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ABSTRACT

This paper argues the case for collaboration between vocational and academic education, between vocational and academic teachers, and between the professors who prepare the teachers. The premise is that today's society calls for an education that is "general" in the most comprehensive interpretation of the word; that is, in the sense of literacy or general knowledge of world trends and events along with practical skills. The paper acknowledges the difficulties in establishing collaboration between the fields. For example, teachers are trained as specialists, and their areas of common knowledge are small. In addition, vocational education has been perceived as reserved for the less intellectually gifted. Another barrier is increasing high school graduation requirements, which sometimes exclude vocational subjects. However, the paper asserts that collaboration, not merely cooperation or team teaching, is necessary to prepare young people for the future. Teachers must together identify the areas of knowledge needed by all youth and find ways to teach them across the whole curriculum. The paper suggests methods and provides examples of ways in which collaboration could be used in agricultural education, business and marketing education, home economics education, and industrial technology education. A final chapter points the way toward an integrated curriculum and an acceptable general education for all students. The paper includes 113 references. (KC)

GENERAL EDUCATION: VOCATIONAL AND ACADEMIC COLLABORATION

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INTRODUCTION

The Objective

The objective of this study is to further a collaboration at the high school level of vocational-technical teachers with their academic colleagues. The end sought is a thorough and comprehensive general education for our students

We realize that "general education" is a concept that can be explained in more than one way. Our use is the conventional one, whose connotation has been recognized in the West for centuries. In classic Greek, one comes upon the phrase *enkuklios paideia*. If *enkuklios* is thought of as circling or encircling and *paideia* translates as culture, then *enkuklios paideia* is the education that is general or common to all those who have at least a minimal education in what is thought culturally essential. This idea has been commonplace in the history of Western education. It can be found in more than one modern foreign language. The English phrase translates the French *culture général* or the German *algemeine Bildung*. We do not suggest that the definition be changed. It is only the focus of the educational process that we would alter. In order for a general education of adolescents to have a chance at becoming vital and exciting, we think that it must be the result of inquiry, discussion, laboratory or studio work, and writing that is stimulated by trying to understand challenges, innovation, movements, or people and their efforts. These challenges must be as real as those to be found in family life, in modern business and industry, and in the several fields that make up what we think of as the justification for vocational-technical preparation.

In the collaboration discussed here, we wish to allow the vocational areas to contribute issues not usually covered by vocational and academic teachers during collaborative planning of topics for student study and classroom discussion. This is of prime importance. Finally, collaboration will not come to pass unless the preparation of teachers is shaped by a parallel collaboration of professors of teachers in both the vocational and academic areas.

Is it realistic to expect happy results? "Convincing" and "exciting" are a good deal to ask of this collaboration. The risk is acceptable because the opportunities for collaborative study by the teachers and, subsequently, by the students, concentrate on challenges, demands, and issues readily apparent to both. Motivation should not be a

constant problem. While no promise is made of a dramatic decline in the school dropout rate, the plague of indifference should be lessened. We truly believe that collaborating on the content of general education will not only make what is learned more useful for all students, but that its perceived relevance by students probably will increase the amount learned and retained. Illustrations in this report will feature prospects that invite collaboration—prospects that are taken from literature in several of the vocational-technical fields. This essay does not draw upon the academic fields as generously. The social studies are used so often here that the impression left is that the only collaboration needed is with that subject. That is not true. This essay should be thought of as no more than the thin end of the wedge. Those at home in English; in mathematics; the physical, biological, and earth sciences; and in the arts certainly can match examples from the social studies. If we succeed in stimulating such illustration, that will be enough.

A slight change of terms should be admitted. The phrase "vocational-technical education" often either will be replaced by "vocational preparation" or supplemented by a mention that some vocational study looks forward to the student's career. The word "education" is intended to suggest something similar to literacy, or a familiarity with issues, ideas, events, and people that are of general significance. "Preparation," on the other hand, includes education, but goes beyond it to signify preparation for a vocation, a career, or profession. This small change allows the reader to step aside from the debate of whether "vocational training" or "vocational education" is the more correct (see Beck, 1988a). No comparable semantic debate is called for when writing of the academic fields. English, mathematics, science, and social studies are recognized as dominating the academic studies. Music and art may be debated as basic, but will be grouped with the academic and not the vocational-technical.

To achieve what we have in mind, teachers in the vocational fields would have to collaborate with teachers of social studies and the other academic subjects. Were the collaboration no more than cooperation, then collaboration would be nothing more than the familiar team teaching. Collaborative teaching, however, finds the issues; ideas; personalities; or events to be explored, inquired into, and discussed in class within such vocational areas as industrial arts/technology education, home economics education, or another of the vocational-technical fields.[1] Locating issues whose analysis promises to

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[1] Each of the fields in vocational-technical education has been altered by science and technology. We have chosen to refer to industrial technology education because that title is becoming common. The term

strengthen almost any student's general education calls for reading and discussion by the collaborating teachers. Are no issues, events, or ideas to be contributed by the academic subjects? Of course they are; no student in a vocational program should be academically lacking. However, we advocate the enrichment of the vocational and academic fields so that *both* will be transformed.

The commanding question is whether the collaboration proposed can strengthen general education. Our response is that the proposals, ideas, and developments that have brought the vocational fields into existence and have been so important in their development, are rich in their potential for a high school student's general education. The claim is not to preempt all of general education, but only to add to it. This calls for the collaboration we will identify simply because the ideas, proposals, and developments we have in mind cover significant scientific and economic trends, as well as other important trends of the past, present, and future. They are realities collaborating teachers can help students understand.

While later sections of this report will offer persuasive examples of the point, a basic assumption must now be clarified. Literature dealing with the development of any one of the vocational fields is salted with opportunities and problems readily associated with the development of the family and the economy—developments whose exploration and analysis in the classroom can make a powerful difference to the quality of what the school offers by way of a general education. But the chances of these targets being spotted and developed by students and teachers working together is much greater when the identification is done by a collaborative set of teachers. To quote Gordon Law (1971): "Any dichotomy between academic and vocational education is outmoded." He went on to say that, "Vocational preparation should be used to make academic education concrete and understandable, and academic education should point up the vocational implications of all education" (p. 13). Both of these remarks were considered by the House Committee on Education and Labor considering the Vocational Education Amendments of 1968. While we agree that the vocational-academic dichotomy should be avoided, even rejected, the challenge remains of how to harness the two. Our proposal is to affect this by the collaboration of teachers.

"technology" well may enter other titles in the vocational-technical field. Then, too, the field is growing. New subjects emerge constantly. In this report we have decided to limit discussion to the older, long-recognized subjects.

A very real difficulty bars the way. For example, later in this paper, when writing of business and marketing education, we ask, "Where does the subject of economics belong?" Does it belong with business education or with social studies? As we will see, it belongs with both. Through collaborative teaching, economics and other matters should be studied in both vocational and academic subjects. Yet that may not be enough to satisfy the demands for a clear boundary line between the vocational and academic. We are concerned solely with the establishment and the sustaining of collaboration. The drawing of vocational and non-vocational boundary lines must never prevent cooperation and collaboration. If and when they do, the effort is unworthy. Boundary lines are not our business. Encouraging collaboration is.

Balance, Equivalence, Credentialism, and Image

We think that having a common professional concern is more promising than attempting to balance the vocational and the academic or undertaking to legislate an equivalence between the two.

Striking a fair balance between the two worlds holds considerable appeal. Even so modern a successor to Plato as Theodore Greene (1955) makes room for this balance in his view of education:

> What is obviously needed is a truly liberal academic community in which the study of art and typewriting, of philosophy and accounting, of theology and medicine, of pure and applied science are, though admittedly different, judged to be equally honorable and valuable in their several ways. (p. 119)

The fact that Greene wrote almost half a century ago of a collegiate course of study rather than that of high school does not affect the claim for balance. Age does not undermine the notion of having a balance of the vocational and the academic or "liberal." Nevertheless, it is an unsatisfactory compromise, a mechanical search for an equilibrium of fairness. The collaboration we seek would be novel. And it would not be an apology. Who is not familiar with the snide evaluation of vocational preparation?

> Lofty contempt for practical subjects is the watermark of too many self-defined scholars. The examples chosen are calculated to get a laugh—pie-making, camp leadership, window-cleaning, pre-pharmacy, salesmanship. Certainly there will be no apology here for the evident abuses of overvocationalism in many sections of present-day education. But to

> assume that training for making a living has no place in liberal education is to assume that education has no context. (Geiger, 1955, p. 153)

"Context" is the key word in Geiger's insight, which was written in the 1950s, but is still apt today. Geiger's remark should not reenforce the long-standing idea that vocational preparation is anti-intellectual or, at best, non-intellectual. That assessment has been around for a long time. Geiger may have had Robert Hutchins (1941) in mind, although Chancellor Hutchins did not mock. He took the opposition seriously—an opposition that hurt vocational preparation when it was thought to be its friend (p. 34). Hutchins spoke for many when he took exception with Sir Richard Livingston, a formidable scholar of classical Greek thought and education, writing

> I think that most of us will agree with this broad statement—that the purpose of education is primarily and basically to equip young people with knowledge and skill by means of which they can most effectively contribute to the production of food, clothing, shelter, and luxuries which go to make up our standard of living. While knowledge of such fields as the arts, language, philosophy, history, and others is of importance to society, still I believe these fields are secondary at least at this time, to the production of the material necessities and luxuries, as society is now demonstrating that it cannot be happy without an abundance of the material things. (p. 34)

While attempts to balance the vocational and academic have overlooked the true potential for vocational studies to add the strength of realism to a high school general education, they have had some allure. Weir (1987) has reported on the British venture to gain "parity of esteem" and Rist and Schneider (1979) have described the amalgam created in the Hibernia School in the Federal Republic of Germany. But neither instance shows vocational and academic preparation as conjoint.

Equivalence and Credentialism

Parity, by affecting an uneasy balance of the vocational and academic, has not resulted in an integrated effort to create a comprehensive general education; a more aggressive approach was undertaken to gain "equivalence" between selected vocational-technical courses and seemingly "like" academic offerings. Equivalence is more contemporary, but not necessarily more successful than balance. In this context, success is to be measured by an improved image and not merely by persuading legislators and other

interested parties to allow some vocational-technical courses to be counted when adding up credits needed for high school graduation.

There is no doubt that in some states, Virginia (Brown, 1984) and Ohio (Parks & Henderson, 1984) for example, teachers of academic subjects, as well as political leaders, have been won over (Copa & Johnson, 1988). In Ohio, teachers in vocational and academic fields have met and planned courses to meet new state requirements:

> The goal was to strengthen academics by creating new "applied academics" courses whose content is directly related to the vocational laboratory content. The course of study is analyzed by the school to determine if there is enough, for example, mathematics to build one or two units of mathematics in the related period(s). Only full credits are given—no partial ones. Some vocational programs include a mathematics credit in the senior year. Students taking a vocational program cannot opt out of the "applied academics" portion if there is one. All joint-districts offer traditional 9th grade English and 12th grade social studies courses not funded by the State Vocational Education Division. (Parks & Henderson, 1984, p. 39)

This effort to use the vocational courses as opportunities to understand the application of mathematics or literature to automobile repair or other subjects encountered in vocational-technical preparation is to be applauded. But the end sought in Ohio is not equivalent to the reconstruction of general education that is argued for in this paper. At the same time, Virginia's plans and action for adding to the mathematical and scientific content of vocational/technical courses and the mathematical and scientific competence of their teachers should be recognized.[2]

The equivalence route was natural enough in what Collins (1979) terms a credential society. His arguments point up the weight accorded education and the reason why educators concerned with vocational preparation would wish their courses thought important. He knows that they are not, although the example he offers is of a full-time vocational school (pp. 16-17). Even so, there is no lack of academicians who have doubted the efficacy of vocational preparation. (This view is not new. See Hogan, 1982, 1985; Stakenas, Mock, & Eaddy, 1984; and Kantor, 1988.)

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[2] Dr. Kay Brown, Supervisor of Vocational Curriculum Development, Virginia Department of Education, has been the principal leader in this development. At the time of this writing, the Virginia Department of Education's *A Guide to Vocational Program Planning* is in press. Reference primarily is to *Completion Requirements for Vocational Programs* and *Vocational Education Course Descriptions*.

Credentialism is a topic of grave concern to those in vocational-technical preparation and is a major factor for the desire to win equivalence in graduation requirements between vocational and academic subjects. What has been overlooked—even by Serow (1986), the leading student of the history that links credentialism and academic standards in high school graduation requirements—is the lower social status attached to vocational preparation. That may seem beside the point when thinking about credentialism and the move to make some vocational instruction equivalent to academic coursework. But credentialism, equivalence, and image are hand-in-glove. For the moment, it is enough to underline Serow's note on the social class tie between an academic course of study and desirable scholastic credentials. In sum, the high school by mid-nineteenth century was a middle-class institution "serving more members of that group than other segments of society and tailoring its academic program to middle-class cultural tastes and social aspirations" (p. 20):

> At the other end of the scale, high school enrollment was beyond the financial means of all but a small fraction of working-class families. One obstacle was the rate bill, an additional tax levied against parents based on the number of their children attending public schools. A more important constraint was the prospect of foregoing income. In Massachusetts, the wages of children under the age of fifteen accounted for one-fifth of the total income of working-class families. (p. 21)

Historically, this social-class distinction was supplemented by another form of differentiation that bore directly on the curriculum. As Serow reads the history of the American high school, the course of study prior to 1920 "still consisted almost exclusively of academic subjects, notably math, science, English, Latin, and social studies/history" (p. 28). After 1920, one sees the emergence of the comprehensive high school, whose first objective, Serow thinks, was "to accommodate pupils who were not academically inclined . . . because only four or five free elective credits could be counted toward graduation, steering the less successful pupils to vocational courses was a partial solution" (pp. 28-29). If Serow's commentary is correct, credentialism and academic expectations have not helped build the reputation of vocational preparation.[3]

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[3] There is some evidence that education generally does not help one's economic progress. Eli Ginzberg, certainly one of the most astute specialists in manpower economics, commented in his Foreword to Ivar Berg's (n.d.) study, *Education and Jobs: The Great Training Robbery*, that Berg attacks, with devastating success, the "errors in contemporary thought and action which hold that education is the open sesame to economic well-being" (p. xiv). In agreement with many others, Ginzberg expands his generalization by writing, "In every instance the data proves overwhelmingly that the critical determinants of performance are not increased educational achievement but other personality characteristics and environmental conditions" (p. xiv).

The press for winning an equivalence between vocational and academic study continues, but, in our opinion, does not promise to be successful. (For examples of the persistence of this quest into contemporary times, see Dyrenfurth [1985]; Copa & Johnson [1988]). Some realize what is happening and regret what they see. In Dyrenfurth's (1985) words,

> In state after state, the number of "basic" courses required for graduation is being increased. The invariable result is a single-focus curriculum that gravely underserves students, for they will have little or no time left in their secondary school years to take practical arts and vocational subjects. (p. 43)

In fact, the trend is towards approving or increasing graduation requirements in mathematics, science, English, and social studies:

> There . . . seems to be a disturbing trend towards separate requirements for an "advanced" or college-preparatory diploma. At least 27 states have issued such requirements or are believed to be considering them. Most often, these add credits in math, science and foreign language. Such differentiation raises the specter of a system where all high school graduates are equal, but some are more equal than others. Given the power of credentialism in America, one has to wonder whether the "supercredentials" will result in added value ascribed to graduates holding them or a devaluing of graduates without them. (pp. 43-44)

At least in the early 1980s, Dyrenfurth could report that only "five states have incorporated vocational education as part of high school graduation requirements, and 13 states have enabled its choice among several options that form part of the state requirements" (p. 44). Dyrenfurth did report exceptions—Colorado, Iowa, and Utah—but elsewhere "the general effect of the additions to graduation requirements is that students will have to take their vocational education courses from a significantly reduced block of elective hours" (p. 44). His impression is that "for most students in grades 10-12, 3-4 credits will be the maximum" (p. 44).

Our inclusion of the twin subjects of credentialism and high school graduation requirements is to emphasize a belief that something more compelling than equivalence will have to be reviewed by academicians and laymen alike. This is not to say that art, mathematics, the sciences, and yet other academic fields have minimal contributions to make to vocational preparation. They do. There should be coordination between teachers of vocational-technical and academic subjects, but coordination is a bit loose and informal. Nor are we turning away from specialized vocational-technical instruction or more

exploratory approaches (Copa & Johnson, 1988, p. 18) when those are thought appropriate. The same can be said about the quest for up-to-date "basic skills" (pp. 19-20) or more time in school for attention to the application of theory, of "pure mathematics" for example (p. 24).

A Matter of Image

While most suggestions made for improving vocational preparation are to be taken seriously, they probably will not succeed in improving the image of vocational study in any important way. If we truly aim to increase the motivation of students, to reduce the dropout rates, to make vocational preparation attractive to students and those who influence the students' choice of fields, the image of vocational preparation must be enhanced (Copa & Johnson, 1988, pp. 80-81). As a local counselor noted about vocational education, "We didn't want the picture out there that this is the place you come when you can't go anywhere else" (p. 115). There are other unfortunate images of the vocational program such as allusions to it as an academic "dumping ground." Anyone who feels that all segments of formal education have an obligation to make schooling worthwhile for those who are not thought of as academically able, or who must look forward to earning their living as soon as possible, will not wish to hold aloof from these students. And some will ask, "Why has vocational education almost always been an elective course?" (Copa, 1984, p. 31).

The problem of image is formidable. For one thing, it has a long history—a history that must be understood before a proposal for a new approach can be advanced.

The Image of Vocational Training Being for the Poor

The history of modern education has no lack of examples of how Pestalozzi, and so many others, have bent their efforts to help impoverished youth to learn ways of earning their living. While any number of examples can be cited, one will suffice:

> For nearly 100 years the curriculum in our schools forced students into one of three programs: general, college preparatory, or vocational. In nearly every high school, most students have been urged to select the status road of "college prep," often despite the student's aptitudes, interests or gifts. . . . A few hardy souls, with parents who either didn't care about school for

> schooling's sake or were wiser than the teachers, chose the vocational program (which was often in such low esteem in the school that its quality was lower than of any other program). (Venn, 1970, p. 107)

It bears repeating that economic poverty was coupled with social and cultural deprivation. How else would one understand such a passage as this:

> The Federal initiative of the 1960's . . . addressed . . . the culpability of public education for perpetuating social and economic inequality during a time of general prosperity. The expanded effort on behalf of the disadvantaged that took shape under the rubric of compensatory education was aimed most at the pre-schools and elementary grades, however, educational compensation entered the high schools in the form of remedial, enrichment, and other supplementary activities intended to offset the financial limitations of some communities and the cultural deficits of the low-income family. (Serow, 1986, p. 32)

However commendable the intention, the image of vocational preparation suffered in this credential society. This damaged reputation has persisted for years and was reenforced by coupling vocational preparation with the needs of immigrant youth. For example,

> The presence of a burgeoning immigrant population compounded the already severe urban problems of crime, housing, health care, and unemployment, and aggravated existing inter-ethnic tensions. Compulsory education, therefore, was expected to enhance the public schools' potential as both a socializing and a custodial agency by removing troublesome youth from the streets, from labor markets, and from the cultural influences of immigrant families, while at the same time inculcating basic language and occupational skills. (p. 27)

The attention of this essay is on the ordinary high school, but the beliefs held of the high school specializing in vocational subjects affected the reputation of the vocational programs in the regular high school. Collins (1979) may be exaggerating the unhappy image of the vocational school, but, if he has not painted too gloomy a picture, his report of failure and the reasons for it are not to be ignored:

> A major reason for the failure of vocational schooling is probably that vocational high schools are known as places where youthful troublemakers are sent to remove them from the regular schools. The warfare between teachers and students at a regular high school is considered mild compared with the real gang-violence (often with ethnic or racial overtones) that is reputed to occur at "Tech." Even if a vocational student happens to learn some usable skills, his or her attending a vocational high school is likely to be taken by the discerning employer as a sign of bad character. (pp. 16-17)

Moving to the 1970s, one notes legislation to provide equality of opportunity for minority and low-income youth, and the renewed interest in the non-academic aspects of adolescent development. The non-academic included vocational preparation.

Vocational Preparation is for the Non-Academic

Perhaps the least flattering part of the total image that has dogged vocational preparation has been the conviction so many have held that vocational study really is not study at all, at least not academic, but chiefly suits those who cannot cope with theory. In a real sense, this is a variant of the old dualism that separated hand and mind. Not surprisingly, the assumption that some are "hand-minded" has had its critics. John Dewey is the best known of those who have attacked dualism of mind and body, or at least the hand, together with the social class distinction that has gone along with it.

The damage to the vocational has not been limited to this single and dramatic division between the intellectual and manual. A less invidious separation has been between general education, defined as academic or liberal, and that which is vocational (Roberts, 1957; Röhrs, 1988). In fact, the two types of education may be accepted by someone who means no harm to the vocational. A rather harmless segregation, but no less a segregation, is that which understands that,

> vocational education is designed to make a person an efficient producer, and liberal education is designed to make a person an efficient consumer. Other concepts of vocational education involve the use of such words as utility and practical, in which vocational education is confined within narrow limits to subject matter looked upon with less favor than that of a cultural nature. (Roberts, 1957, p. 9)

One is forced to recognize that any argument that casts some as representing a type that requires hands-on experience, while others are up to working with natural laws, equations, and principles—in short, with generalizations or abstractions of all sorts—has unfortunate consequences. It discriminates in a way that almost always relegates the hand-minded to a "seat below the salt." And even those who side with the vocational-technical-professional continuum add weight to that dualism. They do so by pointing out that more and more jobs require a high level of skill, or that many students do not go on to college, but still wish to be employed although they lack skills. To all this, Pucel (1984) adds,

> It is equally important, however, to realize that vocational education is needed in the high school because it provides a necessary alternative learning method for the education of youth who do not thrive in the academic classroom. (p. 42)

This leaves those who do not do well in the conventional classroom tarred with the brush of being less than bright, less than those honored in a credential society. The usual way of handling subjects is not challenged, although there now are very persuasive ways of modifying teaching as well as what is to be mastered (see the publications of the Center for Occupational Research and Development, Waco, Texas). Pucel has removed the sting of his comments by describing the classroom presentation of subjects as all too often "artificial." In his words, "In vocational classrooms, math and science and English are not taught in an artificial environment; they are taught when they are needed to do practical tasks" (p. 44).

Is it a fact that there are at least two different types of intelligence lending themselves to vocational *or* academic study? The answer is not in. Until we know more about the typology of learning and how it affects teaching, our attention will be on the collaboration of teachers working in both worlds, the vocational—including the technical and professional—and the academic. The hands-on, practical, or applied will not be lost from sight; there will be times when application is highly relevant. But at no time will teaching and learning lack the academic goal of understanding significant movements, events, or challenges—all prime ingredients of general education. We admit that collaboration will not be easily achieved. Teachers are prepared as specialists. Those who teach them are specialists. Bridging the specialties will be a major challenge.

AGRICULTURAL EDUCATION

Introduction

The purpose of this section is to suggest that agricultural education touches on topics whose study—under collaborative guidance—would do a great deal for a high school student's general education. There are, of course, benefits to be gained by both the agricultural education and the academic programs. That is, both vocational and academic courses would be strengthened by the collaboration, assuming that the collaborating teachers have undertaken collegiate studies in advanced general education. We realize that this cannot always be assumed; however, when we visited with university faculty both in vocational and academic fields, there was unconditional enthusiasm for the idea of collaboration in the preparation of teachers. In sum, the collaboration proposed is realistic.

