State Normal School of Colorado

Education Is Motorization

Bulletin. October 1907.

A Syllabus

SERIES VII. NO. 4

Issued Quarterly by the Trustees of the State Normal School of Colorado, Greeley, Colorado.

Entered at the Postoffice, Greeley, Colorado, as second-class matter.

A Syllabus

—ON—

Education Is Motorization

—BY—

Z. X. SNYDER

PREFACE

The following is a syllabus used by the author in his classes in the philosophy and science of education.

It is a consideration of education as a biological process growing out of the functioning of the organism. Thought, feeling and action are all functions of the organism. It is the dynamic conception of education; that is, education is the result of the efforts of the organism to adjust itself to its environment and to adjust environment to itself.

In accordance with this conception education finds its realization in the life of the individual—in his expansion into life, mind, social participation and divine recognition.

From the above standpoint it may be said that education is a functioning of cells.

Education is Motorization.

1. The nervous system is the organ of mind. All psychical phenomena from the first crude impulse of living matter to the highest types of mentality; as, sensation, thought, feeling, volition, and consciousness are functions of the nervous system — action and reaction of atoms, molecules, cells, tissues, organs, body.

2. The entire organism is the organ of motor activity. All activities of the individual, whether they be sensuous or mental, reflex or conscious motions, are functions of the organism. There is no training independent of the body. All impulses, ideas, sentiments, ideals and deeds are functions of the organism.

3. Motorization in education is the development, organization and reorganization of the histonal elements of the body and their unification in movement and motion to the end of realization; it is functioning the organism.

4. All movements and motions are the result of a coalescence of stimuli. There are two types of stimuli — *inner* and *outer;* the inner stimulus is hereditary and phyletic; the outer stimulus is any external phenomenon affecting the organism. Much depends upon the congruity of these two types of stimuli. If they are incongruous the resultant to action is weakened in proportion to the incongruity. Congruity leads to strong feeling for action in a particular direction.

5. When there is a complete circuit of coalescence, there is adjustment to and of environment to self; this, again, is motorization — education. When the external

stimulus meets with a congruous internal stimulus and this in turn with congruous ideas, the flow in the direction of motor activity will be at its best. A strong interest to actualize will accompany the movement. Dominant physical tones run throughout.

6. The motor activities may, as to region, be classified into *central* and peripheral. In motorization a very important idea is usually lost sight of; that is the development of a central organic feeling, or movement and then releasing it in motion, in realization — in doing, through the peripheral organs. There should be a strong feeling for the movement all over the body — the strong dominant tone. It means doing with the whole body. The teacher must engender this feeling in the child. The racial impulse, the child's age, the child's environment and its development must all be reckoned with in this matter.

7. The whole process in education from the outer stimulus, arousing the entire being in realization to final realization is one of gradual evolution—it is monistic — the nature of it is the same all along — it is organic — natural; this process is one of maturation; that is, no thought is matured until it is realized. In this physiological and educational series (Motor series equals stimulus, sense, sensor centers, thought centers, motor centers, muscle and doing, equals Motorization) no term should be omitted from the first impulse to realization; from sense and imagination to realization in play; from sense, thought and imagination to realization in games; from sense, idea and

reflection to realization in work; from sense, idea and the ideal to realization in life.

8. If a thought is not matured until it is realized, it is clear that the subjects which are used as means to develop thought, feeling and ideals should be adjusted to the child, so that he experiences the truths, etc., in his life in thought, in feeling, and in action; a child should live *his* life through the entire motor series.

9. The matter of completing the physiologicial circuit in the educational process makes the difference between the savage and the civilized, cultured man. It is the difference between the few crude facts of nature on the one hand and, on the other, the play of ideas on these facts directed by ideals and realized in life.

10. The above doctorine teaches that as soon as a truth and its process in realization becomes unconscious (consciousness being a by-product of the process), it ceases to be structural (structural meaning educational); it then becomes a virtual energy and is only further realized when it helps to reconstruct, thereby, again, becoming an active energy in the life of the individual.

General Principles in Education Based upon Motorization.

1. The education of an individual is a scientific process.

2. As a scientific process, it is based upon the organism; hence, it is subject to physiological laws.

3. That part of the organism that has to do with the physical phenomena is the nervous system; that which has to do with motorization is the entire organism.

4. That part of the nervous system that has to do with the thinking process is the brain.

5. The parts of the brain that have to do with the sense-impressions are the sense centers of the cortex; those parts that have to do with the organization of these impressions (or thinking) are the thought centers of the cortex; those parts that have to do with final realization of the thoughts are the motor centers. These are all connected by nerve fibers.

6. Hence, originally *all* knowledge comes by experience through the sense organs; in our individual experiences we get them directly, in history we get them indirectly, from the race we get them phyletically.

7. Feeling, interest, memory, consciousness, emotion, attention and will are by-products of the physiological process. This process is the result of the building up of the organs of the animal kingdom through the countless years of its existence by natural selection.

8. The elementary organs of all these tissues are the microscopic cells. Hence, education is functioning cells.

Suggestions Growing out of Study of Motorization.

