THE EDUCATIONAL PHILOSOPHY OF FREDERICK GORDON BONSER, WITH SPECIAL EMPHASIS UPON INDUSTRIAL ARTS

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CHAPTER I

INTRODUCTION

In every age, in every field of endeavor, in every nation, there are those who stand out above the average man. It may be that the individual has special knowledge, special training, or special talents. There are always crises in government, family life, education, or in many other phases of our way of life. As usual, a few stand out above the others or have the aggressiveness or the will to strike at a critical point or phase in our existence.

Thus, in education, we ban at times something that does not function. It may be that a threatened wrong a few years back has been rectified or at least remedied, but while this change was going on, some other phase has been overbalanced. Thus, we have a few individuals who stand out from the others in each change.

While we remember changes made by Luther in the Reformation, and those made by Pestalozzi, Rousseau, Froebel, and others, we forget many of the lesser lights. We remember Russel of Massachusetts Tech, Calvin Woodward of St. Louis, Salomon, Della Vos of Russia, Bailey, Leavitt, and others; but seldom hear about Frederick Gordon Bonser — no doubt because the promoters of the field of education claim

him as a regenerator of general and elementary education and fail to mention that he was very outspoken concerning the introduction of industrial arts into the curriculum of both elementary and secondary schools, and we find that some authorities even call Bonser the father of industrial arts in America.

Bonser was one of the first to see the fallacy in manual training in modern education and proposed industrial arts as a means of achieving a richer content and more social significances. He felt that a study of industrial arts would provide an understanding that would give an index to man's progress and that this sense of the study of industry is truly cultural.

His conception of industrial arts stood out as being radically different from the earlier movement called manual training. Bonser considered this training did not involve any phase of thinking, but only manual manipulations. There seemed to Bonser that nothing good could be done with the hand apart from the mind; consequently, he believed that the hands could be used as a willing servant of a better and finer mind.

He also believed that social solidarity can be greatly furthered through a better understanding of the fundamental conditions and processes that have been developed in the effort to provide the necessities and comforts of life. The school, then, could be a logical channel

through which to improve this social security because the dominant topics of a school at any period are the dominant life interests of the child in relation to the social life about him during that period. Bonser proposed that the placing of industrial arts in every grade in school could be done to great advantage, and that this would be one method of satisfying the needs and desires of children. Another proposal was made to revise and enrich the curriculum in order that it would feed the imagination of children and at the same time interpret life in its commonplace elements. The Speyer School curriculum of 1913,[1] of which Bonser was the principal promoter, was the first attempt to place the revised curriculum, with a first course of study in industrial arts, in operation. Men of renown in education will certainly agree that Bonser was one of the outstanding men who had a great influence in shaping the new elementary school curriculum.

Bonser's philosophy of life was motivated by a desire to show to other people how the ordinary things of life could be made educational. Industrial arts was one of the phases of study in which he proposed to point out his ideas and beliefs.

Purpose of This Study

The purpose of this study was threefold in nature. The first purpose was to study the life and educational background of Frederick

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[1] Frederick Gordon Bonser, Speyer School Curriculum, bulletin of Teachers College Press, Columbia University, 1913.

Gordon Bonser in order to gain an understanding of the man and his educational purposes and objectives. A second purpose was to gain an insight into Bonser's philosophy of education; and the third purpose was to examine the available writings of Bonser in an attempt to analyze his philosophy of industrial arts as a phase of general education.

Definition of Terms

Throughout this study, the following definitions of certain terms will apply:

Industrial arts: a study of the changes made by man in the form of materials to increase their values, and of the problems of life related to these changes.

General education: the providing of experiences under the auspices of the school which will develop the individual into a useful, happy, and successful citizen.

Phase: any aspect or angle of a situation or question, with reference to which such a situation or question may be viewed or considered as a stage in progressive development.

Practical arts: a term applied to trade, work, and labor, and included in all productive effort; has to do with all vocations which include activities having to do directly with the production, the changing of form, the making available, and the using of things which satisfy our material needs.

Philosophy: the body of principles or general conceptions underlying a given branch of learning; an integrated and consistent personal attitude toward life or activity, or pertaining to certain phases of life or activity; the theory, beliefs, ideas, properties, conceptions, and work of a person which reflect his ideas.

Limitations

Frederick Gordon Bonser was a writer in many different fields of education, including industrial arts, practical arts, vocational education, general education, home economics, crafts, and others. Therefore, it became necessary to place certain limitations upon this study.

Consequently, this study was limited to a consideration of Bonser's philosophy of industrial arts as a phase of general education. The study was further limited almost entirely to the available writings of Bonser himself which relate to the industrial arts and to his educational philosophy, only a small portion of which was accessible to the present writer.

Sources of Data

The limitations set up for this study necessarily place restrictions upon the sources of data. Therefore, the primary source of data for this survey consisted of the writings of Frederick Gordon Bonser which portray his philosophy of industrial arts as a phase of general

education. However, for the biographical study of Bonser, the writings of others were consulted in order to gain information about Bonser's life, about his contributions to education, and about critical evaluations of his work.

Thus, it becomes apparent that all materials for this study were collected from books and articles written by Bonser and by others who wrote about his life and work.

Organization

The present chapter has outlined, in brief, the purpose of this study, the sources of data, and the limitations placed upon this investigation.

Chapter II contains a brief biographical sketch of Frederick Gordon Bonser.

A brief discussion of Bonser's philosophy of education, of the school, of the curriculum, and of the teacher will be found in the third chapter.

The lengthiest of all the divisions of the study (Chapter IV) presents information pertaining to Bonser's philosophy of industrial arts, developed primarily from the writings of this educator.

A summary of the study is presented in Chapter V.

CHAPTER II

BIOGRAPHICAL SKETCH OF FREDERICK GORDON BONSER

There are usually reasons for the philosophy of any individual, which usually is determined by the economic, cultural, and social standing of the individual in any community. All of these factors make their impression upon the young individual. It would, then, seem proper to give the background of Bonser in order that we might have a better conception of his beliefs and ideals.

Frederick Gordon Bonser was born on a farm near Pana, Illinois, June 14, 1875. He spent his childhood and youth in the rural community and early learned to perform the tasks which give a farmer understanding of the meaning and uses of tools. He attended a one-room rural school where he came to know the simple fundamentals of education and where his intellect became that of a child whose school work consisted merely of formal work in a limiting environment.

Part of his eagerness for knowledge and ideas was satisfied by his grandfather. The grandfather had been a world traveler and thereby enlightened the boy's thought by conveying stories of other lands. The

stories of adventure and anecdotes about places remote stimulated the imagination of the growing boy.[1]

During his early life on the farm, a railroad was constructed across his father's farm. The work fascinated him and caused great interest in this construction work. The labor on this project brought his attention to the earth and rock formations revealed by the excavations, for this section of the land was in the glacial moraine. This incident gave the boy an inspirational thought and as a result, he began to read and study more about nature's processes, and about the varying phases of science.[2]

There is no mention of his education in the grammar school, but there is no doubt that he did attend, for he attended high school for two years in the same school. By doing some extra correspondence school work other than this two years of high school study, he managed to pass the entrance examination at the University of Illinois in 1895. He attended the university for two years, left and taught school for two years in Illinois and two years in a village school in the State of Washington, returning to the University of Illinois in 1900. He completed one more year of college study and received his bachelor of science degree in 1901, and his master of science degree in 1902.[3]

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[1]Lois Coffey Mossman, "Frederick Gordon Bonser," Teachers College Record, XXXIII (October, 1931), 1.

[2]Who's Who in American Education, XI, 94-95.

[3]Mossman, op. cit., p. 2.

The desire for a better educational background was evident. His means of qualifying for being better informed and trained was constantly on his mind. The teaching positions naturally improved his education and gave him a first-hand insight into the needs of mankind. Some of his ideas became realities when he was appointed director of the Laboratory School at the State Normal School at Cheney, Washington, which position he held from 1902 until 1905. Being director of the laboratory school gave Bonser an opportunity to put into operation a curriculum which he believed would materially improve the nature of the instruction being offered in the school.

This curriculum could be classed as a forerunner of recent trends toward a richer, fuller type of elementary school curriculum. In content, this work gave an initial emphasis to the proposal that work of the elementary school should include more study of science, history, industrial life, local environment, and related arts. Bonser believed that proper selection of instructional materials from these fields would give subject matter which would be suited to child needs and interests, and especially valuable in interpreting life and giving meaning to common things in life experiences of growing boys and girls. His great work at this school was soon recognized by officials at Columbia University, who offered him an assistant professorship in the department of education, which he accepted.

During his residence at Columbia from 1905 to 1906, he wrote an article entitled "The Reasoning Ability of Children." This was written after he had made a thorough investigation of the reasoning abilities of children in the fourth, fifth, and sixth grades at the Speyer Laboratory School at Columbia University. The reasoning test developed for this study has proved to be of great value in formulating tests in use today. Incidentally, this article was later submitted as his dissertation for a doctor of philosophy degree at Columbia University.[4]

Bonser's second contribution to the formulation and revision of elementary school curriculums was made at the State Normal School, Macomb, Illinois, from 1906 to 1910. During his four years there, he and his associates proposed and put into practice a revised curriculum similar to the one at Cheney, Washington. This particular curriculum was acclaimed as one of the most outstanding courses of study in use at that time. James E. Russel, Dean Emeritus of Columbia University, who made a memorial speech about Bonser, said: "Bonser was not just a great philosopher but a great practitioner."[5] To be practical was considered by Bonser to be an essential characteristic of all things. His years of experimentation with curriculums at Macomb soon gained momentum; consequently, his services were called back to Columbia University.

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[4]Ibid., p. 3.

[5]James E. Russel, "An Appreciation of Frederick Gordon Bonser," Teachers College Record, XXXIII (October, 1931), 9-13.

He received his Ph. D. from Columbia at this time, 1910,[6] and received a professorship in the School of Education, and was, at the same time, appointed director of the laboratory school. His appointment as director of the Speyer Laboratory School gave him another opportunity to apply a revised curriculum.

During his three years as director of the Speyer School, he led his associates in completely reorganizing the curriculum of the school.[7] This work constituted his third contribution to curriculum revision and construction. That this Speyer School curriculum met a genuine need was evidenced by the fact that its demand and sale continued some years after the Speyer School was discontinued, and the publication of the curriculum passed through several reprintings after the closing of the school.

As director of the Speyer School and as a professor of education, Bonser gave much attention to the inclusion of industrial arts and practical arts activities involved in real and meaningful experiences. A statement frequently made by him was, "Education is making the obvious, the commonplace, more meaningful."[8]

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[6]Who's Who in American Education, XI, 94-95.

[7]Bonser, Speyer School Curriculum.

[8]Mossman, op. cit., p. 3.

His leadership in the field of industrial arts has been in the direction of giving the work a richer content and greater social significance. He believed that "social solidarity can be greatly furthered through better understanding of the fundamental conditions and processes that have been developed in the effort to provide the necessities and comforts of life."[9] He believed that such understanding could give an index to man's progress and that this sense of the study of industry is truly cultural.

Bonser proposed that industrial and practical arts be taught to children of all ages. Such common study in the elementary school, he believed, would "promote sympathy among peoples, a sympathy that would help in the solution of some of the economic and industrial problems of today."[10] Through his later years as professor of practical arts education, he continued to be the constructive leader in various fields of the practical arts. In the recurrent reorganization of courses in the household arts, his counsel and leadership were invaluable. His profound respect for the home as a fundamental institution in social well-being gave him a peculiar insight into guiding the thinking of leaders in the field of home economics.

His writings included numerous magazine articles. The range of educational interest shown in his writing was wide, but the dominant

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[9] Ibid., pp. 3-4.

[10] Ibid., p. 4.

interest in all of his work centered "in the desire to enrich the lives of boys and girls through a more vital curriculum content and method."[11]

As he himself states that he had always been an ardent admirer of John Dewey's educational philosophy, he believed "that we have only begun to know the practices and possibilities of the most fruitful educational principles and that there is a brilliant future in education for young men and women of vision, intellect, industry, sincerity, sympathy, and loyalty to the service of human welfare through devoting their lives to teaching educational leadership, . . ." "The teacher must be a real man or woman with strength and force of personal character, with broad and rich life experiences, and with deep and vital human sympathy."[12] It is very evident that he was thinking of the welfare and happiness of children. His practical educational philosophy will always be a great contribution to modern education.

Bonser has summarized his efforts in the field of elementary education. We in the teaching field should try to evaluate our own efforts and contributions; consequently, we need to find out whether we are meeting the needs of youth. Bonser states his efforts as follows:

> I have simply tried to analyze the child's own life, viewed in a two-fold aspect, an unfolding impulsive inner force acting upon and responding to an environment ultimately social in its nature. I have tried to profit by the best things given to us as helps and guides from teachings

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[11] Ibid., p. 5.

[12] Ibid.

> of Comenius, Pestalozzi, Herbart, Froebel, and Dewey. I have tried to unify the dominant topics of school work with dominant life interests and activities in which the child and society are at all times participating. I have tried to provide means for conserving the contributions of the past as an aid in directing the life of the individual and society, and also by means of which each individual will be enabled to contribute some items, large or small, toward better adjustments of life. I have tried to wage that method of attack by which the school must be made typical of the life for which it is a preparation, or it fails to accomplish its end. My whole plea is for a series of dominant topics that shall be really typical of life needs and life interests. My plea is for an enrichment of the content of these topics that this content and the method of its development will furnish abundant motivation for the mastery of the formal mechanical tools of education, thereby placing emphasis upon the ends of education and not wholly upon the means.
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> My plea is to follow the simple teachings of the best pedagogy of today, which hold that the dominant topics of the school at any period are the dominant life interests of the child in relation to the social life about him during that period.[13]

Bonser not only provided good theory for the general education of the child but also practiced what he preached. The many revised curriculums, new fields of study, and more new methods of teaching have been his contributions to the school children and to the programs of instruction by which they are educated.

Mrs. Frederick G. Bonser, after the death of her husband in 1931, together with several of Bonser's former associates, compiled a posthumous volume of his writings. The title placed upon this memorial book was Life Needs and Education. This volume is no mere

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[13] Ibid., pp. 5-6.

collection of scattered articles but is, instead, a living expression of Bonser's fundamental philosophies, organized under four major divisions:

1. The School as a Means of Enlarging Life.
2. Subject Matters That Derive from Life Experiences.
3. Curricula Based upon Life Needs.
4. Teachers Trained to Interpret Life Experiences.[14]

Mrs. Bonser sought to place in one volume a collection of examples of his work in order that Bonser's philosophies could be utilized to the best advantage. This was only one among many tributes to the work that he accomplished in the various fields of education.

Edwin J. Stringham of Columbia University, in making a memorial speech about Frederick G. Bonser, said: "He was in the most perfect sense of the word, a pioneer in educational thought and practice; but with all his attainments and responsibilities and authority, the most modest among men."[15]

Professor Henry Harap of Western Reserve University, in his evaluation of the work of Bonser, quoted a paragraph from an essay by Haldane, the eminent British biologist, as follows:

> Historians have inevitably thought in terms of words. . . . They have not been manual workers, and have seldom realized that man's hands are as important and more

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[14]Frederick Gordon Bonser, Life Needs and Education, pp. xi-xii.

[15]Edwin J. Stringham, "Among the Industrial Arts Teachers," Industrial Arts and Vocational Education, August, 1931, p. 308.

> specifically human than the mouth. . . . When I look at history, I see a man's attempt to solve the practical problem of living. The men who did most to solve it were not those who thought about it, talked about it, or impressed their contemporaries, but those who silently and efficiently got on with their work.[16]

Harap, after quoting the above thoughts from the pen of Haldane, continued by saying:

> I recall this quotation because it expresses Mr. Bonser's view of social studies, but on re-reading it I find there is also in its excerpt, the suggestion of the character of the man whose contributions to economic education are numerous. Mr. Bonser had foresight to formulate a comprehensive school program pertaining to the production and consumption of goods. His lasting contribution to education will be his clarification and propagation of a plan for economic education for the American school.
>
> He espoused the cause of industrial arts because it afforded a direct and basic means of bridging the gap between a generally accepted subject of study and the reality of modern civilization.[17]

Thus, Bonser is depicted as a great pioneer in the field of economic and industrial education.

In the succeeding chapter, Bonser's philosophy of education, of the school, of the curriculum, and of the teacher will be discussed briefly, with Bonser's own writings constituting almost the sole source of information for this discussion.

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[16] J. B. S. Haldane, "Is History a Fraud?" Harper's Magazine, CLXI (September, 1930), 478.

[17] Henry Harap, "Frederick Gordon Bonser: Pioneer in Economic Education for Children," School and Society, XXXIV (December 12, 1931), 796-797.

CHAPTER III

BONSER'S PHILOSOPHY OF EDUCATION, OF THE SCHOOL, OF THE CURRICULUM, AND OF THE TEACHER

Education

William H. Kilpatrick has said that Frederick Gordon Bonser achieved a unique place in American education. "He was the man above all others who saw how the things of ordinary life could be made educational. To show this to others was his life work."[1] Bonser was convinced that all things can be taught and learned as experiences in living—in living with increasing understanding, enlarging appreciation, and growing efficiency in whatever is worth-while in a rich and satisfying life. All of this can be done by utilizing the creative, participating, active abilities of pupils, rather than by limiting their work to the mere memorization of facts, figures, and processes from books.[2]

In 1929, Bonser deplored the fact that, although American children were getting much schooling, they were missing an education. They

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[1]Frederick Gordon Bonser, Life Needs and Education, Introduction by William H. Kilpatrick, p. vii.

[2]Bonser, Life Needs and Education, p. 18.

were not being taught realities, but only words concerning those realities. Their minds were being overwhelmed by "floods of verbalism and symbols, while their interests and problems relate to things, affairs, and people—to the real business of living."[3] Thus, Bonser deplored the lack of practical value so often found in school instruction. The failure of the schools to meet the life needs of youth in an adequate manner was always his subject for lectures, speeches, articles, and books. He wrote:

> Education, of course, relates to the improvement of the desirable activities that are important in life—those that are significant in the practical life of the home and the occupations, health, community, and other forms of social and civic life, and the use of leisure. All of what we call the tool subjects, the processes of reading, language, spelling, writing, and arithmetic, are but instruments or means by which we engage in the real activities of life. Although they are essential as tools, the mere learning of them as mechanical processes has very little educative value in itself. One may be very ignorant, very inefficient, very immoral, and still be able to read and spell and write and figure passing well. It is just here that one great defect in our schooling has grown up. Instead of making school life one experience after another in participating in the activities of practical life, citizenship, and leisure and through these activities learning to get the very most and best possible from them, the schools have spent most of their time in making children acquire the bare facts and skills of the school subjects quite unconnected with their use or meaning.[4]

Always, for Bonser, "education was the process of finding and

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[3]Frederick Gordon Bonser, "The Training of Teachers for the New Education," Progressive Education, VI (April-June, 1929), 112.

[4]Bonser, Life Needs and Education, pp. 3-4.

using new possibilities for the enriching of life."[5] This meant, of course, that he had a high regard for the movement known as "progressive education." He declared that the principles of progressive education are not "fads or frills," but basic, working principles for helping young people to attain a life-long growth in all of their powers of achievement and in development of character, skill, and understanding. Any teacher, in any school or situation, can learn and apply the principles of progressive education with the conviction that they will contribute to his own growth, to the growth of his pupils, and to the joy and satisfaction of both teacher and pupils. Every teacher, if he only wills to be, can become a progressive teacher.[6] The principles of progressive education may be applied anywhere if teachers in the school and patrons of the school are "given the vision, educated in the means of its realization, and provided the privilege and responsibility for its achievement."[7] Thus, Bonser conceived of progressive education as fundamentally an attitude toward teaching and learning—an attitude distinguished from the traditional procedures by its willingness to experiment, its desire to create, and its emphasis upon the constructive project and the worth-while activity.

