

Influence of Social Reform Ideologies on Industrial/Technology Education

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Abstract

The founding of industrial/technology education in America represents the convergence of many influences dating back to the pre-industrial revolution era. Social reform movement, one of these influences, set out to change conditions considered to be causes of poverty and other social problems through active engagements in political, educational, and social programs. This article examines, historically, the influence of social reform ideologies, such as those of the social settlement movement, John Dewey's social philosophy and experimental schools, the social reform movement, and the industrial-social efficiency movement on the development and mainstreaming of industrial/technology education in America. Industrial/technology education should contribute not just to students' skills and knowledge but also to their capacity to develop moral perspectives and social wisdom. Hence, the study of the subject field should be linked to history and changes in social and economic structures of our society.

Keywords: education, art, ideologies, industrial, movement, reform, school, social, technology

Influence of Social Reform Ideologies on Industrial/Technology Education

In the late 1800s, industrial arts education, later known as technology/career education (Dettelis, 2011; Foster, 1997; Pannabecker, 1995; Savage & Sterry, 1990), was still a very vague idea, largely devoid of proper level of organized support and proof of successful implementation. Later during the early 1900s, the idea of a true industrial education challenged the traditional concept of classical education. Efforts to mainstream industrial education subjects into social and educational thinking in America were based on the formation of an ideology related to social reform as well as industry in the 1900s by proponents of school reform, the doggedness and concerted efforts of early leaders of industrial education, and the Smith-Hughes Act—the first federal bill to support public education below the post-secondary education level—(Spring, 1990). The founding of industrial/technology education in the United States represents the convergence of many influences dating back to the pre-industrial revolution era (Stombaugh, 1936). For example, the social reform movement, one of these influences, set out to change conditions considered to be causes of poverty and other social problems through active engagements in political, educational, and social programs.

This article examines, historically, the influence of four social ideologies—the social settlement movement, John Dewey’s social philosophy and experimental schools, the social reform movement, and the industrial-social efficiency movement—on the development and mainstreaming of industrial/technology education in America. Debates on the transition from industrial arts to technology education (Foster, 1994; Lewis, 1994; Savage & Sterry, 1990; Waetjen, 1992, 1993; White, 1990) support the need to examine some of the ideological premises that led to the development and mainstreaming of industrial arts education (now technology education) in the United States and in most other countries. The significance of this

historical review to the understanding of industrial arts/technology education's past is reflected in, among others, Waetjen's (1992) article, *Shaping the Future of a Profession*. In it, he challenged technology education to establish itself as an academic discipline and he also enumerated four essential elements common to disciplines: history, domain, mode of inquiry, and instructive capability.

Waetjen's assessment of these four elements shows a heightened need for a history of industrial/technology education and/or a framework upon which further discussion and debate about the present and future directions for the discipline can be based. Since Waetjen's essay, some (Foster, 1994; Lewis, 1994; Pannabecker, 1995; Zargari & MacDonald, 1994) have written on historical issues relating to technology education in the United States, without an indept discussion of the role of many social reform movements and/or ideologies in the development and mainstreaming of industrial/technology education in America. Even earlier industrial arts education historians such as Bennet (1926, 1937) focused mainly on other aspects of industrial arts education with little interpretations in the broader social context. As Pretzer (1997) noted, technology education in the United States, as other major curricula do, should contribute not just to students' skills and knowledge but also to their capacity to develop moral perspectives and social wisdom. In order to accomplish this objective, the study of industrial/technology education should be linked to history and changes in social and economic structures of our society. This is important because industrial arts/technology education in America is deeply rooted in the works of various social reformers who established movements for the support and improvement of industrial education and the general society (Pannabecker, 1986, 1995). To help technology educators interpret technology in the context of society and social reform, a historical review of four key social reform movements (the social settlement movement, John Dewey's

social philosophy and experimental schools, the social reform movement, and the industrial-social efficiency movement) and their efforts/contributions that shaped and improved industrial/technology education in America is provided next.

