The social efficiency movement in the United States and its effects on school mathematics

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Abstract

Launched during the first several decades of the twentieth century, the so-called social efficiency movement became an effort by a group of U.S. educators to make schooling narrowly utilitarian and vocationally oriented rather than academic. Although the idea of social efficiency had originated in the United Kingdom and initially had broad, humanitarian connotations, it came to be seen as taken over by David S. Snedden and his followers, who sought to establish a narrow form of vocational training and to reorient the school curriculum around topics that were socially useful. The social efficiency movement, which was initially a minor outgrowth of the main idea, was ultimately its most successful part, achieving many of its goals: a differentiated curriculum, tracking for instruction, and the development of human capital as the central purpose of schooling. Its members made serious attacks on the place of mathematics in the school curriculum, attacks that were met in 1920 by the establishment of the National Council of Teachers of Mathematics. Some effects of the movement are still visible today.

In the United States at the beginning of the twentieth century, school mathematics was coming under increasing attack. In the elementary school, formal instruction in arithmetic, which sometimes occupied half the school day, had become the main reason that pupils were obliged to repeat a year (Kilpatrick, 1992, p. 13). Their teachers were being pressured to “reduce the time spent on arithmetic, drop unnecessary topics, and shift the emphasis to problems having social utility” (Kilpatrick & Stanic, 1995, p. 3). Meanwhile, there had been a great increase in the number of students in high school. School enrollments grew from under 7 percent of the population of 14- to 17-year-olds in 1890 to more than double that in 1910 (and more than 10 times that by 1940; Stanic, 1986, p. 194). Responding to the pressure of increased enrollments and rising dissatisfaction with the quality of instruction, states began to reduce their requirements in high school mathematics. In 1921, Ohio dropped its requirement that students take a year of mathematics, and other states soon followed suit, making mathematics an elective rather than required subject in Grades 9 to 12. The percent of students in those grades taking algebra fell from 58 in 1905 to 40 in 1922; in geometry, it fell from 31 in 1910 to 23 in 1922 (Stanic, p. 195). Beyond these changes, the growing industrialization of U.S. society was causing educators and the public to question the traditional liberal arts curriculum and the place and function of mathematics in education.

A crisis in U.S. mathematics education

With no national organization—unlike teachers of English, who had established a national council in 1911—U.S. teachers of mathematics were increasingly frustrated by complaints that mathematics did not deserve its place in


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the curriculum. For example, at the winter meeting of the National Education Association (NEA) in 1919, school mathematics was criticized by several speakers who argued that subjects like social studies and civics would be more valuable for students than mathematics was. Mathematics teachers, with no place on the program, had no good way to respond.

At the NEA meeting in Cleveland the following year, 127 mathematics teachers from 20 states organized the National Council of Teachers of Mathematics (Osborne & Crosswhite, 1970, pp. 195–196; Lloyd, n.d., p. 8). The first president of the NCTM, Charles M. Austin (1921), explained how he and the other organizers saw the problem:

Mathematics courses have been assailed on every hand. So-called educational reformers have tinkered with the courses, and they, not knowing the subject and its values, in many cases have thrown out mathematics altogether or made it entirely elective. [...] To help remedy the existing situation the National Council of Teachers of Mathematics was organized. (pp. 1–2)

The NCTM soon began to make recommendations for the improvement of mathematics teaching as well as to publish a journal (The Mathematics Teacher) and hold meetings for its growing membership.

The social efficiency interest group

The principal source of complaints about mathematics in the curriculum—the “educational reformers” Austin criticized—was a group of U.S. educators who identified themselves as being concerned with what they called social efficiency (although the term social efficiency-social control would be more accurate; Null, 2004). Among the several groups interested in reforming the school curriculum when the twentieth century began, the social efficiency educators “were [...] imbued with the power of science, but their priorities lay with creating a coolly efficient, smoothly running society” (Kliebard, 1986, p. 28). Many of these educators drew inspiration from the work of Joseph Mayer Rice (1857–1934), who after observing elementary school classrooms in many cities and gathering data on pupils’ achievement in 1892 and 1893, wrote several series of articles to expose the low levels of instruction and accomplishment in the schools. Even though Rice did not express the social ideas that others were to espouse later in the century, he became “the principal forerunner” (Kliebard, p. 24) of the social efficiency curriculum interest group, primarily because of his scientific approach to curriculum making through “the measurement of results in the light of fixed standards” (Rice, 1912, p. xiv).