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[5] Ibid., Introduction by Kilpatrick, p. ix.

[6] Bonser, Life Needs and Education, p. 19.

[7] Frederick Gordon Bonser, "Ten Years of Progress in Elementary Education," Progressive Education, VI (January, 1929), 15.

Bonser believed that progressive education offers means for developing courses of study adapted to the individual needs and interests of pupils, with emphasis upon the utilization of all of the powers and abilities of pupils in procedures for bringing about and directing educative interests. Such a plan offers means for transforming failures into successes, and brings about many educational situations in which school experience is constructive, creative, and vital; and out of which such experience may be made to count definitely and significantly in promoting activities of basic importance outside of school. It is in these very important qualities of life that conventional school practice has failed to develop adequate ability and strength.

Bonser believed that "whatever the new education can do to develop the powers and capacities of pupils to be more efficient in their vocations, more sensitive and righteous in their citizenship, more healthful and sanitary in their personal and home life, more wholesome in their use of leisure, and more humane and steadfast in their character will be hailed with delight by all who are interested in the well-being of our people."[8]

If education is, in general, to be modernized, Bonser believed that there is a pronounced need for a very marked reorganization of the usual academic subjects throughout the public school system, in

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[8]Bonser, Life Needs and Education, p. 16.

order that all of the individual subjects may contribute more directly to the solution of problems of present-day life.[9] In other words, education should equip the individual for efficient living in modern social and economic situations. It must, in brief, be practical first of all.

In order to make educational experiences practical, Bonser formulated the method of beginning with life close at hand—life as it is lived in the home and in the community, and life as lived by the people generally. In this concept Bonser embodied the principles of true democracy.[10] To him, "democracy is at once a means for exercising a broad and effective social control and direction, and an equally wide opportunity for freedom in individual development and personal service and satisfaction."[11]

The School

In Bonser's opinion, the school is the conscious means employed by society to give children rich and varied experiences in wholesome living in the most economical and productive manner possible. The fundamental purpose of the school is to bring into the experiences of the children the materials and methods discovered by the experience

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[9]Frederick Gordon Bonser, "Education for Life Work in Non-professional Occupations," Annals of the American Academy of Political and Social Science, LXVII (September, 1916), 69.

[10]Bonser, Life Needs and Education, Introduction, p. viii.

[11]Frederick Gordon Bonser, "The Curriculum as a Means of Revealing Vocational Aptitudes," Education, XXXVII (November, 1916), 145.

of the human race to be most effective in adapting conduct to the most wholesome purposes of worthy living.

Since, at all times, children are living and participating in various activities, the school is to be regarded as a supplementary part of the life which it attempts to enrich. "To fulfill its purpose, the school must therefore reflect the interests and purposes of social life which it desires to promote, and provide the material from the experiences of the past which is required by these very interests and purposes for their fuller satisfaction."[12]

Schooling is educative to the extent that it provides desirable participation in all of the important phases and aspects of life; equips the child with the means for expanded and improved participation in the meaningful experiences of life; gives rise to a desire for richer and finer experiences; and endows the individual with ideals and methods that make it possible for him to experience continued worth-while achievement. Schooling is "idealistic in that it increasingly identifies one with the best that has been done and thought and visioned in living the good life."[13]

Bonser believed that

> The aim of schooling is always educative, but the practice often is not. By the educative we mean having

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[12]Frederick Gordon Bonser, The Elementary School Curriculum, pp. 8-9.

[13]Bonser, Life Needs and Education, p. 7.

> experiences through which we learn to act, think, or feel in ways that are better than the ways we would act, think, or feel without the experiences. No experience is educative unless we behave in some way desirably different as a result of it. The most highly educative experiences also develop tendencies to engage in further similar experiences and reveal new possibilities for large activity. They lead on by arousing interests, providing the means, and stimulating desires to reach higher levels of activity by which even greater satisfactions may be realized. Educative activities in history and citizenship make children want more of such activities; in music make them want more music; in good literature make them want more literature, and so on.[14]

Bonser took issue with the old concept that "it doesn't matter what a boy learns in school, just so he doesn't like it." On the contrary, Bonser gave a positive interpretation of the idea, and emphatically implied that "it doesn't matter what a boy learns in school, just so he does like it."[15] Thus, he was one of the early champions of the idea that the school should be a place of enjoyable experiences, happy associations, and meaningful endeavors. It should by no means be a place designed solely for the acquisition of facts, but rather, it should be a pleasant place in which vital, practical living occurs at all times.

History, geography, science, industrial arts, and other subject-matter fields can be taught in such a manner as to make the work genuinely valuable in presenting real and meaningful problems of practical life and citizenship so that children may have a multitude of

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[14] Ibid., p. 3.

[15] Ibid., p. 10.

experiences in school that link up vitally with the problems and activities of life all about them.

> . . . They may learn of the problems of imports and exports, of climatic controls and influences, of transportation and trade affecting the life of their own communities; they may learn of the problems of agricultural and industrial life, of taxation, of budgets, of immigration, of wages, of local, state, and national political life; they may learn of the dangers and control of germs, of problems of food supply, of the use of steam, gas, air, electricity, light, heat and other natural forces in the home, the community, and in industry. In this age how can we expect children to understand these matters and regulate their conduct to them intelligently without teaching them the meanings, contributions, and values of these factors in life?[16]

In an address delivered to a convention of educators in 1926, Bonser pointed out the results that can be expected when the program of the school is separated from or little related to real-life situations. These results may be summarized as follows:

1. A large number of business failures, totalling 21,180 in 1925.

2. An appalling amount of juvenile crime.

3. Nearly half as many divorces as marriages.

4. A spirit of lawlessness, rudeness, incivility, graft, and neglect of political participation by half of the adult population.

5. A craving for low-grade motion pictures, jazz music, primitive dancing, obscene books and periodicals, automobile speeding, and

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[16] Ibid., p. 6.

emotional revolt against many time-tested and generally accepted moral standards.

6. Low standards of work, inefficient workmen, little pride in achievement, little sense of personal service, little understanding of the meaning of economic and social division of labor and co-operation, and little comprehension of the relationships of work, service, and pay.[17]

All of these problems and weaknesses in society could be greatly reduced in number and seriousness, thought Bonser, if the educational program of the schools were more closely related to the demands and needs of life, and if the idealistic aim of the school were actually put into practice—that of developing in young people the ability to understand and solve satisfactorily the many varied and complex problems of human life. If the school does not provide such preparation, individuals will not be equipped for meeting practical life situations, and when problems confront them, they can do nothing but attempt to flounder through their perplexities or else submit to forces that they do not understand and therefore cannot combat successfully.

Bonser conceived of the industrial arts as a means of bringing the pupils face to face with many of the practical problems of human life, especially those involving the earning of a livelihood, co-operative

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[17] Ibid., p. 5.

activities, and productive labor. He urged that the industrial arts, like all other subjects in the curriculum, should be, first of all, practical and utilitarian, realizing that they would receive much criticism because of their fundamental characteristic—that of serving practical purposes in life. But he assured potential critics that it was not to be feared that the industrial-arts program would over-emphasize their utilitarian aspects at the expense of all other traits. People are prone to forget, he said, how really little of genuine culture the majority of pupils acquire from their school experiences. In this connection, it should be remembered that culture includes not only the arts but also the ways in which members of a given society make their living and do things for their own pleasure and satisfaction and for the welfare of society in general. Consequently, "something must be done to make the school seem, and in fact be, more really worth-while."[18]

The Curriculum

Nature and source of the curriculum.—According to Bonser's conception, the curriculum represents the various experiences in which pupils are expected to engage in school, and the general order of sequence and grade of difficulty in which these experiences are to come. Very generally, the curriculum consists of the materials found to be valuable in carrying on life activities in the best way.

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[18] Ibid., p. 81.

This, says Bonser, is an ideal curriculum. In reality, the curriculum usually has been presented apart or separate from the uses which it is meant to serve in engaging in the activities and meeting the problems of life.[19] In other words, the curriculum in its ideal and most meaningful implication, is a means whereby pupils are enabled to engage in real-life situations, thus learning about life and how to live it most effectively; but the curriculum as usually found in the schools has been employed to facilitate the memorization of multitudes of unrelated facts and figures, with little attempt to study their practical applications to life and in life.

> . . . Throughout the whole range of present-day problems and interests the curriculum should include both the kinds of situations calling for subject matter in the usual sense of that term and the subject matter which the respective situations require. The curriculum then becomes the projects inclusive of the essentials of race experience and the helps necessary to engage in these projects with success and efficiency. . . .
>
> The curriculum has, then, a twofold source: the experiences of present-day life in which it is necessary or desirable to engage; and the results of the experiences of the race in carrying on these activities. Whatever the race has learned that would enable us to meet our needs and solve our problems in a better way by our knowing about it, should be placed at our disposal by the curriculum.[20]

Two common errors of curriculums were pointed out by Bonser as follows:

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[19]Bonser, The Elementary School Curriculum, p. 1.

[20]Ibid., p. 3.

1. Curriculums have been made to include much material that produces no desirable difference in conduct, and, at the same time, they have omitted much that is of very great significance for the proper and efficient conduct of human life in present-day society.

2. Curriculums have been almost universally guilty of requiring activities—desirable enough at the proper time and place—at a time when the pupil has no feeling of need for them and no personal sense of their worth.[21]

Thus, curriculums have been weak and inefficient because of their failure to relate themselves closely to the problems and needs of human life and because of their lack of emphasis upon much that is truly significant in life.

In the elementary school, subjects in the curriculum are justified by their having a body of thought and experience of fundamental and universal usefulness. This means that each subject is made up of the items of knowledge and those experiences or activities which are found to be of value in relationship to daily life needs. Useful information, desirable habits of mind and action, cultivated tastes and appreciations, and attitudes of social helpfulness, all so developed that they guide in the conduct of life, are the result which is hoped

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[21] Ibid., pp. 20-21.

for from the various subjects of study as they occur in the curriculum of the school.[22]

The only source of subject matter contained in the curriculum lies in the results of experiences of the human race up to the present time.[23] In other words, subject matter is condensed experience, organized into sequence that is more or less logical, and presented according to definite plans. Nothing can be included in the curriculum which has not already occurred somewhere, sometime in human life. The curriculum, then, is the organized experience of the human race from its earliest beginnings to the present day.

Since life itself is not broken up into subject-matter areas, each separated formally from the others, there is serious doubt that the curriculum should be so compartmentalized and subdivided. Daily problems have various aspects, involving practical activities and the use of number, geography, history, fine arts, English, and the cooperation of numerous people. All of these aspects appear in an almost infinite variety of combinations, and one is scarcely conscious of passing from one aspect to another.

It is both possible and desirable to bring much of this unity of life into the school. If this is done, school work becomes more nearly

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[22]Frederick Gordon Bonser, "The Industrial Arts in the Elementary School," School Arts Magazine, XIII (November, 1913), 183.

[23]Bonser, The Elementary School Curriculum, p. 4.

a genuine practice of life activities themselves. For developing understanding, many units of work must be studied in each subject in order to bring mastery of the unit, but these should be introduced solely because of their need and worth in problems which require them, and not merely because they are thought to be worth-while knowledge for children to acquire. They will not be limited to any one subject-matter area, but are likely to incorporate knowledge from several areas. They enter into experience in school as practical problems, just as they appear in experiences out of school. "No other phase of school work has such great possibilities for bringing about this unity of school and life experience as the industrial arts when taught with proper regard to the broad relationships of its problems and its content."[24] Thus, Bonser believed that the practical nature and implications of the industrial arts made them especially suitable for relating the work of the school to life needs and problems.

Life was interpreted by Bonser as being "a succession of activities in meeting needs." He stated that from earliest childhood to old age, there is an urge within the individual human being which expresses itself in the form of needs and in attempts to satisfy these needs, which are of many kinds and of varying degrees of significance. The needs which are most necessary for the maintenance of life itself are the

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[24]Frederick Gordon Bonser and Lois Coffey Mossman, Industrial Arts for Elementary Schools, pp. 74-75.

material needs, including food, clothing, and shelter. But there are many other needs, too: activities which bring their own satisfaction, such as play, games, and sports; strong desires for communication and social intercourse; interest in expressing and appreciating feelings of beauty in words, music, bodily motion, form, and color; desire to understand the operation of natural forces and the nature, purpose, and final destiny of human life; and a need for co-operating with others as a means of producing and enjoying satisfactions of all kinds.[25]

Bonser wrote that

> It is the fundamental nature of life to realize itself more abundantly. It is likewise the aim of education to lead progressively into ever widening and deepening experiences. To live an increasingly rich and worthy life is therefore at once the broad, inclusive aim of all endeavor in both life and education. When present needs are satisfied it is important that new needs should make an appeal, and that these in turn, when satisfied, should still point forward to new experiences. To develop this many-sided interest in children the curriculum should stimulate participation in every form of worthy activity and reveal the large possibilities for going on and on through all the years of life, increasingly experiencing the values of science, literature, art, and all other forms of interest contributed by the past or developed by the future. The schools have not wholly escaped the danger of producing arrested development by cultivating a routine of habits which, when followed long, results in an attitude of apathetic contentment. The curriculum must be shot through and through with the interests, activities, and ideals which ever appeal and lead us forward into larger realizations of life and which fill us with the zest and earnestness of youth as long as life shall last. Poor,

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[25]Bonser, The Elementary School Curriculum, pp. 9-10.

> indeed, have been the curricula of the . . . schools when measured by the possibilities potential in the richness of the race inheritance. Children and adults have gone through life without having been even made aware of the interesting and life-giving content of science, literature, history, and the arts. The most fundamentally potent ideal in this presentation is that of enriching and energizing the experiences of childhood that there may be a greater abundance and nobility of life as a whole.[26]

In order that all courses in the school curriculum may be equally democratic, each course must be as rich in educational or life values as any of the others. Some subjects, being required, are taken in common by all pupils, but there are others which are elected because of their bearings upon the natural interests, aptitudes, and inclinations of the pupils.[27] Both required and elective subjects are faced with the responsibility of making themselves serve meaningful purposes through their practical approach to life needs and problems.

At all times, Bonser urged that the method of the school, together with all of its instructional materials, must be typical of the life for which the school is obligated to prepare the young people of the community. If this is not the case, the school and the curriculum fall short of accomplishing their primary purposes. Bonser's principal emphasis was upon the need for a series of dominant topics in the school that should be really typical and representative of life needs

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[26] Ibid., pp. 24-25.

[27] Bonser, Life Needs and Education, p. 83.

and life interests. He was convinced that the content of these topics should be so enriched that the content and the method of its development would furnish abundant motivation for the mastery of the formal, mechanical tools of education. In this way, emphasis would be placed upon the ends of education and not wholly upon the means. Bonser insisted that the best procedure in education is to follow the simple teachings of the concept which maintains that "the dominant topics of the school at any period are the dominant life interests of the child in relation to the social life about him during that period."[28]

According to Bonser's point of view, there is always a valid demand that the materials and work of the school should incorporate, to the highest degree possible, the most fundamental relationships of daily life activities. The permanent solution for this problem cannot be found, however, in the organization of a new kind of school or in the introduction of new subjects into the curriculum. Instead, the school and its subject offerings may be made practical and life-centered by rebuilding the common subjects of study to fit the needs and interests of the present day. And this procedure is just as effective and just as much needed in the college and in the secondary school as in the elementary school.[29]

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[28] Ibid., p. 198.

[29] Ibid., p. 85.

In education, the problem of the day is that of making a fundamental readjustment of the school's work in terms of present-day life needs, all viewed in their proper perspective. Under this program of readjustment, the individual arts and the various subjects will receive the attention and emphasis which are an appropriate measure of their importance in life itself. [30]

In this connection, Bonser insisted that all educational programs should be developed and carried out at all age levels in such a manner as to bring about the wholesome recognition and worth-while channeling of the six fundamental impulses which express themselves naturally in children. These impulses Bonser defined as follows:

1. The impulse to play, expressing itself in games, sports, imitative adult activities, and combining with other impulses to give satisfaction in activity for its own sake.
2. The impulse to manipulate, developing into constructive activities.
3. The impulse to investigate, developing into inquiries about science, geography, history, mathematics, the industries, and everything else that appeals to curiosity.
4. The impulse to communicate, which develops into language, reading, writing, and an interest in literature.
5. The impulse to art experiences, growing into expressions and enjoyment of beauty in form, color, music, poetry, and dramatics.
6. The social impulse, developing into ways of sharing cooperatively with others any kinds of activity that are of common interest and for the common good. [31]

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[30] Ibid., p. 94.

[31] Ibid., p. 182.

Too often, the school attempts to crush some or all of these natural impulses of children. Bonser recalled that in the country school which he attended as a child, the overt expression of any one of these impulses brought punishment. Instead of helping children to develop naturally by helping to give sound and constructive direction to the activities which are so strongly seeking expression in child life, the schools have imposed "the highly artificial activities of memorizing textbook materials and mastering abstract processes separated from natural life and activities."[32]

The need for a flexible curriculum.—Approaches to all projects and subject matter which are more or less remote from the experiences and present needs of the children should be made through immediate interests and experiences which may be directed and guided in such a manner that they will lead by gradual steps to the remote and the previously unknown, thus relating that which is beyond the children's knowledge and experience to that which is currently significant and meaningful.

Since approaches to all questions and problems must be made through immediate and current experiences, many projects and activities containing common subject matter should differ as much in different schools as conditions of environment and of the respective localities

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[32]Ibid.

differ. Thus, individual teachers must be responsible for the use and adaptation of projects growing out of the immediate activities and interests of their own communities.[33] In other words, suggestions in textbooks and in state courses of study cannot be accepted and incorporated into the school situation without adaptation and modification to fit the present needs and the immediate environment of the learners in a particular school.

Of first importance in education is the development of the appropriate attitude or outlook on education as a whole. Next in importance comes the development of curriculums which will provide experiences and training in ways of behaving in matters of large and permanent social importance. This is called by Bonser "the most pressing problem in curriculum-making." Through participation in activities which are guided by the combination of one's own intelligence and the accumulated experience of the human race, one's knowledge evolves into wisdom, which is a working knowledge including awareness of the probable results of optional courses of conduct and their relative worths.[34]

When social changes bring about modifications in ideals or when methods of life undergo alterations because of inventions, discoveries,

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[33]Bonser, The Elementary School Curriculum, p. 153.