The distinction between teaching for agricultural literacy and teaching to prepare a student in vocational agriculture[4] does not suggest that there are few opportunities for the collaboration of vocational and academic fields in agricultural education. As any farmer who has made use of the sciences and of the economics of marketing will attest, that is not true. Moore (1987) extends our horizon when he writes, "Agriculture encompasses the study of economics, technology, politics, sociology, international relations and trade, and environmental problems, in addition to biology" (p. 8). And yet the Committee on Agricultural Education in Secondary Schools (1988) acknowledges that,

> The majority of American children enter school knowing little about agriculture and leave after high school graduation only slightly better informed. Few systematic educational efforts are made to teach or otherwise develop agricultural literacy in students of any age. Although children are taught something about agriculture, the material tends to be fragmented, frequently outdated, usually only farm oriented, and often negative or condescending in tone. (p. 9)[5]

It is to be argued that high school graduates will not have an adequate general education if their teachers have not likewise received a general education fortified by

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[4]This nomenclature is taken from the report of the Committee on Agricultural Education in Secondary Schools (1988), Board of Agriculture, National Research Council. The Committee's definition of vocational agriculture includes classroom and laboratory instruction, supervised occupational experiences, and membership in a local unit of the National Future Farmers of America (p. 2).

[5] The Committee's document has it that, "Less than 5 percent of the high school population enrolls in a 3- or 4-year vocational agriculture education program" (p. 26). Pages 28-31 of this report are especially relevant.

collaborative efforts between agricultural education and academic instructors. Though most illustrations will be from the social studies, other academic fields are equally promising.

A cursory review of the development of agriculture in this country suggests possibilities for collaboration. How inclusive the collaboration might be is hinted at by a single, albeit a rather lengthy quotation from the Committee's (1988) report:

> the teaching of agricultural literacy need not require major curriculum reform. It will require innovative, classroom-tested materials. . . . A biology course that already includes modules on genetics could readily be taught some agricultural examples. Students could learn from examples dealing with production differences among major crops, such as wheat, soybeans, corn, and vegetables. In a plant pathology module, students could learn about major crop diseases and the role of insects in disease transmission. Classroom discussion of topical issues, such as biotechnology, could greatly increase student interest in basic scientific concepts. The study of food and agriculture encompasses production, trade, processing, distribution and marketing. This offers an opportunity to teach social science topics such as economics, civics, governmental operations, sociology, and managerial sciences as well as issues that relate to nutrition, famine, and obesity. In history class, students can study not only the expeditions, voyages, wars, and treaties through which new lands were acquired, but they can also read about how pioneer families grew their first crops, transforming the new lands into a nation. Mathematics courses, particularly computer exercises, could include many interesting examples from agriculture, foods, and nutrition. (p. 10)

This quotation only touches on a few examples; many easily can be added (see pp. 14-19; 39-40). And not a few of these will be suggested by the history of agricultural education in the United States. A good example would be the influence on one of the pioneers in agricultural education, Rufus Stimson, by his teacher, the philosopher and psychologist, William James. The collaboration of a teacher of agricultural education and a teacher of American history could capitalize on this use by Stimson of James' thought for the enrichment of a high school student's general education.

Agricultural Literacy and Opportunities for Collaboration

The prefatory comments by the Committee on Agricultural Education in Secondary Schools (1988) makes readers aware of the fact that agriculture in this country will be formed by forces that can be understood only when a high school general education has been gained by collaborative teaching. A quotation by the Committee illustrates this:

> In the 1980s, many forces have challenged American agriculture and education. These forces include demographics; urbanization; rapid growth in worldwide agricultural production capacity; domestic farm and trade policies; life-style changes; global competition in basic and high-technology industries; the explosion in knowledge caused by increasingly sophisticated computers, digital equipment, and biotechnological techniques; specialization within the professions; public expectations about the role of schools, the food supply, and public institutions. (p. v)

Not one of the forces itemized in this Preface can be studied without going beyond the confines of agricultural education. It is equally true that no high school education can be thought of as offering an adequate general education if it does not see agriculture as an essential part of modern life. This fact is highlighted further by the Committee:

> The committee envisions that an agriculturally literate person's understanding of the food and fiber system includes its history and current economic, social and environmental significance to all Americans. This definition encompasses some knowledge of food and fiber production, processing, and domestic and international marketing. As a complement to instruction in other academic subjects, it also includes enough knowledge of nutrition to make informed personal choices about diet and health. (pp. 1-2)

In these words is not only a call for our type of collaboration, but a note on the interdependence of the vocational fields. While not an emphasis in this essay, it suggests that vocational specialist teachers should collaborate among their vocational fields. Recall the final sentence of the quotation: "As a complement to instruction in other academic subjects, it also includes enough knowledge of nutrition to make informed personal choices about diet and health." Agricultural education and that segment of home economics education are to go forward in tandem.

The more collaboration there is, whether intradisciplinary or interdisciplinary, the less need there is for separate courses devoted to acquiring agricultural literacy. If all students are to be exposed to "some systematic instruction about agriculture" and new courses are not likely to be added, collaboration can result in enriching existing courses. We agree with the Committee (1988) that systematic instruction about agriculture "could be incorporated into existing courses" (p. 2). As early as the close of the eighteenth century, those associated with the Philadelphia Society for the Promotion of Agriculture called upon the legislature to "enjoin on . . . schoolmasters the combination of their subject of agriculture with other parts of education" (Stimson, 1942, p. 3). There is precedent, but it is in the elaboration of what is to be incorporated that one learns how useful it would be to

have the collaboration of those teaching vocational agriculture with their academic colleagues. Additional testimony is given by the Committee:

> technological and structural changes in agricultural industries [that] have enlarged the scope and number of careers. In the committee's view, vocational agriculture should give students the skills needed to enter and advance in careers such as farm production; agribusiness management and marketing; agricultural research and engineering; food science, processing, and retailing; banking; education; landscape architecture; urban planning; and other fields. (pp. 2-3)

In itself, this extended definition of vocational agriculture does not spell out occasions for collaboration, but we can easily imagine the fruits of interdisciplinary instruction. Consider the implication of just one of the Committee's conclusions:

> Production agriculture—farming—still dominates most programs [of agricultural education], although it no longer represents a major proportion of the jobs in the total agricultural industry. Traditional vocational agriculture programs and the student organization, the FFA [Future Farmers of America], are not meeting the broader needs for agricultural education generated by changes in the food and fiber industries and society as a whole. (p. 3)

Later, the Committee returns to this same conclusion:

> The dominance of production agriculture in the curriculum must give way to a much broader agenda, including the utilization of agricultural commodities, agribusiness, marketing and management in a global economy, public policy, environmental and resource management, nutrition, and health. (p. 6)

Again, one must take it for granted that the collaborating teachers are up to the challenge presented them by the Committee and that their own general education will be broad enough to make fruitful collaboration possible. For example, it would be a good idea to have the teacher in vocational agriculture collaborate with a social studies teacher, assuming that the social studies teacher's preparation has included enough economics to make sense of the challenges facing agriculture in the world today and tomorrow. We cannot assume that the preparation of the social studies teachers always will be adequate, but we can be certain that no social studies preparation is up to the mark without some study of economics, if not the specialities of agricultural economics or the economics of education. The same can be said of American social and cultural history. Nor can the teacher of agricultural education be ignorant of the development of her or his own field and

the nature and role of agriculture. All of this challenges those who teach teachers. Without their collaboration, our recommendations are not likely to have a chance to be useful.

Collaboration in Reflection on Agricultural Development in the United States

The history of agricultural education in the United States has been neglected in high schools to the detriment of the students' general education (see Moore & Borne, 1986; True, 1929/1969; Woods, 1943). Even those enrolled in agricultural courses could have a greater understanding of agriculture and its role. Consider only the recent past in which "production agriculture—farming—still dominates most programs [of vocational agriculture], although it no longer represents a major proportion of the jobs in the total agricultural industry" (Committee on Agricultural Education, 1988, p. 3). The flatness of this comment is given historical perspective when the Committee later states that while in 1917 about thirty percent of the U.S. population lived on farms, today "the percentage of the overall population is about 2.2" (p. 25). While the teacher of agricultural education or vocational agriculture will know what this implies for the young person who sees him- or herself as making a living from farming, the implications of this demographic fact deserves to be understood by all young people who graduate from secondary schools. Collaboration with a teacher whose preparation includes American social and cultural history makes that understanding less a matter of chance. In exactly the same way, collaboration between a teacher of agricultural education with a social studies teacher whose background includes some economic history increases the likelihood of insight into the following:

> U.S. industries that serve agriculture by producing, processing, marketing, and preparing food and fiber products for consumers account for about $700 billion in economic activity each year, which is about 16.5 percent of the gross national product. (p. 25)

This portrayal of the diminishing role of farming is not just one more bit of information to be tucked away and soon forgotten. It is a poignant fact of life. Agricultural teachers alone are not likely to communicate how quickly this has come upon us, upon the students' future most of all.

Woods (1943) emphasized the need to increase the efficiency of the individual farmer in order that production be increased. More than this, Woods argued for an increase in the number of farmers:

> The major occupation of rural society is agriculture. . . . According to the 1940 census, there are 6,096,799 farmers in the United States . . . 164,778 farmers enter or need to enter farming each year if the number of farms and farmers is to remain constant. (p. 199)

In all fairness, Woods does recognize that "Problems of economic and managerial nature, including agricultural economics, land management, marketing, and soil conservation, are much to the fore" (p. 202). But his stress is placed on agricultural production. Should not all high school graduates be expected to understand that this assessment of agriculture is to change? And is not this understanding to be part of their general education? If the answers are yes, the plea for collaboration is to be recognized as a help in reaching that end.

Historical review offers the student insights that reach beyond understanding the place of agriculture today. For example, there is the question of why so very few have even rudimentary knowledge of agriculture in today's world. In part, the answer is one that applies to all vocational fields. The vocational subjects are associated with giving the poor and the immigrant the means of making a living. One of the first schools in the United States specializing in agriculture was operated by the Salzburger family in Ebenezer, Georgia. The school was intended for orphans learning to farm. It may be that this bit of history, even though it has up-to-date implications for the lack of esteem accorded vocational study, goes beyond what can be expected for the grasp of the high school student (Committee on Agricultural Education, 1988, p. 54). It does bear on the depth of insight that the collaborating teachers should have, however. This last must not be forgotten; there is no need to iterate that little can be expected of high school education if teachers are not well tutored.

In this instance, the tutoring is in the modern history of education which is studded with examples of vocational education being promoted for the well-being of children of the poor, especially for children of the rural poor. No collaborating team should be unknowing of Pestalozzi in the later eighteenth century and Philip von Fellenberg in the first half of the nineteenth (True, 1929/1969; Beck, 1981, 1988b). It is with memory of their precedent of charity education that True's classic opens with reference to European

developments, among the most important of which were Pestalozzi's undertaking with destitute children of peasants and von Fellenberg's combined manual labor schools and gardens. The social class differentiation that is basic to an understanding of the status accorded vocational preparation is prompted by von Fellenberg operating two schools—one for children of the relatively well-to-do, who were not destined to earn their living from the mental exercise provided by the practical application of manual training in shop and garden, and the poor children who were.

The philosophy, coupled with the ventures of these European reconstructionists, pointed to the hope that schooling could have practical application to everyday life. Improving agricultural practice, not charity, was the goal, and Central Europe led the way. The teachers of vocational agriculture and social studies, both of whom may be unknowing of this segment of history, stand to gain. There is significant American social, economic, and cultural history locked in the history of scientific study that was prompted by the desire to make farming more productive. Most students—and not only high school students—will not know that the history of science in this country often was tied to agriculture. Societies for the promotion of agriculture had their birth in the eighteenth century; the first was chartered in Philadelphia in the Spring of 1785. On the fourth of July the next year, George Washington and Benjamin Franklin were elected members. Informing youth was an immediate objective. In 1794, with this as a central objective, the Philadelphia Society for the Promotion of Agriculture charged a committee with readying "a plan for establishing the State society for the promotion of agriculture, connecting with it the education of youth in the knowledge of that most important art" (Stimson, 1942, p. 3).

The development of agriculture in this country depended on progress in the utilization of science, a point that had been demonstrated in Europe (True, 1929/1969, p. 4). The history of science in agriculture is an impressive part of American cultural history and readily lends itself to study by high school students helped by the collaboration between teachers of agricultural education and science. In a world whose countries are demonstrating their interdependence, a high school graduate's general education should show how agriculture, infused with science, has been a forerunner of the "global village." For example, Humphrey Davy, whose career in chemistry spanned both the eighteenth and nineteen centuries, "began researches in agriculture in 1803 and 10 years later published his *Elements of Agricultural Chemistry*, a book well known in America" (p. 4). Many other

examples might be paraded, not only in chemistry, but also in botany and geology.[6] When a call went out for proposals on the forming of a national university late in the eighteenth century, Benjamin Rush of Philadelphia responded with a plan that called for a university whose subjects of study would include "agriculture in all the numerous and extensive branches" as well as "those parts of natural philosophy and chemistry which admit of an application to agriculture" (p. 21). As the Committee on Agricultural Education in Secondary Schools (1988) wrote, "Agricultural education in the nineteenth century differed significantly from other occupational education in content and approach. An emphasis on science characterized most programs. Rural educators viewed instruction in science and nature as a way to make public education relevant to rural life" (p. 55). The high school student should be challenged to think of ways that this is happening today:

> The high school curriculum in many states included agronomy, laboratory and field work, rural engineering, and farm mechanics. . . . These early programs served two purposes: one related to the out-migration of youth to the cities, and the second to the need to provide new skills and learning potential to those children that remained on the farm. (p. 55)

Social studies has at least as much to contribute towards a high school general education. Mention just has been made to the out-migration of youth to the cities. Even though the high school student cannot be expected to master a great deal of demographics, such high spots as population movement, the growth of cities, the development of suburbs,

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[6] In his earlier publication for the U.S. Department of Agriculture, True (1929/1969) added to the list that,

> "Frederick Accum (1769-1833) established in London a school of chemistry with a laboratory to which some students from the United States went, including Prof. Benjamin Silliman, sr., of Yale, and Prof. William Peck, of Harvard. Boussingault (1802-1887), professor of agriculture in the Conservatoire des Arts et Metiers in Paris from 1839, made and published many experimental investigations in general and agricultural chemistry, which had much influence in the United States. Students who became leaders in agricultural science in America were trained in Liebig's (1803-1873) laboratory in Germany. His *Chemistry in Its Application to Agriculture and Physiology* (1840) and *Animal Chemistry* (1842) became well known here. The works of Buffon (1707-1788) and Cuvier (1769-1832) in natural history, and of Linnaeus (1707-1778), the Jussieu family, Saussure (1767-1845), and Duhamel (1700-1781) in botany early found their way to this country. Among the early geologists was William Smith (1766-1839), who published the first geological maps of England and wrote on irrigation, and William Maclure, a Scotchman and merchant, who lived many years in the United States and made the first geological map of this country" (pp. 4-5).

More will be said of this when the New Harmony community is mentioned in the discussion of industrial technology education.

and the concept of the metropolitan region are far from trivial and belong in a generous secondary level of general education.

The same can be said about the distribution of agricultural labor; for example, the widespread use of slave labor in the antebellum South or such dramatic portions of American cultural and social history as Populism, Henry George's agrarian idea of a "single-tax," or the parts in American history played by the National Grange and the Knights of Husbandry. Our responsibility does not include delimiting the scope of the American story that belongs in a high school graduate's general education (Goodwyn, 1976; True, 1929/1969; Young, 1916). What we should do is touch on a few times when agricultural education could be joined with an academic subject in a manner that will add to the substance of a high school general education. In the survey of American social and cultural history, it is astonishing how many times agriculture has been crucial. And our timeline does not stop, although the agricultural schools and academies of the nineteenth century definitely were a sign that many people took the challenge of agricultural improvement seriously. There was a national movement for education relating to agriculture and other industries (True, 1929/1969, pp. 35-37, 88, 89-94). Even though the pivotal Morrill Land Grant Act, passed July 2, 1862, and amended subsequently, was not conceived to upgrade agriculture or agricultural education, collaborating teachers of agricultural education and social studies can date the beginning of formal instruction in agricultural education from the passage of this Act. In the words of the Committee (1968), "This Act reflected the importance that policy-makers placed on agriculture. It provided for the support of state colleges where citizens could be taught agricultural and mechanical arts" (p. 54). What Morrill sought to do was provide a scientific counterweight to classical, literary college education. Colleges with the scientific emphasis were to be called agricultural colleges.[7]

Aside from governmental support of vocational studies, the central question that nagged high school administrators and teachers in the mid-nineteenth century remains on the agenda today. That is, how can agricultural education be integrated with academic education? By the turn of the century, some four hundred high schools "offered instruction

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[7] In 1867, Morrill visited the Sheffield Scientific School of Yale and explained to one of the professors that he "wished the bill to be broad enough so that the several states might use it to the best advantage. For this wide latitude of use was necessary [for] all the colleges should be the same in spirit and essentially of the same grade, that is—*colleges* in which science and not classics should be the leading idea. He did not intend them to be *agricultural* schools. The title of the bill was not his, and was not a happy one. A clerk was responsible for the title" (True, 1929/1969, p. 108).

in agriculture or its application to botany, chemistry, or zoology" (Committee on Agricultural Education, 1988, p. 56). But this did not involve any collaboration and, consequently, cannot be counted as a starting point. Perhaps the beginning came not with the Morrill Land Grant Act, but with the Smith-Hughes Act of 1917 (P.L. 347), which included specific provisions for agricultural education: "Each state would receive funds for vocational agriculture according to the proportion of the national total of rural population it had within its borders" (McClure, Chrisman, & Mock, 1985, p. 64). There is no doubt that the Smith-Hughes Act was epochal for all of vocational education, not agricultural education alone.[8] While that generalization is not in dispute, high school students should not be left with the thought that the Smith-Hughes Act had anything to do with educational collaboration. However, the Act was a turning point in the Federal support of vocational preparation. The social studies teacher should be able to prompt student thought on the role of the Federal government in the financing and regulating of public education. And what of state and local government? The teacher of vocational agriculture, as any other teacher in vocational preparation, can supplement this key study and discussion. For example, the teacher of agricultural education could point out that rural influence in some state legislation is as evident today as it was in the Smith-Hughes Act which President Wilson signed on February 23, 1917. In that Act,

> The importance of the rural influence and the high priority given agriculture by Congress can be noted in that federal funds could be used to train and pay only the supervisors and directors of agricultural programs. Persons holding similar positions in home economics, industrial, and trade programs were not eligible for federal funds. (McClure et al., 1985, p. 64)

One conclusion is that it is part of a high school student's general education to think of the relation of government to education. Vocational agriculture provides a first-rate opportunity for this reflection. But that does not exhaust the possibilities of collaboration. A question that surely troubles many teachers of vocational agriculture is whether their work permits too little concern for agricultural literacy and too much care for helping their students to become more productive farmers. What of provisions in this early legislation for black Americans? McClure et al. (1985) have a salient paragraph that puts the matter succinctly:

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[8] As McClure et al. (1985) note, "Allocations for industrial, and trade subjects, and home economics would be made according to each state's proportion of the total national urban population" (p. 64).

> The funds appropriated under the Smith-Hughes Act were restricted for programs in less than college-level courses. The funds were distributed on the basis of the population of a state and its proportion of the national population. Unlike some of its predecessors, the Smith-Hughes Act did not contain provisions protecting the interests of racial minorities. The individual states drew up their plans for vocational education and the extent that programs for blacks were included was a matter left to the discretion of each state. As a result, programs for blacks did not receive the same level of funding as did programs for whites. This was particularly true in the southern states that contained the greatest percentage of the black population. Rarely were vocational programs for blacks funded in accordance with their percentage of the population of a state. A disproportional amount of the funds from Smith-Hughes went to support vocational education opportunities for white Americans. (p. 75)

The legislation also did not touch another issue. Vocational agriculture runs on a different educational track than college preparatory courses. The Committee on Agricultural Education in the Secondary Schools (1988) discusses this split in tracking:

> College became much more accessible [in recent times], and schools' curricula reflected the need to prepare students for advanced education. College-bound and vocational students began following different educational paths. By tracking college-bound and vocational students after graduation, educators learned more about the types of students who pursued the two paths, and the types of jobs the students took after graduation. As a result, science and academic skills came to be considered preparation for college and assumed a lower priority in vocational agriculture.

Origins of the Project Method

While the unenviable status of vocational education is well known, the development of the field does not warrant the low esteem in which it is held No sector of the vocational field more truly makes a case for this claim than agricultural education. And no example better illustrates the interdependence of the vocational field than the contribution of Rufus Stimson, supervisor of agricultural education, in what Moore and Gaspard (1987) term the Quadrumvirate (an association made up of David Snedden, Charles Prosser, Charles Allen, and Stimson), a team put together by Snedden, a professor at Teachers College, Columbia University, who became the Commissioner of Education in Massachusetts on November 15, 1909. Although Stimson dominates our allusion to the background of the project method, the student of vocational agriculture will learn from his teaching that the historical record of modern vocational agriculture shows that this field brought the pragmatism of William James into the classroom. Whether explaining the purpose of the real agricultural

experiences offered by the Future Farmers of America, or the insistence that what is learned in the classroom be applied in agriculture or agribusiness, the teacher of vocational agriculture will be using a theory and practice that was advocated by William James. The hub of pragmatic theory articulated by James and others is that the test of an idea's truth is attested by its success in predicting, in advancing the solution of a problem, or, in a word, in being effective.

One can hope that the social studies teacher has been exposed to the essentials of pragmatism in American thought and can elaborate on what Stimson brought to the four-member team that developed a plan for vocational preparation in the Massachusetts public schools, one that inspired like efforts in other states. It will be up to the vocational agriculture teacher to explain why the system of vocational preparation included industrial education, but nothing more of a comprehensive system of vocational preparation (Moore & Gaspard, 1987, p. 3).

Only a sliver of the historical background of the Massachusetts trial with vocational education and its direction by Snedden will be examined. Omitted is the fascinating account of Snedden's stand vis-a-vis that of John Dewey and the former's stand on social efficiency in relation to vocational preparation. (For more information on the above, see Beck, 1989, in press; Wirth, 1972, 1974, 1977; Drost, 1967.) The essential historical background is that after Snedden became the Massachusetts Commissioner of Education, prime among his charges was to shape a program of vocational education compatible with general (academic) schooling. To that end there were to be two deputy commissioners:

> William Orr, the principal of the Springfield Classical High School was hired as deputy commissioner of general [academic] education and Charles Prosser (Beck, in press, p. 80), a former graduate student of Snedden's, was hired to serve as the deputy commissioner for vocational education. . . . Within a year, Prosser hired two assistants, Charles Allen as supervisor of industrial education and Rufus Stimson as supervisor of agricultural education. These four set about implementing a program of vocational education in Massachusetts that has served as a model for the rest of the nation. (Moore & Gaspard, 1987, p. 5)

The intellectual background of the four who make up the Quadrumvirate is impressive. To acquaint readers with Stimson, whom Moore and Gaspard dub "the philosopher," the two write that,

> He was born February 20, 1868 on a farm near Palmer, Massachusetts. Stimson attended Colby College in Maine for two years and then went to

> Harvard University where he studied philosophy under William James. The works of Socrates, Rousseau, Pestalozzi, and Herbart occupied a prominent place on his desk. While at Harvard he took a course in the theory and art of teaching given by Paul H. Hanus. Stimson received the A.B. degree in philosophy in 1895 and the A.M. degree in 1896. He next attended the Yale Divinity School and received the B.D. in 1897. From 1897 to 1901 Stimson was a professor of English, ethics, and public speaking at the Connecticut Agricultural College (now the University of Connecticut). In 1901, Stimson was appointed acting president and was made president shortly thereafter. (pp. 8-9)

On his fortieth birthday, Stimson resigned and accepted the position of Director of the Smith Agricultural School in Northampton, Massachusetts. While one can wonder why Stimson made the change, his interest in ethics and service to mankind taught in his program in divinity suggests that Stimson felt that he could affect lives more directly:

> In the fall of 1908 Stimson assumed the directorship of the new secondary school and prepared a brochure about the new school. In the brochure he outlined a new plan for the teaching of agriculture. Students will learn agriculture at the school but apply what they have learned to their home farms through the use of home projects. (p. 9)

The influence of pragmatic theory on the "home project method" is not difficult to imagine. And the method impressed Snedden and Prosser who persuaded Stimson to join their effort. As the later discussion of home economics will show, the project method was not limited to vocational agriculture. Nor was it circumscribed by vocational preparation. We are not prepared to discuss how it became known to William H. Kilpatrick at Teachers College, Columbia University, but it did—perhaps by way of Snedden, whose connections with Teachers College remained alive all through his years in Massachusetts. While Kilpatrick is remembered as the father of the project method, the roots of that method pass from James through Stimson. Recognition of the part played by vocational agriculture in the development of pedagogical theory and practice, while not new, can be repeated for the benefit of a student's feeling that she or he is one of larger community of learners, a community that is not to be divided into two cultures, the one vocational and the other academic.