Some in the social efficiency camp took an expansive view of the curriculum, but the branch of the movement that ultimately became most effective emphasized vocational education:

The large-scale adoption of social efficiency as the guiding ideal in education and the new emphasis being given to a vocational education were closely allied. Social efficiency is a doctrine predicated on an accurate prophecy about one’s adult role. According to the proponents of social efficiency, the
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curriculum was principally an instrument for getting people ready for the myriad activities that they would some day be required to perform. [...] The job of the schools first and foremost was to train children and youth for their predicted adult roles.

Not the least of the kinds of preparation that was being prescribed was the preparation for the workplace. [...] The curriculum as a whole was now being vocationalized, and vocationalization proved to be inimical to the status traditionally granted to subjects like algebra and geometry in the school curriculum. (Kliebard & Franklin, 2003, p. 405)

Although a number of scholars—including the sociologists Edward A. Ross and Ross L. Finney, the scientific management analysts Frederick W. Taylor and Frank B. Gilbreth, the educational psychologist Edward L. Thorndike, and the curriculum theorist Franklin Bobbitt—contribution to the enterprise of scientific curriculum making, the leader of the effort to vocationalize U.S. schools was the educational sociologist David S. Snedden (1868–1951).

**David Snedden**

Snedden, a student of Ross at Stanford, began his career as a teacher, principal, and superintendent in California schools and then, after getting his doctorate at Teachers College, Columbia, became the first State Commissioner of Education in Massachusetts from 1909 to 1916. He went on to a faculty position at Teachers College, where he ended his professional career. Because he had great credibility as both a practitioner and academic in education, his views became very influential in debates over the curriculum. For example, objecting to the “protected” position that mathematics, like no other subject but English, enjoyed in school, Snedden (1916) spoke from experience:

> I know (having been a moderately successful teacher of high-school mathematics myself for several years) that a substantial percentage of high-school pupils, otherwise of good ability and promise, do not respond well to mathematics teaching, and, I believe, do not materially profit from the assigned tasks, which are uninteresting, discouraging, and even, at times, obnoxious, to them. (p. 204)

Snedden wanted to use scientific means to develop a curriculum that would meet the demands of an industrial society and accommodate learners’ interests and abilities. He saw vocational education for the “rank and file” as superior to a traditional liberal education. In 1914, arguing against William C. Bagley, a defender of traditional liberal education, Snedden (1914/1977a) gave a provocative speech at the annual meeting of the NEA in which he argued that the public was demanding “a more purposeful, a more scientific, and a more efficient liberal education in the schools. This demand is not always articulate and always lacks definition, but it is real, nevertheless” (p. 41). Snedden saw vocational education as fundamentally different from liberal education, and the two could not be blended. “In its simplest and most significant sense,” he said, “vocational education is some form of education designed to equip a young person for a recognized calling” (p.
Allan Snedden (1914/1977a) argued that the aims of education were currently neither clearly defined nor valid, and he took mathematics as one of several examples:

We surely have, for example, no clearly defined purposes to control in the teaching of mathematics in high schools—purposes, that is, of a demonstrable validity. Two purposes now are supposed to guide our efforts in this field—one that of fitting pupils for examination and the other that of giving general mental training. Neither of these objects, however, can be called educationally valid. The first is surely not an end, but a means, while the latter possesses no necessary connection with the steps which are now taken in mathematical teaching. In other words, tho we may intend that mental training shall result from the teaching of mathematics, we have no assurance that it does so result, nor is this end yet so clearly defined as to have a bearing upon the means and methods of instruction which we employ. (pp. 44–45)

He went on to say that although students in the primary grades might profit from an efficient form of liberal education, the great majority of older children, who would become “producers” rather than “utilizers,” needed separate vocational schools. “A vocational school must, to a large extent, reproduce practical processes, must give the pupil many hours of each working day in actual, practical work, and must closely correlate theoretical instruction to this practical work” (p. 51).