1. Motorization results in two types of realization;

individual and social. Motorization that ends in the individual falls short of its full fruitage ; it should reach into the social life.

2. All those phases of manual work which have their origin in primitive life and by development have reached large wholes in the present social life are more important in school work than phases that have started and have not found a large place in the social whole ; as woodwork, weaving, iron, glass, clay, agriculture, gardening, forestry, painting, drawing, architecture, among the first ; and basketry, furs, among the latter.

3. In teaching, arrange conditions and material (as,— air, temperature, objects, pictures, literature and subjects) and yourself so as to develop strong body movement, or feeling for expression. Do not sterilize by too much detail and verbosity.

4. Be careful to strengthen each term of the motor series from stimulus to action.

5. Physical culture, all forms of art (as,— sculpture, pottery, painting, literature, and music) make the body more rythmetical and responsive to the development of movement — of stress in doing.

6. In stimulating the child's body movements, there must always be taken into consideration the child's racial and individual interests. The medium and its form through which he realizes his movement must be congruous with his total interests and his social life.

7. With children whose realizations are in play, it should always be remembered that it is not best to develop a strong feeling or movement, and let it die by absorb-

tion without realization in play. That is, a nervous explosion dying away in the tissue is not healthy or educative. It produces morbidity.

8. In the education of the motor activities the movement must be from the center outward to peripheral action; the peripheral action being based upon strong central movement, or stress.

9. The application of the doctrine of motorization finds its highest service in correlation, or better concentration; as,—drawing, and art, mathematics, history and literature, agriculture, forestry, gardening, physics and English, with manual training; drawing and art, physics, chemistry, geography, history and literature, gardening and agriculture and manual training and English with domestic science; spelling, reading, grammar, history and literature, geography with English; spelling, grammar, use of words, literature and dramatising history with reading; art, history, literature, sociology, industry with languages. These groups all correlate in the life of the child as it transfigures itself into humanity, or the human activities.

10. Broadly speaking, the large areas of the lives of children in their motorization may be defined as the play, the game, the manual training and the art stages; these conform somewhat to infantile, the child, the youth and the adolescent periods.

Applications in Motorization.

I. IN USE OF WORDS—

1. Oral,—As to content and as to sentential structure there should be congruous coalescence from first stimulus through the ear, sense centers, idea centers to the motor centers controlling the vocal chords resulting in speech, which is realization. The word from an oral standpoint has its ultimate value in realization in the social life activities.

2. Written,—As to content, sentential structure and orthograhic structure (spelling) there should be congruous coalescence from the first stimulus through the eye, sense centers, thought centers, motor centers controlling the arm and hand to the written word, which is realizaation. The written word has also a very large value in social life activities. Spelling is only necessary in writing. I think the above suggests the series of motorization to be used in teaching spelling.

II. IN READING—

1. Vocal,—Motorization proceeds from the first stimuli through one or more senses, as the case may be, to the sense centers, thought and motor centers to the vocal cords, accompanied by a body movement together with peripheral movements organized into one whole called dramatization. This process builds up and expresses the whole scheme of the content of the piece read, into being which is absolutely necessary in conveying the thought and scheme to others. Oral reading

has a high social value when well done. Considerable use should be made of the drama.

2. Silent, — Motorization here proceeds from stimulus to body movement, but does not find its end in motion — in dramatization. There is the better matured thought in the oral and dramatic reading; silent reading leads up to the last but one term in motorization, which term is action. It builds a potential which, however, may later become kinetic — or realized. A strong body feeling growing out of the stimuli properly presented leads up to the vivid imagination, which is always a condition for self-forgetfulness in good acting. Self-forgetfulness only follows when there is perfect coalescence of the action of the senses, sense centers, thought and motor centers (sense, stimulus, thought, emotion and will.) The teacher using the proper stimuli together with his personality makes the condition for the development of this entire process in reading.

III. ARITHMETIC—

To motorize in arithmetic means to realize the mathematical experiences in the child's life. Experiences here are first gotten in the same way as in any other subject through the senses. The motor series should be stimulated throughout, developing a strong feeling for movement. A caution must be observed in mathematical teaching not to mistake symbol work for content work. The laboratory is as important in arithmetic, algebra, and geometry, as in any other science. There should be much drill, but it should be motorized

drill — drill that has all the elements of motorization in it — drill that carries with it real life.

IV. LANGUAGE —

Preliminary to the opening up of a subject in any language, there should be given such exercises as to arouse the motor series along the line. The stronger the movement, the greater the disposition to realize the ideas in use. In all language teaching, good use may be made of the lantern illustrating the habits, conditions, customs, history, literature, and spirit of the people whose language is being studied ; good use may also be made of the story. Too much detail and too much technique repress the motor feeling. Young people in the adolescent period are more interested in the life side of the language than the technical, and will react more readily to such.

V. NATURE STUDY —

The field, the laboratory, the library and the teacher are the stimuli in this subject ; what a feeling may be aroused through these media ! This feeling will find its realization in tramping the fields, in climbing the trees, in digging, in working in the museum, in searching in the library, and in many ways which the pupils will devise.