In Conclusion

The purpose of this section has been to argue the case that teaching resulting from the collaboration of teachers in vocational agriculture and academic subjects can benefit the general education of high school students. This assertion pivots on the important role that agriculture has played in this country's history and continues to play here and worldwide. Agricultural literacy is not a luxury. Although it is as essential as any other form of literacy, it cannot be won in the high schools if the vocational teacher is isolated. We have provided all too few examples of how collaborative teaching can help to both overcome agricultural literacy and increase chances for a student to glean a deeper and increasingly more satisfactory understanding of American history and the role of agriculture in science, business, and politics.

BUSINESS AND MARKETING EDUCATION

Introduction

There is a parallel between the discussion of business and marketing education and that of agricultural education. Both have had a strong tradition of vocational preparation, but the two have not made an equal effort to realize the potential contributions their respective fields could make to general education. Leaders in business and marketing education have been specially attentive to preparing students for the job market. While this ambition is proper for any vocational field, it can lead to neglecting to make contributions to a general education.

Literacy in business and marketing is important for general education at the secondary school level. Further, the Policies Commission for Business and Economic Education (PCBEE) (n.d.) supports this in their *Policy Statements, 1959-1989*, which underlines that body's hope that the vocational and general be blended. What we advocate simply takes the Policy Commission's recommendations a step further, from blending to collaboration. As always, collaboration is intended to strengthen both the vocational and the academic studies and not to detract from either.

Business and marketing education have had to overcome a vocational specialization that has nearly monopolized the critical literature. To be sure, there has been growing admission of the social responsibilities of business in marketing/distributive education. Business education had taken the lead as we will show in a reference to Paul Lomax and his colleagues at New York University. This has caused leaders in the field to make considerations that have little to do with vocational preparation. But being in the lead is not the same as seeing the role that business and marketing education can play in the well-rounded education of the adolescent. It is only recently that the phrase "marketing 'ucation" at times has substituted for "distributive education." Note the vocational coloration apparent in Coakley's (1972) definition:

> Distributive education is a program of vocational instruction. Its purpose is to help those enrolled qualify for gainful employment in distributive occupations, or in occupations in which a distributive function appears, according to their individual career goals. (p. 1)

There was no change in the occupational emphasis when three years later Crawford listed three "Basic Beliefs Concerning Definitions" at the opening of her "A Philosophy of Distributive Education—1975" written jointly for the late National Association of Secondary State Supervision of Distributive Education and the Council of Distributive Teacher Educators. The three beliefs were as follows:

1. *Distributive education* is a vocational instructional program designed to meet the needs of persons who have entered or are preparing to enter a distributive occupation or an occupation requiring competency in one or more of the marketing functions.

2. *Distributive education*, as a vocational program, offers instruction in marketing, merchandising, management and personal development.

3. *Distributive occupations* are those occupations followed by persons engaged primarily in the marketing, merchandising or managing of goods and services, at all employment levels. (p. 1)

As we have said, without questioning the vocational intent of a program that is preparatory for employment, one can argue that vocational readiness is not the only objective that should guide business and marketing education. A case for literacy must indicate what business and marketing education has to contribute to a high school general education.

More than thirty years ago, Roberts (1957) pointed out the direction in which business education was heading:

> Business education for general needs is one of the non-vocational practical arts areas of general education. It is designed to assist individuals to develop a better understanding of the business system and to enable individuals to make more efficient use of the goods and services of industry, agriculture and business. This type of business education has received more emphasis in recent years and has been responsible for the introduction of a number of new subjects, such as general business, consumer business, business law and economics into the curriculum of the public secondary schools. The general business education emphasis has also resulted in some modifications in the objectives and techniques of teaching certain established subjects, such as bookkeeping, shorthand, and typewriting.
>
> Vocational business education is designed to develop special competencies in marketable business skills and techniques. It includes specialized training for secretarial, stenographic, accounting, clerical and sales or distributive occupations. The vocational emphasis in business education appeared several decades before the general education emphasis. Business courses of a vocational nature were first referred to as commercial courses, and this

> term is presently used in some schools. Changes in the needs of office and sales workers, as well as the emerging needs of individuals for business knowledge and skill, brought about a new emphasis and the term business education has come into use as more descriptive of this new emphasis. (p. 432)

Thoughts on the relation of business and marketing education with secondary general education will close with thoughts inspired by Lomax, one of the early leaders of business education (Sapre, 1981). In an article published in 1935, Lomax challenged the educational profession with a rhetorical question. He was thinking of economics and whether it belonged in the preparation of the teacher of business or the teacher of social studies. Our response is that this is an improper question. The placement is not an either-or decision. Business and marketing education furnishes material for study and discussion in both settings. The instrument for the inclusion of economics in business and marketing courses and the use of business and marketing as a source for understanding the economics of the modern world is the collaboration of teachers in such an academic subject as economics or any other social science. This collaboration is more likely to happen if the professors in both the vocational and academic fields themselves have collaborated.

Literacy in Business and Marketing

The PCBEE (n.d.) *Policy Statements* is not unlike the National Research Council's *Understanding Agriculture* in that it offers a blend of both general and vocationally specific education. That is, in the Foreword to the *Policy Statements*, the PCBEE claims that "Business education in American secondary schools consists of both general education and vocational preparation for store and office occupations" (p. 1). While a "blend" falls short of what we hope for from the collaboration of business and marketing and academic faculty, it is promising to read of an awareness that *all* high school students can profit from the study of what the PCBEE dubs business and economic education:

> This message to secondary school administrators deals with the business-economic phases of general education because we believe that it is imperative that ALL young people be adequately prepared to deal with business-economic issues and problems.
>
> We hope, however, that secondary school administrators will seek also to strengthen the vocational preparation of young people who are seeking business careers upon graduation from high school. (p. 1)

The PCBEE policy statement would seem to bond business education with economics. In the bonding, business education profits from the injection of knowing some economics. Unhappily, there is no suggestion that the academic study of economics in social studies has anything to gain from business education and marketing. The reciprocal gain is something to be hoped for from collaboration.

Thirty Years: Time for Change

Reflection on literacy in business and marketing education benefits from clear statements of definition and intent written "then" and "now." Illustrative of what commanded attention some thirty years ago was Beaumont's (1958) "Changing Concepts of the Scope and Function of Distributive Education." The shift in nomenclature from retailing to distributive and then to marketing education is one hint that educators interested in promoting general education have an opportunity in this bit of history. "The changing scope of distributive education," of which Beaumont wrote, "was a quantitative one." Beaumont urged his readers to ready students for new opportunities in retailing, in the petroleum industry, agriculture and agribusiness, insurance, and real estate. However, he felt the major opportunities were in "administrative management":

> In the early phases of the distributive education program, instruction was primarily developed for employees. Instruction for employees included the cooperative part-time programs and courses, primarily in salesmanship and product information. These courses were extended to include many other areas of employee training. In addition, courses were developed for supervisors and operational phases of management.
>
> Currently we find a trend toward increasing the development of management programs. Administrative management courses are widely conducted for proprietors and managers of distributive businesses. These courses are conducted particularly for proprietors of small business establishments. Large business has long been aware that management is a scientific tool which can be learned and practiced. Small business is rapidly learning that it must use management as a scientific tool if it is to compete in the present American economy. (p. 10)

Perhaps it was the challenge of management that led the way for the substitution of marketing education for distributive education and the latter for retailing. The shifts in name recognizes that decision making that is essential to managing. More worthy of attention, however, is the opportunity that modern practices in business and marketing give

young people seeking a relevant general education. The PCBEE (n.d.) recommends that business and marketing courses include study of the role and costs of government, creative growth of the economy (which surely invites thought about what constitutes creative growth), factors of cost in producing goods and services, the challenge of inflation and of deflation, labor-management relations and the management of personal economic affairs (pp. 1-2). Although this last invites the collaboration of the business and marketing teacher with someone in home economics, with special attention paid the family, it is the possibilities of collaboration with teachers of academic subjects that is most intriguing. The PCBEE words this aim clearly:

> The business program provides for the general education needs of all students in the areas of business and economic understandings. Business *as one of the social studies* [author's italics] warrants consideration as general education in the secondary school. The well-formulated program reflects the dual responsibility of the department. The economic life of our society is complex; to understand it, to respond to its demands as an enlightened citizen, requires knowledge. The business program must not overlook the business and economic concepts that must be taught to all students. (p. 15)

We would draw attention to the claim that business education is one of the social studies. Collaboration is the best guarantee that business and marketing education will be enriched, while the social studies also gain.

The collaborative possibilities are there, but the bond is an unnecessarily narrow one. It is no less valuable for being limited, but the restriction to economics and, therefore, to social studies, is overly constraining. Other academic fields also can be counted on.[9] It remains true that economics plays a stellar role in much of modern life. This is recognized in the PCBEE (n.d.) policy statement touching on "The Role of Business Education in Economic Education" (p. 21).

Granted, many other disciplines, the arts among them, intellectually nourish all students, including those in business and marketing. Our responsibility is to demonstrate what can be lost to education by turning one's back on collaboration or, in more positive

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[9] This is not a new idea. For example, Struck (1945) certainly saw the possibilities in his *Vocational Education for a Changing World*, as did Byram and Wenrich (1956) in their *Vocational Education and Practical Arts in the Community School*. In the late 1970s, the Minneapolis public schools, in a series entitled *Science/Occupational Education Related Ideas Guide*, undertook to pinpoint the relevance of mathematics and the sciences for business education. To be sure, the Minneapolis series did not anticipate the collaboration of teachers, but the idea of integration was a move in the direction of collaboration.

terms, how business and marketing, together with social studies and economics, stand to gain from collaboration. In the words of the PCBEE (n.d.),

> If the school . . . is committed to as broad a general education as can be planned, then the business program may have to be streamlined considerably for those who choose this sequence for vocational purposes. At the same time the department must see its role in providing appropriate general education offerings. (p. 15)

We suggest that collaboration is a substitute for streamlining. To repeat an earlier rejection of balancing, sharing the course of study in such a way that a few more hours or credits are given the arts, social sciences, and humanities does not achieve true cooperation. Team teaching comes closer to collaboration, but is not close enough. Given this reservation, we can agree with PCBEE in urging teachers in business and marketing education to "Team-teach general business and economics as an integrated effort at gaining economic analysis skills" (p. 25). There is no need for reservations when reading the PCBEE urging of teachers in the field to "Work with social studies and home economics teachers to identify the performance goals in applying economic principles to personal and civic problems" (p. 25). We would substitute collaboration for the phrase "work with."

Consider the following statement of the PCBEE (n.d.):

> Cooperation is vital within all areas of business and office education to consider the means for meeting the new educational challenges of our society. Cooperation can be focused on advances in strategic areas.
>
> 1. Between business education and the arts, humanities and social sciences to bring about a balanced education program—appropriate to the needs of an advanced technological society. (p. 20)

Unless concrete examples are offered for the cooperation or balancing, we are afraid that this remains at the level of rhetorical hope. Our recommendation for collaboration is not meant to advocate omitting arts and humanities from the curricular program of any high school student. They are needed, but an effect on the business and marketing courses, and on the social studies courses as well, calls for a collaboration that is not to be replaced by balancing the program of studies.

Consider another example. If one agrees that a graduate of a high school should be acquainted with the American economic system, then one can agree with the PCBEE (n.d.) that "such subjects as general business, consumer economics, business law, economics,

business management, and bookkeeping make contributions to an understanding of our American economic system" (p. 12). Would a citizen have a greater grasp of that economic system if those teaching business and marketing had been teamed with teachers in the social studies, whose grasp of economic forces were joined with sophistication on the relation of economic with political and social movements? Then, too, a student's general education will be inadequate if her or his understanding stops at the American shoreline. Collaboration with the social studies department should reinforce the international dimension of current economic concern.

A Down-to-Earth Look at Objectives

The National Business Education Association (NBEA) (1987) specifies precisely what the National Association in Business and Marketing has in view for mastery by its students. The NBEA database lists a number of skills whose study would add to a general education were teachers of business and marketing to collaborate with teachers of social studies. For example, keyboarding, basic economics, and computer literacy prompt one to think of activities that have made lasting changes in much of the world's economy. The effects of these changes are as important to the social studies classroom as to the business and marketing classroom. If there is collaboration of the teaching staff, both classes will be studying more than either of them probably would have on its own. All students would profit because they will live and work in a world where manufacture, marketing, advertising, and much more are inescapable realities.

In the word "realities" we include the basics of a general education. The NBEA (1987) competencies could not be more basic:

> Business education has always concentrated on developing basic skills in every student it has served. After all, business education deals primarily with the MATHEMATICS and WORDS of business. Without basic skills in reading, writing, and computing, students cannot succeed in business programs. With this in mind, very visible attention was given to such essentials as basic math skill development, punctuation, spelling, capitalization, word usage, and so on through the entire list of essential skills. In addition, the model curriculum has provided a focus on reading, particularly on the topics of economics, entrepreneurship, and personal development. (pp. 1-3)

While mathematics and economics are the academic subjects that immediately come to mind, collaboration can be extended. Business and marketing not only have been transformed—the computer being only the most obvious example of the impact—but they can be explored as agents that might alter society by affecting desires through advertising, changing the role of women, and altering family relationships. These instances of interaction of business-marketing with society and culture are more apt to be discovered through the interactive process of collaboration. This is shown by our vision being limited to economics and the three Rs when thinking of areas that most closely relate to business and marketing. This tunnel vision can best be corrected by collaboration in which many academic subjects are brought into play.

What is before us is a proposal that looks beyond the promise of the PCBEE or the NBEA (1987). To sense how modest this database is, consider only the "basic skills and core competencies" detailed by the NBEA for the senior high school student:

> Business programs, an integral part of a comprehensive secondary school curriculum, are designed to encompass life application skills; basic business, economic, and business administration education; college preparation; and vocational preparation. A business curriculum is for students who are preparing to enter a four-year college/university, a two-year college/technical school, or employment after graduation. Course offerings focus on instruction in economic education, initial job preparation, and all areas of communication—reading, writing, speaking, listening, and computing. Computer education should be an integral part of the program, and computer applications should be integrated into all courses. (p. 4, sec. 2)

These competencies are down-to-earth, but are restricted to helping students be well-prepared for a vocation, a preparation that need not be sacrificed when a school has a general education as one of its chief objectives. While only collaboration of teachers and teachers of teachers can prove or disprove this hypothesis, we will turn to the past, to the development of business and marketing education. That history may present a record, that itself invites the attention of those whom we wish to see collaborate in forming a curriculum for tomorrow.

Reflection on the Development of Business and Marketing Education in the United States

The development of business and marketing education in this country invites a long overdue collaboration that should benefit the learning in both the vocational and academic subjects. The premise for such optimism is the growing importance of all phases of business in this country, indeed, worldwide.

One question that might be raised by a collaborating teacher of social studies is why Congress did not recognize business and marketing education in its early legislative support for vocational education. The simple answer is that those who pressed for Federal support of vocational training were interested in training and not in an education only one part of which would be preparation for skillful work in a variety of occupations. Then, too, inquiry would disclose the humble status of the business and marketing field at the time the Smith-Hughes Act was passed. It was not business and marketing education, but simply retailing or, later, commercial education when the public schools were involved.

According to McClure et al. (1985), "In the years preceding the Smith-Hughes Act, the Prince School, founded and administered by Lucinda Prince, was the primary source for teachers of retail selling" (pp. 76-77). Prince arguably was a pioneer, perhaps *the* pioneer, in preparation for retail selling (Nichols, 1979, pp. 112-113). The point McClure et al. make is that, "One vocational area was not specifically mentioned in the Smith-Hughes Act nor was it listed by name in the section of the act pertaining to teacher training. This was retail selling or distributive education" (p. 76). It would be negligent to overlook the fact that there was provision in Smith-Hughes for studies, investigations, and reports (Roberts, 1957, p. 219). A Federal Board for Vocational Education was authorized to make studies and do research "with particular reference to their use in aiding the states in the establishment of vocational schools and classes and in giving instruction . . . in commerce and commercial pursuits" (p. 434). As Roberts and others have acknowledged, the Board published "A bulletin . . . in 1919 concerned with the organization and administration of commercial education" (p. 434). Should this segment of vocational education have been given Federal support? The passage of the George-Deen Act in 1936 authorized Federal funds for vocational distributive education, funds that were made available in 1938. Should any part of vocational education be assisted? What arguments were offered pro and con? How might one explain the interest in vocational education, and its preparatory role, exhibited by Dudley Hughes, Hoke Smith, and Senator Walter F.

George, whose name appears on such legislation as the George-Reed Act of 1929, the George-Ellzey Act of 1934, the George-Deen Act of 1936, and the George-Barden Act of 1946? We have asked rhetorical questions, but ones which well may belong to the general education of a high school graduate. If they do, they are best explored by the collaborative route.

This collaborative study by teachers will lead students to uncover the roots of business and marketing education along with understanding the social and cultural environment in which they grew. The mutual advantage of this is that the social studies teacher has ideas and events to probe whose significance is easily established. On the other side of the collaborative team, the instruction and study in business and marketing education acquires a depth that may be lacking. For instance, what would be learned and added to a general education if a student read the following:

> Private commercial schools or colleges flourished in the United States between 1852 and 1893. These schools had their origins in the commercial subjects taught during the Colonial era. Cost accounting was taught as early as 1635 in the Plymouth Colony and in 1751 in the Franklin Academy. Stenography entered the curriculum about 1860. The first of the business colleges was established in 1818 by James A. Bennett, an accountant in New York City. About 1850 the first of the chain schools of business appeared in Cincinnati and Cleveland. The Bryant-Stratton chain started in Cleveland in 1852, and by 1865 the chain included 50 schools. These schools provided training in penmanship, bookkeeping, business arithmetic, commercial law and related subjects. The U.S. Bureau of Education indicated that there were 373 private schools for the teaching of commercial and business subjects in operation at the beginning of the twentieth century. (Roberts, 1957, p. 117)

These facts lack an invitation to speculate on their significance and place in history. For example "penmanship, bookkeeping, business arithmetic, commercial law" contrast significantly with the listing of courses recommended by the NBEA (1987), which, among other skills, included word processing computer applications, data entry, entrepreneurship, decision making, accounting, business economics, and human relations (pp. 1-4).

A Key Memoir

The collaboration which this essay sponsors is well illustrated by the memoirs of a central figure in that record, Frederick G. Nichols.[10] In 1922, Nichols, then forty-four, joined the Harvard faculty, a post he kept until his retirement twenty-two years later. His experience before his Harvard professorate, as well as after it, had been extensive.[11] When the Federal Board for Vocational Education was formed under a mandate of the Smith-Hughes Act, its Director, Charles Prosser, invited Nichols to become assistant director for business education. Although "no association or other group in this field had participated in the activities leading up to the passage of the Smith-Hughes Act" (Nichols, 1979, p. 132), Nichols had gained enough of a reputation to be chosen and in that post he was the primary author of what became a famous bulletin, Bulletin No. 34, on the *Organization and Administration of Commercial Education.* The writings of Nichols invite the collaboration of teachers in business and marketing education with teachers of social studies and, of course, economics, as related to understanding American society in matters that are, and have been, of consequence for both teachers and students in vocational and academic studies.

Nichols was a strong advocate of the vocational interpretation of business education. In that stand he was an ally of Prosser and Prosser's mentor, David Snedden. It was Prosser who wrote the foreword to Bulletin 34, saying,

> "Commercial education is no longer an experiment. It has passed beyond the stage in which its vocational value can be questioned. It is, however, still regarded by many as being somewhat academic." This last sentence could have been labeled the "understatement of the year" in educational literature. (Nichols, 1979, p. 145)

His resentment of the low status accorded the field is nowhere more clear than in a chapter Nichols (1943) wrote for the National Society for the Study of Education, published the year before his retirement from Harvard:

> Business education is an educational stepchild in the family of secondary-school departments, without affectionate nurturing by either parent—general education or vocational training. It is not acceptable for college entrance except when it slips into the fold of creditable subjects through the back

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[10] In addition to the memoirs of Frederick Nichols, we shall draw upon his "Business Education—Clerical and Distributive" (1943).

[11] Reference is to a biographical chronology of Nichols' life in the *Memoirs* (1979) as well as Polishook's "A Profile of the Teacher" in Nichols' *Memoirs.*

> door of "free electives." It is not directly subsidized under the many vocational-education acts except the most recent one (George-Deen), and under that one only in the field of training for distributive occupations which, until this act became operative, was practically nonexistent. (p. 214)

While Nichols recognized that changes in technology have affected preparation for business and marketing, his essay did not ask that general education could gain from an appreciation of the broad societal effects of technological shifts. This is quite clear in the following:

> Every authentic survey in recent years has shown, expressly or implicitly, that business education has not kept pace with occupational developments, that traditional ruts quite as deep as those of certain academic fields, are preventing progress in new and more promising directions, that little is done to insure for commercial courses students who have what it takes to profit from them, that placements in line with training are relatively few, and that necessary occupational readjustments must be made without benefit of pre-employment training of a kind which is designed to afford essential background of understanding and breadth of technical competency. . . . Mechanization of office work is becoming a reality which must be taken into account. Occupational analysis must be the basis of vocational business training. Essential skills must be developed. Occupational intelligence must be assured. Knowledge of business principles must be acquired. (pp. 214-215, 218)

Nichols has been quoted at length in order to document a complex viewpoint that those who are part of academic education look down their noses at vocational preparation while, at the same time, vocational preparation hardly deserves admiration because it fails to keep up with the changing times. Nichols suggested that while vocational preparation was to go its own way, it was to become adequate to the opportunities and needs of the day. Our stand is that a worthwhile general education has to be nourished by what can be learned by teachers and students from developments in each of the vocational fields through study of American society and culture. Nichols' memoirs illustrate the possibilities.

Nichols (1979) enrolled in New York's Rochester Business University in 1895. The curriculum was dominated by bookkeeping, which meant learning business writing, business arithmetic, business English, business correspondence, business practice, and rapid calculation (pp. 9-10). In Nichols' words, "It was a great school. It had been a Bryant and Stratton Chain School whose principals had taken it over when that chain was breaking up" (p. 8). Nichols did not speculate about the place of business preparation in a public school and whether there might be a difference in educational objectives were the

business courses in a public setting. Such questions might not be relevant to a high school class, but the teachers who we wish to collaborate should have the opportunity of confronting them.

When Nichols (1979) organized his own "commercial department" at the Martin School, the instruction he gave was equally limited:

> The Martin School was organized by the Remington Typewriter Company, presumably to serve the double purpose of providing skilled operators of the Remington typewriter, then largely dominating the field, and to make some profit. At that time, women had not invaded the office to the extent they have now. The sale of a typewriter often was contingent on securing a competent operator, so the manufacturer had to be ready to supply both the machine and the operator. (p. 36)

Classes in social studies or American history can lack the very anecdote that Nichols is telling. Neither business education nor academic education have the depth and reality that they would if their teachers had collaborated. The experiences of such a man as Nichols puts teachers and students in touch with the realities of American life that should be explored in a quest for a sound general education.