In Snedden’s view, school studies needed to be functional—serving to prepare students for their vocation—and he did not see that quality in the content of traditional liberal education. Mathematics was not the only subject he castigated for its lack of functionality—Latin and history were also prominent targets—but it was high on his list. For example, in 1907, his first year as an adjunct professor at Teachers College, he did not hesitate to criticize the eminent David Eugene Smith’s proposal to connect algebra and geometry by teaching them in alternate blocks of time. Contending in a letter to Smith that he wanted to see mathematics “so developed as to become real and vital in connection with the mental and social activities of the children who are learning it,” Snedden argued that if mathematical topics were to be isolated rather than connected so that each topic could be directly applied to practical problems, that would “remove the reproach of the non-functioning which now attaches to the subject” (quoted in Drost, 1967, p. 84).

**Snedden and Dewey**

John Dewey (1914 & 1915/1977a), in two papers originally published in *The New Republic*, responded to Snedden’s 1914 speech, although he did not mention Snedden’s name, by claiming that proposals for industrial education were “politically slanted toward the interests of manufacturers, and […] impractical in application” (Labaree, 2008, p. 3). Why should the public school system, Dewey asked, support the sort of training in specific skills that manufacturers had always
provided? Moreover, because workers in the modern industrial enterprise were so highly mobile, it was not practical to provide them with vocational training in such skills.

Snedden (1915/1977b) responded by repeating his claims about the need to extend vocational education and therefore to provide separate vocational schools for the rank and file of young people, “ignoring Dewey’s point about the social functions of vocational education in a capitalist economy” (Labaree, 2008, p. 4). In reply, Dewey (1915/1977b) bluntly rejected Snedden’s argument, saying that he was “utterly opposed to giving the power of social predestination, by means of narrow trade-training, to any group of fallible men no matter how well intentioned they may be” (p. 38). In Dewey’s view:

A separation of trade education and general education of youth has the inevitable tendency to make both kinds of training narrower, less significant and less effective than the schooling in which the material of traditional education is reorganized to utilize the industrial subject matter—active, scientific and social—of the present-day environment. (p. 38)

Dewey’s critique, although compelling, apparently had little or no effect on Snedden, who continued to make the case for a socially efficient education that “presumes to improve society by making its members more vocationally useful and socially responsible” (Drost, 1967, p. 3). And he continued to claim that mathematics had no special status in the curriculum.

Snedden ends a chapter on mathematics in his 1917 book Problems of Secondary Education with three steps he would take if he were a secondary school administrator with a “free hand”: (a) “make algebra (and other mathematical studies) elective or optional” whether for graduation or for college admission; (b) devise mathematics courses for students preparing to become engineers “or for other vocations where such studies demonstrably ‘function’”; and (c) “develop a ‘culture’ course in mathematics” that would be attractive to students and would inform them about its evolution and applications “to the understanding of the universe and the work of the world” (p. 229).

Replying to a critic who questioned his characterization of mathematics as a “dead hand” when it was actually proving vital for navigation and other activities during the First World War, Snedden (1918) pointed out that he had always endorsed the study of mathematics by those who would need and use it: “Demand mathematics as part preparation for the vocations for which it is necessary, and likewise demand chemistry, geography, Japanese, wheat growing, and wireless operating in the vocations where these are necessary” (p. 714). But he could not support requiring mathematics of those who would never need nor use it.