[34]Bonser, Life Needs and Education, pp. 177-178.

or new interpretations, then the curriculum of the school should change correspondingly, so that it may continue to be a true reflection of ideals, methods, and problems of life as it is lived. Every item included in the curriculum, whether large or small, can be adequately evaluated only in terms of how well it recognizes, embodies, and serves fundamental life purposes.[35]

The curriculum is a sequence of purposeful activities together with the subject matter necessary to carry forward these activities in the best way. As such, it must continuously represent present life needs, and it cannot be regarded as any more completed or fixed than is human life itself. In the main, the large life purposes which the curriculum represents and much of the subject matter helpful in realizing these purposes remain unchanged from year to year, and may therefore be regarded as relatively permanent. But discoveries and inventions and the accumulation of new knowledge in many fields are constantly increasing understandings and modifying ways of living. New ways of doing things and new concepts of fundamental human relationships are ever being developed. New interpretations and new expressions of the thoughts and feelings of man are challenging the attention of men and women from day to day. The details of present-day life are ever changing, and in many ways, and for many reasons. Out

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[35]Bonser, The Elementary School Curriculum, p. 9.

of all of these changes and differences in environment comes the necessity for a flexibility in the subject-matter curriculum and in all of the activities of the school that will make possible their adjustment and adaptation in every school to the particular needs of the time and location. "As representing the large main life purposes, we may say that the curriculum is relatively fixed and permanent; as representing the detailed approaches to these larger purposes through the immediate interests and activities of each community, we may say it is ever in a state of change."[36]

Thus, Bonser was a strong advocate of a changing curriculum that was readily adaptable to the needs of the pupils and to the demands of the particular environment in which the school may be located. He was one of the first educators to insist that the curriculum should be more than reading, writing, and arithmetic and other formal subject matter—it should also incorporate constructive, creative, meaningful, and worth-while projects and activities, both mental and physical, to meet the needs and challenge the interests and abilities of the individual pupils.

The activity curriculum.—Bonser, one of the first advocates of the activity curriculum, defined it as "an endeavor to improve the kinds and quality of learning so that we shall get practice in

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[36]Ibid., pp. 5-6.

living in the best ways, using whatever is helpful from books or other forms of race experience."[37]

He conceived the purpose of the activity curriculum to be that of combining the naturally desirable impulses to action in children with the desirable activities of actual life. In school, then, the child should not be preparing for life; but he should be participating in life through the varied channels opened up to him by the curriculum. Everything that is useful from the accumulated experience of the race as found in life itself and in books is to be included in the activity curriculum in order to help in gaining knowledge, establishing habits, and cultivating attitudes, appreciations, and ideals. Since it should be developed with due consideration of all the factors involved, the activity curriculum seems to offer opportunities for more efficient and effective school education than the conventional subject-matter curriculum. It provides means for developing initiative, judgment, self-reliance, and self-direction. New interests and methods of self-direction and constructive work are cultivated which will help children to continue their growth after leaving school, and to advance in intelligence and efficiency as long as they live.[38]

Bonser recognized that the curriculum must contain much of formal subject matter, for the accumulation of such knowledge as formal

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[37]Bonser, Life Needs and Education, p. 181.

[38]Ibid., pp. 183-184.

subjects provide is essential as a basis for learning and for effective living in present-day society. At the same time, however, he deplored the fact that too often the curriculum is almost exclusively devoted to a study of formal subject matter, with little or no provision for children to participate in desirable, purposeful activities closely related to present-day life.

> . . . Our purposes, problems, and needs as they arise in daily life, including, of course, our purposing and planning of future activities, constitute the source of our interests and our acts, whatever their form. It is only in terms of helping these activities along that we can attach any value to subject matter. That which promotes our purposes has value. That which does not help us along in any way with enterprises in which we are engaged makes no appeal to us, and if forced upon us annoys us and tends to develop in us an attitude of distaste or hostility. Present-day life with all of its desirable appeals and problems is thus not only the source from which the experiences in education are to be derived, but also the basis for the selection and evaluation of the subject-matter portion of the curriculum. As there is much difference in the relative desirability of various possible life experiences, selection of activities for the curriculum becomes a matter of importance even more primary than the selection of subject matter. Relatively, the selection of subject matter is secondary, since it is determined by the needs of the purposeful activities which it promotes.[39]

Thus, Bonser took the attitude that the activity curriculum is far more vital and important than the subject-matter curriculum. In his estimation, purposeful activities are fundamental to learning, and the presentation of subject matter should be planned so as to motivate,

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[39]Bonser, The Elementary School Curriculum, p. 5.

expedite, supplement, and give meaning to the creative activities which every good curriculum should emphasize.

Bonser insisted that it is possible to organize a curriculum wholly upon the basis of the activities of life in which children actually engage rather than in terms of subjects in which, as such, few ever engage after they leave school. He believed that such an activity curriculum is ideally desirable. He did, however, point out the difficulty and the danger which might result from the hasty adoption of the activity curriculum. He called attention to the fact that the organization of the curriculum around projects and activities would represent such a drastic change from the conventional practice of placing primary or even sole emphasis upon subject matter that any attempt to inaugurate an activity curriculum, if made with any degree of haste, would not succeed in most schools. In fact, "The whole organization of the schools, and the experience and training of teachers, supervisors, and administrators are so thoroughly established for work on a subject basis that change must be gradual rather than abrupt."[40] Bonser insisted, though, that such a change should be made in every school throughout the nation. Learning, he said, must have practical value in human life; and it should come from purposeful activities more than from the printed page, although he recognized that the two sources of knowledge

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[40]Ibid., Foreword, p. vi.

must supplement each other for the purpose of bringing about wholesome and well-rounded development of the child.

Activity solely for the purpose of having something to do, however, is to be guarded against, as its educational value is negligible. Mere "busy-work" has no place in the school curriculum; without purpose and plan, activities are a waste of time. "There should be no doing without learning from it. It is therefore necessary to select kinds of activity identified with the needs of life."[41] At the same time, the only possible organization of activities which can have a general application or even relative permanence is one which offers a progressive sequence of projects designed for the purpose of realizing fundamental life purposes. Activities alone, though, are not enough; the planned sequence of activities must be accompanied by corresponding sequences of related and pertinent subject matter.[42]

If the purpose of the curriculum is to furnish aid in the selection and promotion of experiences of the largest life values, then the curriculum must include not only the essential facts, principles, and processes useful in the daily conduct of life, but also it must provide for the purposeful and creative activities required for the fulfillment of its purpose.

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[41] Bonser, Life Needs and Education, p. 183.

[42] Bonser, The Elementary School Curriculum, pp. 148-149.

[43] Ibid., p. 2.

As pupils grow older and advance through the grades, manipulative interests—so popular in the lower grades—will tend gradually to diminish in importance, and, for most pupils, investigative and appreciative interests will correspondingly tend to increase. All of these activities should contribute to the process of bringing the learner into an increasing participation in social life and co-operative work and to the promotion of personal satisfactions and adjustments of the individual within the groups in which he lives and works.[44]

The curriculum that is based on activities, then, is an introduction to life as it is lived in the society which surrounds the pupils. Yet it is more than an introduction—in Bonser's concept, the curriculum must provide for participation in life itself or else it can never fulfill its fundamental purposes as conceived by modern educators. Certainly, the activities must be planned and carried out in such a manner as to contribute the highest possible meaning to the work of the school and to human life itself. The activity curriculum, then, is or should be at the very center of the educational program of the schools, with subject matter supplementing it and giving meaning to it.

Integration of the subjects within the curriculum. —"Most school subjects had their origin in practical needs."[45] In order

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[44]Frederick Gordon Bonser, "Activity Curricula and Industrial Arts," Journal of Educational Method, VI (May, 1927), 390.

[45]Bonser and Mossman, Industrial Arts for Elementary Schools, p. 67.

to live most effectively, people needed to be able to read, to write, and to calculate. Because of these needs, the subjects of reading, writing, and arithmetic found their way into the school curriculum. In the same way, the other subjects have been added from time to time in response to felt needs as reflected in the demands of society for more efficiency in performing the work of the world. As new industries have developed, new subjects have been added to the curriculum in order to prepare young people for entry into these industries and to acquaint the general public with the function and purpose of the new ways of doing things. All of these new methods and processes constitute valuable indications of human progress and must be understood and appreciated by the laity as well as by those who are intimately concerned with the new methods. Thus, practical needs and demands on the part of society gave birth to the various subjects included in the curriculums of the schools.

Eventually, it became apparent, however, that the complex ways of doing things which have been developed by modern society often incorporate principles and knowledge from many different fields of learning, all interwoven and interrelated to produce the best possible results. In view of this fact, Bonser foretold "a rapidly approaching time" when school units would be organized and presented on the basis of important life activities, incorporating appropriate elements of

arithmetic, science, geography, history, industrial arts, and other subjects. Such a plan, he prophesied, would remove much of the emphasis upon these areas of knowledge as separate subjects and would tend to unify them into a functional whole. With such a plan of integration and correlation, most of the problems of overlapping in content and purpose would be eliminated, and much time would be saved that must necessarily be wasted under the rigid subject-matter organization of the curriculum.

In this new approach to learning, Bonser saw industrial arts as "one of the largest unifying and integrating centers for the new type of curricula."[46] He assigned this important place to industrial arts because of that subject's peculiar contributions to various vocational interests and because it provides ample opportunity for many of the problems and needs of human life to be worked out individually and co-operatively in the school. Bonser, in his conception of the practical worth of education, believed that the school should equip the pupil to engage effectively in whatever line of work he chooses to enter. This accounts for the importance he placed upon the industrial arts, since they are so closely related to many vocational pursuits. At the same time, he believed that the total curriculum—academic as well as practical—should be designed for equipping boys and girls to live happily,

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[46]Bonser, Life Needs and Education, p. 103.

efficiently, and creatively in the community. Therefore, Bonser believed that

> The world's work may be done far more efficiently, in much less time than is now consumed, and with much greater personal satisfaction, by that distribution of human capacity which will enable each to contribute his reasonable maximum of vocational service. The school is our deliberately organized means to bring about this efficiency in human endeavor. The school's curriculum may be so reorganized that it will increasinbly reflect the problems, needs, methods, and ideals of everyday life. Developed on a plan that will mean participation in activities whose worth may be interpreted in terms of life occupations and life values, children will cease to be bored, and instead, they will joyously, efficiently, and enthusiastically be drawn to exercise their best efforts and express their aptitudes in the full measure of their natural capacity. Such school participation will not only reveal individual differences basic to vocational selection and guidance, but it will likewise develop a genuine culture of life that will ever grow larger in its richness and satisfaction, whatever the form of its vocational service.[47]

In pursuing this line of thought further, Bonser stated that the introduction of the industrial arts into the curriculum offers a means of bringing most of the other subjects of study into a close and vital connection with the situations in which their subject matter is directly useful. This is true because the industrial arts are representative of so many of the practical activities and problems of daily life.[48]

In his philosophy of education, Bonser emphasized the fact that purposeful activities conducted under the sponsorship of the school

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[47]Bonser, "The Curriculum as a Means of Revealing Vocational Aptitudes," Education, XXXVII (November, 1916), 159.

[48]Bonser and Mossman, Industrial Arts for Elementary Schools, p. 68.

curriculum provide a means for the integration and correlation of the various subject-matter fields, each making its own peculiar contribution to the ultimate success and meaningful culmination of the different activities and projects undertaken. No activity has meaning except as it is related to subject matter for purposes of understanding and appreciation; and most activities must call upon the offerings of several different subject-matter areas for their development. Thus, the activity curriculum provides a focal center in which the materials embodied in the subject-matter curriculum unite and become integrated in order to give meaning and significance to the activities engaged in by the pupils. An activity cannot have meaning unless it is closely related to appropriate subject matter; on the other hand, subject matter may have its meaning and worth immeasurably enhanced if it is incorporated into purposeful activities.

The Teacher

In Bonser's conception, life is a process which goes on all the time within people and about people. He believed that this life could be made better and richer if individuals would but put forth sufficient effort to make it so. For this purpose, intelligence is indispensable.[49] In following up this thought, it becomes evident that Bonser regarded the teacher as one of the most significant elements of the school's

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[49]Bonser, Life Needs and Education, Introduction by William H. Kilpatrick, p. viii.

instructional program. The teacher must have the intelligence, the ability, the understanding, and the desire to guide children into experiences which will make life better and richer for them.

The teacher has the primary responsibility in the selection of projects and activities, which include elements required by the experiences of later life as well as those needed in the enterprises being carried on in the classroom. However, children are not to be asked to take an interest in a problem because it will have vital and personal meaning to them at some future time, but because it is a real problem to them now, in the classroom, the home, or the community.[50]

Bonser expressed, perhaps, a bit of cynicism when he remarked, in an address to an educational conference, that "teachers should be at least as well educated as other persons!"[51] By this statement he implied that teachers too often are poorly educated and inadequately trained for the successful accomplishment of their responsibilities in guiding young children and enabling them to perceive meaning in the activities and purposes of human life. Possibly Bonser would have agreed with the old opinion that school teachers are people who have failed in everything else they have attempted to do. This, of course, is an unfair accusation of the teaching profession as a whole, but certainly there are still numerous individual instances in which persons

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[50] Bonser, The Elementary School Curriculum, p. 19.

[51] Frederick Gordon Bonser, "Needed Changes in Teacher Training," Progressive Education, VIII (March, 1931), 274.

have become teachers as a last resort, without adequate training and with less intelligence than is essential to success in the teaching profession.

Bonser suggested that qualifications for entry into the teaching profession should be made more and more rigid until only those persons who are truly capable of doing effective and outstanding work will be admitted. Although requirements for certification have been made more exacting, Bonser's ideal situation has not yet been attained by any means, nor is there any likelihood of its being reached soon. The drastically low financial remuneration accorded teachers in terms of that earned by members of other professions has been instrumental in diverting many of the most capable persons into other fields of work. Many of these individuals would much rather be teaching, if the financial return were in line with the effort expended and with the training required.

Present-day efforts to increase teachers' pay may eventually result in the attraction of more capable persons into the teaching profession. Teacher shortages are due largely to the small salaries paid; and when remuneration is adequately raised, shortages of personnel will tend to disappear and more capable persons will be attracted to the classroom. Thus Bonser's ideal is slowly developing into reality, but there is still a long way yet to go.

Bonser stated that teacher-training institutions should make special efforts to develop in prospective teachers the following desirable qualities:

1. Scholarship or cultural background.
2. A progressive conception of education.
3. An inquiring, creative, constructive, open-minded attitude.
4. An understanding of the behavior, means of growth, and needs of children.
5. Training in the techniques of teaching under efficient, progressive guidance.[52]

Bonser was dogmatic in his assertion that no one can do an effective job of teaching unless he has formulated for himself an adequate purpose and plan for his work, together with desirable outcomes which he will seek to attain. This formulation of a philosophy of education and of teaching should begin while the young man or woman is still in training to become a teacher. That is, the prospective teacher should develop clear-cut ideas and opinions concerning education before he ever enters his own classroom as an instructor. Bonser went so far as to state that if the prospective teacher cannot, with reasonable assistance and guidance from his professors, arrive and formulate some working philosophy to give reasons for the steps and details in his work, it is very doubtful whether he has the capacity to teach in an effective manner.

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[52]Bonser, Life Needs and Education, p. 259.

At all times, the teacher should have positive, working convictions which go together to form a practical philosophy of education to which every decision, every action, may be referred for its justification. If a teacher-training institution fails to help its students to work out for themselves a philosophy of life and of education, no matter how much it crams them with isolated knowledge and devices of practice, it is not a genuinely professional teacher-training institution—it is hardly up to the standards of a good trade school.[53]

It must be recognized that the teacher-training program of any college will not necessarily produce good teachers. It may, however, have some good results. The best that can be done is to turn out individuals capable of becoming good teachers through the application of what they have learned. Teachers become efficient through practice and experience, and are never turned out as finished products by any teacher-training institution. Most colleges which prepare teachers offer some type of practical experience in the classroom for those who are prospective teachers. These programs of "practice teaching" or "student teaching" are invaluable in providing opportunities for the students to put into actual practice the theories and principles that they have acquired in the course of their training. The best that these programs can do, however, is to indicate the students' strong points and their

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[53]Bonser, "Needed Changes in Teacher Training," Progressive Education, VIII (March, 1931), 272-273.

weaknesses and to offer suggestions from supervisors and critics as to how inadequacies can be remedied. The way in which classroom problems are handled and situations dealt with proves a fairly reliable index as to whether the individual can develop into a good teacher. In the last analysis, though, good teachers are produced through actual experience—they are never born.

Bonser pointed out this fact in the following manner:

> Understandings of procedures and efficiency in their use can not be assured without practice. The training schools may not be able to afford each student enough practice to develop much skill in the techniques of teaching. But students should not be certified as qualified to teach until they have demonstrated sufficient control of techniques to assure reasonable success in teaching. By practice under efficient supervision, the prospective teacher having adequate ability to teach can be given enough training to start in the right way, with both passable success and means of continued improvement until mastery is acquired. When teacher-preparing institutions begin to take the problem of training teachers really seriously, they will, of course, make the training schools the centers of interest and activity from at least a third to a half or more of the students' time throughout the period of training. The interpretation and use of all that is learned in terms of the needs of the learners that are taught or to be taught will continuously be a prominent part of the students' thought and experience. Resolving principles and materials into working practice will be an end to which nearly all else is subordinated. Even the personal enrichment of life of students themselves, which the institution and environment should abundantly provide for, will be no exception, for all of this the teacher will share as personal influence and power in teaching. Throughout, theory and practice will have to be integrated—genuinely united through experience in a common purpose—not artificially connected by words.[54]

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[54]Bonser, Life Needs and Education, pp. 230-231.

Bonser pointed out that the problem and content of the preparation required for teaching at its best must give serious consideration to the following elements:

1. The development of fine and ennobling conceptions and ideals of life and of education.

2. A working knowledge of child nature and child growth.

3. An understanding of social and institutional life of the present day, and the vision of a better, reconstructed social order to come.

4. A working knowledge of the materials of science, history, economics, the arts, and current practices and procedures by which individual and social life is maintained and promoted.

5. A creative personality trained to direct groups of learners to venture, to experiment, to search, to think, to construct, to create, and to appreciate the worth and development of educational enterprises designed for well-grounded and well-rounded growth of the individual.

6. A working skill in the techniques of aiding learners in carrying forward a continuous program of educative activities with reasonable and growing courtesy, order, industry, co-operation, and efficiency.[55]

If the teacher-training institution works conscientiously toward the development of the above traits in prospective teachers, it will

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[55] Ibid., p. 231.

thus make its utmost contribution to the general efficiency of the nation's educational program.

In addition to pointing out the qualities which teacher-training institutions should strive to develop in prospective teachers in order that they may become highly capable individuals in their chosen profession, Bonser also mentioned eight essential tasks and functions of the teacher in any school or grade. These responsibilities may be stated briefly as follows:

1. Connect the work in all subjects with backgrounds of experience and with the home and community lives of the pupils, giving it real purpose and motive.

2. Use the interests and needs of the pupils in creative, constructive, and investigative activities, and thereby utilize all of their abilities and capacities in purposeful and worth-while projects.

3. Appeal to the imaginations, sympathize with the enthusiasms, and encourage the spirit of inquiry in the pupils.

4. Help the pupils to grow in thinking soundly and reflectively, thus developing the ability to do selective thinking.

5. Help the pupils to purpose, to plan, and to carry on individual and group enterprises for developing independence, self-reliance, and co-operativeness.

6. Adjust the work of each pupil to his individual capacities so that he will experience success in his efforts rather than failure.

7. Break down the artificial barriers between subject-matter fields, integrate the various subjects into worth-while, practical learning experiences, and help the pupils to understand how the materials of each subject contribute toward the development of important and interesting purposes and activities of life.