The Social Settlement Movement

The Social Settlement Movement was one of many oppositions to the prevailing tenets of classical economics and Social Darwinism in America in the late 1800s and early 1900s. This opposition came from a growing social consciousness that while poverty and suffering were inevitable, they were outcomes of environmental conditions and/or societal problems that had to be solved through social and environmental change. Supporters of social settlement movement—a very influential social reform group in both England and in America—believed that only education, especially industrial arts education, and political reform were the primary means for solving social problems such as poverty and suffering. Founded in England in the late 1880s, the social settlement movement was brought to America through the efforts of Robert A. Woods, Stanton Coit, Vida D. Scudder, and Jane Adams (Krug, 1964; Luetkemeyer, 1985; Spring 1990). After studying this movement in England, they returned to the United States and established similar settlements in many of the major industrial cities. The first American settlement was established by Stanton Coit in New York, followed by the most famous founded by Jane Adams and Ellen Starr on the south side of Chicago in 1889 (Luetkemeyer, 1985). Adams (1910) considered the settlement to be an experimental solution to the social and industrial problems that were "engendered by the modern conditions of life in a great city" (p. 125). Education, in a variety of forms, was to be used as the primary instrument to assist the poor as well as enlighten the general public (Cremin, 1961, 1964). The then narrow academic curriculum of the schools was to be made more realistic. The role of the school was to be that of

social control: to prepare students to live more efficiently in the existing urban-industrial society (Krug, 1964; Luetkemeyer, 1985).

Settlement workers developed educational programs, based on a community's need, to assist the poor. Such programs included classes in literacy, childcare, nutrition, household management, English for immigrants, and vocational education. Adams, who was appointed to the Chicago School Board in 1905, "set out to convert the schools into miniature social settlements" (Cremin, 1957, p. 262). Both Adams and John Dewey, who was influenced by Adams' social philosophy, argued that by studying "the intellectual, technological, and social changes in work processes in the industrial era, schools could serve to enlighten the quality of general education" (Wirth, 1972, p. 84). In a speech before the 1908 National Convention of the National Society for the Promotion of Industrial Education, Adams argued that industry embodied tremendous human activities, inventions, constructive imaginations, and records of education (Luetkemeyer, 1985). She maintained that every factory has in it the possibilities of enormous cultural value, if educators have the ability to bring out the long history, the human, as well as the mechanical development (Wirth, 1972). Adams considered it important that schools assist students in understanding the nature of an industrial-democratic society. Both Adams and Dewey sought "a new synthesis of cultural and practical education" (Krug, 1964, p. 229).

Dewey's writings had a huge impact on both the settlement movement and their support for the establishment of industrial arts education (Krug, 1964; Luetkemeyer, 1985). For example, with the help of Dewey, the settlement movement tried to make schools seem more like social settlements, and to a large extent succeeded (Luetkemeyer, 1985). In response to the yearnings of the social settlement movement, industrial arts educators began to emphasize both an exploratory objective and a concept of the general shop. In the early 1900, the professional

literature of that time was concerned with junior high school-oriented programs such as household mechanics, the comprehensive general shop, the general unit shop, and the laboratory of industries (Barella & Wright, 1981; McPherson, 1979). One of the major problems facing the industrial education profession during this period of expansion was one of terminology. The many terms used to describe shop-oriented programs led to confusion concerning definitions, purposes, and program development of industrial education. Pointing out this problem in his dissertation, William E. Warner (1928) found "28 different terms used by shop teachers in naming their programs" (p. 5).

Many industrial educators saw the need for a separate division within the American Vocational Association (AVA) to reflect their views. Therefore, in 1932 the Industrial Arts Division of the AVA was founded. Robert W. Selidge, who was highly influential in the drive for a separate division, was named the first AVA vice president for industrial arts (Martin, 1979). During the late 1930s, a group of industrial arts educators began to discuss the need for an independent national organization to further the cause of industrial arts at all levels of education. William E. Warner led these industrial arts educators. They met as a group during the annual convention of the American Association of School Administrators in 1939, and founded the American Industrial Arts Association (AIAA). In response to a persistent demand for a unified position within industrial arts education that would be acceptable to all educators and administrators, the Bureau of Education appointed a committee on industrial arts in 1934 to develop a document that represented an acceptable and unified concept of industrial arts education. The Bureau of Education (1938) published the final report of the committee, titled *Industrial Arts: Its Interpretation in American Schools*. The committee defined industrial arts as a "phase of general education that concerns itself with the materials, processes, and products of

manufacture, and with the contribution of those engaged in industry" (Bureau of Education, 1938, p. 1).