The better idea lost

If Dewey won the debate [about liberal and vocational education], it was Snedden who won the fight to set the broader aims of American education in the twentieth century. The debate was followed quickly by two events that set the tone for [the] educational system for the next 100 years—the passage
of the Smith-Hughes Act (1917), establishing a federal program of support for vocational education, and the issuance of the NEA report, Cardinal Principles of Secondary Education (1918). Both documents reflected key elements of the social efficiency vision that Snedden espoused and Dewey detested, a vision that has characterized schooling in the U.S. ever since. (Labaree, 2008, p. 1)

Snedden was a major force behind the Smith-Hughes Act, which was written and promoted by his former student at Teachers College and deputy commissioner for industrial education in Massachusetts, Charles A. Prosser. Further, the commission that produced the NEA report was chaired by Clarence D. Kingsley, another of Snedden’s former students and the Massachusetts school board’s agent for high schools. Neither acolyte was as rigid as his mentor: To get the Smith-Hughes Act passed, Prosser accepted a provision allowing states to combine the administration of vocational and general education if they wished, and Kingsley’s committee called for the mingling of vocational and general education in a comprehensive high school rather than following Snedden’s expensive, impractical, and undemocratic proposal of separate schools.

After 1918, Snedden began to take even more extreme positions on the curriculum, arguing that every vocation should be analyzed into scores or hundreds of recurrent components that would then be taught to students bound for that vocation. “When one multiplies out the possibilities, [...] the complexity of the resulting curriculum structure is staggering. […] Is it any wonder that even the most dedicated vocational educators thought this a bit much?” (Labaree, 2008, p. 16). Nonetheless, even though his influence waned rapidly,

Snedden was the right man in the right place wielding the right idea for his times. [...] The old system of common schooling for all, aimed at providing broad education for the citizenry of a republic, seemed increasingly out of touch with the social and economic order, with its radical division of labor, growing class and ethnic differences, and explosively expansive mode of corporate capitalism. (p. 19)

In a curious parallel, the educational sociologist Snedden’s victory over Dewey in the realm of educational goals was remarkably like the victory of the educational psychologist E. L. Thorndike over Dewey in the realm of education research. Both Dewey and Thorndike wanted the study of education to be scientific, but whereas Thorndike wanted it built on the precise measurement of behavior, Dewey had a holistic and purposive view of behavior, seeking to make the study of education a partnership among many people, wanting education to inform and be informed by other academic fields, and seeing education as a primary vehicle for achieving social change. (Kilpatrick, 2001, p. 224)

Thorndike wanted education research to be professionalized within the university, but Dewey urged education researchers to collaborate, integrate theory and practice, and work across disciplines. Again, Dewey lost, and for many of the same reasons that he lost to Snedden: Dewey’s ideas were complex, were difficult to implement, and did not have the immediate appeal to policy makers and administrators that Thorndike’s did, especially in the university. “Thorndike’s
views provided a logic for university schools of education as well as a disciplinary base for educational research that fit well within the patterns of organization increasingly evident throughout the educational world” (Lagemann, 2000, p. 62).

“Limiting educational scholarship in ways that became more apparent over the years, Thorndike’s triumph and Dewey’s defeat were essential to the early educationists’ quest to define a science that could help them rationalize the nation’s public schools” (p. 22).

**Reassessment**

One problem in discussing the social efficiency movement is that the term itself has a long and somewhat complicated history. Social efficiency has at least three meanings (cf. Null, 2004, pp. 120–124): (a) social control (the meaning favored by David Snedden and other so-called administrative progressives); (b) social service (the meaning favored by William Bagley and other so-called academic essentialists); and (c) social power (the meaning favored by John Dewey and other so-called pedagogical progressives). When historians refer to the “social efficiency curriculum interest group” (Kliebard, 1986; Stanic, 1986, 1988), they are adopting the social efficiency-social control meaning. The other meanings have largely fallen out of curriculum history discourse, although there has been a revival of attention to those meanings in recent years (Knoll, 2009; Null, 2004). For example, John Dewey, whose name would never be listed as a member of the interest group, actually wrote extensively about social efficiency—understood broadly and in a liberal sense—as the chief aim of education.