8. Make the work of the school truly a sharing in the interesting and useful life purposes and activities outside of school.[56]

In other words, Bonser recommended that the teacher should assume the responsibility for giving a valid purpose and motive to all of the work of the classroom by means of practical and purposeful activities and projects inseparably related to the common experiences of life in the community in which the school is situated. Activities should be planned and developed for the purpose of making learning vital and meaningful; and the interests and capacities of all pupils should be challenged, while the spirit of inquiry and investigation is fostered by the projects undertaken by the class. Also, the teacher is responsible for developing the pupils' ability to do selective and sound thinking; and also for fostering within individual children the traits of constructive planning, co-operative effort, and independence and self-reliance.

The teacher, too, must take individual differences into account in planning and adjusting the work of the class; a rigid instructional program is never successful in a group in which individual abilities vary as widely as they do in the average class. Therefore, the program of learning must be modified for both inferior and superior pupils, so that each group will experience a wholesome sense of successful attainment. The teacher must be able to show the pupils how the activities of the schoolroom are related to those commonly carried on in society; and she must be capable of bringing the subject matter of all pertinent fields to bear upon the activities and projects which are being undertaken in the classroom. In other words, she must integrate and correlate various fields of knowledge in order to develop in the pupils an appreciation of the fact that any project undertaken must draw upon many different sources of information, and must utilize many different types of information, for its successful completion.

In the light of these essential qualities of a good teacher, Bonser listed the necessary qualities of a progressive teacher, as follows:

1. Breadth and depth of scholarship or cultural background.
2. A progressive conception of education.
3. An inquiring, creative, constructive, open-minded attitude.
4. An understanding of the needs and means of growth in children.
5. Training in the techniques and methods of those forms of teaching which best promote growth.[57]

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[57] Ibid., p. 17.

In a similar manner, Bonser mentioned, on another occasion, seven qualities or traits of an efficient teacher, as follows:

1. A conception of the meaning, purposes, and processes of education at its best.
2. A consciousness of existing social problems, and a vision of a reconstructed social order in which desirable ideals are conceived as goals toward which to work in improving immediate social conditions and standards.
3. Knowledge of immediate life problems and an ability to think intelligently and constructively about these problems, together with knowledge of race experience and its use in relationship to present interests and problems.
4. Release and development of the creative and dynamic powers by which personal life is strengthened and enriched, and by which all teaching activities are vitalized.
5. Development of abilities and techniques in enkindling or using desirable interests and promoting growth in all of the desirable capacities of learners in achieving worthy purposes.
6. Development of techniques in the organization of group activities of learners to provide for both individual growth and group progress through co-operative activities.
7. Practice in the use of all essential techniques in teaching by the best methods we know, under competent supervision, to clarify understanding of procedures and initiate right beginnings in their use.[58]

The teacher who conscientiously attempts to put these traits and qualities into practice will unquestionably be a good teacher whose classroom procedures and techniques will contribute immeasurably to the pupils' well-rounded growth and purposeful development along educational lines.

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[58] Ibid., p. 223.

As the principal source of suggestion for classroom undertakings, the teacher must recognize that in every subject, scores of activities and projects may be employed which will call forth the interests and whole-hearted efforts of children in planning, securing facts and materials, observing conditions to which they have heretofore been blind or indifferent, and in carrying out their plans and projects to successful completion. In such activities, imagination, discrimination, accuracy of observation, and judgment are all stimulated and developed. These activities are creative teaching and learning situations, vastly different from and far superior to assigning materials in books to be memorized and recited. The prospective teacher in training should have ample opportunity to participate personally in such activities and thus learn how they can be made meaningful and vital to children. In a practice-teaching situation, these activities and creative projects will be as fascinating and educative to the prospective teacher as to the children with whom she works. After gaining experience in these creative learning situations, no teacher will ever be content to teach by the dull, listless method of merely assigning lessons, hearing recitations, and giving examinations. Only as teaching and learning are creative are they stimulating, growth-promoting, and satisfying to either teachers or pupils.[59]

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[59] Ibid., pp. 245-246.

Bonser was convinced that

> All teaching may be creative, but most conventional teaching is not. Whenever both teacher and pupils are stirred to active investigation and inquiry in developing growth, there is creative activity. Using the experience one has, in new ways, to gain more experience is creative. Having a vision of something to be desired and adventuring forth to make the vision real requires the use of creative capacity. Whatever one does for the first time, using his own powers in accomplishing the new purpose, yields original and, for him, creative experience. Merely imitating what someone else does, or doing what someone tells one to do, involves but the smallest element of originality.[60]

Thus, it becomes evident that Bonser's conception of the function of the teacher is a wholesome and constructive view. In keeping with a flexible activity curriculum in which purposeful projects and enterprises are designed for the purpose of reflecting real-life situations, the concept of the teacher as a creative guide is one which holds great promise for more effective teaching and learning in the schools. The teacher is to call forth the best efforts of the pupils by means of challenging their interests and capacities in worth-while undertakings. At the same time, the teacher is to be a skilled and competent practitioner of the best methods developed for productive learning experiences. Children can learn something even with a poor teacher—or in spite of a poor teacher!—but with a highly qualified, intelligent, and conscientious teacher their learning experiences will be enhanced immeasurably.

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[60] Ibid., p. 242.

CHAPTER IV

BONSER'S PHILOSOPHY OF INDUSTRIAL ARTS

Definition and Function of the Industrial Arts

Definition.—In the early years of the twentieth century, when industrialization was experiencing its heyday of growth, the need for more intelligence and training on the part of workers in the industries was seriously felt and recognized by industrialists and by the workers themselves. In 1910, Frederick Gordon Bonser wrote that this need had produced a widespread demand for a kind of school work which would produce immediate returns in terms of increased skill and technical efficiency in industrial vocations.[1] In other words, there was a general feeling that the public schools should prepare young people to take their places in the various industries that were coming into prominence at that time. This was a radical departure from the age-old conception of education, which had always been regarded as a means of developing the mental powers of the individual, with little regard for the fostering of manipulative skills. Now, however, there arose a demand that the school should also teach children to work efficiently in

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[1] Frederick Gordon Bonser, Life Needs and Education, p. 69.

the industries. Thus, the school was asked to perform two distinctly different functions—to prepare young people to enter the professions and to prepare them to hold jobs in the many industries that were beginning to occupy an extremely significant role in the economy of the nation.

A special name was soon applied to the new work undertaken by the schools. Bonser wrote that "changes from materials as produced by nature into products for use are called manufacturing processes or industrial arts."[2] It was not long before the term "industrial arts," thought to have been originated by Bonser, was being applied to the new practical curriculum of the schools designed to train young people to take their places in the industries. Bonser has formulated the two following definitions of the industrial arts, which are very similar in statement and meaning, and yet which complement each other in producing a clearer understanding of Bonser's conception of the industrial arts:

> . . . The industrial arts are those occupations by which changes are made in the forms of materials to increase their values for human usage. As a subject for educative purposes, industrial arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes.[3]

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[2]Frederick Gordon Bonser, "Industrial Arts," Chapter XII in Teaching Elementary School Subjects, edited by Louis W. Rapeer, p. 282.

[3]Frederick Gordon Bonser and Lois Coffey Mossman, Industrial Arts for Elementary Schools, p. 5. Italics in the original.

And,

> The industrial arts represent the changes made by man in the raw products of nature to make them more usable as food, clothing, shelter, utensils, tools and machines, and records of his experiences, as books and periodicals. All are constantly using the products of these changes, and information is needed as to the value of materials and methods of construction showing how to select and use products, how to help in the regulation of the production and distribution of products, and how to know good design in each kind of product.[4]

Industrial arts in the school curriculum, then, have to do with understandings and processes related to the above purposes and appreciations. Not only is construction work to be done with the hands, but designs are to be drawn, and studies are to be made of the ways in which various products are made commercially in industrial plants.

In Bonser's thinking, the "practical arts" and the industrial arts were virtually synonymous, for certainly he looked upon the industrial arts as highly practical in their worth and implications. He said that the term "practical arts" includes all of those activities which have to do directly with the production, the changing in form, the making available, and the use of all things which satisfy the material needs of human beings. He proceeded to say that the field of the industrial arts, as here defined in terms of the practical arts, is very large, including all of the changes made in food materials, clothing materials, woods,

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[4]Frederick Gordon Bonser, The Elementary School Curriculum, p. 141.

metals, and clay and other earth products in order to increase their value and utility.[5]

Criticism of manual training.—The subject of manual training preceded that of industrial arts in the curriculums of the public schools of the United States. Manual training represented a tremendous forward step toward the modern conception of what education should do for the children who attend school. But, in Bonser's opinion, manual training did not go far enough to meet the real needs of the pupils. It was too often mere busy-work, having to do with the development of manipulative skills without much purpose and practical application of these skills, once they were learned. He said that the vital weakness in manual training lay in the fact that, after the child gained clear notions of what was to be done, the activity could be carried out mechanically by the hands without mental activity. The lower centers of the brain and of the spinal cord were the only parts of the nervous system employed very extensively in these activities. Mere motor training does not require much use of the frontal lobes of the brain. Repetitions of motor activities for the sake of developing greater skill soon reduce themselves to muscular routine possessing little educational value.

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[5]Ibid., pp. 155-156.

At the same time, however, it must be recognized that muscular activities possess worth-while educational values, but there is always the danger of over-emphasizing them at the expense of much greater values. Manual training did exactly this, said Bonser, while the industrial arts seek to make motor activities serve valuable, educational, worth-while, and practical purposes—the result of thought, choice, and evaluation. Variety in projects stimulates thought rather than routinizing motor activity.[6] Therefore, the industrial arts are far superior to manual training in fostering worth-while educational goals and bringing about desirable outcomes.

Bonser listed four principal inadequacies of manual training, as follows:

> Want of relationship of the work with life. The sequence of the models was in terms of tool processes.
>
> Failure to provide for the individuality of the child. Each must conform to the system.
>
> Lack of motivation. The work was all prescribed in a fixed course.
>
> Placing the emphasis upon the product as the objective, rather than upon the growth of the child.[7]

Only since about 1910 has any definite attempt been made in the schools to study industries as they are carried on in the most modern manner. The predecessor of industrial arts, manual training, made

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[6]Bonser, Life Needs and Education, p. 71.

[7]Bonser and Mossman, Industrial Arts for Elementary Schools, p. 479.

no effort to study industries as they are. The pupil might become quite proficient in the use of hand-working tools in the school, and be able to make creditable pieces of furniture without learning anything about the way in which most furniture of the present day is made in factories. Work in manual training represented a subject without a subject matter other than that of mere hand technique. Manual training was a system of manipulative activities planned for the development of either skill or self-expression, or both; and it had no body of thought or content designed to bring about appreciations and understandings. In contrast, the industrial arts include a body of ideas and meanings, and of interpretative and expressive activities, attitudes, and habits. Outcomes of the study are found in the operation of these experiences in the control of one's conduct whenever conduct relates to the use of enjoyment of industrial products, to the regulative problems of industry, to the interpretation of new methods of production, or to the application of these principles to the making of objects and the development of projects, using the various materials and tools related to the field of the industrial arts.[8]

Scope of industrial arts in the school.—In an address delivered before an educational conference at Columbia University in 1910, Bonser pointed out the fact that the industrial arts program

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[8]Ibid., pp. 29-30.

of the schools should include a study of those industries relating to food products, textiles, wood products, iron and other metals, and clay and allied earth products. He went on to say that up to that time, the school's work with foods had been called domestic science; that with textiles, domestic arts; and that with wood, metals, and clay, manual training. The designing and decorating of all kinds of projects were included in drawing. All of these subjects, he stated, had been largely formal, with the work being accomplished with little thought or relationship to the industries represented. The purpose of developing skill had been emphasized, to the almost complete neglect of thought content or human values.

Bonser then suggested that by taking proper units of work from each of these five fields, a new subject of study could be developed which would largely replace the four subjects, manual training, domestic arts, domestic science, and drawing. This new course, to be called industrial arts, would include all of the most vital and meaningful elements of the four courses out of which it would be organized. Its subject matter would command respect; and, in developing a knowledge and intelligent understanding of social and economic relationships needed by every child, and an appreciation for and sympathy with the work of industrial vocations, it would be as valuable as any other subject in the school curriculum.

Definite units typical of the important industries must be selected, and graded in sequence so that simple phases are presented in the lower grades, with more complex phases being offered as the pupil advances into higher grades. Proper motives and opportunities must be provided for the development of power and some degree of efficiency in the manipulation of materials and tools and machines. Projects in wood, for example, will have to be selected so as to be within the range of possible construction for respective grades, and must be in such sequence as to develop a growing knowledge of the use of tools and an appreciation and understanding of increasing complexity in principles and processes of construction.[9]

At every opportunity, Bonser pleaded

> . . . for more reality in school life, for more activity of the kinds natural to growing boys and girls, for more attention to the kinds of experiences which are identified with the needs for better and more abundant living. In a measure realized by no other subject, method, or means, industrial arts provides the content and the procedure for adapting . . . school work to the abilities, interests, and needs of children and to the problems and needs of social life. It affords the means for changing early education from a series of meaningless, imposed, formal tasks to a series of interesting, educative experiences in which children engage with enthusiasm and zest. A speaker, in talking of adult education, recently said that it was a way of "getting on to the world in which we live." This is just what industrial arts helps children to do—to become intimately acquainted with the ways by which life is maintained and improved.[10]

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[9]Bonser, Life Needs and Education, pp. 75-76.

[10]Ibid., p. 106.

Industrial arts, then, in Bonser's conception, affords a means for promoting a more intimate relationship between the work of the school and the needs, problems, and interests of life as it is lived in the community and in the world. Education should not be limited to book learning, but it should include also the ability to employ one's brains and hands in the doing of worth-while work and in the construction of meaningful projects which will afford pleasure, understanding, and satisfaction to the person engaged in such activities.

Industrial arts in the curriculum.—In order to live today with an intelligent understanding and appreciation of the industrial world requires immeasurably more knowledge and experience than were required two generations ago. In view of this fact, Bonser insisted that the school is the only institution "through which this body of experience can be systematically acquired."[11] Thus, the school was to be a means for promoting the acquisition of knowledge and understandings relating to the work, the products, and the social and economic contributions of the various industries to social and economic well-being.

In carrying out this practical purpose of the schools, Bonser felt that the industrial arts provide the logical point at which the curriculum can be expanded and vitalized in order to give children

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[11] Ibid., p. 74.

industrial knowledge and understandings. Also, in the courses in industrial arts, pupils may readily acquire the skills and aptitudes necessary for vocational efficiency in the industries. In his opinion, the industrial arts, rightly interpreted, contain a rich and worthy body of thought and experience and, when properly organized and presented, they involve the revitalizing of practically the whole school curriculum.[12]

Although he was emphatically in favor of the inclusion of the industrial arts in the curriculums of the schools, Bonser recognized the danger that too much emphasis might be placed upon this new area of learning. He recognized the industrial arts as a vital and meaningful element in the total program of learning afforded by the school—not as the sole source of learning or even as a pre-eminent one. He was sufficiently broad-minded to recognize that every subject has its rightful place in the curriculum. But he did insist emphatically that the industrial arts should be given their rightful position among the subjects, since they are capable of making truly vital contributions to learning. He warned educators to be careful that, in their zeal to give adequate place to the industrial arts, they did not tend to minimize the more academic subjects and to consider them of little importance.

He also pointed out that sincere efforts should be made to avoid giving an emphasis to the technical content of the industrial arts which

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[12] Ibid., pp. 85-86.

would cause them to overshadow that broader education to which they contribute.[13] Thus, every subject has its rightful position in the curriculum, and none should be emphasized to the exclusion of others. Each subject supplements the others and all should be recognized as contributing something of worth to the well-rounded education which the school is to provide for all pupils.

Bonser pointed out three values of the industrial arts in the curriculum of the school, as follows:

> First, that the industrial arts, rightly interpreted, contain a body of thought and experience sufficiently vital to human well-being to give the subject a place in the elementary and secondary school curriculum on a basis of thorough respectability and validity.
>
> Second, that properly organized, the industrial arts will involve a revitalizing and motivating of much of the other subject matter of the school curriculum, providing tests for selection and elimination on the basis of really human values.
>
> Third, that the social and liberal elements in the study of the industrial arts are more significant than are the elements involved in the mere manipulation of materials.[14]

Thus, Bonser saw in the industrial arts a means of providing social and liberal values in education, of recognizing and meeting vital human needs, and of dealing constructively and effectively with materials and processes in educative ways at all grade levels. Bonser's concept of the place of this subject in the elementary school was a

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[13] Ibid., p. 72.

[14] Ibid., p. 74.

revolutionary idea—so much so that the industrial arts are only now beginning to enter the curriculum of the elementary schools. But this educator felt that the subject should have a place in the curriculum at all grade and age levels, from the lowest to the highest. Believing that understandings, appreciations, knowledge, and skills require a long period of time for effective development, he insisted that the earliest grades of the elementary school should be the place for the introduction of industrial arts in the curriculum.

Concepts of industries and of occupational pursuits should be developed in the earliest years of the child's educational experience, he felt, in order to provide an adequate background of knowledge, understanding, and experience for concentrated emphasis upon vocational training in the higher grades. He believed that a brief introduction to the industrial arts in the high school could not be nearly as effective as continuous work in this field from the earliest grades until graduation from high school. In the higher grade levels, the subject matter of the industrial arts is somewhat complex and technical, and a sudden enrollment in these courses, without prior experience on simpler levels, may produce such confusion and uncertainty in the mind of the learner that he becomes frustrated and unhappy in many of his efforts to accomplish his work. But the child who has grown steadily in concepts, appreciations, understandings, and skills as he has advanced

through the grades will be perfectly at home in the advanced classes in industrial arts.

More than a generation after Bonser began to advocate the placement of industrial arts in the curriculum of the elementary school, modern educators are coming to realize the worth of his ideas. That explains why, within the past few years, this subject has been introduced in many junior high schools and in large numbers of elementary schools. Bonser wanted the industrial arts to occupy as vital a position in the curriculum as do reading, writing, artithmetic, and English; and eventually, perhaps, his desire will be fulfilled as the subject proves its worth in the lower grades.

Bonser insisted that the study of industries encompassed in the subject-matter field of the industrial arts, was coming to be of increasing importance in the curriculum because of the concentration of industries in factories and in shops, away from the home and every-day life experiences of the individuals. Information and attitudes concerning the making of clothing, furniture, shelter, foods, and other products were once obtained by children in their own homes, through their own participation in these activities, under the guidance of their parents. But, under the altered social and economic systems of the present time, if these experiences are to be had at all, they must be provided

by the school, for the home has lost its former importance in the economy of the nation.[15]

It is sound procedure, Bonser stated, to hold to the principle that the industrial arts should receive attention in the school program proportionate to the importance of the problems of the consumer and the citizen regarding industrial products and materials outside of school—no more, and most certainly, no less. It follows, then, that this same principle should apply to all other fields of study: in the curriculum, each kind of activity should receive emphasis in proportion to its importance in contributing to the purposes of life and of education in general. The use of this principle would insure balance in the organization of the curriculum.[16]

Bonser insisted at every opportunity that

> . . . The remoteness of school work from life must be overcome. The use of the industries is basic as a material out of which and upon which to build that culture of hand and brain and soul which makes the individual alert, inventive, intelligent, appreciative, and moral in any vocational activity which either choice or circumstance may impose. Such treatment of the industries as is proposed would vitalize every subject of the school curriculum. The subject matter of arithmetic, geography, history, and English is largely the materials, the sources, the relationships, the evolution, and the social significance of man's activities in procuring food, clothing, and shelter, his first and most fundamental needs. Again I would say, have no fear of the

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[15]Bonser, "Industrial Arts," Chapter XII in Teaching Elementary School Subjects, edited by Louis W. Rapeer, p. 282.