The most rewarding examples from Nichols' *Memoirs* have to do with the time period of the Smith-Hughes Act. "Industrial or trade training" was far more conspicuous than its "commercial" counterpart. Snedden and Prosser led the struggle to win recognition for a vocational preparation that was not a despised adjunct of academic education: "Academic respectability, not recognition as a type of vocational training was sought by the leadership, what little there was" (p. 115). Nichols' claim is that business teachers were not interested and, therefore, not active in the "vocational education movement." The latter was led by Snedden and Prosser who wished to promote industrial or trade training. The inclusion of funds for research and service was included in the Smith-Hughes Act because of pressure, but not pressure from business teachers. Nichols was scornful of this disinterest:

> Let me hasten to say that the pressure referred to was not exerted by business teachers or others in this field. None such interested themselves in this legislation except the private business school proprietors who opposed it. None nad been active in the vocational education movement. It had not occurred to those leading in this movement to try to interest commercial teachers . . . in it. The plain fact is that at that time, and far too frequently now, there was a tendency on the part of business teachers to deny the vocational aims of their courses. Oh yes, of course, they were preparing

> people for positions (not yet jobs), but at the same time they were struggling to establish academic respectability. (p. 132)

We have included this passage because it raises an issue that should not be avoided. It is doubtful whether there can be a collaboration of equals, a collaboration of teachers in vocational and academic subjects, if the vocational teachers feel that their professional efforts are not academically respectable. This issue has to be faced. High school students must be able to choose curriculums without the interference of a reputation for respectability.

Ms. Lucinda Prince

The first project that Nichols' undertook as assistant director of business education for the Federal Board for Vocational Education was in retail selling education. Ms. Lucinda Prince of Boston was brought to Washington on a dollar-a-year basis. The history of business and marketing education has a conspicuous place for what McClure et al. (1985) term "the famous Bulletin Number 22 entitled *Retail Selling* by Lucinda Prince and Isabel Bacon" (p. 77; also see Nichols, 1979, pp. 136-142). The bulletin met the following need:

> This bulletin . . . was extremely popular and went through several printings. It served as the basis for numerous training programs in retail selling. The federal board and its special agent for retail selling [Ms. Bacon] made a continuous effort to get many business people to recognize retail selling as a business endeavor. However, there was an ingrained prejudice among many in business education that considered selling to be a second-class occupation. (p. 77)

Ms. Bacon had been a student of Lucinda Prince and had become supervisor of retail selling in the Boston public schools. She was asked to join with Ms. Prince "to deal with the requests for help that were sure to come" (Nichols, 1979, p. 133).[12] As we will learn from the history of home economics education and the work of Mabel Dodge—or of Industrial Arts Education, in whose record is Felix Adler and his Workingman's School—a good deal of what was undertaken in vocational education, at least in urban settings, was

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[12] Nichols (1979) says of Ms. Bacon, "I recall no competition for the job of special agent in commercial education for the retail selling field. Again the candidate must have been a teacher, organizer, and supervisor of this specialty following Prince-School-type training and store experience. Miss Bacon alone could qualify. She did and was appointed" (p. 133).

spurred by a woman's or man's social conscience, a desire to improve the lot of the poor. The effect of this on the image of vocational education has not been trivial.

Prince began instruction in retail selling in the United States and dominated the field until the passage of the Smith-Hughes Act. Coakley (1972) reminds us that in 1905 Ms. Prince, "in cooperation with the Woman's Education and Industrial Union of Boston, established the first class of eight girls for retail training. Ms. Prince had previously made an investigation of saleswomen and their needs" (p. 3). Within a year, Ms. Prince had initiated a part-time training program, having persuaded William Filene's Sons Company in Boston "to allow the six girls in her second class to work for the store on Mondays." By 1911, Ms. Prince established "the first school not only to train educational directors for stores but also to teach high school teachers how to give instruction in store-training courses" (p. 3). It should be borne in mind that Ms. Prince's work was in the private school. As late as 1918, Nichols (1979) could write the following of the public high schools:

> It should be noted that in 1918 public school business education was still largely a group of commercial subjects transplanted from the private business school into the academic program of the high school, and from there grafted onto a puny night school program of grade school and high school subjects. (p. 145)

Nichols' reflection heightens the significance of the fact that in 1912,

> Mrs. Prince was successful in getting retail store selling into high schools. During this year, continuation schools were also organized. Thus, she is credited with the organization and early promotion of cooperative education for retail employees on both the secondary and college levels. (Coakley, 1972, p. 3)

Although this may seem true of another time, it may be worthwhile to study those attitudes and values. If the study is collaborative, it is unlikely that anyone will be put on the defensive. The target is the same for the vocational and non-vocational and, if it is participated in by students, these young people will gain insight into the rather long history that touches their own lives.

Where Does it Belong?

Only five years before Lucinda Prince began her search for a practical way to give hands-on experience to future saleswomen, New York University opened one of this country's earliest Schools of Commerce. Business teacher education at New York University began thirteen years later in 1913. That year the School of Commerce's bulletin ran the following statement:

> A University School of Commerce would not be properly fulfilling its mission if it did not make provision for training men and women to teach commercial branches in the secondary schools. The demand for such men and women during the past ten years has been greater than the supply . . . A commercial teacher of the present time needs more than an elementary knowledge of bookkeeping, stenography, typewriting, and commercial law. . . . More important for the commercial teacher is a broad knowledge of commerce and finance and a clear perception of the relation which technical subjects bear to the general science of business. (Sapre, 1981, p. 1)

It was not until the academic year 1927-1928 that a separate Department of Business Education was organized with Lomax as its chairman. The only reason for presenting this slice of business and marketing history is that more than one topic for a collaborative study is illustrated. The principal one is evident in the final sentence of the quotation from New York University's School of Commerce's 1913 bulletin. There the reader was told that the "commercial teacher" required an understanding of the relation of such a technical subject as accounting or bookkeeping to the "general science of business," which we assume to be finance and economics, if the two can be divided. While the idea involved is central for us, it will be delayed in favor of less involved events. One of these was the involvement of the students with what Sapre's (1981) book terms "The Depression Years":

> During the Depression years, the faculty of the School gave serious consideration to unemployment, the status of teachers in New York City, and the responsibility of education in relation to other social institutions. (pp. 5-6)

The particular course that the business education faculty of New York University offered in this arena of social responsibility bore the name "Ethical Issues in Corporate Responsibility." How the notion of corporate responsibility might be dealt with in a high school is not crucial. What is ethical is that the concept can best be explored in collaboration, and there would be added advantage if the teacher(s) of business and

marketing education and of social studies could be joined by others in a given community alert to the importance of the issue. It was important by 1930 and is no less important today. Nor is the ideal of social responsibility restricted. It can be the thin end of the wedge for entering other forms of social responsibility, be they the abuse of chemical substances, sexual practices, or environmental matters. In a word, the collaboration that is our theme readily lends itself to the interdependence of subjects. Lomax and his colleagues learned what is true of all vocational fields—that they are about the real world and give access to the problems that all human beings face.

One issue that has come to the fore in recent years are the gender differences in occupational roles. At about the time the Smith-Hughes Act was under discussion, data was published on the "commercial callings" of men and women in "Kansas City, St. Louis, New Mexico, and the United states as a whole" (Freeman, 1981, p. 39). The survey showed what commercial subjects were available to Missouri's men and women and what "retail dealers" ranked first. The conclusion drawn was that these rankings should affect curricular offerings for men and women. There was no question, however, about what the gender differences implied about American culture. In 1916 this could be expected, but today gender differences in wages and salary and in positions held are lively topics. Once again, many are intimately related to what is studied in courses on business and marketing. If there were collaboration of the type we repe[illegible]dly have urged, the probing, analysis and discussion would be both lively and relevant to the lives adolescents will live.

Business literacy has returned in this incident of gender differentials. "There is obviously," Lomax once wrote, "a business side to all social-institutional life, as in the relationships of government to business, of the legal courts to business, of the church to business, of the schools to business, and to the various institutional forms of recreation to business." His conclusion was that, "The sum total of these and other institutional relationships to the institution of business, as particularized in business transacting experience, comprise business general education" (Freeman, 1981, p. 73).

Let us assume agreement with Lomax. The heart of the matter is some considerable grasp of economics if the opinions of the teachers leading the study are to have weight. We have come to the principal question of this section. It is reasonable to think that the collaborating teacher from social studies will be at home inquiring into many aspects of American social and cultural history. But whose responsibility is it to command a

reasonable knowledge of the economics that is certain to be involved in many inquiries? This question has been debated for years. Quoting from Herbert Tonne's writing in the *Journal of Business Education* in 1967, we are treated to these remarks:

> Business educators at all levels are highly patriotic in their insistence that business teachers are the most competent in giving economic education. They point out that business teachers have had more courses in economics than the social studies teachers. Yet just as social studies teachers are primarily teachers of history, so business teachers are primarily teachers of shorthand, typewriting, and bookkeeping rather than teachers of economic education. (Tate, 1981, p. 343)

It is safe to assume that sophistication has increased in both camps. In any case, the gulf has existed between the vocational and the academic. If the representatives of those two worlds collaborated, economics would be of service in joint study. Both sets of teachers would be responsible for bringing economics, or another relevant discipline, to bear. If neither commanded the analytic tools needed, one only could hope that the illiteracy would be discovered and corrected. Both sides, and their students, would gain from the amendment of the preparation of the teachers of business and marketing, as well as the teachers of the academic disciplines. In the absence of such collaboration, we can anticipate an unhappy rivalry that deprives students of their due general education.

HOME ECONOMICS EDUCATION

Introduction

Home economics education is so much a part of home economics that we cannot write about it independently. We will concentrate here on home economics in general without reference to teaching about the family, nutrition, design, textiles, child rearing, family relations, the technologies of the home, or other specialties within home economics.

Not every leader in home economics education will list the same curricula areas, but in a list published by the Minnesota State Board of Education the "Curricula in the content areas of family life, child development and parenting, consumer nutrition, personal home and family resource management, textiles and housing address the twelve learner goals of the Minnesota State Board of Education" (Rogers, Wilkosz, & Grote, 1987, p. 14).

Then there is the matter of the field's mission, not the subspecialities contained. One example has been drafted by Brown (1980):

> The mission of home economics is to enable families, both as individual units and generally as a social institution, to build and maintain systems of action which lead (1) to maturing individual self-formation and (2) to enlightened, cooperative participation in the critique and formulation of social goals and means for accomplishing them. (p. 80)[13]

The mission of this study is to explore some of the possibilities of collaboration between the teachers of home economics and the teachers of academic subjects. We do not feel responsible for entering into a debate between those who would elect to help high school students master tasks central to family life such as child care, parenting, design, or nutrition, rather than vocational preparation, political responsibility, and the more philosophical challenges associated with thought and choice (Brown, 1985) We will take examples of collaboration from a few of the academic subjects, with social studies our most frequently used field.

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13 The impression should not be left that home economics education is simply concerned with its philosophy and curricular matters. The American Home Economics Association, some of whose members were involved with home economics education, gathered in San Antonio in June 1990 "to discuss child care, aging, food safety and nutrition, teen-age pregnancy and vocational education." Wozencraft (1990) goes on to report that, "For home economists, every one of those subjects is a top legislative priority for the 1990's" (sec. B6).

The need for such collaboration is well known in home economics as is manifest from the following: "Programs [in home economics education] are characterized by a multidisciplinary nature that draws from the social, psychological, biological, and physical sciences and the arts" (Rogers et al., 1987, p. 13). The purpose guiding this task is to seek to strengthen the general education of the high school graduate.

Collaboration entails teachers entering into a partnership in which the home economics teacher introduces her or his academic colleague to one or more of the home economics subfields. The academic teacher would get ideas for new material through interaction with the home economics faculty, literature on home economics, and observation of the home economics classes. The criteria of collaboration is not satisfied when a class in home economics or home economics education experiences the addition of a very small, even superficial, increment of an academic subject—mathematics for instance. An example appeared in an article by Williams and Parkhurst (1988):

> Mathematics has application potential to all content areas of home economics. Those examples that are commonly examined and with which there is familiarity include the more technical aspects of the curriculum. Such examples include the following: application of multiplication and division skills to measurement in food and nutrition, such as increasing or decreasing recipes according to number of servings desired; activities that involve students in dividing a food product, perhaps a pizza, into serving pieces of equal size for X number of people; reference to newspaper ads for figures to use in computing state sales taxes, percentages, discounts, sale prices, or interest rates; unit pricing activities whereby students are involved in the task of determining the best buy in terms of cost by calculating the cost per unit of a large or a small package of the same product; calculation of the costs involved in housing decisions, such as determining the number of rolls of wallpaper needed to cover the walls of a designated room, a more advanced assignment being the calculation of the amount needed when one must consider a specific repeat in the pattern; calculation of the amount of interest paid over the duration of a mortgage on a home. (p. 19)

When the authors take up "societal issues and concerns," the possibilities of collaboration both with teachers of mathematics and social studies are exciting. Two examples are offered by Williams and Parkhurst:

> when discussing families in a global context, computing population density in various parts of the world and relating the figures to poverty, hunger, illiteracy concerns, or energy use; relating malnutrition to the growth of children and interpreting growth charts of children. (p. 19)

In passing, we observe that reviewing the growth charts of children involves the same techniques and reasoning as using growth charts of farm animals. Opportunities for the interface of the vocational subjects, while not the subject of this essay, are real and afford a chance for a student to confront basic facts of society.

There are three further limitations to be discussed. One entails the restriction on the academic subjects with which we will illustrate collaboration and the treatment of home economics. The second is the nineteenth century and the years close to the Smith-Hughes Act from which so many of our illustrations are drawn. The third is the role of women, which is a major theme of our illustrations. Most of the collaboration will be drawn with these caveats in mind.

As with agricultural education and business and marketing education, literacy in home economics, especially if it is broadened by the process of collaboration, has impressed us as a worthwhile part of a high school student's general education. Literacy in home economics will be followed by reflection on some opportunities in the history of home economics for the collaboration of teachers in home economics and such subjects as mathematics or social studies.

It is in the historical section that we will confront the most vexing of issues in the relation of home economics to secondary school general education—the topic of gender.

The historical record reveals the struggle to have "domestic science" recognized as a collegiate study, something that had to precede finding a place for such study in the high school. American society and culture did not easily make room for the familial, economic, and political concerns of women. When it did, the role of men in family life also came up for review. It would be unrealistic to think of home economics education as having little to offer the male student. According to Karl Weddle, "Home economists are not gender specific" (Wozencraft, 1990, sec. B6). Wozencraft went on to report, "Dr. Weddle said recent studies indicate that men account for as much as 10 percent of recent college graduates in home economics, and some programs report a 50-50 ratio of men to women." In fact, the members of the modern American family were understood to play a variety of roles in an increasingly complex institution.

Compounding the complexity, and certainly related to role, is the increasing presence of women in the labor force.[14] Even home economics is directly involved, although not at the high school level. The nutrition studied by many college students of home economics makes many of them interesting to companies that have need of experts in diet and nutrition. Figures on the employment of these college graduates can be brought to a high school class by teachers and students. This entails questions of social policy and equity, issues that do call for collaboration.

Literacy in Home Economics

Discussion is elusive on the centrality of literacy in home economics in a high school graduate's general education. In the contemporary literature on criticism of American high school curriculum, a great deal of attention has been paid to academic weakness and very little to subjects of concern to those who have fashioned the study of home economics. The economy of the home is only a part of what is studied. The economist's interest in personal and family patterns of acquiring income, spending, and saving may be elusive in a survey of what is offered under the name of home economics. In contrast, the home and the quality of family life are dominant themes. It may be that a change of name would more accurately describe what the field is about. Beyond that, students and outsiders in general should know that the history of home economics in the United States has involved the evolving role of women in American society and culture. In those of our colleges and universities that have taken women's studies seriously, students enrolled learn some of the story of home economics. No other high school study offers comparable insight. Nor do they lead to an understanding of what only recently has changed men's roles. Changes in what have been gender-defined roles is important when one thinks about the adequacy of a high school student's general education. One cannot help but wonder if home economics has been thought of as a subject primarily for young women and, if by young men as well, only in the hope that some skill, cooking for one, might be acquired.

The evolving roles of family members includes that of children, a subject that readily extends to child care. Led by an awareness of how inclusive is attention to the

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14 The U.S. Labor Department's Women's Bureau (1983) tells that women will account for almost two-thirds of the growth in the ranks of those who work (Fullerton & Tschetter, 1984).

family, one has little difficulty appreciating how design, with its obvious nurture by art, or fabrics, and nutrition, with their attachment to such sciences as chemistry and biology, came to be embraced by home economics. The interrelations of those who make up a family are not to be overlooked. But the limits are not those of a single family, nor the interaction of families within local communities, states, or a single nation. Students have grown in their interest in how home and family patterns have evolved in other cultures and societies. In light of helping high school students develop a more cosmopolitan outlook, this last is not trivial. By cosmopolitan, we mean more than an eager reception of alternative lifestyles, values, and attitudes exhibited by other countries. The multicultural composition of American subcultures is just as relevant.

Everything about the field of home economics touches on the quality of decisions. These decisions are sometimes those of the citizen. That is so very clear in the writings of Brown (1985). It is also clear in a succinct definition of the field that appears in Rogers et al. (1987):

> Home economics education curriculum provides learning experiences in which students can identify and assess complex relationships in a global society, and prepares them to help create a nondiscriminatory, multicultural environment. Integral components of the curriculum include a focus on developing skills necessary for solving practical perennial problems of the home and family, those that require critical thinking, practical reasoning and judgement based on examination of values, beliefs and attitudes. (p. 14)

When writing of aims, the same publication is consistent with the definition it assigned the field, but the language used to state the aims is abstract. For example, we read that,

> Home economics education strives to improve family, community and work-role performance and to improve understanding and practices regarding the human conditions in these settings. The profession enables individuals and families to understand and control their physical and social environments and to apply their understanding in seeking solutions to home and community problems relevant to improving the human condition. (Rogers et al., 1987, p. 14)

Specifics indeed are on hand to guide the teaching of home economics and to permit productive collaboration. Later in Rogers et al., we read that one outcome is to "assess and evaluate current and emerging information in regard to food and dietary choices" (chap. 3, p. 21). The place in a general education for this competence needs no justification, but it

does invite collaboration. By him- or herself one can hardly expect a home economics teacher always to be able to improve the literacy of a high school student with respect to what he or she eats. Chemical tests often are involved in adjudicating claims and counter-claims from governments, trade associations, and public interest groups. An example was the 1989 debate on Alar and its possible effects on young children should they eat apples sprayed with it. A colleague prepared examples of technical questions the chemistry teacher might help students answer:

> What is Alar? What does it do to the body? Why are children more vulnerable to its use? Why is it used on apples? How much is harmful to people? How is that standard determined? How are apples tested for its presence? Can consumers tell if apples are tainted? If so, how? What chemical reactions occur in the apple?[15]

There are other questions about Alar or other chemical substances that do not ask for collaboration with a teacher of chemistry, but well might add to a student's general education. The propriety of seeking collaboration is even more convincing if the questions discussed by the high school class include such provocative questions as these:

> Whose interests are served by Alar being sprayed on apples?
>
> Whose interests are served by having the news media report on Alar?
>
> What are the consequences for individuals? For our society? For apple growers? For chemical companies?
>
> What is the government's responsibility regarding the use of Alar and what are the responsibilities of consumers?

Such questions as these answer the query on whether the family is affected by social and economics issues. It follows that those in the economics of education and social studies are natural partners for collaboration. Brown (1980) has explored this matter and drawn very interesting conclusions on the scope of both home economics and social studies (pp. 121-125). To quote from her analysis,

> One difference lies in the scope of social concerns with which each deals, social studies being concerned with a much wider range of social concerns than those which are the center of home economics education. Study of concerns about the family and the social conditions impinging on it can be given only brief attention in a social studies curriculum in which other areas

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[15] The writer is indebted for these and the following questions to Jerry H. McClelland, Associate Professor, Home Economics Education, University of Minnesota.

> of social issues must also be dealt with. In home economics education, the entire focus of attention concerns the family. (p. 123)

Brown goes on to write,

> Social studies has a socio-civic concern and home economics education has a socio-personal concern in the family. The former seeks to develop a social understanding of the family and one's relation to it as a citizen. The latter seeks to develop an understanding of the family's potential for ill or for good of the individual person and of society and the influence of social forces on this potential. (pp. 123-124)

Our proposal for a collaboration between teachers of social studies, as well as other academic disciplines, and home economics should add to more than the sum of the parts. There should be real power in the partnership. Home economics education has involved itself with social and political matters. As we shall see, that was especially true in the late nineteenth century. Today, more than any other of the vocational disciplines, home economics has become the home for serious philosophic study, study that complements political action. As has been the fashion in modern Western philosophy, questions about values and knowledge have been uppermost. Such a passage as that which follows on the differences between technical and critical thinking is not uncommon:

> Technical thinking is concerned with predictions and control in order to achieve efficiency. Technical thinking typically involves direction by experts in addressing human problems and qualitative measurement of socially defined variables. Value issues are not typically explicit or addressed in technical questions. The focus is on how to achieve a goal or product rather than on its worth, value or appropriateness. The concern is not what should be done but rather how it can be done.
>
> In critical thinking, students are taught a process and concepts for critically and rationally scrutinizing historical and current conditions. Critical thinking means exercising and developing students' innate potential to reason, pause, reflect and think. (Rogers et al., 1987, p. 35)[16]

Critical thinking, the authors go on to say, reflects a reflective attitude, "a call for the reasons why in a situation. . . . The attempt is to see things in a broader perspective, to question practices and procedures with direction toward the understanding of human liberation" (p. 35).

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16 A serious discussion of value orientation is to be had in Brown (1980) on "communicative" and "emancipative" action in the family (pp. 64-66).

An even stronger statement of the field's political life can be read in the following:

> Many times the solution to problems which the family has lie in society itself and social action beyond the immediate family is required. Then professionals can help both by providing opportunities for families to engage cooperatively in public discourse for understanding and for collective action and by serving as leaders in public critique of ideology and of forces of exploitation. Service to families is educative in that it helps people transform their own ways of thinking and acting. It is political, in that (1) the family itself becomes a political unit questioning the legitimacy of social processes used in making basic decisions which affect the family and (2) the profession does not remain politically neutral about those same social processes of decison-making. (Brown, 1980, pp. 82-83)

These passages should alert the reader to the fact that some who lead in home economics education have taken a stand on positions and values to which they are committed. Without saying whether this lack of neutrality is desirable, there would seem to be little question that a high school student's general education will be stronger if that student is challenged to appraise basic questions about ethical matters and the reliability of claims that this or that is true. This is important; even if it is not unique and provocative in vocational education. We admit that the possibility of indoctrination is a threat, but the risk is materially lessened by the awareness of the home economics teacher and by collaboration with a social studies teacher who is aware of the need to be wary of propaganda and indoctrination. Although there is this risk, we think it worth taking for the sake of exposing students to questions of validation and verification. For citizens of a democracy, both are indispensable in choosing within the context of public issues.

Collaboration in Reflections on the History of Home Economics in the United States

The development of home economics in the United States is rich in its potential, a potential that really cannot be harvested fully without collaboration. The possibilities are impressive. On the one hand, the student confronts the evolving character of the family and this interweaves study and discussion of the evolving roles of family members. Because so much of the attention on the evolution of roles affects the well-being of women as employees, business and marketing education is intimately related Inevitably, this line of thought leads the student to reflect on the evolution of American and the world's economy and, then, on alternative cultures. In contrast with the possibilities, what follows

is but a meagre sampling. It is difficult to think of a field that has more to offer a high school student's general education than home economics.

