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Progress Report on Revision of Curriculum in General Science for Iowa High Schools

RALPH A. SHALLA

Fellow teachers and scientists, I am very glad to present to this group the work that has been done so far by the General Science Production Committee in the building of a state course of study for the State of Iowa.

I am reminded of the remarks of a Missouri University Professor of Education, who was speaking to the general teachers' meeting in Keokuk. He said, "I direct my remarks to the bald headed row in the front which I presume to be high school teachers". He was right, for most of them were in secondary education. I therefore direct my remarks to any like group, hoping that they are also secondary education instructors.

The members of the production committee are Mr. Dean C. Stroud of Amos Hiatt Junior High School in Des Moines, who is the writer, Mr. Don L. Hempstead of Frank L. Smart Intermediate School of Davenport, Mr. W. Gjerde of Iowa State Teachers College at Cedar Falls and Mr. Ralph A. Shalla of Keokuk Junior High School at Keokuk, Iowa. The committee has had three meetings to date. At the first meeting suitable aims were formulated by the committee, aims that could be taught in a general science course. Naturally the group was not satisfied with these aims and they were revised several times until now they stand quite well in our opinion. These aims will be read later with comments as to why they were chosen and written as such.

The next task for the committee was to organize the subject matter of the course which was done to our own satisfaction. This is quite true as the group realize that the subject matter is organized differently from that found in any text book or organized body of general science knowledge. Indeed they have organized the course under nine units whereas generally such a course is usually found under as many as seventeen units. The committee assumes that the content will be more teachable than if it were more divided. They have tried to embody all the subject matter found in general science without making it too detailed for use by the average teacher. Indeed they have arranged some brand new phrases which would compact the units making them more easily *taught, read and understood*. To date no order of presentation has been suggested and the units shall be reviewed in the most compact order. The committee gave complete freedom to each writer to add in any material necessary in rounding out the units.

1. The unit of the "*Earth's Surface*" is being written by Mr. Gjerde and is composed of the following:

Erosion
Glaciation
Soil Sources

Rock Formation
Minerals
Loess

Here special attention is to be given to Iowa as a part of the whole unit.

2. Mr. Gjerde is writing the unit on "*Climate and Weather*" and because of the close relationship of Air and Water to this unit, all have been included. All the topics follow.

Air	Weather
Water	Climate
Weather Instruments	

3. Mr. Stroud will write the unit on "*Astronomy*" which will contain the following:

Solar System	Earth Relationships
Stars	Seasons
Constellations	Day and Night
	Moon Phases
	Tides

4. The unit on "*Machines*" will be prepared by Mr. Stroud and briefly it contains these topics:

Work-Energy-Power-Force	Transportation
Simple Machines	Specific Gravity and Density
Compound Machines	Flotation

5. Mr. Hempstead is to write on the topics in the unit "*Improvement of Life on Earth*". This of course will contain much biology and will deal with these subjects:

Disease	Foods
Bacterial	Heredity
Structural	Leisure Time and Recreation

Here considerable will be said about recreation and what the State of Iowa is doing to provide it.

6. The unit on "*Electricity*" has been combined with that of sound because of the many ways in which they are related. Mr. Hempstead is writing the unit and some of the sections are:

Sound	Static Electricity
Communication	Current Electricity
Magnetism	

7. The unit on "*Fire and Heat*" is being prepared by Mr. Shalla and it contains the following:

Heat as Energy	Sources of Heat-Fire.
Thermometry and the	Fuels
Effects of Heat	Clothing and Housing
Heat Distribution	Insulation and Refrigeration

8. Mr. Shalla is writing the unit on "*Light and Sight*" which contains these basic sections:

How We See
Color
Photography
Eye Structure vs. a Camera
Lens and Mirrors

Light Intensity
Motion Picture and Photo-
electric Cell
Light Distribution
Incandescent Lamp

9. The "Introduction" will be written by the committee as a whole and will contain subject matter relative to the whole course. To be included with other material not totally decided upon are:

Scope of the Course of
Study.
Scientific Methods of Pro-
cedure in Thinking and
Laboratory.

Units of Measure
Evaluation and Testing
Individual Differences.

A summary of the aims formulated at an earlier date follow. The committee has kept them very simple but detailed enough to be self explanatory. Each of these was compiled with specific reasons in mind and these shall be mentioned with the purposes the committee had in mind for each one. We do feel that it should be remembered that these nine points or aims are what we as teachers are trying to get across to our students. *That the subject matter of the course is only a means to an end; a means to accomplish these aims.*

Aim No. 1. To develop a knowledge of the basic laws and generalizations in the field of science needed to understand man's environment.

The committee believed it to be necessary that each student gain a working knowledge of science to the extent that he understand life's situations in which he finds himself.

Aim No. 2. To develop an understanding and ability to apply the scientific method in the solution of problems.

In the compiling of this aim the committee did not have in mind the formal learning of the steps in the scientific method but rather a gaining of the knowledge about the method and its use by continual practice and repetition.

Aim No. 3. To develop an understanding and appreciation of equipment and ability to use it.

So many cases of high school scientific equipment are locked and students regardless of responsibility are not allowed to handle or examine it in any way. This aim was designed to open apparatus cases to the good, reliable student, under proper supervision and guidance.

Aim No. 4. To develop an impartial and objective attitude toward ideas and social problems that contribute to health and human welfare.

The committee had in mind that a scientist must face reality and the truth regardless of consequences and that he must be able to

formulate opinions based on truth and right thinking, where health and human welfare are of prime consideration.

Aim No. 5. To understand and practice the conservation of natural resources.

This aim was designed with the thought that the supply of all world goods is naturally limited and that it is the duty of the individual to be a wise user of it for himself, for his country, and for the world as a whole. Neither should he be too wasteful nor too frugal in the consumption of natural resources.

Aim No. 6. To appreciate the contributions of science and scientists to civilization.

The chief purpose involved in this aim was to show the great fortitude and courage with which men of science carried forth their work to completion. The committee believes this to be the subject matter in the course which if properly used will help build character and good citizenship in our students.

Aim No. 7. To provide training which will enable all pupils to become intelligent consumers.

Let the student gain enough knowledge of science that he can differentiate between good and poor articles for sale, that his powers of discrimination may be sharpened to the extent that he will become a more critical buyer.

Aim No. 8. To develop the ability to read, understand and use an accurate and appropriate scientific vocabulary in written and oral expression.

The committee here realized that every secondary school teacher, no matter how specialized her field, is still a teacher of the fundamentals. That a scientific vocabulary demands special practice in its proper use and this can only be attained in a science course.

Aim No. 9. To help the pupil establish vocational and avocational interests through his knowledge of science.

The committee concurred in the belief that general science teachers could aid their pupils most in cultivation of a vocational interest which would lead the pupil to chose his life work. They might do the same from a negative standpoint, whereby he would find science not to his liking. In a good many instances they would arouse curiosity to the extent that an avocational interest or ordinary experimental type of interest might be brought about in the individual.

The committee was surprised at how well the nine units of material in the course of study lend themselves to teaching toward the nine aims laid down. It is to be understood that the aims were compiled before the material of the course was organized. Probably the unit which fits in least is the one on "*Astronomy*" as it does not involve the following aims to any great degree:

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- (1) contribution to health and human welfare
- (2) conservation of natural resources
- (3) intelligent consumership of goods

The committee believes that the aims can be taught very effectively by the use of the subject matter in the course of study.

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