John Dewey's Social Ideologies and His Experimental Schools

John Dewey helped synthesize the ideas of early industrial arts education advocates and articulated a coherent philosophy for the subject field. His work with the industrial arts education movement has been documented in the studies and writings of several industrial arts educators (Anderson, 1926; Bennett, 1926, 1937; Herschbach, 1979; Leutkemeyer, 1985; McPherson, 1979). In 1896, at the University of Chicago, he and his wife, Alice, founded the Laboratory School in order to test his educational theories. Industrial activities were central to his scheme of education and were particularly valued for their social and psychological, rather than utilitarian, value. Dewey (1897) argued that in an industrial society the school should become more industrial. He believed that education could prepare the young for future social life only when the school itself was a cooperative society on a small scale. Thus, Dewey would have students learn what industrial society could be through reliving its problems and manipulating its materials, techniques, and knowledge. Industrial arts education, then, could impart an understanding of industrial society and of the necessity for social cooperation, discipline, mutual understanding, and democratic processes and ends. Only in this way, he felt, could education ensure that the tremendous scientific-technological forces sweeping the country were indeed being used to promote humanistic and democratic ends (Dewey, 1917). Dewey observed that the school was isolated from life itself. He selected activities that were of interest to the children and that also possessed educational value (McPherson, 1979). In this regard, Dewey (1915) stated:

We must conceive of work in wood and metal, of weaving, sewing, and cooking. . . . We must conceive of them as their social significance, as types of the processes by which society keeps itself going, as agencies for bringing home to the child some of the primary necessities of community life . . . through which the school itself shall be made a genuine form of active community life, instead of a place set apart in which to learn lessons.

(p. 14)

Dewey valued the effectiveness of industrial education activities in stimulating the child through problem-solving situations and cognitive activities. He believed that children have a natural impulse to communicate, construct, investigate, and experiment; and that industrial activities provided the best means of bringing this impulse into an interplay with ideas and knowledge (Herschbach, 1979). Industrial activities hold the attention of the child and stimulate imagination; they expose the child to the materials and processes in his or her immediate world; and they provide a variety of content necessary for the correlation of a broad range of knowledge and facts. The pioneering work of Francis Parker, an earlier reformer and progressive, inspired Dewey. While Parker wanted to make schooling more "child-centered," Dewey wanted to make it more "social-centered," while still retaining Parker's humanitarian emphasis. Thus, Dewey gave educational reform a social purpose, which placed it in the mainstream of pedagogical thinking during the turn of the century (Herschbach, 1979). Other proponents of industrial education who also supported Dewey's social reform ideologies include Charles R. Richards, James Russell, Frederick Gordon Bonser, and others.

Richards, head of the Manual Training Department, Teachers College, Columbia University, was one of the first in the Manual Training School to be influenced by the work of John Dewey, as evidenced in Richards' speeches and writings from 1900 to 1904 (Martin, 1979).

In these speeches and publications, Richards advocated the Deweyan concept of industrial occupations as opposed to the manual training position. In his famous editorial in *Manual Training Magazine*, Richards (1904) recommended that the industrial education profession should use the term "industrial arts" in place of "manual training" (p. 33). Similarly, Fredrick Gordon Bonser structured his industrial arts program at Speyer School on an "interactionist-developmental psychological basis," developed by Dewey and others (Herschbach, 1979, p. 16). In other words, the early ideology of social reform constitutes the pedagogical antecedent of industrial arts. Using Dewey's theory of occupations, Bonser developed an elementary school curriculum from his experiences: his earlier work at two laboratory schools (the State Normal School in Cheyney, Washington; and Western Illinois State Normal School in Macomb, Illinois) and his later work at the Speyer School (the experimental laboratory school of Teachers College). As the director of the Speyer School, Bonser accepted the use of Dewey's psychology of occupations for the development of the school's curriculum. After a published report on the Speyer School and its unique form of education, the Speyer School curriculum was in demand throughout the country and went through several reprints long after the school was discontinued. Bonser and Mossman (1923) later used the report as basis for the book, *Industrial Arts for Elementary Schools*. In the book, Bonser gave his most popularized definition of industrial arts:

The industrial arts are those occupations by which changes are made in the forms of materials to increase their values for human usage. As a subject for educative purposes, industrial arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to their changes. (p. 5)