We will di[illegible]o the history of home economics in this country without adhering to divisions that have been made. At least one will be acknowledged, however, because we intend to accept the years after 1950 as a period in which home economics was preoccupied with a "search for identity" (Brown, 1985, pp. 152-153). This quest anchors the fourth and last period dealt with by Brown (p. 144). Brown calls her first division "The Early Years: First Admission to Colleges and Universities" (pp. 152-153) and "the decades just preceding that time" (pp. 182-243). The period that follows in Brown's study will engage us; it is the time of the famous Lake Placid Conference(s), significant "in the development of home economics in terms of ideational influence as well as impetus for expansion" (p. 152). It is the third period, the span of years between 1909 and 1950 that will occupy most of our attention. This was a time "of expansion and change in which home economics was favorably received . . . and in which growth was rapid and not carefully regulated by appropriate procedures and norms" (pp. 152-153).

The Early Years of Feminism and Domestic Economy

Assuming that a social studies teacher will wish students to be aware of facts in American cultural and social history that have not lost their impact, it is noteworthy that home economics has had a long history. Even its earliest names, "domestic economy" and "household economies," were not so distant from what emerged at the turn of this century as home economics. A succession of annual meetings between 1899 and 1908 held at Lake Placid, New York, saw the change in name (Brown, 1985, p. 182). As True (1929/1969) notes,

> These conferences were attended by a considerable number of teachers in the land-grant colleges and public schools. They fixed the term home economics as the name of the general subject which included food, nutrition, clothing, and household equipment and management, and through reports of committees, discussions, and bulletins exerted a considerable influence on the systematization of the subject and the improvement of courses of study. Out of these conferences grew the American Home Economics Association of 1909.

An interest in the home and family inevitably led the Lake Placid conferees to read about and discuss subjects that could be enlarged upon if the teacher of home economics were to collaborate with a teacher of chemistry. Reflecting on the years 1899-1910, East (1980) provides the clue:

> There were the growing science of nutrition with Wilbur Atwater and the extensive chemical and bacteriological analyses of water supplies, milk and manufactured consumer products. This was the period of awakening to purposeful adulteration of foods which resulted in the first food and drug laws in 1906. Both men and women worked on these environmental concerns. (p. 20)

The pure food and drug legislation, the probing of adulteration and kindred subjects, were part of what Theodore Roosevelt came to call "muckraking." Opportunities for collaborative teaching and study of American social history need no comment.

The *Proceedings* (1901, 1902) of the Lake Placid Conferences are peppered with references to the application of science. In addition to the scientific observations of food and nutrition in general, there were discussions and references to the environment, especially to sanitation: "The early home economists were much concerned with sanitary practices at home: the placement of privies, the sources of water, the scouring and soaping of everything" (East, 1980, p. 23).

As Brown (1985) sees it, those who came to Lake Placid were troubled by what they thought was overtaking the American family. A collaborating teacher of social studies should be able to enlarge on the theme that Brown states in the following:

> By the time of the Lake Placid Conference, concern continued for the home and family as a haven from the impersonal life brought on by the disintegration of the isolated community. However, now the concern was greater, for industrialization and the social structure it imposed were causing significant changes within the family itself. Family members were increasingly taken out of the family setting so that parents, especially the father, had little time there and younger members were often leaving home to work before they had matured in character. Work outside the home and work in the home had become categorically separated. Many household tasks were now being performed through industry; formerly one or both parents had done these tasks with the children thereby providing time for informal education of the child in values in interpersonal understanding, and in understanding of what was done in the home. (p. 247)

There was no essential alteration of emphasis, which was on the home and the wife/mother who managed its economy:

> There were school and college classes in domestic science, domestic art, household science, household economics, as well as in cooking, sewing, and housewifery. . . . There was an American Kitchen Magazine, and American Household Economics Association. . . . All these were aimed at and populated by women. (East, 1980, p. 20)

The welfare of the family and of the woman in the home was not newly minted at Lake Placid. Nor was its place in the secondary school, especially in the academies of the nineteenth century, which tended to offer more practical subjects than the Latin grammar schools. It was in the academy that domestic economy had its birth:

> Emma Hart Willard was a graduate of one of the academies and it is she who has been credited with instituting the teaching of domestic economy at Troy Female Seminary in Troy, New York, a normal school she founded. Emma Hart Willard was a feminist in that she was concerned with the development and progress of women. (Brown, 1985, p. 183)[17]

Students in the high school should know that this early push for modifying the education of women usually was a highly personal one. In 1819, Willard published her widely read *Plan for Improving Female Education* at her own expense.

Not all feminists had the same agenda. Consider Catherine Beecher, sister of the very well-known author of *Uncle Tom's Cabin*, Harriet Beecher Stowe. In 1851, Catherine Beecher's *Evils Suffered by American Women and American Children* came off the press and broadcast its appeal for women to prepare themselves for entry into the professions rather than the factory:

> It was Catherine Beecher whose work Ellen H. Richards later spoke of as "the true beginning of the Home Economics movement." Miss Beecher argued and worked for domestic economy as a "branch of study" and seems to be the first person on record to view domestic economy in this way. This she did through her teaching, writing (some of it with her sister Harriet Beecher Stowe), speaking, and the organization in 1852 of the American Women's Educational Association. (Brown, 1985, p. 184)

The student enrolled in home economics has a unique opportunity of gaining insight into the movement called feminism, a movement that arguably is of high priority in an

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17 The feminist movement is traced in Brown's *Philosophical Studies* (1985), pp. 223-237.

adequate general education of a high school graduate. At the same time, the unfolding story of home economics is not an inert list of happenings and names. There was a real conflict of views in the movement that evolved into modern home economics. Personalities were not involved, but values were. Students enrolled in social studies should know about them.

Two women have been named, Ellen Swallow Richards and Catherine Beecher. The student has been told that Richards was a feminist "concerned with the development and progress of women." He or she will learn that Beecher was no less concerned, but that she was not a feminist, that she opposed feminism, believing that women should be subordinate in the family as in political affairs. In fact, Beecher was a leader in the ranks of those who opposed giving women the right to vote (Brown, 1985, p. 187). That stand was based on a belief that there was a natural difference between the male and female, a difference that was rooted in biology, but then affected the social, economic, and political.[18] Tomorrow's students should understand that Beecher's views have been modified, but have not vanished.

The students in this collaborative discussion will learn what an uphill effort feminism has exacted, but the impression should not be left that few men, if any, have joined the ranks. They will come across the work of Benjamin Richard Andrews, who died in 1963 at ninety-six. Although we will not pause to call attention to his work, or that of other males sympathetic to the life and opportunities of women, the participation of men should help the student to realize that they are not engaged in a study of a "female-only" movement. A generously proportioned general education will not be so narrow in scope or limited in sympathy. Nevertheless, these students may learn that when President Woodrow Wilson signed the Smith-Hughes Act in 1917, he may or may not have known that he was signing an instrument that specified that "not more than twenty percentum of the money appropriated under this Act for the payment of salaries of teachers of trade, home economics, and industrial subjects for any year shall be expended for the salaries of teachers of home economics subjects" (East, 1980, p. 31). While this proportion seems fair, that it is prescribed seems to suggest a feeling that the subject of home economics was suspect. It certainly had been in the liberal arts colleges. While one cannot expect that high school students will be particularly moved by the action of the Vassar College Board of

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18 Feminism has never been a unified movement—even less so in recent days—as is made plain in Brown, 1985, chap. 6.

Trustees in the early 1860s, nonetheless they may get a cue to thoughts on education when the trustees expressed themselves as "satisfied that a full course in the arts of domestic economy cannot be successfully incorporated in a system of liberal education" (p. 45). This action was taken because Matthew Vassar, founder of Vassar College for women, had expressed the wish that, among other studies, there be "Domestic Economy, practically taught, so far as possible, in order to prepare the graduates readily to become skilled housekeepers" (p. 45). It is up to high school teachers to know whether their students should be expected to grapple with the idea of what constitutes a liberal education, but their general education surely must be open to what the evolving cultural perspective has been of the female role.

In the years shortly after the passage of Smith-Hughes, the woman's role was almost uniformly described as domestic. If students are directed to the history of home economics education, they may come across the thoughts of Henrietta Calvin, a home economist attached to the U.S. Office of Education:

> Home economics education includes instruction in those subjects which related to home making and its coordinate activity, housekeeping. . . . Home economics, therefore, finds its place in the school curricula because it furnishes vocational training in that occupation in which 93 percent of all American women ultimately engage. (East, 1980, p. 32)

The student in a collaborative teaching-learning mode, once again has an opportunity to learn about the vocational and non-vocational roles of females and males. For example, East (1980) notes that,

> Home economics became, in many schools, the only vocational area which was open to girls exclusively [in the years not long after Smith-Hughes went into effect]. All this has changed now. Several new laws have redefined the rules and the fields (George-Reed, 1919; George-Ellzey, 1934; George-Deen, 1937; George-Barden, 1946; the Vocational Education Act of 1963; Vocational Amendments of 1968 and 1976). Now there are many boys enrolled not only in the programs variously called "general," "homemaking," or "useful," but also in those called "gainful," or "occupational," or "wage-earning." And there are girls enrolled in each of the other vocational subject areas. (p. 33)

Two Remarkable Careers as Illustration: Grace Dodge (1856-1914) and Caroline Hunt (1865-1927)

The point of highlighting Grace Dodge and Caroline Hunt is to deepen our endorsement of collaborative study between a home economics teacher and someone from the academic subjects interested in a high school student's knowing more of the unfolding story of women in American culture. What we are doing can have the effect of reinforcing the attitude that men and women occupy wholly different niches in the culture. While that is not the intention, the inquiring student learns that a good deal of the earlier cultural history of the United States did little to honor women. We admit that students should learn that ethnic and minority groups generally have received equally short shrift. Our focus is very narrow, but the teachers and students who play a part in the study of home economics education will have been introduced to the riches that are available in the study of social and cultural history.

Grace Dodge can be used to introduce the idea of public service. Her adult life was spent in promoting "the public good." Being an heiress to the Dodge fortune made it easier for her to establish Columbia University's Teachers College, the YWCA, the Travelers Aid Society, and the American Social Hygiene Association. Admittedly, the profession of home economics was not central to what Grace Dodge wished to do. Notwithstanding, her intention to better the lot of poor women ran close to the feminism that is our central theme. East (1980) lists Dodge with the most important of the four early home economists she writes about[19]:

> She was one of those invited to the Lake Placid conferences who did not come. She was one of the early honorary members of the AHEA. She actually taught what we now call home economics and wrote a textbook for her students, but did not identify herself with the new ideas. Yet the attitudes and values epitomized in her life are typical of many of the earliest home economists. (pp. 89-90)

High on the list of values to which East alludes is a humanitarian concern for the quality of life in poor families:

> At twenty she was teaching slum children in an Industrial School, where children too poor to have the clothes and food to enable them to attend public school were fed, clothed, and taught by the Children's Aid Society. By the time she was twenty-four she was chairman of a city committee on

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19 The others were Ellen Swallow Richards, Isabel Bevier, and Benjamin Richard Andrews (see chap. 5).

> the Elevation of the Poor in their Homes, and had been teaching kindergarten classes for poor girls, and had organized a club of working girls. (p. 91)

The social studies teacher can help students to understand that Dodge's image is not of a lady-bountiful. Nor was her emphatic insistence on "providence, thrift, cleanliness, and management" to be understood as the tyrannizing of a busybody. Dodge was a conspicuous part of what were intended to be practical ways of leading the poor to independence without inviting a revolutionary overturn of society. She was not acting alone. Once again, the social history of the United States in the last quarter of the nineteenth century would show the inquiring student that Dodge and another of that era's home economists, Emily Huntington, teamed with Felix Adler (not given/a; see also Bennett, 1926; Beck, 1942), in promoting manual training in schools and not only what was to be practiced by girls and older women at home. As so often is the case, a realistic survey of social history in this country shows more than one vocational-technical field working in tandem and integral to the social life of the community, in the present case New York City. The overlapping efforts of Dodge, Huntington, and Adler were well known to such a historian of industrial education as Charles Bennett.

Emily Huntington will be slighted in favor of attention to Dodge, but the latter was very much aware of Huntington's imaginative use of toys. As Bennett (1926) reports,

> In 1874, Emily Huntington came to New York to take charge of the Wilson Industrial School for Girls at Saint Mark's Place, an institution founded in 1854 and supported by charitable Christian women. In 1876, she visited a kindergarten exhibition and saw the children joyfully playing with blocks, and singing their songs of labor. While watching them, the idea of substituting miniature household utensils for the kindergarten gifts and occupations came to her as an inspiration. She began to apply the idea. She fitted up rooms with child-size furnishings and wrote songs that delighted the children and their parents; housework became play.
> Grace Dodge became interested and "gave wings" to the work by writing about it, by talking about it, and by enlisting others in the movement. In 1880, the Kitchen Garden Association was organized to standardize and promote the instruction, and Miss Dodge was elected its corresponding secretary. The movement spread to many other cities and even to Europe and the Orient. (p. 412)

The groups of children with whom Huntington worked were known as "kitchen garden" groups, groups of children who "learned housekeeping tasks and roles though

play with child-sized brooms and scrub brushes and dishpans, tables and chairs, wash tubs and ironing boards" (East, 1980, p. 91).

We can only pause to acknowledge the extent to which home economics, feminism, and women reformers in general—founders of Settlement Houses, for example—gave life to social conscience in nineteenth century America. One hopes that students guided collaboratively will not be so abrupt. At least they can know that Emily Huntington's "kitchen garden" groups became so popular with older boys and girls that the Association was transformed into the Industrial Education Association, whose objective was "To promote special training of both sexes in any of those industries which affect the house and home directly or indirectly and which will enable those receiving it to become self-supporting" (East, 1980, p. 93). While this does no more than remind the student that home economics has continuously been closely associated with action intended to benefit the poor, teachers may be interested to know that the Industrial Education Association evolved further, this time into the New York College for the Training of Teachers. Nicholas Murray Butler, Associate Professor of Philosophy at Columbia, was its first President. Dodge saw to that and initiated what was to become Teachers College, Columbia University, serving as that institution's first Treasurer.

The power home economics evidenced by the turn of the century insures that no single leader thus far mentioned exhausts the human resources that students can uncover. Although writing of Caroline Hunt, who died in 1927, moves the search forward in time, it does not break the ties students will have found. After all, Hunt was one of the early members of the Lake Placid group. Then, too, her biography, *Life of Ellen H. Richards*, roots her in the early days of home economics. The collaborating home economist and social studies teacher will find that Hunt was eager to do something for the family of the urban poor:

> There were jobs to be had and each successful immigrant attracted his friends and relatives who came and lived nearby. There was a little Germany, a little Italy, and a little Ireland. Caroline Hunt interviewed over a thousand families, street by street, house by house, collecting dietary histories, occupations of fathers and mothers, numbers and ages of children, health problems, income levels, literacy in English and native tongue. (East, 1982, p. 3)

The students will find that Hunt was a force in the women's liberation movement, a force operating not in New York City as Grace Dodge or Emily Huntington were, but first

in Wisconsin, where she was the first woman to graduate from the Law School of the University of Wisconsin; where she was a close friend of Governor La Follette's wife, Belle; and where she was a social activist, as well as someone who carried out committee assignments for the American Home Economics Association. The home economist's contribution to the women's liberation movement and to social betterment is fascinating. This is one more bit of evidence of how forceful this vocational field has been in this country's social reform. Social change and feminism are intimately linked in home economics history. There is little reason to deny Hunt a place in the women's liberation movement. Comment on a series of essays Hunt wrote for *The Chautauquan* recognizes and applauds her stature in the movement:

> Of the several themes which run though all the essays, the major one is freedom for women. She was very much, in her quiet way, a woman's liberation figure. She recognized the biological childbearing responsibility which tied women down, but she tried to show how the social expectations which limited women's personal freedom could be lessened. She pleaded the case with women; reduce housework by simplifying it; with men, expect intellectual companionship from your wives rather than rich meals; for children, expect them to do their own housekeeping of their own rooms. (East, 1982, p. 100)

Hunt voiced and wrote her message repeatedly. In 1908, she published one more essay that stated her case clearly and is certain to help students to understand the pivotal nature of the home and family in the home economist's vision:

> Women must be free to work in the interests of the home and of the children. They must be free from unnecessary labor and care within the home, and able to work for it in public; they must be free economically, and able to control their own incomes and to make experiments for themselves in new methods of housekeeping; they must be free politically, and able to control, by means of the ballot, public methods of preparing and transporting food, of caring for streets, of educating children, and of doing other work which affects the welfare of the home. (p. 101)

In summary, East (1982) reflects on the writing of Ms. Hunt, singling a political awareness that would come alive once again in contemporary thoughts of leading thinkers in home economics education. East might have been addressing collaborating teachers and inquiring students when she wrote,

> In her several writings on the importance of public work for the home Miss Hunt recognized the interrelationship of society and the home and the inability of families to protect and nurture their members adequately without action outside the home as public citizens. She was not averse to the home

> economists, themselves, being activists as individuals. But she believed the home economist's professional role was to help homemakers see the political importance of individual actions, indeed the vital necessity of taking public action in order to secure private good for their families. She hoped the home economists would march for suffrage. She chose to work with the Negro women to raise their awareness and to urge them to march. (p. 141)

In Conclusion

In her book on Caroline Hunt, East (1982) quotes from Brown and Paolucci's 1979 publication. The quotation is not part of a critique of Hunt's ideas and ideals, but East thinks that "Caroline Hunt's beliefs ring out again in the statement,"

> The mission of home economics is to enable families, both as individual units and generally as a social institution, to build and maintain systems of action which lead (1) to maturing in individual self-formation and (2) to enlightened, cooperative participation in the critique and formulation of social goals and means for accomplishing them. (p. 140)

We think that a high school graduate's general education should help with confronting the question of the political content of what he or she is studying in home economics and the political stands that are endorsed. Admittedly, such a thought may be far from what the student encounters in home economics readings. The "manipulative or skill aspects of the homemaking job" is as apt to be the lesson. Presumably authors agree that,

> On the skill with which household tasks are performed depends other aspects of home life. The homemaker who serves poorly cooked, unattractive food, whose own clothes or whose children's clothes are dowdy, whose house is disorderly and not well cared for, often finds her children and husband irritable and herself in a state of confusion. (Coon, 1943, p. 271)

The Coon essay includes brief sections of the "managerial and business aspects of homemaking" (pp. 269-270) and the "personal relationship aspects of homemaking" (pp. 270-271). The students and teachers must ask themselves whether these are unimportant parts of home economics education. Coon also writes of "The Scientific Aspects of the Homemaker's Job" (pp. 272-273) and "The Psychological-Social-Political Aspects of Homemaking" (pp. 273-274). True, both the latter are treated so briefly that the reader is ill served, but the categories promise a great deal to be gained in the name of general

education and by the collaboration of home economics teachers with colleagues from academic fields. So it is with the small section Coon devotes to "The Artistic Aspects of Homemaking" (pp. 274-275). Perhaps the most promising interdisciplinary relationship that can be struck by a teacher of art or art education, would be with someone in home economics (or industrial arts), whose special interest is design.

Whether the issue has to do with design, what kind of food to buy, or what ideology to pursue politically, the student of home economics is face to face with options in which values are expressed. Alongside these values is data relevant to the decisions. To the extent that a graduate of a secondary school has become an educated person, the graduate will have to reflect on the values to which she or he is committed, as well as on the data that applies. Even so cursory a review as this one shows that collaboration can be of great help in clarifying what data is important and which values are at stake. Home economics today seems enmeshed in finding its identity. The general education of high school students doubtless will be touched by the quest, but we think collaboration holds a greater potential for reward. Very quickly, collaboration will indicate that any branch of home economics, present or past, has much to offer academic studies and academic studies will be shown to enlarge the horizons of the students in home economics. General education cannot but profit.

INDUSTRIAL TECHNOLOGY EDUCATION

Introduction

No specialty of vocational education in the country is more intimately a part of society and culture than is industrial arts education or, as it is increasingly called, industrial technology education.[20] This close bonding of preparation for employment that affects, and is affected by, society and culture, encourages us to expect that a high school student's general education will benefit by the collaboration of teachers of industrial technology education and social studies. No doubt, there must be attention to the sciences, to art, and other academic studies. Unfortunately, social studies has been passed over during the development of industrial arts/industrial technology education.

We hope to illustrate how fruitful collaboration can be by discussing literacy in industrial technology, drawing on the history of preparation for relevant occupations. "Relevant occupations" refers to occupations that a generation ago would hardly have been thought industrial. Daiber and La Clair (1986) divide "student pursuits beyond high school into four areas: communication, construction, manufacturing and transportation" (p. 98). The same authors go on to list ten objectives commanding these four areas of pursuit, only one of which was to "Provide a classroom setting which allows students to examine societal problems that result from people's use of technology" (p. 97).

When the Minnesota Department of Education (1988) undertook to circumscribe the area of industrial technology education, its formula included

> the areas of communication, energy and power, production, and transportation. It is concerned with technology, and its evolution, utilization, and significance; with industry, and its organization, personnel, systems, techniques, resources, and products; and finally, the social/multicultural impact of both technology and industry. (p. 17)

It is not until the reader reaches the phrase "the social/multicultural impact of both technology and industry" that the teacher of industrial technology education is expected to think of what the field means for society and citizenship apart from technology. Those who work wherever and at whatever level of occupational responsibility can be expected to act as responsible citizens. It may not suffice to describe the mission of teaching industrial

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20 As is evidenced by the title recently used by the Minnesota Department of Education, *Model Learner Outcomes for Education*, 1988.

technology education solely in terms of technology, even when we have recognized "the social/multicultural impact of both technology and industry" in another context. The following goal is an example of the technological focus that so often characterizes even the most advanced programs:

> The goal of industrial arts/industrial technology is to develop students who are technologically literate. This means students and young adults who understand and appreciate the highly technical world in which they live. This means using process skills and providing experiences in classroom activities that assist in developing self-forming-people who are autonomous and in control of their lives. Industrial arts/industrial technology emphasizes both knowing and doing. It applies mathematics, science, and communication concepts to "real world" problems citizens face in their daily lives. It provides relevance and application which integrate learning which may previously have been fragmented, isolated, or disconnected from any experience or environment the student may have encountered. It requires higher order skills such as analysis and synthesis to solve problems, construct usable devices, and understand industrial-technical systems. (p. 38)

In our opinion, the usual program of industrial technology education does not allot enough time to thoughtful study of the following issues in an extension of socially aware legislation: provisions made in federal legislation supporting vocational education for minorities, funding for non-discriminatory programs, and protection of the environment. It is close to the life of the high schoo student that some will drop out of school or will fail to receive preparation adequate for employment in an economy depicted as "high tech." Much the same will be said for other developments in what has come to be dubbed industrial technology. Pointing a finger of blame is not the intention; heightening the awareness of students is. We think that collaborative teaching is more likely to succeed in sharpening the understanding of what is real in the industrial world. There are no lack of subjects for student discussion. Wage differentials can stand as an example. In this instance, the collaboration is not with a teacher of mathematics or the physical sciences, but someone whose study has included economics. In a report released by the United States Census Bureau on July 25, 1989, the student learns that wives earn only fifty-seven percent as much as their husbands:

> The report found that wives working at full-time, year-round jobs earned an average of $18,929 in 1987, up 15.9 percent from 1981. Husbands in full-time jobs earned an average of $33,054 in 1987, up 11 percent from 1981. (Scripps Howard News Service, p. 1)

Much of our failure to consider that which is not directly part of the technological revolution is that change has overwhelmed us: "Coping with the rapid technological change is the greatest challenge that curriculum developers face" (Lauda & McCrory, 1986, p. 16). Change indeed has come quickly. Thus, the American Industrial Arts Association has become the International Technology Education Association, at one and the same time displacing industrial arts as a descriptive title while acknowledging the international presence of technology. The appearance of the word certainly did not mean that the field was newly aware of the world beyond our shores. Of all the vocational specialties, industrial technology education had been aware at least of developments in northern Europe (Beck, 1988b).

