

REVIEW

Transforming Middle School Science Education by Paul DeHart Hurd published by Teachers College Press (2000)

The author's purpose is to effect a change in the way science is taught in the Middle School. From the Preface we read, "The author's view throughout this book is that the invention of new science curricula for the middle school begins with a study of adolescents, including their social behavior, biological characteristics, physical and emotional health, and other conditions that influence the student's life pattern. All of these attributes have roots in modern science." His audience is clearly the administrators of Middle Schools, the administrators in charge of university curricula for prospective teachers, the prospective teacher, and those already teaching in the Middle Schools who wonder why the experience is not working. He points out that re-treading high school teachers or elementary school teachers to teach in the Middle School is not the way to solve the current problems (See page 76.). (See also pages 36-37 for some of the problems.) The colleges and universities must offer programs that explicitly train and prepare Middle School teachers to recognize that Middle School students are significantly different from elementary school students and High School students and that they form an important niche that needs to be addressed and a niche that is not currently being addressed.

The author has been involved with this problem for many years (I took classes from him as a Shell Merit Fellow in 1969) and cites many of his own studies and recommendations. He coined the phrase "science literacy" in 1958. The book has fewer than 100 pages, yet provides a tremendous amount of information for the reader by summarizing the results of many extensive studies all of which are referenced for the reader who seeks more. A college student thinking about a teaching career will learn a lot about the developing adolescent without having to take a course in the subject. An administrator in Middle School will find his or her practical experience brought to a focus and thus see clearly the direction to take to improve his or her school. All of this material is presented in a clear and coherent fashion.

The tone of the book was influenced by oral interviews with Middle School science teachers (121) and Middle School dropouts (20+). Where relevant, studies (See page 32 for example) reflect results broken down into male/female, Black/White/Hispanic, geographical location, and parental education level. The recommendations encourage accommodation of learning styles, prior experience and abilities, and individual needs of students.

The work is designed to make the reader aware of what work has been done to bring him or her quickly up-to-date, rather than to teach a topic that would be tested.

I have no cautions for users of the first nine chapters. I would add that physics experiments, which are not mentioned, fit well into a Middle School curriculum and they satisfy the author's desire to introduce science topics that can be related to adolescents'

penchant for physical activity, their interest in the limits of their own bodies, and their desire to learn how they can control their own environment with a knowledge of the scientific approach to problem solving. Chapter 10 entitled “What’s Next?” notes that there are number of resource centers, but their material is not in a format amenable to the needs of developing adolescents. The author recommends a national center funded by the federal government. I would recommend that the discipline-oriented science societies couple with the science teacher-oriented societies to produce a virtual library of effective materials. Getting grants for projects from within such a consortium should be relatively easy.

A listing of the Chapter titles follows: 1. “Seeking to Understand the Developing Adolescent” presents a quick overview of what to expect of 10-14 year olds. 2. “At the Crossroads” continues with a look at how they handle school and how they spend their leisure time. 3. “Issues in Educating Developing Adolescents” presents a short history of the Middle School with a list of the functions of the Middle School and a list of the desirable elements of the Middle School. Further lists compare Middle schools with Junior High Schools and their make-up with associated problems and some recommendations for change. 4. “Rethinking Education in the Middle Grades” has several lists having to do with what makes a Middle School effective; trends, conditions, and missing elements in the education of early adolescents; and the results of four major studies that looked at science education, in particular, with problems and recommendations for transforming the schools. 5. “Emerging Goals for the Teaching of Science” includes identifying the personal and social needs of the age groups and then national goals for the teaching of science. Some of the global concerns headline the chapter: learning to learn, scientific literacy, linking science education with the workplace, and modernizing the science curriculum with a new vision. 6. “Life Skills and the Quality of Life” lists the core elements of life skills that will help individuals contribute to a healthy society and environment. 7. “A Lived Science Curriculum for the Middle Grades” synthesizes what has been said in previous chapters in preparation for the recommendations of the following chapters. 8. “The Changing Concept of Health” reminds the reader that habits formed in Middle School can be lifelong threats or benefits to a healthy lifestyle. Developing adolescents are biologically ready and in most instances curious enough about their own bodies to be attentive to the student-centered objectives listed here. All the sciences can be brought to bear on the problem of getting students to realize that there is solid evidence for following this advice. 9. “Preparing for Life: A Science of Ourselves” identifies a detailed list of curriculum principles for the 6th through 8th grades. 10. “What’s Next?” contains suggestions for improving the situation, but also points out that even though the problem has been recognized for over 2000 years past efforts have not been successful.

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