded his list of misguided educational reformers. He contended that followers of Dewey, Freire, Prigogine, and Whitehead ignored the cultural roots of the ecological crisis. According to Bowers, these progressive educators constructed a double bind when they defined social justice as achieving equal standing in a culture that destroyed natural systems. He argued that contaminated environments hurt traditional social groups and progressive models of educational reform reinforced the cultural models that expanded ecological destruction. For these reasons, Bowers wanted educators to do two things. First, they should learn how traditional societies lived in harmony with the environment. Second, they should encourage different cultural groups to renew their traditions that represented alternatives to consumerism.¹⁷

CONCLUSION

The debate between Bowers and McLaren does not suggest that these educators are the equals of Dewey and Bateson. Instead, the exchange they initiated illustrates that people disagree about whether social progress comes from people learning to solve problems. On the one hand, Dewey would contend that progress could arise from people learning to control the environment. Dewey expanded this notion by adding that people should learn how to do things better, and they should decide what sorts of things are most worth doing. On the other hand, Bateson warned that the world is more complicated than people realize. The connections among things could cause efforts to control something to destroy another.

The ideas of Dewey and Bateson suggest an answer to the question whether schools should teach students to solve problems even though their thoughts extend beyond the scope of that issue. In fact, the question seems foolish when it is simply about teaching students to solve problems. A more reasonable formulation is whether schools should only teach children to solve

¹⁶ C. A. Bowers, "Critical Pedagogy and the 'Arch of Social Dreaming': A Response to the Criticism of Peter McLaren," *Curriculum Inquiry* 21, no. 4 (1991), 479-487, retrieved from <http://www.jstor.org/stable/1180178>

¹⁷ C. A. Bowers, *Educating for Eco-justice and Community* (Athens: University of Georgia Press, 2001), vii-xi, 202-207.

problems. This requires people to ask if there are many ways to think. Dewey said there were many ways to think, but the scientific method was the most effective. He described human activities as efforts to change the environment to serve the purposes people had. Since he considered experience to consist of doing and undergoing, the response the environment gave could cause people to change their aims. Bateson seemed to look on the idea of cause and effect as logical traps. In the face of complicated situations, people could not clearly see the environment's response. As a result, the effort to exterminate mosquitoes could eradicate songbirds. As an option, Bateson asked people to look on learning as something that took place within a system that rested within other systems. Under such a scheme, solving problems was one type of learning. Another type of learning might be the type offered by Zen Buddhists that tried to recognize the contexts within which the problems presented themselves. Bateson acknowledged that the scientific method was a good way to solve problems, but he added that it had limits. A higher type of learning would show those limits and call the method into question.¹⁸

Although Dewey was optimistic that schools could and should teach students to solve problems, prudence would require that students learn to act cautiously so that the cures they prescribe do not cause more trouble than the ills they wish to prevent. This would mean that students should learn more than how to solve problems.

¹⁸ Gregory Bateson, "The Logical Categories of learning and Communication," in *Steps to an Ecology of the Mind* (Chicago: University of Chicago Press, 1972), 279-308.