Because of their frequent references in speeches and publications to the educational theories of Dewey, Richards and Bonser are recognized as the major interpreters of Dewey's

work in industrial arts education (Luetkemeyer, 1985). Richards began his teaching career as a member of the faculty of the Industrial Education Association in New York City in 1885 and ended it in 1888. The Industrial Education Association became the New York College for the Training of Teachers in 1887 and Teachers College, Columbia University, in 1893 (Pannabecker, 1991). Richards returned in 1896 to Teachers College and spent the subsequent 10 years as director of the Department of Manual Training (Bawden, 1950). Richards derived many of his conceptual ideas on industrial arts education from his social service philosophy and implemented them at Horace Mann School (Luetkemeyer, 1985). Using socioeconomic analysis, Richards identified the areas of manufacturing, transportation, and communication to be taught in the sixth, seventh, and eighth grades, respectively. Richards also helped develop the curriculum for the Speyer School, for which Russell appointed Bonser director in 1910. Bonser also received an appointment as a member of the faculty of Teachers College, Columbia University. The Speyer School implemented the curriculum developed by Russell and Bonser, which also reflected the social service philosophy. The result of their work, which was published as the *Speyer School Curriculum*, identified the categories of "food, clothing, records, utensils, tools, machines, and weapons as the areas of instruction" (McPherson, 1979, p. 5). David Snedden and William E. Warner (1927) considered this approach (later known as the Russell-Bonser plan or the industrial-social theory) to be the conceptual basis for industrial arts education.

The School and Social Reform Movement

Greater numbers of children—often the sons and daughters of “working men,” immigrants, and the rural and urban poor—entered the schoolhouse in increasing numbers each year between late 1800s and early 1900s. For example, in 1890 there were over two hundred thousand youths in public high schools (Herschbach, 1979) and by 1910 there were over sixteen

million children in public elementary schools (Bureau of the Census, 1899-1900). They lacked the background, desire, or money to remain in school for long. For many students there was little hope of progressing successfully through the system of education. The school was as alien to them as their ways were to the schools. If public schooling was going to meet the challenges of the massive influx of students, then it had to offer studies that could be of benefit to the child of the working class (Herschbach, 1979; Kahn, 2001). This problem forced educators to reconsider both the aims and practices of schooling in the nation, which was experiencing a fundamental economic, as well as social and educational transformation. Schools did not offer continuous schooling of a practical nature for 80% of the student population who were leaving school before completing the seventh or eighth grade in early 1900. For example, in a report to the Douglas Commission in 1905, Susan Kingsbury strongly argued that if an industrial arts education were provided, not only could the early school graduates be retained, but that such students could obtain the skills necessary for occupational success (Kahn, 2001). As America entered the age of mass education in the early 1900s, the necessity of absorbing large numbers of working class children into education largely overshadowed differences in program design or educational philosophy (Stombaugh, 1936). This fact, more than any other, "accounts for the successful introduction of industrial arts education into public schooling" (Herschbach, 1979, p. 11).

Social reformers were the earliest advocates of industrial arts education, as well as the first to experiment with industrial education programs for youths, as they attempted to provide institutional and social services necessary to combat many of the hardships experienced by slum children (Spring, 1990). These reformers' intent upon alleviating the harshest aspects of slum life for children, responded to the children's physical needs: warm meals, medical care, and

clothing and shoes (Kahn, 2001). Kindergartens established by social reformers provided one of the earliest and very influential ideas on industrial education. One of the reformers, Friedrich Froebel, a German educator, designed a system of play activities in which children "modeled clay, painted, constructed with blocks, measured, wove cloth, and participated in other manipulative and conceptual activities" (Cooper, 1882, p. 132). These activities were intended to provide rudimentary skill development and were considered to be the best preparation for the arts and trades. Through kindergarten instruction, children could acquire positive work habits and attitudes. Children learned to plan activities, follow directions, complete tasks successfully, and cooperate with one another.

The kindergarten movement provided a psychological rationale for activities relating to the industry, probably the most profound impact of this movement. For example, Froebel developed a strong case for drawing instructional content from the surrounding world of the child (Froebel, 1887). In an industrial society, this implied industrial content (Bennett, 1926, 1937). Froebel also believed that instruction had to call into play both physical and mental capacities and aptitudes in order to achieve a balanced and harmonious development of the child. In support of Froebel's view that instructional content should be drawn from the surrounding world of the child, Herschbach (1979) wrote:

natural objects analyzed in science were molded and drawn in the art room; geometrical forms studied in mathematics were constructed in the carpentry shop; apparatus for physics was fabricated in the metal shop; and field trips to factories became the topic for English essays. In addition, through industrial activities, students could learn about industrial society and the role individuals played in the production of goods and services.