VI. PHYSICS —

The stimuli coming directly out of the environment, such as the mechanical contrivances involving principles of physics are realized when these contrivances are con-

structed; as, haystacker, windmill, irrigation ditches and headgates, telephones, electric lighting, water motors, telegraphic system, the mechanics of vehicles, eye glasses, thermometers, ventilation, gas lighting, heating apparatus, plumbing, etc. The material for an entire course of physics lies in the presence of the child. The fullest realization may be experienced here. Formulations of facts into principles should follow in this work; then in turn the application of the principle in life in the daily activities of the pupils.

VII. HISTORY.

In history by the aid of the lantern, pictures, library, museum, and the story, the child may be brought into very close and sympathetic relations with the peoples whom it is studying. The entire motor series may be realized up to the last term, action; here there is fine opportunity to dramatize the life of the period. This sort of work well directed develops a strong potential for ethical action in the life of the pupil. A study of the life history of utensils, tools, machines, fabrics, etc., put pupils in sympathy with the life of a people.

VIII. GEOGRAPHY—

Geography furnishes great opportunities for stimulation of the sense and thinking activities of children. Products, their transportation to different parts of the world, the physical conditions upon which the products and transportation depend and the dependence of the people upon them, all provide a wide field of interest

and study. The local fields, manufactories, methods of transportation, pictures, the lantern, library, and the museum, are media for stimulation. People are interested in people; strong feeling grows out of a clear and close study of geography in relation to the people. This sort of study realizes the definition of geography, "The earth is the home of man." Considerable motor work may be done in moulding; out in the field is an excellent place to mould on a large scale; every school should have a piece of ground on the campus for the construction of the continents on a large scale; an entire class may make it.

IX. LITERATURE—

Here, there is a fine opportunity to develop the fact that "literature is life." By the use of the lantern; by pictures showing how people live—showing the trials, difficulties, hardships, joys and sorrows, aspirations and ideals; by the use of the story; by the use of the library; by the use of the museum, the life of the human family may be given such a setting as to develop strong impulses, sentiments and ideals of response in the pupils. The motor series in literature finds its highest point in thought, sentiment and action—action in the drama, action in the practial lives of the pupils. The tissues of the entire body should feel literature by being so developed, constructed, and reconstructed by the study of it as to make a powerful potential, the release of which would flow in the direction of right living. Literature is life; it should be felt as life, studied

as life, loved as life, lived with as life, acted as life. This is motorization in literature.

X. ARTS-CRAFTS—

From sense to muscle, from the kindergarten to high school, inclusive, in manual training, in domestic science, in gardening and forestry and in art, is the law of the motor series. Any term slighted results in a slight in all forms that follow. The best opportunity is afforded in these subjects for the development of a strong movement to do. Every time the pupil does, the doing should reflect back and clear up the ideas upon which the doing is based. The feeling, or movement, should be deeply artistic in all that is done. The construction must first be true, then ornamented to suit. The lantern, pictures, the library and Arts-Crafts museum are all means to the end. They are great in making a soul for this work. It all belongs to motorization.

XI. MUSIC—

The first step is the development of a feeling for music through tone. Tone is the primary motor element in a strong musical feeling. The musical soul is the attuned body; every cell vibrates in rythmic unison with every other cell; there is congruous coalescence of all the organic units. Fundamentally the teacher's tone is the stimulus; in the child the motor series is from the teacher's tone to the child's vocal cords. Music is the climax of the arts. Because it is the finest

of the fine arts, it naturally takes more time to develop it; while this is true, it is the most universally applied of all the arts, It should have more time in the curriculum. A growth of feeling for the proper tone should commence with the little children in the kindergarten and continue throughout the school course.

XII. PHYSICAL EDUCATION—

This should be a basis for the entire educational structure. In the formal work the stimulus is the command. The stimulus, thought and action is the formula. In motorization in physical education there is much to be done with rythm. Music to guide the movements is important. The entire nature is congruous in action. From the standpoint of motor adjustment the entire body is better conditioned for work in any line. Physical exercise should be for life's sake.

What has been said above has reference to general organic adjustment. Besides this it has an important value as a health tonic; it creates a better hygienic adjustment of all the parts of the body, It, again, has a pathological value. There are remedial exercises that correct defective parts.

Realizations Growing Out of the Applications of Motorization in Education.

1. "Education as Motorization" is realized in the expansion of the individual in the development of the vital, mental, social and spiritual natures.

2. The development of the vital, or biological nature is the expansion, multiplication and functioning of the cells of the organism.

3. The development of the mental, or psychological nature is the enlargment and functioning of his intellect, his sensibilities and his will, which are functions of his organism.

4. The development of his social, or sociological nature is his ethical interpretation of his environment as formed by his fellow-men, and his social participation with them.

5. The development of his spiritual, or philosophical nature is the enlargement of his view of the universe of things and forces and the unity of all these; further, it is the development of the power of the individual to sense divinity and to feel and recognize divine impulses in his own nature and a divine control of all things.