Since 1970, the name technology education has come to the fore in answer to the question, "What title should be given to a program designed to help students comprehend their technological inheritance and technological future?" (Lauda & McCrory, 1986, p. 15). Although we do not choose to subsume all technological change under one rubric, effectively erasing such specialties as agricultural education, business and marketing education, home economics, or the thought of technology education is not to be dismissed out of hand. It has the merit of calling attention to the comprehensive nature of a changing technology that has touched so many and accomplished so much. At another time we will return to the thought behind the title, technology education. This circling back will refer to a series of articles carried by the *Scientific American* in 1982.[21] The issue was devoted to "the mechanization of work." Perhaps mechanization is to be preferred over technology. While it achieves a recognition of how far mankind has come in mechanization, reviewing work in agriculture, mining, design and manufacturing, commerce, and office work allows recognition of specialties. We, too, see merit in that recognition, although, as stated repeatedly, we wish to encourage communication between the specialties.

Three points are to be clarified: First, the phrase "industrial education" has been used on occasion. Industrial education includes vocational-industrial education *and* industrial arts education/industrial technology education. Second, vocational-industrial education is another vocational field, but one with which we are not dealing specifically.

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[21] The 1982 issue of the *Scientific American*, published Ginzberg, "The Mechanization of Work" (pp. 66-75); Rasmussen, "The Mechanization of Agriculture" (pp. 76-89); Marnvelli and Karhnak, "The Mechanization of Mining" (pp. 90-113); Gunn, "The Mechanization of Design and Manufacturing" (pp. 114-130); Ernst, "The Mechanization of Commerce" (pp. 132-144); Giuliano, "The Mechanization of Office Work" (pp. 148-164); Scott, "The Mechanization of Woman's Work" (pp. 166-187); and Leontief, "The Distribution of Work and Income" (pp. 188-205).

Third, Industrial arts education, under the present federal act, is eligible for federal support and is, therefore, legally a vocational education field. The official literature of the American Vocational Association and the U.S. Office of Education refer to industrial arts education as "general vocational education." On the other hand, industrial arts educators, as well as industrial technology educators—and we will use the phrase *industrial technology education* most often—only rarely think of themselves as vocational. For a long time they have thought of their field as a part of general education. This last will make our task all the more easy.

As stated, our objective is the enrichment of a high school student's general education. For that, the student has to have more than a cognizance of what science and technology have done for their vocational specialty. They should come to realize that the *Scientific American* articles by Scott, "The Mechanization of Women's Work" and Giuliano, "The Mechanization of Office Work," share common ground. American society and culture are part of that common ground.

The reality of change, rapid and ever more rapid, has not been overlooked. We recall that in its day industrial arts education had displaced manual training, a change in name that recognized that industry's factory hands outnumbered the skilled hands of craftsmen. If we restrict the discussion to the factory, it too has changed and so has the workforce (Braden, 1987-1988). For one thing, the workplace has non-human members of its workforce. The production often is continuous, a phenomenon made possible by automation and robotics:

> Automation and robotics are two closely related technologies. In an industrial context, we can define automation as a technology that is concerned with the use of mechanical, electronic, and computer-based systems in the operation and control of production. Examples of this technology include transfer lines, mechanized assembly machines, feedback control systems (applied to industrial processes), numerically controlled machine tools, and robots. Accordingly, robotics is a form of industrial automation. (Grover, Weiss, Nagel, & Odrey, 1986, p. 3)

The idea of robots need not be explored solely in terms of industrial automation. Robotics invites reflection on our civilization. Grover and his associates remind us of Shelley's *Frankenstein* and go on to write,

> A Czechoslovakian play in the early 1920's by Karel Capek, called *Rossum's Universal Robots*, gave rise to the term robot. The Czech word "robota" means servitude or forced work, and when translated into English,

> the translated word became robot. The story concerns a brilliant scientist named Rossum and his son who develop a chemical substance that is similar to protoplasm. They use the substance to manufacture robots. Their plan is that the robots will serve humankind obediently and do all physical labor. Rossum continues to make improvements in the design of the robots, eliminating unnecessary organs and other parts, and finally develops a "perfect" being. The plot takes a sour turn when the perfect robots begin to dislike their subservient role and proceed to rebel against their masters, killing all human life. (pp. 6-7)

While the authors are willing to let the matter drop with a reference to the origin of the word robot, the illustration of an opportunity to collaborate is attractive. A teacher of literature and one of industrial technology education can exploit Shelley's *Frankenstein*, Capek's play, or samples drawn from modern science fiction.

Mention of automation and robotics reminds us of what is meant by describing ours as an "information age" or the "data age." The worker, the manager, processes data, supplying data to both humans involved in making decisions and to such automated mechanisms as robots. Decision-making skills, as well as an ability to communicate and cooperate, are highly prized by employers, but our attention is on industrial technology and the part it can play in developing a strong general education at the high school level. A powerful challenge to that goal is whether our society can afford to indulge a general education, especially one that is the outcome of a shared process of collaboration. Collaboration would not be a bother if it could be confined to mathematics and such sciences as physics, chemistry, and biology. No one objects to such collaboration or to including more study of those subjects for the sake of technological competence. The problem comes when one declares in favor of a general education and argues that collaboration with teachers of mathematics, physics, chemistry, and biology will not suffice.

The section that follows on literacy in industrial technology is a reflection on development, reflection that takes as its vehicle some of the federal legislation that began with the Smith-Hughes Act of 1917. Charles Prosser will be conspicuous, but some of the movements and thinkers who dominated industrial arts education in the nineteenth century will not be dismissed.

Literacy in Industrial Technology

Under the heading of "A Technolcgical Base for Education," Lauda and McCrory (1986) offer an introduction to technolcgical literacy, one whose thesis has become familiar:

> The educational system of today cannot afford to provide society with individuals who live in a high technology society with a low level of technological understanding. Repeated calls for technological literacy have appeared in the past several years. The National Science Board Commission's [1982] report entitled "Today's Problems, Tomorrow's Crises" is one example of this warning. Their report states that the educational system must be able to broaden the pool of students who are prepared and highiy motivated for careers in math, science, and technology. (p. 22)

Few would consider this assertion contentious. Quite apart from society's need for a broadened pool of students "prepared and highly motivated for careers in math, science, and technology," the general education of all high school students, including that fraction whose vocational interests attract them to industrial technology, should be familiar with some of the implications of our scientifically and technologically powered society. That fraction of students who are enrolled in industrial arts programs, or even a single course, have an advantage. If broadened through collaboration, their studies can permit them insight into the realities of what so often has been called a "technological revolution." The collaboration is of pressing importance. If the literature is correct,

> Programs have not kept pace with the changing technology. Updating laboratories to reflect contemporary technology is cost prohibitive and alternatives to this problem have not been a high priority for many teachers. (p. 29)

If cost truly is prohibitive, collaboration with teachers of mathematics, physics, chemistry, and biology is mandatory. It will not suffice to admit that too many of our industrial arts programs "are still based on the teaching of woodworking, metalworking, and drafting":

> Traditional industrial arts curriculum designs use content primarily concerned wi.h industrial materials [woods, metals], processes [drafting, graphic arts], or physical phenomena [electricity, energy/power]. (p. 34)

Adding to the urgency is the "knowledge explosion":

> The amount of knowledge present today has been forecast to double again in approximately eight years. This exponential growth rate of knowledge has further accelerated new innovations and broadened the gap between classroom subject matter and the technological realm. Because of the wide separation between reality and many present high school industrial arts programs, there is need to realign and upgrade content to be congruent with modern technology. (Daiber & La Clair, 1986, p. 95)

To update courses that call for modernization, turning them into courses in industrial technology, makes collaboration all the more relevant. Were the updating to happen and the mathematics-physical science collaboration also to be realized, industrial arts students still would be disadvantaged. To sense what would be missing, Lauda and McCrory (1986) provide a clue: "The programs [in industrial arts] have been materials/project oriented, making them involved with technical processes without conscious concern for the sociocultural context in which they exist" (p. 28). Lauda and McCrory leave the difference that might be made by a conscious concern for sociocultural context to our imagination. We think that unless there is collaboration with teachers in social studies, students in industrial technology will learn little more than what the media states about nuclear disaster, pollution, disposal of toxic waste, and all that is linked to the cost of technology. What the media omits is what citizens and their political leaders can do about these issues. Without the collaboration of teachers of mathematics and the physical sciences (overlooking the earth and biological sciences), a relevant portion of the study and discussion is apt to be shunted aside. That cannot be accepted if industrial technology is to be part of general education. Nor do we think that it is enough to reduce "social-cultural skill development" to "helping students to become more capable of decision-making, problem-solving, communicating, and coping as citizens, consumers, or employees in a changing world" (Daiber & La Clair, 1986, p. 114).

The students in industrial technology hold our special attention. We can appreciate the advantage enjoyed by the industrial technology teacher who can collaborate with much of the academic faculty—without forcing the communication. Lauda and McCrory (1986), arguing for technology education, assure us that,

> The student gains a comprehension of the human endeavor we call technological process. Civilization is more than buildings, cities, devices, and tools. It embraces emotions, beliefs, ideas, and methods of thinking, all of which are involved in invention and innovation. Today's information age is demanding and calls for individuals who can function with their

> technical means and within the institutions established for developing, utilizing, and controlling those means. Technology education can provide content and instructional strategies within a laboratory setting which introduces students to technological concepts.
>
> The student gains a content base which will amplify work in the other disciplines. This is inevitable since the use of technical means is basic to human existence. So long as the discipline merges the technological, ideological, and sociological systems together, interdisciplinary benefits are inevitable. (p. 30)

This gain must move beyond rhetoric. To be literate in industrial technology, the high school student must encounter more than what Lauda and McCrory (1986) propose as an alternative to conventional industrial technology:

> As an alternative, McCrory [1980] has suggested a technology education curriculum model which identifies six elements [humans, energy, tools, materials, information, processes] to be studied in the contexts of production, transportation and communication. (pp. 34-35)

Granted, we are thinking only of industrial literacy, with literacy a rather minimal objective. Even for so undemanding a grasp on industrial technology as literacy implies, we think that more can be expected than this model offers. Whether the student has a vocational end in sight, or is in some non-vocational curriculum, she or he needs to understand that technology encompasses a great deal. The term is Greek in origin and the Greeks intended *technè* or its plural, *technai*, to include all skills. One has only to read the long list of *technai* claimed as Prometheus' gifts to mankind (Aeschylus, 1960) to know that we would do well to enlarge our sense of literacy in industrial technology. Industrial design is an example of a technique, a *technè*, or set of techniques that has/have played a conspicuous part in the development of modern industrial fabrication. The Arts and Crafts Movement of the nineteenth century, introduced here after being developed in England, was only the forerunner of a modern interest in design. Should it be ignored, even when one's sights are as low as is suggested by literacy? Historians of the American development of industrial arts tell of the English background to the American attention to design:

> The British House of Commons became concerned about the shortcomings of British arts and crafts and appointed a committee in 1830 to determine ways and means of extending the knowledge of arts and crafts among the people, especially among those engaged in manufacturing. The committee agreed that a deficiency existed in artistic knowledge and suggested that the British government establish a school of design to afford manufacturers an

opportunity to acquire more knowledge of the fine arts insofar as they affected the products manufactured in Great Britain.

The School of Design was opened in London in 1837 under the management of the London Board of Trade. The course of instruction consisted of drawing and the history and application of ornament to the manufacturing industry. (Roberts, 1957, p. 65)

Other Arts and Crafts schools opened their doors in England, schools that taught that what factories produced for the consumer lacked design. As Bennett tells it in his classic study of the early history of industrial arts, the movement grew out of the teaching of Thomas Carlyle (1795-1881) and John Ruskin (1819-1900). They cried out against mechanical duplication, against insincerity in art, and against the use of meaningless ornament, art was not something superimposed; it was in the thing itself, in its proportions and structure. . . . The recognized leader in the movement to apply the teaching of Carlyle and Ruskin was William Morris (1834-1896). Associated closely with him throughout his life was the painter, Edward Burne-Jones . . . whom Morris met at Oxford. Associated with those two in spirit, and often in labor, were Dante Gabriel Rossetti (1828-1882), painter, Philip Web, architect and designer, and several other artists and craftsmen. (Bennett, 1937, pp. 295-296)

Toward the end of the nineteenth century,

> The arts and crafts movement found its way to this country from England in the early 1880's when Charles Leland introduced the idea in the schools of Philadelphia. He considered some of its important features to be the development of an understanding of artistic design, practical skill development for leisure time and profitable purposes, the revival of artistic pursuits being eliminated by industrial machinery, and the suitability of decorative art to the abilities and interests of children as opposed to trade or mechanical studies. (Barella & Wright, 1981, p. 184)

This brief introduction of design into the treatment of industrial technology literacy hints at how rich a contribution one can make to a student's general education through the collaboration of teachers of graphics in industrial arts or industrial technology and, in this case, graphics teachers associated with art education, studio art, and literature. This might be an illustration of what is intended by Daiber and La Clair (1986) when they number among the objectives of technology education participation "in multi-disciplinary activities in the school curriculum to illustrate the relationship of technology to other subject areas" (p. 97). It surely gives the lie to the misconception that only today's most future-looking educator will "Use design concepts to develop problem-solving and creative thinking abilities through product design and innovation" (Minnesota Department of Education, 1988, p. 23).

A Plus and a Minus

The literature touching on literacy in industrial technology does rate a plus in specifying what students should be able to do. This may be one of the useful results of the demands made in the name of accountability and student competence. The minus is the almost total lack of similar attention to the chances for intradisciplinary coordination within the special areas of vocational preparation and, equally regrettable, opportunities for interdisciplinary collaboration between teachers in the vocational subjects and their colleagues teaching academic subjects. At the moment, we are thinking about the literacy of high school graduates with an eye to industrial technology. The fact that the student population under review has shown a definite interest in a vocational future should make the task of sketching literacy requirements easier than if we were asked to think of the general education of high school students selected at random. Of course it might, if we brush aside the notion of general education and hold our demands to technical competence in such areas as communication, energy and power utilization, production, and transportation: "The technical skill areas focus upon students' ability to correctly use modern tools, machines, materials, processes, and technical information" (Daiber & La Clair, 1986, p. 114). There is no need to withhold approval for mastery of those skills. They do not conflict with the ambition of cultivating literacy in industrial technology for the sake of a convincing general education. The contrary is true. To be literate in industrial technology obliges the student to know that industrialization has affected the family and home; has affected business and marketing; has a significant relation with agriculture; and is related with the preparation of those employed in the work we call health care. It is no less a gain to exercise the collaboration which we have advocated.

If the latter needs further illustration, consider the collaborative possibilities of the following objectives listed by the Minnesota Department of Education (1988).

Under the heading of *Communication*, we have culled only a few examples, including

> Analyze communication impacts on the environment. Identify and describe the roles of communication in industry, e.g., to inform, persuade, educate, promote equity, and entertain.
>
> Explain the principles of photography (chemistry).
>
> Define high technology terms associated with telecommunications like satellites, lasers, holography and magnetic bubbles. (pp. 22-23)

Under the heading of *Energy and Power Utilization*, we elect the following five objectives for student competence:

> Discuss the impact of tax incentives on the development of alternative energy sources.
>
> Use mathematical formulas to calculate electrical, fluid, mechanical, and radiant power values.
>
> Define the terms "renewable" and "non-renewable" energy sources and identify several examples of each.
>
> Draw a block diagram of a basic nuclear reactor.
>
> Draw an atom and identify each part by name. (pp. 26-28)

The teacher of physics would be the appropriate collaborator when a teacher of industrial technology wished to deepen the understanding of the structure and potential of the atom or the nuclear reactor. The teacher of mathematics and of social studies, if the latter has studied some economics, would also be appropriate for certain types of collaboration. We do not apologize for repeating that these acts of collaboration are of benefit to the general education of those students who have not elected vocational preparation.

In fact, they have an opportunity to see how the ideas with which they are in touch can be applied as seen by the following real life example. At a school's open house, a visiting teacher of mathematics stopped by a shop in the tool-and-die area where a student was setting up a divider head on a milling machine. The teacher asked what was involved and, learning that sines were essential to the process, is reported to have said, "Why I have been working with sines for fifteen years in a class on trigonometry and never knew how they were used."

> That for which we have argued certainly is evident in the area of *Production*:
>
> Identify and describe material, human, and capital resources necessary for materials processing. [Social studies teachers familiar with the concept of human capital development should be intrigued.]
>
> Discuss the impacts of new technology on the efficiency, cost, and speed of manufacturing and construction, and their social, national, and international political implications.

Compare and contrast the types of multicultural, gender-fair, human resources, e.g., management, technical, and production-type human resources.

Become aware of impacts and effects on people and goods of strikes, layoffs, company/business politics, labor contracts, affirmative action, quality of life, and buying power. (pp. 29-31)

The area of *Transportation* has its own expectations for students. For example, they are to

Analyze the impact transportation has had and will have on the environment and on diverse cultures in society.

Compare the advantages, disadvantages, and applications of vehicles and devices in the transportation of diverse people and goods. (pp. 33-35)

Collaboration in Reflections on the History of Industrial Arts/ Industrial Technology in the United States

The history of industrial technology education in the United States can be roughly divided into two parts of very unequal length. One segment goes back in time from the signing of the Smith-Hughes Act in 1917 to Colonial times. Smith-Hughes becomes the pivot, or almost so, because events between 1906 and 1917 also will command our attention.

With the Smith-Hughes Act, the federal government became an important player in the story of developing industrial study that has been vocational in tone. Vocationalism wholly displaces such an aim as manual training which, in its time, sought to train the mind and thereby lay claim to a conspicuous place in general education. Teacher and student face the question of whether the nature of education in industrial technology has forsaken general education in preference to vocationalism.

In that questioning of the field's character, two persons figure prominently: David Snedden and, certainly, Charles Prosser. We have met Prosser in earlier portions of this essay. One reason for his ubiquity is that Prosser steered the Smith-Hughes Act into a vocational mold. That emphasis became the one that fitted all the "George" bills that followed Smith-Hughes. It is arguable that, while concern for ethnic groups, minorities as

a whole, women, and others in need of special protection has become conspicuous in vocational legislation, support for the vocational has not taken a back seat to social conscience. While that assertion is debatable—and we shall see that probing the character of the supportive legislation invites collaboration with social studies—Prosser was Snedden's student and right-hand man. Snedden cannot be left out of these reflections, although we will do little more than mention his educational philosophy, which favored Prosser's vocationalism and irritated John Dewey. Because the Snedden-Dewey debate (*The New Republic*, 1915) can have no more than a very small place in a high school student's general education, justification for its inclusion is simply on the grounds of its relevance in a vocational teacher's professional background. That holds, whatever the teacher's professional specialty.

Federal legislation and the debate over vocationalism is not all that preoccupied those involved in industrial technology in the years leading up to, and away from, the Smith-Hughes Act. There were such European contributions as sloyd and the Russian tool exhibit of graded models at the Centennial Exposition of 1876, the manual training movement made famous by Calvin Woodward, and the introduction of industrial arts, a term first used in the literature in 1904 (Barella & Wright, 1981, p. 180).

Prior to Smith-Hughes

The early years of what was to evolve into industrial technology really have not been studied in any depth and have not been carefully related to the economic and political life of the colonies and, later, of the new nation.[22] The early record is one of apprenticeship, eventually complemented by private evening schools (Martin, 1981). Apprenticeship is what the colonials had known; its continuance was to be expected. As increasingly more of the industrial (mechanical) revolution nourished American production, three trials at training became dominant: the manual labor movement, mechanics institutes, and manual training.

The manual labor movement lasted only fifteen years, from 1830 to 1845, and it is doubtful that it was more than a passing venture, promising much but proving unappealing. One of its claims worth noting was that manual exercise would benefit students. Here the

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[22] This is persuasive despite the publication of Barella and Wright, 1981.

collaboration of the industrial technology teacher and that social studies teacher who is tutored in intellectual history, could be fruitful. That is, the claim that manual training exercises the mind has surfaced many times—the thoughts of Rousseau and Adler serve as prime examples—and is a noteworthy part of a vocational student's general knowledge.

A much more compelling case can be made for the mechanics institute movement, whose inception appears to have been in 1820 and one of whose best known early representatives was the Franklin Institute of Philadelphia. Clearly the name of that institute invites reflection on the views Benjamin Franklin had on skill training, but, more to the point, students will learn that the institute approach was not transient but evolved into collegiate technical institutions, for example the Rensselaer Polytechnic Institute which had been the Rensselaer School, founded in 1824.

Is this fraction of American social-educational history suitable for inclusion in a high school student's general education? This is a difficult question to answer. The evolution of the Mechanics Institute does provide insight into the steps taken in technology, steps that led to the mastery of increasingly more advanced science. Consider Bennett's (1937) comment on the background of the Worcester Polytechnic Institute. The context of Bennett's commentary is the steady increase in the demand for applied science, for technology:

> All this development in applied science was yielding results in the industries of the nation but there remained the increasingly important work of training more engineers, designers of machinery, factory managers, and other masters of both scientific principles and practical details. Such training involved instruction in the mechanic arts and the processes of manufacture as well as in mathematics and science. The first institution to make adequate provision for such instruction was opened in 1868. This was the Worcester Country Free Institute of Industrial Science, later known as the Worcester Polytechnic Institute, at Worcester, Massachusetts. (p. 311)

By the middle of the century, Yale had its Sheffield Scientific School (1847). The Lawrence Scientific School was opened by Harvard in the same year and the Chandler Scientific School was announced for Dartmouth College in 1852. The Morrill Land Grant Act of 1862 provided many states with public collegiate institutions in agriculture and the mechanic arts. Discussion as to the reason why the schools of technology were established is a memorable part of American social history. The high school student will come to sense how dependent the American economy was becoming on industrial technology. More than that, the student will have a chance to think about a real dilemma in American education—

does applied science have a place in general education? This is a question that should be answered when the teacher of industrial technology is teamed with one or more teachers of mathematics, the physical sciences, or the social sciences. Unfortunately, too many teachers of mathematics and the physical sciences have been trained without attention to the relevance of their academic fields to general education.

Manual training, oddly enough, was introduced by a college professor of mathematics, Calvin Woodward, who had graduated from Harvard in 1860, just two years before the signing of the Morrill Land Grant Act. He was quickly made a professor of mathematics and applied mec[illegible]s at Washington University, St. Louis, where he also became Dean of the polytechnic [illegible]culty. Teachers and students may note Woodward's combined assignments in what today is termed pure or basic science and applied science or technology. It also is relevant to think about why there developed so wide a gulf between the vocational and the academic.

Woodward was not troubled by any chasm separating the basic from the applied. What bedeviled him was that students in his class on applied mechanics had difficulty visualizing the forms being taught. When he asked them to make the forms in wood, Woodward discovered that they did not know how to use the requisite woodworking tools. Woodward was not alone. The President of the Massachusetts Institute of Technology, John Runkle, visited the Centennial Exposition (1876) and was impressed with the Russian exhibit of graded models. So was Woodward. Runkle thought that making these models, or others like them, was exactly what his students needed and he intended to build a series of shops at MIT to teach the mechanic arts—quite like laboratories that had been dedicated as adjuncts of the theoretical studies of physics and chemistry.

Our collaborating teachers should know that Woodward and Runkle looked beyond the laboratories and models. They thought about the educational principles. As Bennett (1937) observed, Runkle "recognized the value of instruction in the mechanic arts for the purposes of general education" (p. 334). Woodward agreed. The shops "were not to teach trades." But, then, Woodward paused, "In our desire to eliminate all narrow utilitarian motives, have we not sometimes run to the other extreme and excluded from our schools important and essential branches of study because they were suspected of being useful?" (p. 338). The question Woodward asked is germane to a general education, even that of a high school student.