(p. 12)

Overall, early kindergartens and industrial schools became part of many charitable and religious agencies that cultivated positive public opinion toward industrial education. As many social and education reformers, such as Benjamin Franklin and Felix Adler, joined the drive to set into motion common schools for industrial arts education, one outcome was the introduction of arts and crafts into public education (Bigelow, 1904; Smith, 1981).

The social reform movement also supported the establishment of industrial arts schools for older children in the slum districts of large urban centers (Martin & Luetkemer, 1979). These schools had a decisive impact upon the evolution of industrial arts education. The most important was the Workingman's School, founded in 1879 by Felix Adler of the Ethical and Cultural Society of New York City (Groszman, 1891; Herschback, 1979). The Workingman's School offered regular subjects in addition to science, art, domestic, and mechanical arts instruction. The school provided general and practical education to children of the working classes who would probably not enroll in public schools (Beck, 1958; Martin & Luetkemer, 1979). Adler's major contribution to the development of industrial arts education was the function assigned to practical work. He envisioned industrial activity more as a method of teaching, rather than as an alternative content area (Barella & Wright, 1981; Foster, 1995). In addition to supporting Froebel's philosophy about drawing instructional content from the surrounding world of the child, he felt that industrial arts activities could be correlated with the teaching of the more traditional subjects and that it could exert an enriching and vitalizing effect. Through observation, drawing, modeling, construction, or exposure to "concrete" experiences, children were led to discover understanding and meaning (Barella & Wright, 1981; Foster, 1995; Groszman, 1891).

Out of some early educational approaches evolved certain general ideas regarding the purposes and functions of industrial education. From a pedagogical point of view, supporters of industrial education believed that it balanced the curriculum, which was too heavily weighted with "book-learning" and was unsuitable to less academically inclined youths. In addition, industrial education could hopefully be correlated and integrated with other subjects of the curriculum, resulting in a richer and fuller educational experience. From a social point of view, supporters of industrial education advocated it as a way to develop good work habits. These habits could lead to success in an industrial world. Social reform movement supporters believed that students could be provided with the educational enrichment necessary for appreciating and participating in the cultural heritage of society, in which students could gain an understanding of the industrial environment in which they lived (Cooper, 1882).

Placing certain industrial education programs, such as industrial arts, within the school of educational thought known as "social reconstruction" resulted in the close connection of social reform with the industrial education movement (Herschbach, 1979). Before the turn of the century, the ideas of social reconstructionism were best represented in the early kindergarten movement, the work of Felix Adler, arts and crafts instruction, and the early works of educational progressives such as Francis Parker and M. A. Hailmann (Barella & Wright, 1981). After 1900, these ideas were best represented in social settlement schemes and community-centered programs of schooling, as illustrated in the work of Jane Adams, Florence Kelly, Samuel Dutton, and John Dewey (Barella & Wright, 1981; Herschbach, 1979; Spring 1990). Manual labor activities in agriculture were related to school studies, providing a source of real interest in schoolwork for the students. Representing a dozen or more trade areas, skilled craftsmen who were employed by the school as a part of their regular work provided trade

instruction. Industrial education provided a natural avenue for educational reform. "It was practical, close to the common daily experience of man, and therefore easily understood" (Barlow, 1990, p. 9).

The Industrial-Social Efficiency Movement

Business, commercial, and industrial groups provided another early source of support for industrial education in America. Out of these groups emerged the Industrial Social-Efficiency Movement, which argued that industrial education was needed for the economic development of the country. The movement emerged during the 1800s as one of the strongest supporters of the inclusion of industrial arts education as part of regulars school curriculum in America. According to the philosophy of this movement, which received the support of Charles Prosser, David Snedden, Edward Thorndike, and others industrial and social efficiency could be achieved through the introduction of the subject into public schools (Foster, 1994, 1995; Gordon, 1999). A study carried out by members of this movement in the late 1800s found that the massive increase in the number of public school students during that period forced schools to adapt curriculum offerings to the needs of children of the working class (Gordon, 1999; Herschbach, 1979; Hyslop-Margison, 2000). Also, in order to address the increasing school dropout rate and to make education relevant to the needs of a growing section of the society, some educators who supported the group's social-efficiency philosophy recommended that industrial education should prepare youngsters for the world of work (Hyslop-Margison, 2000; McCrory, 1987).