[16]Bonser, Life Needs and Education, p. 81.

> term utilitarian as a basic principle for educational activity. Culture that is genuine is founded upon and vitally involved in utilitarian activities. It is but the expression of these most fundamental utilitarian and social relationships in their idealistic aspects that gives us much of our most cherished art, literature, and music.[17]

Thus, the industrial arts provide a means for tying in school work with the needs, interests, and problems of life. They contribute richly to understandings, appreciations, and skills, and make it possible for the individual to make his best possible contribution to the social and economic welfare of the society in which he lives.

Bonser believed industrial arts to be a study that enlists all of the learning and active impulses and abilities of children, including manipulative, investigative, aesthetic, and social. It represents areas of real need in both child life and adult life. It employs the minds and thinking abilities of children quite as much as their hands. It readily leads on to related fields of cultural content, giving a basis for an interest in and an appreciation for much of history, geography, science, literature, and art for which children and students otherwise would have no approach nor any adequate means of understanding.[18]

As a usual thing, children have exceedingly strong impulses for manipulation and experimentation, great curiosity, and strong desires to express themselves in constructive and artistic efforts. These

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[17] Ibid., p. 81.

[18] Ibid., p. 105.

impulses are readily and meaningfully recognized and promoted by the industrial arts. Work with the materials of food, clothing, housing, and furniture provides opportunities for using these impulses to physical and mental activity with valuable educative results. "It affords the starting point for taking up questions concerning the four kinds of value—health, economic, art, and social—as these enter into problems of daily selection, use, care, and enjoyment of the supplies and equipment in our common surroundings."[19]

Aims and Purposes of the Industrial Arts

Objectives and purposes.—Industrial arts, as a school subject, represents the distilled experience of man in his alteration of natural materials to meet his needs for physical comfort and sustenance. But the provision of physical comfort is not the end of the industrial arts, for it is recognized that physical well-being contributes much to the enrichment of spiritual life. As religious missionaries discovered long ago, there is little need to preach the gospel of salvation to people who are desperately hungry; first, feed them, and then they will be more receptive to things of the spirit. It must be recognized that the making of products in wood, metals, textiles, clay, or food materials has little spiritual value within itself; but when these

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[19] Ibid., p. 125.

activities are given spirit, meaning, and significance, they become vital and constructive and creative, and the pupil sees obvious worth and value in the total activity. Whenever worth is ascribed to a thing, it immediately comes into spiritual significance; for only with the spirit and the mind can worth be recognized and evaluated.

To those critics who objected to the inclusion of the industrial arts in the curriculum on the grounds that their practical value and approach would cast unfavorable implications upon other subjects in the curriculum, Bonser asserted that there is no room for fear of mere utilitarianism in a study of the industries if such study is made the basis and point of departure to seek out values of permanent worth and inspiration for intelligent, creative effort. No activity in human life can be made really significant unless the world is interpreted as fundamentally a world of life purposes, moral worths, and spiritual ideals.[20] The industrial arts seek to give students work with materials and processes designed to develop appreciations and knowledge.

Bonser's aim in the industrial arts was to bring more meaning to life. The hands, of course, would be employed, but they would be used only as the willing servants of a better and finer mind and soul. Food, clothing, and shelter were to serve as the beginning and the

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[20] Ibid., pp. 93-94.

fundamental elements of the industrial arts, because people live in and through these three all-important necessities of life. But food, clothing, and shelter must be better understood as to their sources, processes, and contributions to human life; and they must be used with more meaning and with greater sensitivity to their effects. In this manner life itself would be made richer and finer through becoming more meaningful and more promising for the future.[21]

Thus, Bonser's concept of the industrial arts was a broad and all-inclusive one, encompassing the curriculum of homemaking as well as the subjects ordinarily understood to belong to the field of the industrial arts. His conception of the unification of the departments of industrial arts and of homemaking was so far ahead of the educational thinking of his time that his ideas in this regard have not yet been put into operation in the curriculums of the schools, except in rare experimental projects. There is perhaps no real need for such integration of activities connected with food, clothing, and shelter as he advocated, so long as each is dealt with adequately in the program of its own department.

In considering the offerings of the industrial arts curriculum, Bonser recognized two fundamental purposes in studying the industrial arts. One was a vocational purpose, while the other was a purpose

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[21] Ibid., Introduction by William H. Kilpatrick, p. viii.

aimed at meeting the requirements of a general, well-rounded education.

In elaborating upon these purposes, Bonser stated that the study of an industry for the sake of developing skill and efficiency in producing satisfactory work in that particular industry is known as the vocational purpose in studying that industry. The term "industrial education" refers to a definite, intensive training for productive work in some industry or area of work. The vocational study of an industry implies the gaining of a knowledge of its processes and also of sufficient practice in their utilization to develop skillful and efficient production. To develop efficient workers is the fundamental and controlling purpose.

With reference to the second purpose in the study of the industrial arts, Bonser pointed out that the general educational purpose of industrial arts includes the study of materials, processes, and conditions of production, and the purchase and use of the products of the more important industries, purely for the values which such study affords in one's everyday life, regardless of occupation. In other words, it involves learning about the functions, processes, and products of industry and of different kinds of work, primarily for the sake of gaining such knowledge as will enhance understanding and appreciation of the work of the world, and of the workers engaged in

such work. Productive skill has no part in the general educational purpose of the industrial arts, as it has in the vocational purpose. Instead of devoting intensive study to the skills required in one industry or type of work, as does the vocational education program, general education in the industrial arts covers numbers of industries, providing a general survey of many ways of contributing to the welfare of society and of earning a livelihood. The fundamental purpose is not to prepare workers in a given field, but to develop understandings and appreciations of how various types of work are performed, the social and economic values of such work, and the skills necessary to various trades and occupations.[22]

Thus, the vocational purpose in the industrial arts is aimed at the preparation of skilled workmen in some particular trade, whereas the general educational purpose has to do with broadening the pupils' conceptions of how the work of the world is done, the processes involved in many different types of work, and the social and economic worth of such work to the welfare of society as a whole.

Bonser proclaimed the belief that the work in the industrial arts

> . . . is expected to contribute much that will help one to live in health, with economy, surrounded by products in good taste, efficient in matters of industrial-social control, intelligently interested in the industrial changes of his day and generation, and efficient in common, everyday manipulative activities.[23]

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[22]Bonser and Mossman, Industrial Arts for Elementary Schools, pp. 5-7.

[23]Bonser, Life Needs and Education, p. 102.

Although Bonser emphasized the vocational purpose in the industrial arts, he recognized that pupils enrolled in the lower grades would have little interest in or need of such training until they are older. For this reason, he stated that in the lower grades little emphasis can be placed upon the attainment of productive skills, since lack of muscular co-ordination and inexperience in manipulative activities render real proficiency impossible. At this level, instead of efficiency in production, the aim is to develop general dexterity with a variety of materials and processes rather than any form of specialized skill. It is desirable, of course, that this dexterity should grow from year to year as the child grows and accumulates experience and ability. If constructive projects are well chosen for the different grades in all of the varieties of materials utilized, this dexterity will increase normally without any special practice for skill, as such. "The standard of proficiency in constructive work which should be maintained throughout the grades is that each child should do his best in each piece of work undertaken."[24]

Appropriateness for the purpose intended is the most fundamental and inclusive quality in determining the excellence of a product in terms of both utility and beauty. Anything not well adapted to the purpose which it is made to serve loses much of the beauty which it

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[24]Bonser and Mossman, Industrial Arts for Elementary Schools, p. 44.

might possess because of its harmony and color when considered without regard for its use. A party dress which is most satisfying and attractive when worn to a party, does not appear at all appropriate when worn for work or travel; the most beautiful camp chair would seem distinctly out of place in the living room; a fine Oriental rug placed in the kitchen would look ridiculous.

> . . . Whatever is sincerely, genuinely beautiful as an industrial product must be so well adapted to its purpose that in its use for that purpose there is no thought or feeling of inappropriateness aroused. If such a thought or feeling is aroused, a sense of insincerity and sham may become so prominent as to cause one to feel dissatisfaction and annoyance rather than satisfaction and pleasure.[25]

The design for anything that is to be made must be one that can be used—one that will work— or it is not a good design. It may not violate the abstract principles of harmony in form and color, but if it cannot be utilized for some practical purpose, it really is not a design at all, but only a pleasing arrangement of lines, tones, and colors. Thus, the industrial arts and the fine arts closely supplement each other in the construction activities carried on in the industrial arts program: the industrial arts declare that a thing shall be functional and thereby serve some worthy purpose; the fine arts say that it shall be attractive and well-unified in serving the purpose for which it is made.[26]

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[25] Ibid., pp. 55-56.

[26] Ibid., p. 56.

Bonser called to mind the fact that one seldom sees an industrial product which does not have evidence of some attempt to make it pleasing to the eye in form or color, or both. Appeal is made to one's sense of beauty as well as to usefulness. In buildings, furniture, rugs, chinaware, clothing, books, tools, vehicles, and many scores of other industrial products, great effort is ordinarily put forth to make each product attractive to the eye as well as efficient in meeting the practical purposes for which it is intended. In many of these products, a large part of the sales price represents qualities not essential to mere use. Everything could be purchased much more cheaply if only utilitarian purposes were served in construction. Tables, chairs, dressers, sideboards, bedsteads, rugs, and all other household furnishings, if made for use alone, could be produced at costs absurdly low in comparison with the prices people are willing to pay for these articles when they are made to appeal to the human desire for the beautiful as well as for the useful. Our purpose, then, knowing this, is a double one when we purchase the products of industry—to meet utilitarian needs and to satisfy feelings for beauty. Products which are made by pupils in the industrial arts shop should meet the same two requirements of utility and beauty.[27]

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[27] Ibid., p. 52.

In emphasizing further the relationship which should exist between the industrial arts and the fine arts in bringing about products which are both useful and attractive, Bonser formulated the following outline for presenting the interdependence of the industrial and the fine arts in producing work that is acceptable from the standpoint of both beauty and usefulness:

A. The industrial arts element with utility as its purpose.
   Excellence and desirability are determined by:
   1. Appropriateness to purpose as to conditions, seasons, and occasions.
      a. In materials—Are they suitable?
      b. In form—Is it well adapted?
      c. In construction—Is it sufficiently strong and durable?
   2. Economy in cost—Is it unnecessarily expensive?

B. The fine arts element with beauty as its purpose.
   Excellence and desirability are determined by:
   1. Appropriateness to purpose.
      a. As to use in itself relative to:
         (1) Materials—Are they suitable and appealing?
         (2) Form and color—Are they pleasing and harmonious in composition?
         (3) Fineness of construction and finish—Is the workmanship of fine quality?
      b. As to surroundings—Is it in harmony with the other elements of the composition of which it is to be a part?[28]

Thus, it becomes apparent that, in Bonser's opinion, a product which is useful without attractiveness and appeal to the aesthetic sense falls far short of fulfilling its highest possible function; and, at the same

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[28] Ibid., p. 55.

time, if something is made in such a way that it is attractive and beautiful but has little or no utility, it serves little purpose. In other words, to be most effective, a product must be useful and at the same time attractive.

Adaptation of the industrial arts to the various grade levels.—As has previously been indicated, Bonser believed that work in the industrial arts should begin in the lowest grades of the elementary school and be continued in logical sequence of difficulty throughout the entire school experience of young people. This means, of course, that the industrial arts program in the lower grades will be very limited because of the limited experience and knowledge and manipulative ability of the young children in those grades. These youngsters know about the work their parents do about the house, and perhaps they know how their father earns the livelihood for the family. They have seen deliverymen bringing groceries, milk, mail, and packages; and they have watched with interest when various workmen have come to their house to make repairs—plumbers, carpenters, paperhangers, electricians, and so on. The curriculum of the school should provide for the beginning of industrial arts work with the limited world that the children know and understand. These young children

> . . . like to handle things; they are curious to do things and see what happens; they like to talk about their

> experiences; they cannot refrain from asking questions; and they still play with dolls, build houses, and play store. These tendencies are valuable because they can be utilized in enlarging their experience.[29]

As a subject in the elementary schools, the industrial arts must stand the same test and be measured by the same standards as any other elementary school subject. In general, this test is that it shall consist of a body of thought and experience sufficiently important to human welfare to justify acquainting all children with its content. Secondly, the subject matter must be flexible enough to adapt itself to the interests and capacities of school children and to the practical possibilities of school instruction.

As a subject in the secondary school, the industrial arts must meet just as fully the test of rich thought content and humanistic values as any other subject in the secondary curriculum. At this level, interests become more specialized and activities more purposeful. However, highly developed technical skill is not the chief purpose of handwork. At the secondary level, the educational values of the industrial arts are reflected in increased knowledge of scientific principles and processes in industrial fields, in maturing judgment in interpreting industrial problems and relationships, and in growing standards of industrial phases of social and economic life.[30]

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[29] Ibid., pp. 82-83.

[30] Bonser, Life Needs and Education, pp. 73-74.

Whereas, in Bonser's concept, the industrial arts should be a unified study in the elementary school, comprising work with foods, wood, metals, clay, textiles, and other materials of social and economic utility, the course may be subdivided in the junior and senior high school into three separate courses—industrial arts, household arts, and fine arts. But even in connection with such a separation of the field, there will still be many overlappings, and it may often prove highly profitable for the three groups to meet together as one class for occasional units of work which co-ordinate the knowledge and techniques learned in all of the fields.[31]

> In the grades above the third, the work in industrial arts takes on a degree of detail or intensity which calls for larger considerations of fundamental processes, the limitations and possibilities of materials, and the story of the development of processes and methods from early beginnings to the forms by which our work is done today. Gradually through these investigations those values are brought out which are important in relationship to health, economy, and taste in living, and which should be instrumental in making for greater efficiency in social co-operation.
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> All through the grades, the historic and geographic relationships, the underlying scientific principles, the quantitative aspects, and the related literary or artistic interpretations of phases of industrial life will need consideration in connection with the processes studied. Through the whole progress of the work, it is desirable that it should become increasingly apparent that industrial activities are not an end in themselves, but that they are means by which man is increasingly provided with creature comforts, added leisure, and opportunity for

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[31] Ibid., p. 97.

greater refinement of living in both his physical and spiritual experience.[32]

The industrial arts, then, are to become increasingly complex from the lowest to the highest grades. At all levels, they are to make use of other subject-matter areas which can contribute to their meaning and significance. The activities are not an end within themselves, but they are to be recognized as means by which man makes life happier and more meaningful. Nor is the making of useful articles all that is needed; along with the construction work, there should be cultivated a deep appreciation of the methods by which similar articles are made commercially in factories and shops, and of the contributions which such articles and their related industries make to the welfare of mankind. Thus, the industrial arts are primarily a social study in that they encompass historic, geographic, social, and economic implications along with the actual skills and processes required for effective work in these fields.

Vocational values of the industrial arts.—It is to be surmised that Bonser, with his emphasis upon the utilitarian functions of the industrial arts in the school, should place great stress upon the ability of the industrial arts to meet the vocational needs of young people. In 1910, in an address delivered at Columbia University, he said that there were at that time over a million young men and

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[32]Bonser and Mossman, Industrial Arts for Elementary Schools, p. 84.

women who were enrolled in various types of technical, continuation, and supplementary schools because they had failed to receive needed training for vocations in the public schools. Most of them were attending classes in these schools in the evenings, after a strenuous day's work in industrial and commercial vocations. Bonser conceded that these special schools were filling a vital need and that they should continue to exist as long as there was a need for them. At the same time, though, he asserted that these one million young people enrolled in vocational schools were "just one million reasons why the public elementary and secondary schools should awake to their responsibility and so establish the work of their daily offerings that no one may be driven out of them to secure a worthy education." Bonser added that all of the demands for separate and numerous schools for industrial training represented "a most scathing indictment of the practical efficiency and the boasted democracy of our whole school system."[33]

The practical arts, including industrial arts, household arts, commercial arts, and agriculture, are tremendously important for the discovery of capacity to perform efficient vocational services, in the opinion of Bonser. Incorporated into these fields of study are interests and activities which may reflect the occupational problems and interests of over three fourths of the total population and are

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[33]Bonser, Life Needs and Education, p. 85.

representative of the vocations which will be entered by more than three fourths of the pupils in the schools. In these fields the range of work extends from that which can be done well by those of mediocre ability to that requiring the very highest types of general and specialized abilities. The problems of discovering these varying grades of capacity and of distributing pupils vocationally so that each may make his most effective contribution possess fundamental significance both to the individual pupil and to society in general. In these fields, as in no other, performance in school work may be a clear indication of future performance in the respective vocations themselves. In other subjects, estimates of vocational ability depend more upon inferences than upon actual performance.

In the practical arts, however, the observation of success or failure in activities that are identical to those in various occupations provides clear-cut indications of individual abilities in these fields.[34] For this reason, the industrial arts provide opportunities for judging vocational proficiency in many lines of work. Of course, it must be recognized, however, that in adult life one's skills may be quite different from what they are during childhood and youth; but at the same time, performance in the creative projects of the practical arts provides a valuable index as to what may be expected from the individual

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[34]Frederick Gordon Bonser, "The Curriculum as a Means of Revealing Vocational Aptitudes," Education, XXXVII (November, 1916), 154-155.

when he has left his formal schooling behind and when he enters certain vocational fields.

> . . . the largest contribution the school can make to the problem of vocational guidance lies in its providing such a curriculum and such methods of work that it will both reveal and develop industrial capacities or aptitudes in terms of vocational activities. This does not mean any invasion of the school's function in developing what we so cherish as general culture. It means rather an enrichment of the school's life which will develop larger intelligence, saner and more humane attitudes, and finer, deeper appreciations—the three essential elements of culture.[35]

Bonser believed that both social and individual efficiency depend alike upon the maximum use of individual capacities. To a very large degree, industrial capacity must be interpreted and measured in terms of vocational service. It must be recognized that both the vocations and the capacities of the individuals making up society differ so fundamentally and in such great variety that the discovery and classification of industrial capacity adapted to respective forms of vocational service have become problems of difficulty and complexity, as well as of great importance. The placement of individuals in vocations which are, for them, the ones in which they may perform their best work depends upon a clear recognition and evaluation of individual differences.[36]

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[35] Ibid., p. 147. Italics are Bonser's.

[36] Ibid., p. 146.

Since people are different in abilities, interests, needs, and requirements for personal satisfaction, the work that they do in the world must be different, also. In the modern complex society of the present day, which is steadily growing more and more complicated and intricate, there is work which everyone can do, and do well. It is the responsibility of the school to enable young people to discover for themselves the lines of work in which they exhibit their highest abilities and those which bring them the greatest satisfaction. Having assisted in the discovery of such areas of work, the school then must meet its obligation to train these young people to perform the work required in a manner that is both efficient and satisfying.

Impulses to Action in the Industrial Arts

Bonser stated that there are at least four fundamental impulses to action in the industrial arts as a subject of study in the school. Although he devoted lengthy discussions to the meanings and implications of each of these impulses, they will be briefly summarized in this section of the study.

> 1. The impulse to manipulative activity, resulting in the handling of materials and tools, and, in time, the using of these in constructive and investigative activities.[37]

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[37] Bonser and Mossman, Industrial Arts for Elementary Schools, p. 33. Italics are Bonser's.