The origin of the term social efficiency has been traced to the British author Benjamin Kidd (1895), who wrote a popular book *Social Evolution* that attempted to apply ideas of natural selection to ethics, morals, and the welfare and development of individuals and nations (Knoll, 2009). Some of Kidd’s argument was rejected when his ideas migrated to the United States—in particular, his claim that much progress is irrational because it is based on religion, and his view that there is an inevitable antagonism between individual and society—even though his advocacy of civil rights and equality of opportunity was applauded. But the term social efficiency was picked up and used by sociologists like Lester Ward and philosophers like John Dewey, although with meanings that were more liberal and democratic than that of Kidd.

The intellectual history of social efficiency turns out to be more complicated than many historians have realized. It provides a case study of the way in which, when a term becomes popular, its origins are forgotten, and it acquires new meanings, some of which are incompatible. The word efficiency came to be used as a catch-all term for a desirable goal of schooling:

Most likely, the term “efficiency” was used in the 1910s and 1920s much like the term “effectiveness” is used in relation to schools today. In the rhetoric of most popular contemporary discussions of education, an “effective” school is simply a powerful school, a “good” school, or even a school that “works.” (Null, 2004, p. 120)
Early proponents of social efficiency such as Dewey understood that the term was ambiguous, which is why they “stated very carefully what they had in mind when they employed Kidd’s imaginative phrase” (Knoll, 2009, p. 382). But the situation has changed:

Distinguished historians of education regard efficiency as irreconcilable with freedom, participation, and equal opportunity. In essence, they consider it as inhumane and as a technocratic device to impede change, reform, and social progress. […] Yet efficiency, or social efficiency, is not per se anti-democratic, anti-liberal, anti-humanistic, or anti-social. On the contrary, for most educators of the progressive era, efficiency was the prerequisite for the realization of the ‘common good’, the ‘just society’, and the ‘worthy life’. (p. 382)

Nonetheless, the “social efficiency movement” is commonly interpreted today as the vocational education movement in which Snedden was one of the original leaders but which then was taken over by other administrative progressives. The system they erected in the United States in the early twentieth century was effective in part because it had stronger political cover than Snedden’s extreme version. It introduced a vocational orientation toward education—education for social efficiency, for human capital production, for economic growth, for modernism—while preserving the traditional liberal academic curriculum in a diluted form. It tracked people by class de facto but not de jure; it could be presented as democratic education, the way the Cardinal Principles report did, while Snedden’s was explicitly socially reproductive, deliberately designing a separate education for the rank and file. Snedden played bad cop to Kingsley’s good cop, getting out in front, catching the flack, then being pushed gradually from the scene, to be supplanted and largely forgotten by the winning version of social efficiency education. (Labaree, 2008, p. 21)

The system created by the social efficiency educators still flourishes in U.S. education. It sorts and tracks students according to their ability and presumed future destinations. In mathematics, that has meant that algebra, in line with Snedden’s (1917) analysis, has not been seen—until quite recently—as a subject to be taught to all students. Like other school subjects, mathematics is to be studied not for any intrinsic value it might have but for its usefulness. U.S. children need to do better in mathematics so that they can outperform children in countries that are economic competitors. The role of the public school has become essentially vocational, to develop social capital, and school mathematics contributes to that role by equipping students to be productive members of society.

Americans are nothing if not pragmatic, so it is no small irony that the philosopher of pragmatism John Dewey lost out to a movement driven by an administrative, managerial ideology of what works most efficiently in education. And U.S. mathematics educators have been obliged to show that their efforts fall within that ideology: As in a corporation, instructional goals are set out in advance, and teachers are held accountable for meeting them thoroughly and efficiently. Mathematics has retained its place in the U.S. school curriculum primarily through
inertia and continued arguments for its utility. Gone is Dewey’s idea that teachers of mathematics should psychologize the subject matter so as to make it part of students’ experience. The emphasis instead is on results.

References