Bennett titled the decade 1880 to 1890 "a period of controversy." Students should know that a century ago American educators were embroiled in an often heated debate over the merits of "mental discipline" through shop work. There were those who took the position that "whatever energy or strength was absorbed in manual training exercises with tools was just so much energy withdrawn from mental training" (p. 361). The leader in opposing the idea of training the mind by high standards in the use of tools was William Harris, philosopher, Superintendent of Schools in St. Louis, Missouri, and later the first United States Commissioner of Education. Harris's position marks one of the first articulate statements that industrial preparation had no place in a general education. While his real target was the advocacy of vocational preparation advanced by the popular English thinker, Herbert Spencer (see Harris, 1902),[23] Harris managed to set in motion the idea that vocational preparation had no place in a proper education. In fact, Harris probably spoke for many in hailing a manual training school that would "save valuable time . . . for general studies" and would establish a "manual training school side by side with the high school as an independent institution for the preparation of youth for their vocation" (Bennett, 1937, pp. 362-363).[24]

The salient point for teachers and high school students is what subjects or exercises do "train the mind" or afford "mental discipline." Controversy over that point bears directly on why a student might elect a vocational study. Teachers may wish to review the findings and conclusions of the experimental psychologist Edward Lee Thorndike (1913). Thorndike contributed a good deal to the inference that Latin or mathematics were no more promising than other studies for the attainment of mental prowess.[25] What mattered was to exercise what was essential to the task that had to be done! The debate continues to this day.

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[23] The key essay of Spencer's that presented a target to Harris was "What Knowledge is of Most Worth?" in *Education: Intellectual, Moral, and Physical*, 1861. The American publication included essays that had appeared in British journals between 1854 and 1859.

[24] Harris was commenting on the 1884 annual convention of the National Education Association, at which there were displays in the field of industrial education prepared by The St. Louis Manual Training School, The School of Mechanic Arts of the Massachusetts Institute of Technology, The Illinois Industrial University, and Purdue University.

[25] Thorndike's theory of "identical elements" is spelled out in his widely-read *The Psychology of Learning* (1913). Thorndike wrote that "if the stimuli in two situations were similar and the same response were called for, transfer should take place" (vol. 2, p. 358). This concept is commented upon in Gage and Berliner, 1984, p. 353.

Collaborating teachers surely can point out the broad implications and the educational precedents in this controversy. With the involvement of the social studies, and presuming an interest in American social and cultural history, the student of industrial technology should do well. In New York City in the 1880s, the work of three people converged and their eye was on the youngsters of the poor. The first was the Kitchen Garden Association of Emily Huntington, the idea so attractive to Mabel Dodge and noted in our writing on home economics education. The Association was to grow into the Industrial Education Association. The other was The Workingman's School and Free Kindergarten opened by Felix Adler, who was to found and become the leader of the Ethical Culture Society. The objectives of Huntington and Dodge were not identical with those of Adler, but they were complementary. Adler (1937) believed that the lot of the poor could be bettered by strengthening the minds of their young people and that manual training was the way to do it (pp. 456-459). However, not one of the three felt that there should be an independent vocational school. Adler (not given/b) was the most outspoken:

> We do not propose to give our pupils an aptitude for any particular trade. . . . We would consider that a retrograde step rather than as a step in advance, if we were to prevent these young lads and little girls from spending even a few years in gaining knowledge, without reference to the pitiable necessities of their after-lives; we do not propose to yoke their young souls before they have had time to expand at all into the harness of trade merely for the sake of earning their bread better afterwards. (pp. 13-14)

Adler believed that the school, in all its teaching, was to exhibit a "creative method":

> We lend . . . an entirely new import to the method of the industrial education in the school. We are seeking to apply the principle which ought to be at the foundation of every modern scheme of education: namely, that, as experiment conjoined with observation is necessary to the discovery of truth, so object-creating must supplement object-teaching in that re-discovery of truths which it is the purpose of all education to facilitate. Therefore, work instruction is not something outside the regular instruction, it is an organic part of the regular instruction. It becomes a means of teaching mathematics, for instance, more thoroughly, causing the pupils to work out mathematical truths with their own hands. . . . It becomes the means of making the hand a wise and cunning hand by putting more brain into it. But, on the other hand, it also makes the brain a clear and vigorous and enlightened brain, by giving it the salutary correction of the demonstrations of the hand. (p. 14)

There were those who, by the turn of the century, felt that there ought to be separate vocational schools, although not for the purpose of siphoning off intellectual misfits from the schools for general education. Among them were Snedden (Drost, 1967) and Prosser. Both believed in freestanding vocational schools, uncompromised in their instruction by an obligation to offer general education. Snedden was well known and his thoughts acted as a lightning rod. While Snedden did receive support, his ideas also were vigorously opposed. No doubt his best known opponent was the philosopher, John Dewey, and the two men exchanged brief sallies in *The New Republic* (Drost, 1967; Snedden, 1915; Dewey, 1915; also see Wirth, 1972, 1974). The context in which their difference of opinion was aired is what matters to this discussion.

Our high school student has become acquainted with manual training schools as a notable step in the unfolding story of industrial technology education in this country. Schools always live in a matrix that is altered by what is happening in society and by a variety of cultural values. In the case of manual training schools, one is tempted to single out the word "manual" and to think about its derivation from the Latin term for hand, *manus*. Doubtless a few people did sense a contrast between *training* the hand, so that a person was skilled and *education* by means of a book (*liber* used as a noun) for a freeman, someone free from work (*liber* used as an adjective) and, thereby, able to afford the time for reading books. Interesting as such speculation might be, it does not illuminate the American scene early in this century. All that needs to be recognized is that the American trade and, therefore, industry, was in a poor competitive position *vis à vis* its principal competitor, Germany. There was a shortage of skilled labor.

It stands to reason that manual training schools were heartily supported by manufacturers, merchants, and others in the business community:

> In several notable cases, they were so much in favor of it that they were willing to provide funds to establish schools of this type. They looked upon the manual training schools as the solution of what they regarded as one of America's greatest problems. They believed that this new type of school was to solve the problem of providing more skilled labor. (Bennett, 1937, p. 382)

At first the manual training schools were envisaged as private, but then

> Many leaders in educational thinking had reached the conclusion that perhaps the industrialists were right and that no harm would come to general education if specific training for a vocation were given at public expense.

> Some still insisted that such training should be given as part of the public-school offering and so preserve the unity of the system of public education. (p. 396)

That was the context of our introduction of Prosser. For our student, as for the teacher of industrial technology, Prosser is the exemplar of a vocational point of view par excellence. Through him the student can come to grips with the longstanding dilemma of how vocational preparation is to be.

At the beginning of the century, when Prosser comes to our attention, there is a shortage of skilled workers and a high dropout rate in the high schools. Massachusetts did something about this:

> The Massachusetts Legislature by an act of May 24, 1905, provided for a commission on industrial and technical education, consisting of nine persons "representing the manufacturing, agricultural, educational and labor interests" to "investigate the needs for education in the different grades of skill and responsibility in the Commonwealth." (True, 1929/1969, p. 357)

There is no reason to repeat the findings of the Commission beyond these notes from McClure et al. (1985):

> The commission . . . reported that within the state approximately 25,000 youngsters between the ages of fourteen and sixteen were not in school and were either working or idle. However, most of those in this group who were employed were not engaged in an activity that would teach them a trade, but were generally doing menial tasks. The commission referred to the two years between the ages of fourteen and sixteen for this group as wasted years. These young people were not in school and they were not learning a trade. The evidence indicated that the families of not more than 33 percent of the twenty-five thousand youngsters actually needed them to work. For the remaining two-thirds, the decision to leave school centered on their boredom and dissatisfaction with education. The commission believed that if the curriculum reflected a more practical approach to life through vocational education, then those who might leave school could be enticed to stay until they reached age sixteen. (p. 36)

This was in 1906 and the student can ask whether, in essentials, the situation of the dropout has changed.

The student who wonders what became of the report issued in April, 1906, by the Massachusetts Commission on Industrial Education (popularly known as the Douglas Commission because of the vigorous backing of Governor William Douglas) will learn that it met widespread interest, the consequence of which was the creation of the National

Society for the Promotion of Industrial Education. Six years later, on April 1, 1912, Prosser became the secretary of the society and was able to use his office to effectively campaign to secure federal aid for vocational education, a campaign whose success was climaxed by President Wilson signing the Smith-Hughes Vocational Education Act on February 23, 1917.

We now have the interests of youth and employers on our agenda. The student is posed a question on the vested interest of employers in obtaining more skilled workers. There also is the question of a young person's future employment or what she or he has to offer an employer. Before passing judgment on Prosser's stand in favor of vocational preparation, these topics have to be threshed out. The educational values come down to a feeling that vocational preparation is quite different from, and perhaps antithetical to, a general education.

When pondering those questions, it may be relevant to know that Prosser had a degree in law, and had studied and practiced the treatment of juveniles. Prosser also collaborated in writing the education chapters in a book about the New Harmony Movement and colony in Indiana (Lockwood, 1907), one of the most interesting of the utopian communities that have appeared in this country. Once again, collaboration of a teacher in industrial technology, at home in the history of technical development in industrial technology, and a teacher of social studies, informed about American social history, could guide a student in shaping her or his judgment about a man and a series of events such as those in which the Smith-Hughes Act played a part. It is quite likely that in the absence of just such collaboration, the Smith-Hughes Act and the actors most important for its development will be studied unrealistically, if at all.

Prosser was drawn to the New Harmony Movement because so many of the educators noteworthy in formulating industrial education were active in it. Incidentally, the "Introduction" to the Lockwood (and Prosser) book on the movement was written by William T. Harris. Harris saw no contradiction between his appreciation for New Harmony and his stand on the manual training movement or Prosser's allegiance to vocational schools. In sum, Harris drew attention to the educational notables who guided the fortunes of New Harmony—Owen, for one, and Maclure for another. Teacher(s) will know that these are names prominent in the history of Western educational thought.

As Harris saw it,

> The work of Maclure in the school at New Harmony, and afterward as publicist, deserves study on its own account. He brought industrial instruction into his school, and laid so much stress on the mechanical features of education that he in a great measure neutralized the effect of the school on the characters of his pupils, for he more or less turned off the minds of his pupils from those studies which give original initiative, and turned them in the direction of matters of skill and routine practice. In these days of attempts in the direction of manual training and other industrial education, the experiment of Maclure and the results of the people of New Harmony deserve the most careful consideration. (Lockwood, 1907, p. xii)

Harris was very interested in the kindergarten or infant schools which he introduced in St. Louis when he was Superintendent, and in the thought of Pestalozzi.

Prosser and New Harmony, its leaders and school, come alive in the matrix of American social and cultural history. They were part of that history, a history that can be brought to life for high school students. New Harmony was not of little consequence in the American story:

> Notable as New Harmony was in its own time as the scene of an ambitious effort at social regeneration the perspective of years is necessary to an adequate portrayal of its importance in American history. The death-bed of Robert Owen's "social system" became the birthplace of several distinct movements which have assumed great proportions since the story of the New Harmony communism became a half-forgotten chapter in the history of social experiments. There the doctrine of universal elementary education at public expense, without regard to sex or sect, as a duty of the State, was first proclaimed in the Middle West, and through the labors of Robert Dale Own, more than any other one man, this conception of the State's duty had found expression in a common-school system that is the glory of the Republic. Through William Maclure, Robert Owen, and Joseph Neff, Pestalozzi's pupil and the author of the first American works on the science of teaching, the Pestalozzian system of education, now everywhere predominant, was first successfully transplanted to this country. William Maclure's manual-training school at New Harmony was the first of its kind in the United States, and through that institution and its popular publications, the idea of technical training was first widely disseminated in this country. The infant schools established at New Harmony by Robert Owen "the father of infant education" and conducted throughout the lifetime of the communistic experiments, were the first of their kind in America. It was in the schools at New Harmony that the theory of equal educational privileges for the sexes was first put into practice, and through Robert Dale Owen, as author, agitator, and legislator, the New Harmony idea of "free, equal, and universal schools," exerted a determinative influence upon American institutional development. (Lockwood, 1907, pp. 3-4)

New Harmony is an example of what students in vocational programs, as well as their collaborating teachers, should find intellectually intriguing. New Harmony's "communism" did not go beyond the sharing of resources; it had very little, if any, economic-political ideology as baggage. More to be regretted is the limited reference to Pestalozzian influence. Neff was the major instrument of the ideas generated by the pioneering Swiss educator. There is no need to apologize for the introduction of the history of modern education in this document. The pity is that so few teachers know very much of it. It is more of a pity that this educational history has not been treated as part of American social and cultural history. And that last is exactly what Prosser's and Harris' engagement with the New Harmony Movement was. Those two educators were commenting on a promising bit of American history:

> Through William Maclure, "the father of American zoology," Constantine Rafinesque, the pioneer ichthyologist of the West, Charles Albert Lesueur, the first classifier of the fishes of the Great Lakes, Gerard Troost, one of the earliest American mineralogists, and the younger Owen, New Harmony became the greatest scientific center in America, and the first important scientific outpost in the West; there came such distinguished students as Sir Charles Lyell, Leo Lesquereux, Audubon, Prince Alexander Philip Maxmillian and his company of scientists, F. B. Meek, and Dr. Elderhorst. New Harmony became the headquarters of the United States Geological Survey, with one of its own students, David Dale Owen, in charge; it was the site of a museum containing the remarkable collections of Say and Maclure, and of a scientific library unexcelled on the continent. One member of the New Harmony coterie of *savants*, William Maclure, was one of the founders of the Philadelphia Academy of Natural Sciences, another, Robert Dale Owen, became the legislative father of the Smithsonian Institution. It was in certain of the New Harmony communities that women were first given a voice and vote in local legislative assemblages, and there the doctrine of equal political rights for all, without regard to sex or color, was first proclaimed by Frances Wright. Through this brilliant woman, too, New Harmony became one of the earliest centers of the abolition movement, and spoke forcibly through Robert Dale Owen to President Lincoln when emancipation hung in the balance. Through Robert Dale Owen, New Harmony impressed upon American law the modern conception of the legal rights of women. (p. 4)

In Conclusion: The Collaborative Study of Legislation

In connection with the Smith-Hughes legislation, the President established the Federal Board for Vocational Education. Because he had been so instrumental in securing federal support and was so identified with vocational education, Prosser was made

chairman of the board. Organized labor supported the effort and Prosser kept private industry and business involved. One of the first books dealing with schooling in the workplace was Allen's (1919) *The Instructor: The Man and the Job*. Prosser wrote its Preface, including a note that Allen had been his assistant for a decade. What Prosser did not note was that students needed more than skills. At the time of his writing, the high school student interested in becoming ready for an industrial occupation had an unrealistic understanding of what was being federally supported in industrial preparation. For one thing, Black Americans were left out. As we quoted earlier,

> The funds appropriated under the Smith-Hughes Act were restricted for programs in less than college-level courses. The funds were distributed on the basis of the population of a state and its proportion of the national population. Unlike some of its predecessors, the Smith-Hughes Act did not contain provisions protecting the interests of racial minorities. The individual states drew up their plans for vocational education and the extent that programs for blacks were included was a matter left to the discretion of each state. As a result, programs for blacks did not receive the same level of funding as did programs for whites. This was particularly true in the southern states that contained the greatest percentage of the black population. Rarely were vocational programs for blacks funded in accordance with their percentage of the population of a state. A disproportionate amount of the funds from Smith-Hughes went to support vocational education opportunities for white Americans. (McClure et al., 1985, p. 75)

Inasmuch as Prosser was directly responsible for the drafting of the Smith-Hughes Act and we do not know of his objection to the unfair treatment of Black Americans, the student will understand how difficult it was, and still is, to sustain a social conscience sensitive to such principles as equality of opportunity.

Much of what follows highlights what was lacking in the marketplace and what was brought to the attention of legislators for remedy. The Prosser-Snedden point of view was that vocational preparation should not be combined with a general education. Prosser's outlook prevailed for quite some time; some would say to this day. Whether it is true that the vocational fields are overly given to the vocational certainly is worthy of discussion. Instead, however, our attention will be on what can be added to a student's general education if she or he, while enrolled in such a vocational field as industrial technology, has access to collaborative teaching.

In the business and marketing education section, note was taken of the fact that Smith-Hughes made no provision for vocational courses in commercial education and that

provision was not made until 1963. Apparently, private school interests mounted an effective lobby. Students might think of lobbying and special interests. The plight of women and their protection was not considered in this early legislation, nor again until enactment of the Education Amendments of 1974 (P.L. 93-380), Title IV (see Nystrom & Bayne, 1979). The general education of a high school student in any branch of vocational education, not only in industrial technology, must allow the student to confront these limitations.[26] But is it realistic to expect that this will happen? A generation ago the answer almost certainly would have been "no" (for example, see Mobley & Barlow, 1965), except for the fate of the unemployed.

Today there is a great awareness of groups needing protection and assistance. Many students have been unaware of this, what it means for American society, and what legislation has been enacted to meet the problem. Nor have they known what part vocational education might play. Too often what was read and recited was not challenging.[27] The opportunity for strengthening general education was missed. For example, a student might read, "The significance of the George-Deen Act was that it recognized that the personal and public service occupations required skilled people. Vocational education began to broaden its scope" (Nystrom & Bayne, 1979, p. 22). A student who had elected to study in industrial technology should learn that he could be involved. Economic changes, social and political facts, are opportunities for collaborating teachers who wish to enrich general education.

Another failed chance for showing how collaboration of vocational and academic teachers could be useful is evident from a comment by Nystrom and Bayne (1979) on the Elementary and Secondary Education Act of 1965:

> The Elementary and Secondary Education Act was specifically designed to provide sound educational opportunities to youngsters between the ages of five and seventeen. Particular emphasis was placed on the education of students from low-income families. (p. 30)

The poor remain a targeted group and the high school students' study and reflective discussion of poverty is indisputably important. Because of the nature of the problem,

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[26] The writer wishes to recognize the important contributions to this discussion made by his colleague Edward Tebbenhoff.

[27] If followed by collaborative teaching with someone from social studies, a student's general education could be strengthened by "Questions for Review" in Nystrom and Bayne, 1979.

collaboration with teachers from the social studies once again is in order. Surely, this collaboration would call for teacher comment on a passage that otherwise could pass without remark:

> Expanding un- and under-employment, racial unrest, social turmoil, and other major factors began coming to light in the late 1950's and early 1960's. To most concerned vocational educators, it appeared that the traditional concept of providing vocational training to a limited number of students in a limited number of areas was not effective in a society requiring vast numbers of technically trained personnel. An increasing emphasis on job enlargement and education was indeed ready for change. (Nystrom & Bayne, 1979, p. 37)

Collaborative teaching and guidance in reading and in classroom discussion would help expand an understanding of what led up to President Johnson signing the Perkins-Morse Bill (the Vocational Education Act of 1963). This assumes that it is not quite enough to read the following:

> Legislation, in particular occupational education legislation, is a process through which a cultural need is identified, interpreted, and acted upon in relationship to the various pressing economic, political, professional, and social factors characteristic of the society at a specific point in time. It can be postulated, therefore, that the study of a society's legislative enactments is a study of the society itself. . . . The early 1960's saw a dramatic rise in youth unemployment and underemployment: a tremendous personnel shortage in many technical, semiprofessional, and skilled occupations; an increase in the retraining and continuing education needs of workers displaced by automation; and a rising demand for new educational opportunities, both at the secondary and post-secondary levels. (p. 38)

The stubborn effect of poverty was the object of one piece of legislation after another,[28] each linking vocational preparation with increasing employability and reducing dependence and poverty. Affirmative action is simply one more subject that could be probed and, with teacher collaboration, increased in its promise for bolstering a student's general education (Nystrom & Bayne, 1979, pp. 98-102).

As we said at the beginning of this section, the venerable field of industrial technology once again is in transition. Although few of our examples have been taken from the parent disciplines of mathematics, science, and technology, it is unthinkable that the opportunities these hold for the preparation in industrial technology are going to lessen.

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[28] For example, the Manpower Development and Training Act of 1962, the Equal Opportunity Act of 1964, and the Comprehensive Employment and Training Act of 1973.

It is as unthinkable that only those students intending to work in industrial technology will be the ones to benefit educationally from collaborative teaching. We hope that the general education of students in all academic subjects will profit from the same collaboration that has been illustrated in this attention to industrial technology students.

MAKING IT WORK

The Challenge: "Other Than" Not "Better Than"

In this section we confront that longstanding distinction between vocational-technical and academic education. Our conclusion is that it is sensible to think of the two as different in their emphasis, with neither being superior or inferior. This is the first step. What follows complements what has been said in favor of collaboration.

When educator and writer C. P. Snow wrote of two cultures, it was the polarity of science and humanities that he regretted. While that polarity continues to plague higher education, it is another dualism against which this essay has been written. The divisiveness we have in mind is that separating the pure and applied, the basic or pure (as with science) in contrast with the applied (as with technology). Gies (1984) clarifies the difference: by equating science with the discovery of knowledge about things—which might be galaxies, atoms, or cells—in contrast to technology, which is knowledge created—tools, processes, or techniques. Lauda (1985) puts the difference succinctly: "In essence science aims at enlarging our knowledge through devising better theories. Technology . . . aims at creating new artifacts by devising means of creating effectiveness" (p. 4). But that does not end the matter. No one today disputes that mathematics and science must be understood as essential for technological success. The fact is that we have not gone further. We have to attend to the consequences of our technology. Science may be neutral, but the bearing of technology on the quality of life cannot be understood as neutral, indifferent to the consequences for mankind. In our desire to advance technologically, we can limit concern to improving our standard of living. That is simple utilitarianism. Although Maley (1984) restricts his attention to Industrial Arts/Technology Education when he notes our utilitarianism, he could be writing of almost any vocational-technical field. In his words,

> for years the industrial arts profession has tended to relegate its study of technology to a narrow concept of "utilitarian" projects that were selected more for their limited utility rather than as a penetrating study of technology or for their educational value. (p. 3)

The phrase "for their educational value" is to be emphasized. It highlights general education. We have attempted to select a few examples of how a student's *general* education would be helped were academic staff to work with teachers in the vocational

fields. A general education is neither vocational nor academic. The charge of utilitarianism, usually thought of in crass terms, is not fair. What results from collaboration can draw on both academic cultures and we think that it should. The key word is understanding. The interaction that comes with collaboration is not the product of stimulation by the social sciences standing alone. The humanities as a whole are provocative. Grubb, Davis, Lum, Plihal, and Morgaine (n.d.) see the point. He and his colleagues are writing of integration, not collaboration, but they make an important point:

> in our view the incorporation of literature, history, and the social sciences into efforts to integrate academic and vocational education is one of the only ways to counter a potential objection to these efforts: that they intend, like career education fifteen years ago, to turn high schools into wholly vocational institutions with almost no commitment to the political development of students, no place for the development of the capacity to be socially critical . . . and no place for exploration of values and sensibilities that come in the humanities. (pp. 46-47)

Maley (1984) puts the point succinctly:

> In the case of the Newcomen Steam Engine, it is a matter of *understanding* how this important technological innovation functioned; the *understanding* of scientific principles applied; and the *understanding* of technological factors that made it possible—to say nothing of its great social consequences, including the Industrial Revolution that so transformed the societies of the Western World these past 200 years. (p. 5)

What we intended to show was the likelihood that collaboration would contribute to a student's general education. As with so much technology, understanding demands a grasp of some mathematics, relevant science, and social science. Though we primarily cited how vocational students would benefit, students in academic courses also would have their general education enhanced were their teachers to bring those, or other examples, to their courses in mathematics, art, or other academic disciplines. Unfortunately, there seems to have been few examples of collaboration, even of collaboration between the vocational-technical fields and the social studies. Lest we overlook this opportunity for collaboration, Grubb et al. (n.d.) remind us,

> there have so far been very few efforts to integrate social studies, the social sciences, or history with more occupationally-oriented programs or courses. Again, we see considerable potential: the history of technological developments and their effects on economic, political, and personal life is surely an important aspect of our history; the political battles over the introduction of new technologies and the consequences for different occupational groups could be incorporated into courses on government; the

> economic issues surrounding occupations, earning, employment trends, the unemployment patterns should be included in any economics course. Such courses or modules could be specialized to particular occupational areas or clusters; for example, in agriculture and agricultural economics . . . while a program, in business could focus on business-government relations including historic and recent battles over regulation and deregulation, macroeconomic policy and its effects on business practices, the effect of office automation . . . gender (and racial) segregation at different levels of business occupations, public opinion about business, and the developing international economy. (p. 46)

In all frankness, we confess to the belief that there is more potential for collaboration in the vocational subjects. After all, they are close to life. A case does not have to be made for their "relevance." That is guaranteed because technology insures relevance. There is no vocational field that is not better described as vocational-technical. The literature in each vocational-technical area offers examples.