In discussing this natural impulse of manipulation, Bonser pointed out that the first forms of manipulative activity manifested by the young child are aimless and without plan, all of such activities being primarily sensory and motor. Examples of this first and earliest form of manipulation include the mere handling of materials and objects, tearing paper or cutting it with scissors, pounding or driving nails with a hammer, running the sand of the sand table through one's fingers, squeezing or patting modeling clay, and piling up blocks and knocking them over. Such activities are prevalent among kindergarten and first-grade children, and are often found among children of pre-school age. Gradually a second and higher form of activity comes into existence, when an aim or conscious purpose enters into the activity.

Making a wagon or a sled with the wood, nails, and hammer; making a mountain or a roadway out of the sand; making a pie or a dog or a dish out of the clay; and cutting a house or a doll out of the paper are examples of this second form of manipulation. An aim of something to be made is recognized, and some knowledge is evident as to how to make it, but no planning is done as to details. Satisfaction comes from both the activity itself and from the achievement in making some kind of product, crude as it may be; while satisfaction in the first form of manipulative activity comes solely from the handling of materials, and not from any sense of accomplishment.

The third form of manipulation consists of constructive activity with a definite purpose and plan. Not only is the final product envisioned before the start of the activity, but also the detailed parts and the respective steps in the construction are thought through. The wagon is to be made with wheels of a certain type and size, and other parts are to be of specified form and size. The product made of clay is definite in shape and dimensions. Satisfaction comes from both the product and the activity. If the finished product does not resemble the plan somewhat closely, little satisfaction is derived from the work. In this third stage of manipulation the skill motive emerges because it begins to have value as a means of achieving a desired result. Further development of the manipulative impulse largely takes the form of developing increased skill in the production of clearly projected objects or of the development of skills required for other purposes involved in manipulative techniques.[38]

> 2. The impulse to investigate, expressing itself in inquiries about constructive methods, kinds and sources of materials, uses of materials and products, the operation and explanation of devices and principles of machines and constructions, and the relationships of practical activities to human purposes.[39]

This second impulse to activity in the industrial arts is one which Bonser emphasized at every opportunity. He said the industrial arts must do more than develop manual skills and dexterity; they must

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[38] Ibid., pp. 34-36.

[39] Ibid., p. 33. Italics are Bonser's.

also develop the mind and the brain as much as the hand. In this broadened purpose the impulse to investigate plays a pre-eminent part.

Very early in life, questions of "What?" and "What for?" cause children to make many observations and explorations and to employ much bodily activity. In their early years, aims and activities are casual and vague; mental activity and bodily activity are often combined, and satisfaction comes from the activities themselves and from the information growing out of these activities.

The exploratory or investigative impulse undergoes higher development when the question of "How?" enters in. When this happens, more definite forms of activity, both physical and mental, result through experimentation and trial-and-result methods of answering questions. Manipulation is often combined with investigation in experimentation in making things. "Examining automobile engines, visiting factories and shops, watching the operations of derricks, street sweepers, fire engines, threshing machines, hay presses, tractors, locomotives, boats, and other mechanical devices, and asking questions about almost every form of device or machine as to 'how it works' are characteristic and familiar evidence of this second level of investigative activity." Descriptive reading materials may be employed as a source for answering questions. Satisfactions come from

the bodily exercise and activity involved in the experimentation and excursions and from the necessary mental activities which result in the acquisition of worth-while information and understandings. To learn the purposes and meanings of operations and processes gives satisfaction.

Still a higher level of investigation is reached when the question "Why?" is added to the "What?" "What for?" and "How?" When this interest in knowing the reasons for activities and processes develops, manipulative impulses tend to become almost wholly subordinated to purposes of investigation and research. Those manipulative activities in which the pupils are engaged are mostly those required in experimentation. At this stage, reading becomes a primary means of answering questions, for printed materials become the principal source of information. Curiosity has developed until it has become "scientific." This means that curiosity has a purpose behind it to serve as a motivating force and a stimulus to research. Satisfactions are derived mainly from the mental activities involved in the investigations, and from intellectual appreciations that are acquired—the joy of knowing and of finding out.[40]

3. The art or aesthetic impulse, which finds satisfaction in the enjoyment of beauty in form and color as observed in materials and products, and in creative

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[40] Ibid., pp. 36-37.

production by the designing and constructing of new products.[41]

Very early in life, children manifest an impulse to notice, collect, and handle brightly colored objects; to show preferences for clothes, household furnishings, and other objects having brilliant colors; and to draw and color or model objects in imitation of real forms that have appealed to them. Thus, they give expression to their inborn aesthetic impulse. Satisfaction comes from these aesthetic activities through the sensory stimulations derived from form and color as observed, and from the manipulative activities required in making drawings, paintings, or models.

A higher level is attained in the aesthetic impulse when elements of proportion, balance, and relationships of harmony begin to have influence in the pupils' preferences for certain objects, in choices of products used, and in the designing of objects to be made. At this level, satisfaction is derived from responses to sensory stimulations and from the creative activities involved in the designing of products.

In everyday life the art impulse is expressed most fully in the effort to be adorned with clothing and provided with other personal possessions which bring satisfaction in form and color. Often it becomes extremely difficult to determine whether choices in these matters truly reflect the preferences of the individual, or whether they

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[41] Ibid., p. 33. Italics are Bonser's.

are primarily the result of social standards and stimulations, since the artistic or aesthetic impulse is readily modifiable in its forms of expression by the influences of others, expressed in choices and preferences.[42]

> 4. The social impulse, leading one to observe what others are doing, to attempt to share with others their activities, and to secure from others their approval and co-operation in furthering one's own activities.[43]

The earliest form of the social impulse is expressed largely in terms of mere gregariousness— the desire to be with others. Gradually, within the individual, the desire grows to participate with others in what they are doing and to have others share in one's own activities. Before long, the individual realizes, through experience, that others may help one in carrying out one's own plans, and that there are definite advantages in group co-operation. Exchanges of ideas are profitable, and division of work involved in a problem of common interest results in the accomplishment of much more in both quantity and variety within a given period of time than one could possibly achieve alone.

> From experiences in sharing constructive and investigative problems with others, the facts of interdependence are discovered. The division of labor and co-operation of the practical world are observed. From both personal experience and observation, the meaning of interdependence

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[42] Ibid., pp. 37-38.

[43] Ibid., p. 33. Italics are Bonser's.

> among all may become clear. An appreciation of this fundamental fact of the dependence of each upon all and of all upon each, if stimulated, will readily lead to feelings and meanings of personal responsibility for the conditions of life and the well-being of others about whose work one becomes interested.[44]

The social impulse also finds expression in a desire to adopt the standards and usages of others—to dress and to furnish one's home as others do, and to have the same types of possessions as those owned by persons who are respected and whose approval one wishes to obtain. "The art impulse and the social impulse sometimes come into conflict, as when one sacrifices his own choices in form and color to standards socially approved, or when he sacrifices social approval to personal choices."[45]

Although the four native impulses discussed above provide the drive or motivation for the activities mentioned for each of the impulses, and for many others that might have been listed, they probably exert little influence in providing these activities with direction and form. Experience and selection determine the habits which develop as outgrowths from the activities. The impulses indicate possibilities for action, but experience, outcomes, satisfactions, and surroundings influence and bring about the selective growth of particular forms of constructive, investigative, aesthetic, and social habits and

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[44] Ibid., p. 38.

[45] Ibid.

attitudes. The satisfaction derived from the activities themselves, the influences of the social environment, and the approval of others are the three factors which most directly affect the selections and choices of children and determine their interests and habits.

Encouraging children to investigate, teaching them methods which result in success and satisfaction, and approving their investigative activities and results will produce a development of the investigative impulse far beyond that which occurs in children or young people not receiving such encouragement. In a similar manner, the other impulses may be developed into effective habits or attitudes by proper influences, or they may be seriously inhibited by neglect, indifference, or discouragement.

Although nature endows the individual with tendencies to act in desirable ways according to these impulses, and also sees to it that satisfactions are derived from activities carried out under the influence of these impulses, the development of these native tendencies to action into skills, interests, attitudes, and appreciations is a matter of educational direction.[46] Thus, the children are equipped by nature with these four fundamental impulses when they come to school; and they will give varying degrees of expression to these prods to action. But if these tendencies are to be operative in productive and

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[46]Ibid., pp. 38-39.

creative ways, they must be carefully guided into worth-while channels of achievement.

Bonser, in his discussion of the natural impulses of children, pointed out that

> . . . For children, the earlier expressions of interest are in the manipulative and investigative forms of activity with almost no relationship to adult standards of worth. But, as intellectual and social interests develop, it becomes increasingly easy to direct the constructive, investigative, and art activities into forms which are large in the values which we desire to cultivate. From interests merely manipulative and investigative, attention may be gradually transferred to questions and problems of health, economy, and art, by the use of constructive and investigative methods of work as means of answering these questions and solving these problems. Manipulation may become a matter of constructive and experimental dexterities and skills for meeting one's practical needs. Investigation may become a habit of open-minded inquiry and method in solving practical and intellectual problems. The art interest may become an attitude and method for the selection of properties and objects for contemplation which yield enjoyment because of their beauty. From the social interest, there may be developed an attitude and a method of behavior relative to the well-being of others.[47]

Industrial Arts in the Elementary School

In its most practical conception, the elementary school devotes its efforts to those elements of study which are of common value to all persons, regardless of sex or probable future occupation. Its work is limited to those needs which are common to all individuals within a democratic form of life. This does not mean that the individual

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[47] Ibid., pp. 39-40.

differences of children are ignored, but it does mean that the common elements by which people live efficiently, co-operatively, and harmoniously together constitute the basic materials emphasized. All pupils must know how to read, write, and do simple number work; all need to know the fundamental facts and meanings of geography, history, literature, and science as they enter into daily life and human relationships. In the light of this conception of the function and nature of the elementary school, Bonser is certain that there is a vital function to be performed in the elementary school by courses in the industrial arts. In this connection, he asks the question:

> . . . Is there not also a body of experience and knowledge relative to the industrial arts which is of common value to all, regardless of sex or occupation? If so, this should properly make up the content of the industrial arts as a study for the elementary school to that degree in which elementary-school children have the capacity for it.[48]

Thus, he discovers in the industrial arts a body of common learnings which will prove to be of worth to all individuals, even in the lower grades. Consequently, he insists that the industrial arts must be permitted to make their contributions to the program of the elementary school, along with other fundamental courses. At the same time, though, it must be recognized that work in this field must be carefully planned to fit the grade levels. In the lower grades there is little that can be

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[48] Ibid., pp. 20-21.

done except mere manipulative activities; but later, as the children develop in muscular co-ordination and in mental and physical ability, understandings, appreciations, and skills must be emphasized. Bonser points out that the simplest processes and understandings in the field of the industrial arts should be planned for the lower grades, with increasingly difficult processes and understandings following in sequence upward through the middle and higher grades. In the lowest grades, the pupils can become acquainted with the materials and tools of the industrial arts; they can develop understandings and appreciations relating to these materials, such as wood, metal, textiles, and clay; they can learn the fundamentals of the use of certain simple tools; and they can actually learn how to use these tools and their hands by "making things" from the various materials.[49] What they make, though, will be crude and lacking in proportion until they acquire skill and co-ordination.

Schweickhard, a recent writer, like Bonser, recognizes the presence of certain impulses in industrial education—starting points for all work and activities and indicators of what might be expected as the end result of all projects and effort in industrial education. He mentions these impulses as follows—the same four motivating forces listed by Bonser (see pp. 91-100):

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[49] Ibid., p. 26.

> . . . First, and probably most commonly observed, is what may be called the manipulative impulse, because of the fact that it arises primarily from the mere desire to be doing something with the hands. Second, there is the inquisitive or investigative impulse, which often leads the boy to take the watch or other mechanism apart to see what is going on inside. Third, the social impulse, perhaps in a slightly indirect manner, operates to promote a desire to perform some common task with the co-operation of others. And fourth in order, but probably not in frequency and importance, the esthetic impulse appears in stimulating a desire to create the beautiful or to beautify something already created.[50]

Thus, it appears that Bonser's fundamental concepts of native impulses related to the industrial arts are corroborated by other educators.

During the period when young children "act first and think afterward," much learning by trial-and-result will occur. It is probably worth-while to allow children to find out many things through this kind of experimentation when it does not involve a serious waste of materials or the ruining of a co-operative piece of work on which a number of individuals are working. Failure brought about by impulsive action will tend to cause the individual to observe more closely others who succeed, and to accept advice as to his own techniques. Gradually the advantages of making plans first of all and then of acting in terms of plans will become appreciated. As early as possible, children should be led to perceive the values of planning or thinking through their constructive and investigative problems before they begin to

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[50]Dean M. Schweickhard, Industrial Arts in Education, p. 33.

investigate or construct.[51] Only in this way can scientific and fruitful work in the industrial arts be done.

Because of Bonser's insistence upon a purpose in all the work done, Bawden and others give Bonser credit for having exercised perhaps the most telling influence of all educators in shaping the nature of the educational handwork introducted into the elementary grades. His emphasis upon "a rich informational content for handwork courses which would increase the understanding of children with reference to the social, economic, and esthetic features of modern production methods and modern industrial products, was one of the most significant contributions" ever made to modern education.[52]

In the elementary school, the departmental plan of instruction is far less efficient than the practice of having all related work taught by one teacher. Under the departmental plan, the problem method can hardly exist at all in any natural sense of the term, since life problems do not fall neatly and conveniently within the scope of any one subject-matter area, but are likely to involve subject matter from several different fields. Because of its extensive interrelationships, industrial arts, of all subjects, of all areas of learning, should not be taught by a special teacher when the pupils are in the lower grades.

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[51] Bonser and Mossman, op. cit., p. 46.

[52] William T. Bawden et al., Industrial Arts in Modern Education, pp. 107-108.

"It is not a special subject in the sense of being unrelated to other subjects, but, quite the contrary, it is rather the most general subject of all in its far-reaching relationships."[53] Therefore, it loses much of its significance and meaning when taught as a special course at the elementary level, rather than in integration with other fields of study. In projects and activities, the industrial arts are able to make important contributions, along with other subject-matter areas; and all subjects which have any bearing whatsoever on the project should be brought into the picture in order to contribute to the best and most meaningful solution possible for the problem being undertaken.

Newkirk quotes Bonser and Mossman's definition of industrial arts in education as "a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes." Then he makes this comment:

> Industrial arts is thus a curriculum subject, treating a special phase of our social system. It frequently employs certain handwork techniques as part of its teaching procedure. These techniques are not ends in themselves; they are teaching aids used to further learning in the subject of industrial arts.[54]

In each elementary school, according to Bonser, it is desirable to have one room equipped with the necessary furnishings and tools for the industrial-arts work of all of the first six grades. Although

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[53]Bonser and Mossman, op. cit., p. 74.

[54]Louis V. Newkirk, Integrated Handwork for Elementary Schools, p. 4.

much of the work in the industrial arts can be done satisfactorily in the regular classroom, it is highly worth-while to have one large room to which any grade may go when the work requires it. This room, especially adapted to industrial-arts needs and projects on the elementary level, should contain several tables of different heights, several work benches also of different heights, the common hand tools for working with wood, a sewing machine or two, a gas or oil stove with an oven, a few cooking utensils and dishes, a zinc-lined cupboard for work with clay, a soldering outfit, an abundance of closet space for small tools and materials, and cupboards and drawers for paper in various size sheets. For storing unfinished work, a considerable amount of locker space is desirable. Such a room may be gradually supplied with tools and devices as needed, thus avoiding the expense of purchasing equipment not needed. Every elementary-school shop should have the essential tables, benches, and tools for fundamental work in the industrial arts, but other equipment should be provided according to the needs of the local school in the light of the industrial-arts program provided.[55]

Such a suggestion for an industrial-arts shop for the lower grades appears to be in conflict with Bonser's insistence, mentioned previously, that the industrial arts should not be treated in the elementary school as a separate course, but should be organized in

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[55]Bonser and Mossman, op. cit., p. 81.

co-ordination with other subject-matter areas. In fact, however, there is no discrepancy between the concept of integration and the provision of a shop for industrial-arts work. Just as, in working on a project, pupils may go to the blackboard or resort to pencils and paper for the solution of necessary problems in arithmetic, so they may go to the shop to work out problems involving the industrial arts. Then, when they have completed their work in the shop, they return to the classroom and apply the contribution of the industrial arts to the over-all project on which they are working. The shop merely provides equipment and working space that usually are lacking in the ordinary classroom. Bonser carries his idea of integration to the point of saying that one teacher should teach several subjects in order to emphasize their inter-relationships.

Bennett, like Bonser, believes that the industrial arts in the school should be regarded as both a subject of study and as a method of doing things. Also, industrial arts as a phase of the curriculum is to be looked upon as both a means and an end—a means to industrial and economic efficiency, and an end which enables youth to participate in activities that are worth-while, practical, and satisfying within themselves, apart from any contribution they may make to one's ability to earn a livelihood.[56]

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[56]Charles Alpheus Bennett, History of Manual and Industrial Education, 1870-1917, p. 453.

But industrial arts in the elementary grades, especially, is to be utilized in integration with other areas of learning.

> The industrial arts work makes so many demands upon arithmetic, geography, history, and English, and likewise contribute so much in furnishing motives and problems for these subjects, that the teaching of all of these by the same teacher in a given grade is essential for the most effective and economical work. The teaching of each is made more easy and effective by the use of the others.[57]

Certainly, this would be an ideal situation, but difficulty is likely to be encountered in attempting to assign these various subjects to a single teacher. Ordinarily, the elementary teacher is a woman, while the industrial-arts teacher is usually a man. It perhaps will be just as effective if different teachers are assigned to these respective fields, provided each has a clear understanding and a deep appreciation of the nature of the work that the other is attempting to do. With Bonser, the important thing is to have a well-rounded program of industrial arts in the elementary school, taught by a capable and skilled instructor. With such a program, industrial arts can make a vital contribution to elementary education, not necessarily as a separate course but as a significant phase of school work closely co-ordinated with all other work at the elementary level.

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[57] Bonser and Mossman, op. cit., p. 74.

Values and Outcomes of the Industrial Arts

Bawden and others state that, although many persons have been instrumental in bringing about a revision of curriculums to meet the needs of present-day life, two men in particular should be mentioned for the importance of their contributions in this direction: Frederick G. Bonser of Teachers College, Columbia University, and Franklin Bobbitt of the University of Chicago. Bonser, say these writers, sought to place industrial arts among the essentials of education, and devised definite recommendations for reorganizing subject matter in order to attain the practical objectives which were to be sought.[58]

From a study of industrial arts in the schools, at least five significant and worth-while outcomes may be expected. These have been listed by Bonser as follows:

1. Health outcome: awareness of general health needs, ability to select and use foods and clothing so that they will help to keep the individual well, and intelligence about all phases of cleanliness and sanitation in and around the home.

2. Economic outcome: ability to buy and use industrial products of good quality in material and construction, well adapted to their purposes, at costs that are reasonable; caring for what is purchased

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[58]Bawden et al., op. cit., p. 86.

so as to maintain its serviceability to the highest possible degree; ability to repair, or to supervise repairing, when it can be done to advantage; and practice in intelligently substituting inexpensive for expensive products when such substitution can be made advantageously.

3. Esthetic outcome: loving that which is beautiful, and ability to select and use products which are beautiful in themselves, which are excellently adapted to the particular purposes for which they are selected, and which fit harmoniously into the surroundings in which they are placed.

