

5-1956

The Development of a General Education College Chemistry Course

Luther Arnold

Winona State Teachers College

Follow this and additional works at: <https://digitalcommons.morris.umn.edu/jmas>



Part of the [Chemistry Commons](#), and the [Science and Mathematics Education Commons](#)

Recommended Citation

Arnold, L. (1956). The Development of a General Education College Chemistry Course. *Journal of the Minnesota Academy of Science, Vol. 24 No. 1*, 76-77.

Retrieved from <https://digitalcommons.morris.umn.edu/jmas/vol24/iss1/18>

This Article is brought to you for free and open access by the Journals at University of Minnesota Morris Digital Well. It has been accepted for inclusion in Journal of the Minnesota Academy of Science by an authorized editor of University of Minnesota Morris Digital Well. For more information, please contact skulann@morris.umn.edu.

glands attached to albumen fixative. Transfer the slide to a jar of absolute alcohol for 5-6 minutes and then into a jar of xylene for clearing. Mount in damar or other mounting medium.

REFERENCES

- DeRoberts, Nowinski, and Saez, *General Cytology*, 1954, Wiley.
Demerec, M., *Biology of Drosophila*; John Wiley and Sons, 1950.
Painter, T. S., Salivary Gland chromosomes and the attack on the gene. *Jour. of Heredity*, vol. XXV, 1934, No. 12; 465-476.

* * *

THE DEVELOPMENT OF A GENERAL EDUCATION COLLEGE CHEMISTRY COURSE

LUTHER ARNOLD
State Teachers College, Winona

ABSTRACT

Purpose of the Study

The purpose of the study is to develop philosophically a first-year general education college chemistry course which will serve the general education student as well as the specializing student. The course is based upon modern philosophy of science and education with emphasis upon objective scientific thinking.

Assumptions in the Development of the Course

Four assumptions are made as a basis for the course:

1. That in our democratic society objective thinking based upon understanding of scientific principles relating to the structure and interaction of matter leads to a better life and should, therefore, be a part of the education of all.
2. That the chief function of a general college chemistry course is to provide experience in objective thinking regarding the structure and interaction of matter, especially as it relates to life in our society and culture.
3. That one learns most effectively when new learnings are associated with past experiences so they are meaningful to the individual in controlling, predicting, and testing future experiences.
4. That a general education chemistry course should begin with modern atomic theory and be developed upon it.

Criteria in the Development of the Course

To select and organize content and experiences in keeping with these basic assumptions, criteria were established. Applying the fourth basic assumption, those materials concerning the atom which were

also in agreement with the other basic assumptions were considered. The criteria are:

1. Relatedness—of each part to the basic assumption regarding the atomic theory, of each part to each other part, of each part to the importance chemistry plays in the life of the individual, and of each part to the past experience of the student.
2. Flexibility and variability—in its provision for individual differences and its adjustability to environmental factors.
3. Continuity—in its relation to logical sequence and dependence upon past experience leading to new experience.
4. Interaction—between student and instructor and among students leading to active participation.
5. Motivity—in its provision for continuing interest.
6. Harmony—with sound educational philosophy, with democratic processes, with modern philosophy of science, and with what is known about the structure and behavior of matter.
7. Effectiveness—in developing objective thinking and a practicable and usable philosophy of life.

Identification of Principles...

To ascertain that important aspects of chemistry were not overlooked, a list of statements relating to the structure and behavior of matter was compiled from major sources and submitted to a jury of eighteen specialists, nine in general education and nine in chemistry instruction. Fifteen ratings were received, seven from the general education field and eight from the specialist field. Three hundred and seventy-six statements were judged to be essential and were arranged in logical sequence according to the plan of the course.

Conclusions and Suggestions for Further Study

The study brings to attention several areas worthy of further study:

1. An evaluation of the course in practice.
2. The preparation and qualifications of college chemistry instructors.
3. The practice of employing graduate and teaching assistants whose interest may not be in teaching.
4. Responsibilities of general chemistry instructors and their effect on teaching.
5. The role of the laboratory.
6. The influence of testing practices on objective thinking.

If first-year college chemistry is to make greater contributions in satisfying the needs of all students, it would appear that the whole field should be critically investigated. Such investigation would be in harmony with the philosophy of science which science instructors should promote.