And what of the academic subjects? Will they be weakened by collaboration? Not at all. The content of the academic subjects would be enriched with significant, relevant material drawn from the vocational fields, but usually overlooked by vocational teachers. Why overlooked? Because the preparation of the vocational teachers may lack the necessary academic study that might sensitize them to what their subjects can contribute. Technology has made collaboration possible. The dependence of every technology on science means that mathematics and science have a prime place in any collaboration. We think that it is a wry bit of humor that has made the word "academic" mean something trivial, not worth thinking about. "Oh?", we say, "so-and so is just academic; don't think about it." Plato, whose Academy is used, or misused, in the modern expression, surely would have winced.

Academic subjects are relevant. One promising approach is to have the collaborating academic teacher make use of material studied in the vocational classes. For example, the art teacher might have been collaborating with a teacher of home economics or industrial technology whose class was involved with "useful objects" or "good design," as described by Edgar Kaufman Jr. (Goldberger, 1989). The class had been studying what goes into designing consumer products of high design quality. If the study and discussion reaches any depth at all, the character of "good design" will be thought and talked about. The conclusions probably will rival a collegiate inquiry of a philosophy class in esthetics, but there is every reason to think that what is reflected can serve in both the vocational and the academic class. Collaboration is not a zero-sum game, one in which a winner entails a

loser. Everyone wins and students gain more in the way of a general education than they ever would otherwise. Plihal (n.d.) has made available a number of examples of this "integration" in discussion of "correlated" and "Fused" curriculums. While we postpone a more thorough discussion of curricular integration, it is clear that the objective of integration is more likely to be achieved with collaboration focused on general education. Nonetheless, integration, while it does not go as far as collaboration, does bring teachers and their specialties together. To cite Plihal (n.d.),

> An example involving vocational education would be an English teacher working with an agriculture teacher, having students write compositions or read literary works that relate to contemporary agriculture problems. (p. 11)

As Plihal recognizes in writing of a "fused curriculum," fusion results in a new subject: "The fused curriculum approach to integration involves the merging of related subjects into a new subject" (p. 12). Plihal illustrates this:

> Perhaps an example of fusing a vocational subject with an academic subject would be to synthesize aspects of home economics with aspects of sociology, psychology, anthropology, and economics to create a subject of family social science. (p. 12)

Without anticipating all of our conclusions about integration, there is a point worth driving home. However much we may favor balance in a curriculum (e.g., Conant, 1967), balance is not the same as the *interaction* that we intend through the collaboration of teachers. Even team teaching falls short of the mutuality we seek. Unless there is real fusion, the teacher may end up with giving a little and taking a little. The teachers of the academic subjects may do most of the giving while teachers of vocational subjects receive. But even if the balance means that both sides give and receive, active interaction must be achieved for collaboration to have taken place.

Parity of Esteem

The same chapter in *Vocational Education* that ran a quotation from Theodore Greene quoted Geiger (1955; see also Barlow, 1965) on the perennial question of upgrading the poor image of vocational education by comparison with the academic:

> Lofty contempt for practical subjects is the watermark of too many self-defined scholars. The examples chosen are calculated to get a laugh—

> pie-making, camp leadership, window-cleaning, pre-pharmacy, salesmanship. Certainly there will be no apology here for the evident abuses of over-vocationalism in many sections of present-day education. But to assume that training for making a living has no place in liberal education is to assume that education has no context. (p. 15)

Grubb et al. (n.d.) make another point. He is looking back to the 1880s, but what he finds haunts us still:

> The pressure for a more obviously utilitarian form of education, preparing students for immediate employment, led to a greater stress on vocational skill preparation in the movement for vocational education. In addition, as high schools came to have more lower-class, immigrant, and black students, the idea developed that education ought to be differentiated according to the "evident and probable destinies" of students: those destined for working class jobs—and most likely to be working- or lower-class, immigrant, or black—should be in vocational tracks while those bound for managerial and professional positions—most often middle-class and white—would be in academic programs. The success of the movement for vocational education, the coming of federal aid for vocational education in 1917, the growing practice of tracking, the introduction of testing as the basis for differentiating students, and the continued expansion of the high schools, with more and more lower-class and immigrant students whom educators considered appropriate for vocational education, all cemented the divisions between vocational and academic education. (pp. 5-6)

There is no magic, no public relations selling, or advertising that will take care of the error that is being committed. We feel that, in time, collaboration truly can help by demonstrating that the vocational subjects have so very much to offer via the teamwork of teachers from both the vocational and academic areas.

Integration: A First Step

Modern curricular integration in the professional preparation of vocational education is about sixty years old. Homer Smith's *Industrial Education: Administration and Supervision*, published in 1927, marks the end of the time when advocates of undiluted vocational preparation were an important voice. The "Foreword" to Smith's book was written by his friend, Charles Prosser, a long-time advocate of rigorous vocational training

in vocational schools unburdened by responsibility for general education.[29] As Prosser put it,

> Industrial education has ceased to be a suggestion or a movement; it has become a fact in American education and in our public schools. We have now entered upon the task of making it serve the special social end for which it arose and for which it must be developed—that of providing for an individual those experiences whereby he learns successfully to carry on any gainful occupation in trade, industrial, and mechanical pursuits. (p. v)

The department in which Smith taught soon was to see itself as devoted to general education and not to the occupation-specific training to which Prosser was devoted.[30] Unfortunately, the new fields were not clearly defined. World War II had ended and a great deal of job training ended with it. "Technical" was not yet popular, but in a very few years educators were to become aware that their fields were a part of general education. John Dewey was the chosen philosopher of education and the the phrase, "Practical arts," became well known. Strictly vocational subjects, like those Prosser would have taught, were distinguished from the new practical arts. The latter were to be seen as complements to a general education: "General and vocational education are interdependent, are related, through different aspects of the vital social processes of preparing for living and of living" (Struck, 1945, p. 5). These were the words of Struck, one of the first to write on the new arts. He told readers that the practical arts were not vocational, though they could be thought of as prevocational, offering opportunities to explore. Struck went further:

> in practical arts education considerable emphasis is placed upon developing useful skills, but not to the exclusion of related knowledge. In fact an effort is made to combine materials having distinct educative values. Craftsmanship is stressed not for its own sake, nor for vocational purposes, but rather as a means of unlocking the gates of useful knowledge and skills that are important to modern living in a broad sense. Practical arts education seeks to broaden, enrich, and modernize general education. (p. 26)

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29 Prosser regarded Smith not as a casual friend, but as an "intimate friend." In his "Foreword," Prosser, the editor of a series in which Smith's book appeared, wrote that, "this publication has special personal and professional interest. The author has for five years been a colleague on the Trade and Industrial staff of the University of Minnesota, as well as an intimate friend" (p. viii). (See also Prosser & Allen, 1925; Prosser & Quigley, 1949.)

30 In later years, the criticism of job-specific training changed to the charge that it overlooked "basic skills of reading, writing, science, and mathematics" (Pepple, Law, & Valdes, 1990, p. 7). Still later, the criticism of academic failure was extended to include failure to provide practice in communication and human relations skills. This last was a departure from the faulting of vocational/technical preparation as weak in mathematics and physical science.

Struck thought of the four chief fields of the practical arts as agriculture, business, homemaking (or Household Arts Education), and industry. Each of the four might have subdivisions, as food, clothing, and family living were subfields of homemaking. And always one was reminded that the fields and subfields were not vocational. Agricultural Arts Education (sometimes called General Agricultural Education) might encourage school gardening or other club activities while Vocational Agricultural Education "prepares definitely for successful farming, as, for example, general farming" (p. 25). In the same vein, Business Arts Education (General Business Education) might have students in "a course in junior business practice." In contrast, Vocational Business Education "Prepares persons for useful employment in business or commercial callings, including distributive occupations" (p. 25).

How much of what was experienced in the practical arts was trivial? How much is difficult to define? For example, Struck describes Household Arts Education (or General Home Economics) as offering "instruction in clothing and foods, in junior and senior high school, on a *general* basis" (p. 25). One wonders what is "general" in distinction from that which "seeks to prepare girls and women for effective homemaking as a career" (p. 25). There was no doubt that the practical arts were to be thought of as integral to general education while harboring as its controlling purpose "*to develop basic skills in, and understanding and appreciation of, useful or practical arts*" (p. 26). Struck expanded on this basic statement of objectives in the following:

> in practical arts education considerable emphasis is placed upon developing useful skills, but not to the exclusion of related knowledge. In fact an effort is made to combine training in manipulative skills with thought-content materials having distinct educative values. Craftsmanship is stressed not for its own sake, nor for vocational purposes, but rather as a means of unlocking the gates to useful knowledge and skills that are important to modern living in the broad sense. Practical arts education seeks to broaden, enrich, and modernize general education. (p. 26)

We share this hope "to broaden, enrich, and modernize general education." Practical arts education may have been steered by this aim, but it could not achieve it. There was no significant collaboration with academic teachers and the studies planned for high school students seem trivial. This was immediately after World War II and a decade later one might have expected the practical arts to have matured into a more convincing study. However, the definition of practical arts had not changed:

> The term practical arts will be used to refer to those phases of general education dealing with the organization, materials, processes, and products of agriculture, business, industry, and the home and with the contribution of those engaged in these fields. (Byram & Wenrich, 1956, p. 82)

The objectives of practical arts remained as Struck had stated them. Byram and Wenrich simply quote from Struck's (1945) *Vocational Education for a Changing World* (pp. 26-27). Once again, "manipulative, creative" work is to enliven the school:

> to unify learning and integrate education through creative work that draws upon content from a number of areas of instruction, such as English, social sciences, physical sciences, literature, art, architecture, homemaking, agriculture, business, and industrial pursuits. (p. 100)

There is a statement in Byram and Wenrich (1956) that should give pause to anyone interested in the enrichment of a high school student's general education. It concerns the matter of inquiring into the possible consequences of technology. We think that it is an important part of a student's general education and a reason for the collaboration of a social studies teacher with one of the vocational-technical fields:

> Whether it is the responsibility of the social studies or of the practical arts to educate people so that they can more intelligently meet their responsibilities as citizens is not the issue. It is important that it be done somewhere in the school. (p. 88)

Collaboration should occur directly in the interaction of the vocational/technical education teacher and the social studies teacher. Social awareness is not the monopoly of social studies. We would grant that and welcome the concern with consequences wherever the stimulus comes from. It is the collaborative process that is our target.

In Byram & Wenrich (1956), the reader is assured that general and vocationally specialized education supplement each other:

> Education involving skills, attitudes and technical knowledge of an occupation also has certain cultural values that might be thought of as general education. With preparation for a vocation as the focus of an education, the student is more likely to recognize the place of all subjects in the curriculum; mathematics, science, art, and government take on new meanings. They are now functioning and meaningful subjects related to the student's goal. Subjects, in the mind of a student, are no longer fragments of learning, each unrelated to the other or to life. They are now part of an integrated curriculum made significant by the fact that the student is engaged in a directed, purposeful activity, leading to a life of productivity. (p. 119)

The "cultural values" to which Byram and Wenrich have called attention are not clear. This lack of specificity handicapped the effort to make a place in education for the practical arts. What was plain, however, was that there was not to be a wall between general education and practical arts. This relationship developed into the correlated and fused curriculums on which Plihal (n.d.) was to report (pp. 10-12). Negative aspects to the practical arts programs also persisted. Happy accidents were reported, but there were few signs of planning.[31] In a chapter on "Problems in the Improvement of Instruction," there is a note on course planning: "One of the ways in which teaching of marketable skills can be made more effective is through analysis of the needs of the occupation" (Byram & Wenrich, 1956, p. 336). This targeted "marketable skills" and went on to become a favored approach to planning course content. It could have affected team teaching by inviting teachers to see to it that students with definite occupational aims had the experiences that "job analysis" indicated they would be using. The results of such attention is not to be thought equivalent to the collaboration we advocate. However, in this, Byram and Wenrich did find a place for the interests and career thoughts of students:

> In planning instruction in the practical arts, creative activity of the learner should be stressed. It will be necessary to inventory the interests and experience of pupils in the classes, and to encourage them to select and plan new experiences and projects in connection with which they can have opportunity to exercise initiative and to try out their own ideas. (pp. 337-338)

Minimal structure and coherence in the curriculum persisted (Grubb et al., n.d., pp. 61-62). At best, teachers in vocational subjects got a "lift" from "the knowledge that all the faculty understands what they are trying to do" (p. 351):

> Teachers chiefly in general education will be greatly encouraged in their work if the teachers of special and vocational subjects succeed in making these subjects contribute in some degree to the general education objectives of the school. (p. 351)

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31 For example, the discovery that a student was intensely interested in radio. The boy "had an opportunity through the practical arts to develop this interest [and] will discover that he needs an understanding of some principles of physics, competence in certain mathematical operations, or the ability to express himself more effectively. If the teachers of science, mathematics, and English are aware of this absorbing interest in radio and are sufficiently flexible in planning learning experiences, the instruction in these subjects can be related to the boy's central interest and thereby given real meaning and purpose" (Byram & Wenrich, 1956, pp. 244-245).

The job analysis way of specifying what was to be taught lead to the integrative curriculum trials of the 1970s. Reference has been made to the publications of the Vocational-Technical Division of the Minnesota State Department of Education,[32] and the Department of Vocational-Technical Education of the Minneapolis Public Schools (n.d.). If not prototypes, they are superior guides:

> The rationale for the guide is . . . to enable teachers to provide greater opportunity for students to satisfy their particular needs within the framework of the existing Science curriculum, not for them to design new Science courses. (introductory remarks)[33]

The intention of the *Guides* was to assist teachers of mathematics and science to help students and teachers to identify the science subjects and skills most useful for students in terms of the occupations in which they expect to work. This job analysis ignored the student's imaginativeness, flexibility, or the fact that it is difficult to predict just what skills will be needed. Grubb and his colleagues (n.d.) sum up legitimate reservations about such integrative undertakings as the *Guides*, although they are writing of the integrative curricular models they have studied:

> Some of them are frankly remedial, trying to improve the basic skills which elementary and middle-school teachers have failed to convey to vocational students; others address weaknesses in narrowly-conceived vocational programs, particularly as employers have called for more general capacities and problem-solving abilities in the workforce; and still others focus on the aridity and irrelevance of the academic curriculum by introducing more vocationally-relevant materials. (p. 59)

An important step was taken in the development of course material that could be used in curricular integration. Beginning in 1973, educators were able to review "Applied Technology" prepared by the Agency for Instructional Technology (AIT). "Applied Mathematics" was published later by another group, the Center for Occupational Research and Development (CORD), involved with the application of academic mathematics (Pepple et al., 1990, pp. ii, 21-26; Plihal, n.d., p. 20). Grubb et al. (n.d.) write of this approach as one that modifies the academic curriculum by adding such applied academics as "Principles of Technology," "Applied Mathematics," and "Applied Communication." At the time when Grubb and his colleagues surveyed the national scene, some sixteen states

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32 The detailed monograph, *Geometry*, published in 1973, is typical.

33 This statement is typical of those that appear in the guides.

claimed to be introducing "one or more of the applied curricula" (p. 22). They also wrote that at times the applied academics were used for remediation. At other times, the content was watered down. Or the courses simply may be electives in schools lacking a coherent program.[34] At any rate, college-bound students rarely are to be found in them (p. 27).

Despite shortcomings, there are places where leaders in vocational-technical education persist in their efforts to integrate their offerings with the academic, especially physical science. Virginia certainly is one of the more aggressive and persistent, seeing to the coordination of its integrated program with postsecondary institutions and with business and industry.[35]

As Grubb and his colleagues (n.d.), we would wish to see schools in which there was something more than integration. We expect that further step to come from collaboration where the curriculum is not only a mechanical combination of the vocational-technical and the academic, but a thoughtful amalgam to which the collaborating teachers interact to produce course content stimulated by a give-and-take. At the moment, even the most promising high school program, one that Grubb et al. found in only two high schools, targets occupations and not general education (Model 8, "Combining departments," pp. 38-45). The "career path structure" has proved a strong motivational device for students who have been grouped by career choice; our interest, however, is with students-in-general and their motivation.

Moving Away from the "Shopping Mall High School"

Elective courses have their place. The difficult decision is what the core curriculum should be. In vocational-technical education, occupations make up the core. The common core has a motivational advantage in that it might stimulate communication and provide a feeling of community, of common values. But at what cost? Attention to problems connected with the image of the vocational program and student is nothing new. Among

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34 These were characteristic of high schools referred to by Grubb and his colleagues as "shopping mall high schools." In such schools, students elect courses, but the decisions are made without there being coherent programs from which to elect courses. In schools organized along the shopping mall lines, "most students drift through high school taking random collections of disconnected courses, with little thought or guidance about how these courses relate to each other or to their futures after high school" (pp. 41, 61-62).

35 This is evident from their Department of Education's brochure, "Strengthening the Basics" and the Department's publication, *Articulation in Virginia: Coordination of Secondary/Postsecondary Education*.

six components that Grubb et al. (n.d.) suggest for the reconstruction of secondary education is

> Reducing tracking and segregation of students, by eliminating (or at least weakening) the divisions between academic and vocational students. (p. iv)

Segregation also makes for provincialism, for ignorance of alternative views. Why encourage it in education? Our solution is to make general education the core. The interactive collaboration of teachers will do a good deal. Collaboration does not mean that specialization of teachers is unnecessary. Vocational-technical teachers should not be expected to be substitutes for mathematics teachers or teachers of chemistry, history, or other subjects. The academic specialists would not be interchangeable with their vocational-technical colleagues. Educational specialists should collaborate with, but not substitute for, one another. Doubtless this is self-evident, but it needs stating when vocational-technical courses are under pressure and it is tempting to substitute vocational-technical courses for academic ones on the grounds that with some additional study the vocational-technical staff can teach one or another academic subject. What holds for the academic specialties holds for the vocational-technical as well. What we seek is an exchange, an interactive type of communication. The process is not an integration, but a product that shows collaboration.

The complement of what has been said of teachers is that students should be advised to take courses they need. If proficiency in a modern foreign language is thought important for a student, she or he should enroll in the courses teaching that language. If that seems self-evident, the same logic holds for chemistry. A course in home economics does not substitute for study in chemistry unless the teacher is certified to teach chemistry.

These are points that bear repeating. They supplement what Plihal (n.d.) found in her comprehensive survey of curricular integration:

> At a glance, it is obvious that there is considerable activity directed toward integrating vocational and academic education—especially when one realizes that only a portion of such activity is reported in the literature. It also is obvious that integration is occurring between all vocational areas and each of the three academic areas of English, science, and mathematics, as well as computer use. Among the vocational areas, it seems that the most activity has occurred in the area of industrial education. Among the academic areas, mathematics and science have been integrated more than English or computer use. Most of the reports we examined referred to integration at

> the secondary school level although we did find cases of integration at the elementary and post-secondary levels. (p. 19)

Intramural integration within the vocational-technical field should make collaboration easier. This intramural integration is what Plihal (n.d.) calls "broad fields curriculum":

> If the areas of vocational education which are now treated as discrete areas of knowledge were united into an area of study that focussed on understanding their interrelationships, we could create the broad fields of vocational education. It seems that this is what Jeannie Oakes . . . is describing in her proposal for a reconstructed vocational education that includes new purposes, organization, curricula, and language. She suggests calling this broad field "technology and economic sciences" or "technological and economic literacy." (p. 19)

The same intramural integration in the secondary and postsecondary schools would aid collaboration when it takes place within the academic areas, as it does in Humanities programs.

Administrative leadership is fundamental. Informal discussion will not do:

> For present purposes, it is sufficient to note that reshaping the high school curriculum through informal means—through jawboning and exhortation—is nearly impossible under any circumstances, and to do so where there would be resistance from academic teachers guarding their traditional content and methods would be beyond imagining. (Grubb et al., n.d., p. 22)

The best way to get around guarding academic turf is to encourage teacher collaboration. If experience is a reliable guide, there will be little, if any, resistance to the interaction we advocate:

> in every school we visited where teachers are cooperating in some form of alignment, the results are literally thrilling: teachers find a large number of unexpected parallels between academic and vocational materials; the academic teachers discover . . . that vocational teachers have a great deal to offer, in terms of content, pedagogical methods, and motivation; vocational teachers discover new ways to reinforce basic skills; everyone is delighted with the chance to break down the walls among teachers; and the level of excitement and innovation is unmistakable, especially in contrast to the sense of routine and humdrum in the conventional high school. (p. 28)

A mechanism for the promotion of wholly voluntary collaboration is in order. The mechanism we suggest is a council of teachers. The purpose of such a council would be to encourage discussion by teachers of what they plan for their classes. Colleagues from vocational and academic fields would have a chance to ask for greater detail. The next step would be to reflect on the possibilities for collaboration. After that, the details are such mechanical ones as scheduling. Many schools now have the equivalent of councils made up of those teachers who instruct English or some other subject. Fundamentally, what we are asking is that these councils interact; that there be continuous dialogue on common ground, in this instance common ground between the vocational and the academic.

The ultimate test of any experiment with curriculum is what happens to students. In the instance of collaborative teaching, it is essential to have the continuous help of guidance personnel or counselors who talk both with the student and the teachers. The council must reflect the counselor's participation in the collaborative effort. The counselors, if they are not assigned too many students, should know each student and be in a position to pass along to teachers clues to strong interests of the particular girl or boy. We remember a boy with a very keen interest in television. That interest went a long way in advancing his high school studies. That sort of interest is just what the counselor should know about, if the counselor has the time to spend with each student.

In the best of all possible worlds, we would suggest that every effort be made to have the counselors involved in the discussion of the council of teachers or other bodies concerned with the collaborative process. As with the school librarians, who also should be involved, the counseling staff is part of the group responsible for a student's academic development.

There is little chance for the realization of our recommendations for collaboration unless cooperation is warmly endorsed. Our optimism may have to be tempered, but we think that teachers can be convinced. Assuming that is the case, it is the teachers of teachers who have to be won over. As Grubb and his colleagues (n.d.) report,

> The appropriate response over the long run is to change teacher training practices in order to prepare a different kind of teacher. To participate more readily in integrative efforts, academic teachers should be familiar with modern production processes, with the activity-based and cooperative teaching methods of good vocational programs, and with the general vocational challenges which all high school students face, particularly the need to grapple with occupational choices and their educational requirements. On their side, vocational teachers may need to be better

> prepared in the academic subjects most important to their vocational fields. Above all, teachers of all types need to be prepared to collaborate with other teachers and to participate actively in curriculum development, since the most promising forms of integrating academic and vocational education require cooperation in order to devise new approaches and new curriculum materials. (pp. 56-57)

As with the administrative staff and classroom teachers, we believe that college and university staff in our departments and colleges of education will be willing to study collaboration. To determine the degree of success of collaborative teaching, we would suggest combining each undertaking with a schedule of action research. Pooling outcomes of this research will provide clues on the promise of our recommendation.

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