4. Social outcome: sensitivity to the well-being of industrial workers, understanding of conditions in the various industries and of conditions under which work is accomplished, and intelligent response in all possible ways to help in the regulation of industry so that no one will suffer injustice or injury for the sake of unfair profits for employers, accompanied by unfair wages for employees and unfair prices to consumers.

5. Recreational outcome: development of permanent interests in the materials, processes, products, and achievements of industry as fostered by observation and by reading of the changes, discoveries, and inventions in industry as these are found in operation or described in current magazines or books; or as expressed in avocational construction of products having special appeal; or as satisfied by observing and enjoying useful and beautiful products of industry which one

may not be able to own but which one may find in the homes of friends, in public buildings, in shops, in stores, and in museums.[59]

Proctor cites and accepts Bonser's conception of the five main lines of activity in education, cited above, which, in reality, are general statements of the objectives of education. These are the maintenance of health and the preservation of life, practical activities and the means whereby the individual may engage in them with efficiency and satisfaction, civic and other regulative activities, social outcomes, and recreational activities. Proctor says that these lines of educational activity contain valuable implications for modern education.[60]

As incidental results which may be expected to materialize as adjuncts to the five major outcomes noted above, Bonser lists the following skills and qualities which the individual may develop:

> Be reasonably dextrous in handling materials, tools, machines, and products found in the general environment; be capable of doing or directing the simple kinds of repair work relating to clothing and the household where the specialist is not needed; and have such qualities as accuracy, neatness, and persistence reasonably well developed with reference to their application to the use or upkeep of industrial products. These are the outcomes incidentally developed through the appropriate realization of the primary outcomes.[61]

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[59] Bonser and Mossman, op. cit., pp. 14-15.

[60] William Martin Proctor, Educational and Vocational Guidance, p. 84.

[61] Bonser and Mossman, op. cit., pp. 15-16.

Bennett agrees with Bonser that the child should be permitted and encouraged to have, as far as possible, the same experiences in school life which people normally have in adult life outside of school.[62]

Beginning with the work of the kindergarten and continuing throughout the duration of school experiences, attempts have been made to organize the work with materials upon the basis of the expressive natural impulses of children. It has been found that all children have some interest in expressing their thoughts, ideas, and feelings in creative ways through the use and manipulation of materials. These activities may or may not result in products which serve useful purposes. The utility value of the product is not so important as the growth of control of the materials used to a degree that brings satisfaction in the products as objects of either use or beauty. In such experiences the consideration of utmost importance is that

> . . . The creative impulse is growing, and it is free from any limitations which might be placed upon it by any prescribed set of models or by subordinating it to the service of utilitarian purposes. From this point of view, materials and processes are chiefly of value as means for expressing the children's ideas of design and decoration.[63]

The designing of projects to be constructed should provide for the "freest kind" of self-expression within the limits of definite purposes. For this, the use of finished products for reference and

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[62] Bennett, op. cit., p. 455.

[63] Bonser and Mossman, op. cit., pp. 23-24.

comparison will be of much help. In fact, these are vitally essential. Excellent pieces of work similar to what the children are doing provide them with standards with which to compare and evaluate their own efforts and the products resulting from their efforts. They also stimulate creative endeavors if attention is directed to the elements that provide them with originality. Some of these elements may be utilized in developing one's own original thought. Of course, no other object should ever be copied outright, but from a study of excellent examples the youthful designer may receive one or more ideas about detail which he can incorporate into his own design, perhaps combining elements from several different examples observed. If the child is designing a chair, he will be interested in studying many chairs and in becoming familiar with chair designs of different historic periods. From such a study he not only receives help in perfecting his own design for a chair, but also he accumulates knowledge which will help him, for the remainder of his life, in selecting and purchasing chairs and in understanding and appreciating design in chairs whenever and wherever he may see them.[64]

Thorndike and Gates have pointed out that the project method in education was interpreted by Bonser and by Kilpatrick in a broader sense than had been true of other educators up to that time. Referring

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[64] Ibid., p. 60.

to Bonser and Kilpatrick and their concept of the project method, Thorndike and Gates wrote:

> . . . These writers wish to suggest that each educative experience should project—it should point toward something, it should lead somewhere, satisfy some need, contribute to some purpose, facilitate some activity, provide for some utility beyond the momentary task. They wish to suggest, furthermore, that the pupil's activities should project; that is, they should have some significance beyond themselves, they should illuminate other activities, should promise to satisfy some need, or to facilitate some purpose. Thus, in this broader sense, the project method requires that education satisfy needs which life, aside from the artificial requirements of the school, sets up; that as far as possible these needs be felt; that the situation be arranged to facilitate the emergence of learnings which most effectively and broadly serve to satisfy felt needs.[65]

Along with many other modern concepts in education, the recognition of individual differences in pupils and provision of flexible curriculums to meet the needs and to challenge the abilities of all members of the class was recognized by Bonser as a highly important consideration in the field of education. He declared that it is impossible to organize the work in industrial arts or in any other subject in a logical sequence that can be presented to the class without alteration or adaptation. Within the class are many different individuals, each having different abilities, interests, and needs; and the curriculum must be sufficiently flexible to offer to each person the highest

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[65]Edward L. Thorndike and Arthur I. Gates, Elementary Principles of Education, p. 272.

possible educational values and experiences for meeting his own particular needs and challenging his interests.

In planning a course of study or a unit of work, the only thing that can be done is to organize materials in a manner that may be best suited to the average pupil in the class, with the understanding that less capable pupils may have difficulty in achieving work designed for the average pupil, and that the superior should not be allowed to stop when he achieves the work of the average pupil. Thus, special provisions must be made for both inferior and superior pupils.

Children differ individually in their capacity for creative expression more than in any other qualities related to work in the industrial arts. In spite of these innate differences, no child should be deprived of ample opportunities for the development of creative ability, and these opportunities should be made available to him at his own level of achievement. Those children of superior abilities should be given special opportunities for the growth and application of their unusual capacities, while those who are inferior must be guided and carefully assisted in order to make satisfactory progress; and for them it may be necessary to modify and simplify the curriculum in order for them to gain any satisfaction and a sense of accomplishment in their work.[66]

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[66]Bonser and Mossman, op. cit., p. 24.

Brewer says that Bonser wrote and worked tirelessly on behalf of making constructive, meaningful, and satisfying activities an integral part of the school curriculum.[67]

Bonser did not believe that projects should be planned merely for the purpose of giving the pupils something to do; but instead, all activities should contribute perceptibly to the accumulation of worth-while learning experiences. Mere "busy work" was deplored by Bonser as an unjustifiable waste of time and energy; but being busy for an educational purpose was an entirely different matter, in his opinion. He declared that

> . . . The chief concern about any subject introduced should be its richness in valid educational content. If studies for the industrial and household arts groups are made up largely of scientific and geographical principles and problems in direct relationship to shop and laboratory work; of the historic settings and relationships of the industries as they have developed; of the larger economic and social values of the industries; of the thoughts and feelings enkindled by man's reflection upon and emotional interpretation of the meanings and higher significance of his work as expressed in his literature, music, and art—if the studies in metals, woods, and clays are all shot through and through with these vital human values, then will the work be truly educational and cultural.[68]

The marvels of ingenuity and creativeness involved in adapting a relatively small number of different materials to a range of purposes as great as those found in the more important industries "can hardly fail to stimulate an intellectual curiosity that will tend throughout

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[67]John M. Brewer, Education as Guidance, p. 8.

[68]Bonser, Life Needs and Education, p. 83.

life to find satisfaction in learning of the new adaptations resulting from discoveries and inventions yet to be made."[69] Thus, the wide variety of purposes and activities in the field of industrial arts provides, in Bonser's conception, opportunities for the development of interest and curiosity about ways of making things and processes involved in adapting materials to various purposes. Bonser believed that, once interest and curiosity are aroused, learning must inevitably follow; but without interest and curiosity, there can be little learning.

Of almost equal importance in Bonser's philosophy with interest and curiosity as motivating forces for learning, was experience, which, he said, could not be over-emphasized.

> . . . There is something of meaning and significance which attaches to experiences of actual, practical participation which is not realized without it. The realities of experience make for a genuineness and permanence of meaning not realized from the mere getting of information about facts and relationships. To one who has spun a small quantity of thread or yarn, who has woven a small rug, who has constructed a house or a piece of furniture, who has made a piece of pottery, and who has followed through the different illustrative methods of food preservation—to such a person all of the industrial activities corresponding to these have a fullness and warmth of interest and meaning not possessed by one who has not had these experiences. There is an attitude of familiarity with the fields of production and their products, and a feeling of sympathy and comradeship with those who are occupied in their production. The larger and fuller our experience with a thing or situation, the larger its meaning for us.[70]

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[69] Bonser and Mossman, op. cit., p. 28.

[70] Ibid., pp. 47-48.

In his concept of the value of experience, Bonser might well have been writing in 1953, so modern is his approach and so universally adopted is his concept. Instead, though, he wrote this statement a generation ago, when he was one of the pioneers in stressing the importance of experience in education. But he went even further in his stress upon the worth of experience, saying that "the past experience of the children, the present environment, and the current interests of community life and of the larger life of the world, as a whole, should all contribute in determining the immediate forms of approach to the values to be realized in the industrial arts as well as in all other subjects of study."[71] Thus, the curriculum should encompass all environmental influences to which the children may or should react.

In his discussion of the value of experience in education, Proctor quotes and commends Bonser's statement of the purpose of education: "It is the purpose of the . . . school to provide experience in meeting the common needs of all, regardless of sex, vocation, or social status."[72]

In work in the industrial arts, two factors are involved in obtaining satisfactory results: one is form and the other is execution. Form consists of developing clear ideas of what is to be done and how it is to be done. Execution is actually the process of doing what is to

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[71] Ibid., p. 32.

[72] Proctor, op. cit., p. 91.

be done. Learning to do a thing means getting clear ideas of what is to be done and how it is to be done, and then trying to do it, comparing results with models, trying again, and so on. In each attempt, those processes and results which contribute to success should be selected for use again, and those which are unsatisfactory should be eliminated. Thus, accomplishment is the result of trial and retrial, the selection of satisfactory methods and results, and the discarding of the unsatisfactory. The method by which motor training is achieved consists of self-criticism and directed retrying until all of the correct movements and processes are acquired and all others are eliminated.

In teaching children how to carry on constructive phases of work, the free use of imitation is very helpful. Showing a person how to do a thing is usually much more effective than merely telling him how. Correct methods of handling tools and materials should be demonstrated to children, but not all of them will be able to master these techniques at the beginning of instruction. Lack of physical strength and of muscular co-ordination and control may often make it best for younger children to use their own methods and techniques until growth makes it possible to adopt adult methods more readily. "From the very beginning, children should be taught self-criticism—the judging of their own efforts and results by comparison with good copies, and the locating of the particular elements in which they are succeeding and

failing."[73] Thus, from the various activities, should come self-criticism and self-evaluation in terms of the products of effort.

In studying the processes by which raw or unworked materials are transformed into finished products, bases for the determination of values in the products may often become clearest when one enters as much as possible into the processes themselves. Frequently it is difficult to understand fully what is being done merely by observing the processes. Here the real value of industrial arts becomes apparent. Industrial arts does more than provide opportunities for studying about and observing processes by which commodities are made; this subject makes it possible for the learner to participate personally in various processes, to handle and study materials, to take note of problems that arise in working with these materials, and to participate in discovering solutions to these problems. In such a way, the learner derives understandings and feelings of intimate acquaintance with materials and methods that cannot be acquired in any other way. The primary purpose of handwork in the industrial arts is to help make meanings clear and to provide the reality of personal experience. Out of this experience in making things and in handling and assembling materials are likely to come permanent interests and the possession of values in the form of ideas and attitudes and habits.

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[73] Ibid., p. 45.

Schweickhard, in discussing the use of materials which are common to the industrial arts, states that "the variety of materials with which the child comes into contact means little to him except as he can know and understand the uses to which each may be put." Then he accepts and quotes Bonser and Mossman's list of the uses of materials in the industrial arts; namely, food, clothing, shelter, utensils, records for transmitting human experiences, and tools and machines for doing work more efficiently.[74]

Manual dexterity comes through handwork primarily as an incidental by-product—understandings and appreciations are the fundamental outcomes. Another and hardly less important purpose of handwork lies in the fact that children enjoy manipulative activities. Often they will gladly participate in some form of manipulation without a conscious plan in doing so, and from this purposeless activity they can be led to engage readily in planned projects which will bring satisfaction through productive and creative work with materials and tools. Thus, handwork often serves as a means for approaching higher forms of endeavor in the industrial arts and for developing greater interest, understanding, and personal appreciation of meanings and values.[75]

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[74]Schweickhard, op. cit., pp. 62-63.

[75]Bonser and Mossman, op. cit., pp. 16-17.

Bonser was convinced that

> . . . Some values are brought out best through manipulative activities. Hand work in the making of products teaches methods of construction and the relationship of these to the quality of the materials and products, and helps in the understanding or interpreting of methods more complex than those which can be used in the schools. In every construction project there is also an opportunity for self-expression in its design and decoration.[76]

Practical activities, when utilized adequately and with understanding, may contribute largely to the development of permanent intellectual interests, appreciative attitudes toward beauty as a quality of industrial products, and social attitudes that are humane toward the producers in industrial labor.[77] Bonser said that

> The most basic test of the value of the study of design as related to industry is found in the degree in which ability is developed to choose and enjoy material products which are beautiful in themselves and harmonious with their surroundings. If design in relationship to clothing has been so studied that one dresses in good taste as to both form and color of fabrics and garments; if design of household furnishings has been so studied that one will select various articles for the household in good design and appropriately adapted to their surroundings; and if design in relationship to other industrial products has been so studied that one's choice among these is always good, then the study has served its purpose well. To develop ability to recognize that which is in good design and so to like it that we choose it when we have opportunity to select, is the specific purpose for which the work is offered.
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> By the method employed, large opportunity for self-expression is provided. The work will tend to develop in each child interest in creative design in about the same degree in which he has capacity for it. For those who desire

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[76] Ibid., p. 27.

[77] Ibid., p. 50.

> to design and produce their own products, or those who have ability and inclination to become designers, as such, the work will offer a good beginning. But extensive training definitely specialized is necessary for efficient, creative designing. The elementary school makes no attempt to give such intensive training. Its purpose is achieved when it develops as much as possible the capacity to select and enjoy that which is beautiful.[78]

Thus, a major aim of the industrial arts is to develop the esthetic sense, or the appreciation of form, beauty, and appropriateness. As one important element in the development of this esthetic sense, the pupils should design, or have a large part in designing, every object which they make. Even if patterns or models are employed, the children should be expected to work out new lines and innovations in form in order to stamp their work with their own individuality. This is one effective means of developing judgment and taste. Designs for projects to be made should become increasingly complex as ability and understanding develop. Beginnings will have to be very simple, but through them knowledge and judgment will grow. Provisions for choices must be extensive and varied, and opportunities for making mistakes will furnish the necessary basis for constructive criti cism and help. There can be no growth of judgment unless there is participation in judging. Comparisons of efforts and judgments made by members of a class working together afford excellent opportunities for developing the

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78Ibid., pp. 65-66.

power of judgment if these are carefully directed, guided, and fostered by the teacher.[79]

Schweickhard, like Bonser, recognizes that the esthetic element plays an important role in the creative work that is done in the industrial arts. The products of effort in the industrial arts must be not only practical, but also attractive. Schweickhard elaborates this point by writing:

> There may be a feeling abroad to the effect that anything industrial must be characterized by hard and cold specifications and calculations, and a belief that, in the industrial world, no account is ever taken of the esthetic. Nevertheless, the esthetic impulse can and often does play a very important part in various phases of industrial education. . . . With the development of ability to use the hands, the esthetic impulse is revealed in drawing, coloring, and modeling attractive forms. The satisfaction in all cases is derived from the manipulative and sensory activities brought into play in making or enjoying the things which are pleasing to the eye. . . .
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> Above the early manipulations, the esthetic impulse appears upon a more advanced level. Here it comes to involve a knowledge of the elements of proportion, balance, and harmony, and the further use of such knowledge in the choice, design, and use of material products. . . . In this connection there is unlimited possibility for application and development in the field of industrial education.[80]

Many of the activities which involve co-operation and the regulation of behavior are connected with the production, use, and distribution of the materials and products of industry. In order to supply

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[79] Ibid., pp. 59-60.

[80] Schweickhard, op. cit., pp. 44-45.

himself with material things and to use these most helpfully and rightfully, man must have acquaintance with a large body of subject matter.[81] These activities involve co-ordination of subject matter as well as co-operation in effort. Before any final assignments of industrial-arts work can be made to any given grade, other subjects and interests have to be given due consideration. The study of the industries and participation in the making of industrial-arts projects cannot be isolated from the work in most of the other subjects without very serious loss, both to industrial arts and to the other subjects concerned.[82] Study should be unified, and projects should be attacked from the different angles afforded by the different subjects in the curriculum. But when all of the subjects have made their contribution, a unified and well-integrated project emerges as the result.

The Joint Committee on Curriculum, headed by Henry Harap, has stated that Bonser hoped that his program would lead to the socializing of the entire curriculum.

> . . . Based upon his experience in supervising the Speyer School, Mr. Bonser showed how each subject of the curriculum may be related to the practical activities involved in the production and use of food, clothing, shelter, utensils, records, and tools. In other words, in this plan industrial arts was the core of the curriculum.[83]

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[81] Bonser and Mossman, op. cit., pp. 141-142.

[82] Ibid., p. 30.

[83] Joint Committee on Curriculum, Henry Harap, chairman, The Changing Curriculum, p. 84.

Ordinarily, said Bonser, materials and forms of construction which are of fine but simple quality are more durable than forms that are more complex. With good materials and simple lines, harmonies of form and color are accomplished with little need for detailed adornment because of the strength, dignity, and natural beauty of fine materials. Simplicity adds to the sense of sincerity and restful satisfaction, while complexity or great variety in detail arouses suspicion and promotes confusion. But, regardless of how fine the materials may be and how simple the design, the laws of harmony for form and color must not be violated, or the product will be less beautiful than it otherwise would be. A gown constructed of the finest materials may be made to fit so poorly that its lines arouse feelings of pity or disgust; its colors may be so hopelessly out of harmony that it irritates and annoys. Buildings, furniture, rugs, and anything else may be made of the most durable and attractive materials, but be literally ugly because the principles of harmony have been violated in their design.

> The close relationship of the fine and the industrial arts indicates that the two cannot be kept apart in teaching without danger of great loss when we are considering the problem from the point of view of the consumer or user of products. In the selection of products, one must consider both phases, and neither can be adequately considered without reference to the other. The two phases are aspects of a common problem. They should be so taught in the . . . school.[84]

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[84]Bonser and Mossman, op. cit., p. 57.

As a part of its legitimate and fundamental work, the school system should provide for study and participation those phases of the industrial arts which are primarily educational in nature and function. Whenever the need to offer specialized training is recognized in order to contribute to the primary goal of developing a high degree of skill, and technical efficiency becomes the principal emphasis in the industrial-arts program, this specialized work should be taken over by the segregated trade or vocational school or course. If this conception were put into operation, work in the manipulation of materials and in the processes of construction would be limited to the development of clear ideas and appreciative insights.[85] This is the fundamental aim of the public school, rather than the development of a high degree of technical skill and of specialized vocational efficiency.