One of the movement's earliest and persistent arguments in support of industrial education was that it was needed for the economic development of the country. Indeed, industrial education emerged as a subject field of public education in response to the rapid industrial transformation of the nation; and the activities of businesses in support of industrial

education accelerated. The leading businessmen who had worked closely with Calvin Woodward, for example, provided the backing that made it possible to establish the Manual Training Institute of St. Louis (Gordon, 1999; Hershbach, 1979; Hyslop-Margison, 2000; Krug, 1964; Leutkemeyer, 1985). Also, the Commercial Club of Chicago, a group of 60 merchants and manufacturers, founded the Manual Training School of Chicago. Similarly, the first "public free" manual training school established in Baltimore, Maryland, in 1884, resulted from the efforts of a group of businessmen (Herschbach, 1979; Hyslop-Margison, 2000). In Boston, programs of industrial education at the primary, secondary, and college levels directly resulted from the active support of the Committee on Industrial Education, a group of interested civic and business leaders. In numerous other cities and towns, commercial clubs or groups of businessmen provided both leadership and financial backing to industrial education associations and other similar groups that promoted tax-supported industrial education programs in public schools (Kirkland, 1967).

After the turn of the century, business groups lent their support to the drive, which resulted in the passage of the Smith-Hughes Act of 1917 (Spring, 1990). The Douglas Commission and the National Society for the Promotion of Industrial Education, among others, were able to spur on the action for government support, securing a permanent place in American education for vocational education (Gordon, 1999; Hyslop-Margison, 2000; Hershbach, 1979). But these groups were successful because they clearly articulated an ideological position, which brought out the economic importance of industrial education. Advocates of industrial education contended that the subject field could feed the growing industrial needs for trained manpower; that "industrial intelligence" could be developed, assuring the worker a greater economic gain; that labor could be dignified and ennobled; that the "antagonism" between manual labor and

intellectual training could be reduced; and that work values could be stressed, thus adapting immigrants and rural migrants to the urban-industrial environment (Hyslop-Margison, 2000; Martin, 1979; Spring, 1990).

The means of achieving these aims was to differentiate students early in their school career, provide them training in specific job skills, and encourage them to develop proper work attitudes and habits. These views came together in the educational philosophy of "social efficiency," supported by Charles Prosser, David Snedden, Charles Allen, Ellwood Cubberly, Edward Thorndike, and Frederick Taylor (Herschbach, 1979). Advocates and supporters of social efficiency argued that industrial and social efficiency would be achieved through the introduction of the subject field into public schools. Also, supporters of the field saw the subject as a means of creating individuals who were useful to society, both vocationally and in terms of social responsibility (Luetkemeyer, 1985). Later, the Jackson's Mill group used socioeconomic analysis to structure a curriculum model around manufacturing, construction, communication, and transportation (Hales & Snyder, 1982a, 1982b). The social service philosophy is still evident in contemporary technology education in America.

While John Dewey was providing a psychological concept, which supported the development of industrial arts education, Edward L. Thorndike was developing a behaviorist psychology, which supported vocational education. Unlike Dewey, Thorndike placed primary emphasis upon the mastery of subject matter. Through his experiments, Thorndike showed that very little "general learning" actually took place and that transfer of training did not occur as previously assumed. In other words, the study of Latin or woodworking did not appreciably help the future doctor, accountant, or plumber in developing any general mental ability and was thus important only to the extent that the individual utilized it in a specific way. Thorndike (1920)

provided industrial and vocational education supporters with a powerful psychological argument to reinforce their demand for specific occupational training. The concern of Thorndike and other behaviorists regarding stimulus-response bonds and terminal behavior led to the practice of breaking subject content up into small, identifiable elements (Thorndike, 1920). According to Herschbach (1979), vocational educators, such as Charles Allen and Robert Selvidge, readily adopted this practice and developed the immensely popular trade and job analysis approach to course construction in industrial arts and vocational education.