Activities and Projects in the Industrial Arts

Frederick G. Bonser believed that the materials of the industrial arts, such as paper, wood, metals, clay, and fibers, must be regarded as nothing more than media for the expression of life problems with beauty of form and color, as well as utility, as an inseparable element of such expression.[86] He felt that schools should organize

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[85] Bonser, Life Needs and Education, pp. 71-72.

[86] Ibid., Introduction by Kilpatrick, p. xv.

all of their work on the basis of projects that will arouse in children challenges and feelings that will impel them to put forth their best creative energies in carrying these projects forward. Since the selection of projects should bring about constant testing of the results, the projects selected should be co-operative, socialized life situations in which individual contributions will be evaluated in terms of the degree to which they promote the common interests of the group. Within the projects the occupational, social, and recreational interests of the present-day world should be reflected, so that whatever is of value will contribute toward a larger personalization and socialization of the occupations and interests of the society.

> . . . This means a socialized curriculum, a socialized method, and a democratic spirit of co-operation. It means putting a high premium upon creative effort and co-operative participation in all school enterprises from the superintendent's office down through principals, supervisors, teachers, and pupils to the youngest child in the kindergarten.[87]

Thus, at all age and grade levels, creative effort in accordance with the child's stage of maturity is to be emphasized, promoted, and fostered in every possible way.

In the industrial arts, in which every problem in construction is also a problem in design and planning, the work soon reveals those individuals who possess the creative imagination and the artistic

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[87] Bonser, Life Needs and Education, p. 39.

quality for originality and fineness in producing designs and projects. When every problem demands the thinking out and making of working plans and drawings, the work accomplished reflects the degree of ability for mechanical construction and the capacity for draftsmanship possessed by the individual. When all of the methods and processes of producing things with the hands with the aid of simple tools are related to a study of machine and power production of similar articles by industry on a commercial basis, and when opportunity is provided in the shop for some machine study and operation, the capacity for and interest in machine construction and mechanisms are revealed. When freedom is permitted and experimentation is encouraged, the tendency on the part of some pupils to work out original and adapted contrivances for production will lead to the discovery of those who have capacities for mechanical invention or mechanical construction of a high order.[88] In the industrial-arts program of the school, then, children have encouragement and opportunity to give expression to their creative and mechanical abilities, thus often revealing to themselves and to others the directions in which their real abilities lie. In this way, they are given interests and skills for both vocational and avocational activities.

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[88]Bonser, The Elementary School Curriculum, p. 155.

Charters criticizes both Spencer and Bonser for paying no conscious attention to the ideals which are necessary for complete living. He writes:

> . . . "Self-preservation" may be secured at the expense of very important ideals; it is frequently of less importance than the ideal of unselfishness. Without taking ideals into consideration, we cannot determine the form in which activities shall be carried on. The same criticism can be leveled against an activity-analysis such as that of Bonser, who, in The Elementary School Curriculum, specifies job analysis as the method to be used in determining what shall be taught, but fails to give equal emphasis to the ideals which shall dominate the activities.[89]

Bonser, however, had an ideal in his methods and purposes—that of economic competence and self-sufficiency. His ideal was that of preparing young people to assume their positions in society with efficiency and with success, both social and economic. What greater ideal is to be found anywhere?

Much concentrated attention should be devoted to the processes and practices of the dominant industries studied by pupils enrolled in industrial-arts classes. Shop work in wood, metals, and clay for boys, and in textiles and foods for girls, should be as intensive and thorough for pupils electing industrial and household arts as are foreign languages and literature for classical students. Appreciation and understanding of technical excellence cannot be fully developed without active participation in production. Before the meaning of

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[89] W. W. Charters, Curriculum Construction, p. 11.

skillful work can be appreciated, sincere attempts must be made to engage in it. "So long as the student is dealing primarily with ideas, with activities full of meaning, and not merely with hand manipulations, the work has educational worth."[90]

Not only must the school foster the growth of the creative impulse in children, but also this impulse must be directed so that its products are of wholesome, positive worth. Just to keep busy is not enough, Bonser repeats time after time in his writings; but to keep busy at tasks that are worth-while and satisfying is the goal to be sought. The individual child should be engaged in producing constructions, and in developing skills, ideals, attitudes, and appreciations in terms of personal interests and initiative. Also, the work that the child does should have worth to the individual and to the group; they should be positively benefited in a number of ways. Any project or activity which possesses no social or individual value at all, or which is antagonistic to the well-being of the group, should be eliminated from the program.[91]

In order to afford their maximum values, projects must be carried out in relationships that are genuinely co-operative in nature. In the school, the individual pupil should appreciate his work in its relationship to the common purposes of the class as a whole, and the

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[90]Bonser, Life Needs and Education, p. 84.

[91]Ibid., p. 35.

co-operative enterprises as a whole to larger life purposes outside of the school.[92] If these appreciations are consciously developed, the individual child will gain a knowledge that human efforts and human life itself depend upon others for their best development—that human beings are interdependent, each contributing something worth-while in effort or attitude to all others.

Bonser possessed clear-cut conceptions of the purpose and worth of projects in the industrial arts. In an address delivered before an educational convention, he said, in part:

> . . . The making of a cabinet in wood, of a garment in textiles, of a cold chisel in iron, of bread, or cheese, or sugar among foods, are all so rich in thought material that every one of them may be taught without any of that formal grind that so often robs all manual school work of any real developmental value. The great point of emphasis for all of these studies in the . . . school is not skill in manipulation —is not the art side primarily in any instance. The manipulation of materials—work with the hands in wood, iron, textiles, foods, or clays—is here for the purpose of helping the mind to grasp the meaning of these industrial activities —to utilize expressive capacity along with acquisition. It is to clarify ideas and appreciate meanings, feelings, difficulties, and excellencies, and not to make mechanics, or cooks, or dressmakers, or special workers in any other field. Through the work of the school the child must get this fundamental knowledge and experience once furnished by his every-day life.[93]

To this end, Bonser advocated the introduction of actual industrial processes into the program of the school. He saw little value in doing

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[92] Ibid., p. 32.

[93] Ibid., p. 76.

things one way in the school, when those same things were done in an entirely different manner in the commercial and industrial world. Let the school do them the way that industry does, and thus bring about real understanding and skill, as well as appreciation of the work performed in various industries.

This pioneer educator believed that one of the most significant contributions to be made to education by the industrial arts is that of fostering broad interests and intellectual curiosity. He said:

> The materials, processes, and products of industry appeal to our intellectual interests. Our curiosity as to what things are made of, how they are made, and what they are used for leads us to ask many questions. This interest is strong in early life, but if it has little to satisfy it, it will tend to grow less and to be crowded out by other interests. By the study of the industrial arts, however, new problems are continually appearing which stimulate curiosity, challenge inquiry, and reward investigations by the satisfactions of understanding and achievement. These studies in industry not only help to develop and direct this form of curiosity, but they provide growth at the same time in intelligence about the means by which man supplies himself with products to meet his needs. By these studies, the activities of men become increasingly meaningful. Industry has a significance entirely lost to those who know nothing of its processes and detailed achievements. A lifelong interest may be developed in the activities of industry so that one will find satisfaction and pleasure throughout the years in noting the discoveries, inventions, and new uses and applications of science in industrial production.[94]

Whatever may be the object to be designed and constructed, Bonser recommended that numerous good examples in considerable

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[94]Bonser and Mossman, op. cit., p. 13.

variety should be utilized for study and evaluation before the children begin their own work. In this way, they will gain new concepts of beauty of line and form, and new understandings of various possible patterns, all of which should enter into their own planning and construction. There is doubtful educational value in merely copying an object exactly as it is in the original; rather, the child should study the original and perhaps use it for the basis of his own work, but by all means he should be encouraged to make changes in the original to conform to his own concepts of beauty and utility. Care must be taken that the standards emphasized in examples of products used for study and comparison must not be so far beyond the capacities of the children as to discourage them. Objects and models studied should always be carefully selected with the abilities and maturity levels of the pupils in mind. In the use of superior products as models, the instructor may point out to the pupils ways in which the model may be simplified in their own designs in accordance with their abilities and experience. Or, if there is no danger of frustration and discouragement, he may encourage the pupils, or at least the more capable ones, to undertake the complex design and construction reflected by the model in order to sustain their feeling of high achievement.[95]

To avoid fatigue, nervous tension, and failure in their efforts, children should not be required to engage in activities which demand

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[95] Ibid., p. 61.

muscular controls and co-ordinations that are too difficult for children of a given age. Probably any activity that produces much fatigue among children in a brief interval of time is too difficult for healthful development. Certainly, in the elementary school it is wholly unnecessary to have manipulative work in the industrial arts which produces much fatigue when engaged in for reasonable periods of time.[96] When the work ceases to be pleasant and becomes drudgery, it loses its educational value and its meaning.

In the study of all industrial-arts units in relation to health, economic, esthetic, and other values, many questions will arise which can be answered only by investigations. Bonser declared that the more these investigations include some practical activities such as experiments, construction, and field trips, the more effective they will be and the more permanent will be their results. Of course, this does not imply that books and other printed matter have no place in the industrial-arts program; it does, however, mean that printed materials should be supplemented extensively by many types of experiences. So important is actual participation in practical learning situations that it is preferable to say that investigative work and practical experience should be supplemented by the use of printed materials.

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[96] Ibid., p. 46.

Reading will often lead one to engage in experimentation and construction of various types, and this practical work will, in turn, lead to more reading for further direction and for gaining wider interpretations of meanings and applications of what is being done.[97] Thus, reading may inspire one to engage in certain projects, and engaging in these projects will, in turn, lead to further reading. In this way, the two activities of reading and working, of learning and experimenting, supplement each other and become interdependent in the work of the industrial-arts program in the school.

Churches, libraries, and other community buildings often offer much in their own designs and decorative features to help in the development of standards and the cultivation of taste. Excursions should be made to every possible source in the community that will provide illustrations of good design related to any school problem in construction, selection, or the enjoyment of beauty as created by man. At the same time, the beauties of nature should be utilized to the fullest possible extent for cultivating an interest in the beautiful and a love of it.[98]

In 1929, only three years before his death, Bonser, as he looked backward over the progress that had been made during his lifetime in according to industrial arts a vital and functional place

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[97] Ibid., p. 48.

[98] Ibid., p. 65.

in the curriculum of the schools, was highly pleased and frankly optimistic. But, although he recognized that much had been done, the industrial-arts program was still far from the ideal for which he had invested the greater portion of his life. He remarked that "in view of what remains to be done, we may be reminded of the motto once common for classes graduating from high school: 'We have crossed the bay; the ocean lies before us.'"[99] This is still true today.

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[99]Bonser, Life Needs and Education, p. 29.

CHAPTER V

SUMMARY

Frederick Gordon Bonser was a versatile educator whose teachings, writings, and lectures covered many fields of education. Although he appeared to be equally at home in all areas of learning, his attention was focused upon industrial arts and its role in the school program, and upon the elementary school as the proper level for the introduction of work in the industrial arts.

Bonser was a pioneer in advocating many ideas and attitudes and practices which have come to be generally accepted in the field of education. He emphasized the value of experience as a significant factor in all learning; he stressed the existence of individual differences and the necessity for making the school curriculum sufficiently flexible to enable all children, regardless of their differing backgrounds and abilities, interests and needs, to attain satisfactory achievement; he wrote and spoke widely on the need for converting the schoolroom into a place for freedom of activity and for creative effort; he said that learning must be practical, or it is of little worth; he insisted that the school must divorce itself from mere "book

learning" and take cognizance of the needs and demands of human life in present-day society.

Education, he said, must be practical, down-to-earth, and truly meaningful. It must contribute to the enrichment of life, and it must be progressive. The methods and subject matter of the eighteenth century are completely outmoded in the twentieth, but the school, he said, has been slow to recognize this fact. The school, which should be the institution to lead in progress, is too often the last to take recognition of new developments and processes. The school must be geared intimately with human life and needs, so that life in all of its richness may be mirrored in the work of the school; and so that pupils, while engaging in the work of the school, will be participating in activities akin to those which their elders are performing in the community.

The school is charged not only with the responsibility for providing experiences in wholesome living for the children who attend, but also it has the obligation to pass on to the young generation the racial heritage of the past—the knowledge and techniques which have been developed by earlier generations.

The curriculum should find its source not only in the knowledge and cultural heritage developed in the past, but also in the problems, needs, and activities of current life within the community and the world. The school must be a miniature society, and, in its modern

concept, the curriculum must be closely related to life and its activities; in fact, it must bring the children into contact with life at its best and with concepts and meanings in their most vital interrelationships. No one subject can make these necessary contributions alone, but all subjects must be co-ordinated in order to make their maximum influences felt upon any given learning situation. The result of this integration will be that the child will understand that subject-matter fields are interdependent, and that each can make its own singular contributions to understandings, learnings, and the development of meaningful activities and projects. Life itself brings many varying forces to bear upon the individual, and the school and its curriculum must, in the same manner, bring many learning experiences into the child's knowledge.

In the modern concept, the teacher is a guide and a helper, not a dictator nor a rigid disciplinarian. The teacher must have intelligence, understanding, and skill in order to give effective guidance to the pupils in their learning experiences and in their activities and projects. As the primary source of activities and projects to be engaged in by the pupils, the teacher must be capable, alert, and versatile. He not only must be continually ready to suggest activities and projects, but he also must be capable of directing the pupils' participation in such a way that they may derive the highest possible values from their experiences.

Bonser, in advocating that the industrial arts should be given an important place in the curriculum of the schools, said that they should replace the earlier manual training which was their predecessor. He asserted that manual training, although it possessed value as a revolutionary subject for the schools, fell far short of the worth to be found in the industrial arts. Manual training, in its objectives, aimed primarily at the development of skill in the use of the hands and made little or no effort to relate what was done with the important work of the world. A table was made not because the utility of the table was recognized but because making a table would increase skill and dexterity in the use of the hands. The industrial arts, on the other hand, as conceived by Bonser, aim at the production of things because of their social, economic, and utilitarian values. Also, the objective is to learn the processes of various industries by engaging in similar practices on a small scale in the school shop.

The industrial arts should be made one of the centers of integration within the school curriculum. In work with wood, metal, textiles, food, and clays, many different techniques and processes are used, and the subject matter of many different fields of learning may contribute to the activities and projects carried out with these materials. The industrial arts, rightly interpreted, contain a rich and worthy body of thought and experience and, when properly organized

and presented, they involve the revitalizing of practically the whole school curriculum. Bonser saw in the industrial arts a means of providing social and liberal values in education, of recognizing and meeting vital human needs, and of functioning effectively in educative ways at all grade levels. Believing that understandings, appreciations, knowledge, and skills require a long period of time for effective development, he insisted that the earliest grades of the elementary school should be the place for the introduction of the industrial arts in the curriculum.

Because of their inherent practical values, Bonser wanted the industrial arts to occupy as vital a position in the curriculum as do reading, writing, arithmetic, and English. In his conception, the study of the industrial arts enlists all of the learning and active impulses and abilities of children, including manipulative, investigative, esthetic, and social. It represents areas of real need in both child life and adult life. It employs the minds and thinking abilities of children quite as much as their hands. It readily leads on to related fields of cultural content, giving a basis for an interest in and an appreciation for much of history, geography, science, literature, and art for which children and students otherwise would have no approach nor any adequate means of understanding.

A product which is useful without attractiveness and appeal to the esthetic sense falls far short of fulfilling its highest possibilities; and, at the same time, if something is made in such a way that it is attractive and beautiful but has little or no utility, it serves little purpose. In other words, to be most effective, a product that is made must be useful and at the same time attractive; the practical arts and the fine arts must be integrated within it.

While the industrial arts possess many educational and esthetic values, they are, at the same time, a valuable means for vocational training in certain fields of work. Many children, enrolling in industrial-arts classes, "for the fun of it," soon discover strong interests and real abilities in one or more areas of work encompassed in this field. Bonser insisted that the program in industrial arts should be strong and comprehensive enough to give adequate preparation for entry into various industries.

Bonser believed that at least four fundamental impulses to action among children should be given recognition in the industrial-arts program, which should guide these impulses into worth-while and meaningful channels of endeavor. These four impulses were called by Bonser the impulse to manipulative activity, the impulse to investigate, the art or esthetic impulse, and the social impulse. If given free rein and constructive guidance, these motivations to action will

result in valuable learning experiences in any field of study, but particularly in the industrial arts.

Present-day concepts of the scope and purpose of the industrial arts have not yet caught up with those of Bonser, formulated more than a generation ago. He insisted that the industrial arts should begin in the very first grade of school and should be offered and required continuously throughout the school experience of the learners. The subject should not be an elective, but a requirement, for at least a major portion of the educational careers of the young. It, of course, should be offered in very simple form in the lower grades, but it should increase in complexity and variety as the children grow older. While the modern conception includes, for the most part, only work with wood and metal, Bonser insisted that work with foods, textiles, clays, and other industrial materials should also come within the scope of the industrial arts.

In the elementary school, children should begin, with the beginning of their school life, to develop understandings and appreciations of materials and products and processes that enter into the work of the world; and, at the same time, they should acquire the ability to think out creative projects and to work with their hands in constructive ways. If possible, in the lower grades especially, the industrial arts should be taught by the same teacher as the one who gives instruction in such

related subjects as history, geography, arithmetic, and English. In many school situations, however, this arrangement will not be possible. Who teaches the industrial arts, however, is not nearly so important as the requirement that these studies shall be closely integrated with all other subjects which may have any possible relation to them. Thus, the contents of the entire curriculum may be called upon to make contributions to the development of projects and activities and to the solution of problems.

Bonser did not believe that projects should be planned merely for the purpose of giving the pupils something to do; but instead, all activities should contribute perceptibly to the accumulation of worthwhile learning experiences. Mere "busy work" was deplored by Bonser as an unjustifiable waste of time and energy; but being busy for an educational purpose was an entirely different matter, in his opinion.

Manual dexterity through handwork comes primarily as an incidental by-product—understandings and appreciations are the fundamental outcomes. Thus, a major aim of the industrial arts is to develop the esthetic sense or the appreciation of form, beauty, and appropriateness in design. Pupils should be encouraged to employ their creative abilities in designing and carrying projects to completion. If they are given freedom to incorporate their own ideas of design and

utility, what they make will be much more meaningful to them, for it will be more truly their own.

It has become apparent in the course of this study that Frederick Gordon Bonser was a pioneer thinker in education, and particularly with regard to the role that should be occupied by the industrial arts in the educational program of the schools. His conception that the industrial arts should become a vital part of the elementary-school curriculum has not yet become generally accepted, although within the past ten or fifteen years these courses have been added to the curriculums of many elementary and junior-high schools in various parts of the nation. Likewise, his idea that the industrial arts should incorporate actual processes and techniques of industry has been slow to win acceptance in the schools. His belief, also, that the industrial arts should serve to prepare youth to enter industry equipped with a high degree of efficiency and skill has seldom been realized in the public schools, whose attitude toward the industrial arts places them more definitely in the realm of avocational studies than of vocational. This is true largely because the schools have not yet accepted Bonser's contention that the industrial arts should be required courses, rather than elective studies. At the same time, Bonser's broad concept of the comprehensive scope of the industrial arts has not been generally accepted, although it is gaining ground among educators.

Thus, it becomes apparent that even today, more than a generation after his death, Bonser in his philosophy of the industrial arts is still ahead of current practice. Much yet remains to be done before his ideal conception of the industrial arts can emerge into reality. But the time is now ripe for such progress.

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