Within the industrial arts education movement itself, however, there were varied if not contrasting ideas. Those who represented what was called "industrial arts" traced their lineage back to one set of ideas, and the advocates of vocational industrial education to another. This fact is of importance, for it identifies the ideological antecedents of contemporary programs in industrial arts education, vocational education, and technology education in the United States. Industrial arts was undergirded by an interactionist-developmental psychology, including the works of John Dewey and Edward Thorndike, which clearly set it apart from the behaviorist psychology supporting vocational education. Consequently, markedly different program designs and aims characterized industrial arts and vocational education. Both subject fields were also characterized by a different social philosophy: one (industrial arts) the ideology of social reform, the other (vocational) of social efficiency. These differences, however, held the movement together while it was struggling to find acceptance in the public school. By reflecting a large number of social interests and by embracing fragmented and changing social thinking, industrial education gained wide support.

Conclusion

Industrial education/technology education has been in existence in one form or another in America. The purpose, as outlined by founders of the field, is to provide opportunities for individuals to become effective contributors to the well-being of society. By 1917, industrial education captured the attention of the American public, due largely to the fact that advocates of the subject made a strong appeal to a public that was awakening to the impact of the social and industrial changes sweeping the continental United States. With the contributions and support of leaders in the field, industrial arts education supporters and practitioners succeeded in articulating an ideology—a set of ideas about the function and purpose of industrial education in public schools. Through well-articulated ideology, industrial educators gave purpose to both these various movements and form to industrial arts education programs in American public schools.

Social settlement doctrine grew as a religious and humanitarian effort to deal with the causes of poverty and other social problems generated by industrialism and urbanism. The doctrine also demanded that schools should adopt a social service philosophy; and its supporters set out to change the environmental conditions considered to be causes of poverty through active engagements in political, educational, and social programs. Social settlement movement viewed industrial education as an integral part of a general education. The need for a more meaningful and relevant education for the youth during the pre- and post-industrial era, the impact of the World Wars, and the combined influence of many movements advocating industrial and vocational education contributed a great deal to the establishment and sustenance of industrial arts/technology education in the United States.

John Dewey synthesized the ideas of early industrial education advocates as well as helped articulated a coherent philosophy. Industrial activities were central to his scheme of education and were particularly valued for their social and psychological, rather than utilitarian, value. He believed that education could prepare the young for future social life only when the school itself was a cooperative society on a small scale. Dewey helped students learn what industrial society could be through reliving its problems and manipulating its materials, techniques, and knowledge. It was by doing so that industrial education could impart an understanding of industrial society and of the necessity for social cooperation, discipline, mutual understanding, and democratic processes and ends. Dewey supported the social service reform movement as part of his educational philosophy. He influenced others such as Charles Richards and Frederick G. Bonser, who conceptualized their ideas on industrial education within Dewey's social service philosophy.

Social reformers were one of the earliest advocates of industrial education, as well as the first to experiment with industrial education programs for youths, as they attempted to provide institutional and social services necessary to combat many of the hardships experienced by slum children. The social reform movement also supported the establishment of industrial arts schools for older children in the slum districts of large urban centers. These schools had a decisive impact upon the evolution of industrial/technology education.

Industrial-social efficiency movement emerged from various business, commercial, and industrial groups and provided another early source of support for industrial education in America. The industrial social efficiency movement argued that industrial education was needed for the economic development of the country. The movement found that massive increase in the

number of public school students during the early 1900s forced schools to adapt curriculum offerings to the needs of children of the working class. In order to address increasing school dropout rate and to make education relevant to the needs of a growing section of the society, supporters of the movement, including educators, recommended that industrial education should prepare youngsters for the world of work.

As this review shows, the founding and mainstreaming of industrial/technology education in America happened due largely to the influence of several social reform groups and/or ideologies in the late 1800s through the early 1900. Such social reform groups or ideologies include the social settlement movement, John Dewey's social philosophy and experimental schools, the social reform movement, and the industrial-social efficiency movement. Through the support provided by these social reform groups, ideologies, and/or movements; by reflecting a large number of prevailing social interests; by embracing fragmented and changing social thinking during the late 1800 and early 1900 in America; and through the efforts of its founders and early supporters industrial education gained wide support and was mainstreamed into the general public school curriculum in America. Today, industrial education has metamorphosed—through shifts in ideology, meaning, and purpose—into technology/career education throughout America and beyond.

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