

4-1948

## Chemistry-Restricted

Robert Molkenbur

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

Molkenbur, R. (1948). Chemistry-Restricted. *Journal of the Minnesota Academy of Science*, Vol. 16 No. 1, 38-40.

Retrieved from <https://digitalcommons.morris.umn.edu/jmas/vol16/iss1/7>

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](mailto:skulann@morris.umn.edu).

## Science Education Section

### THE RELATIONSHIP BETWEEN READING COMPREHENSION AND ACHIEVEMENT IN SCIENCE

JANE JOHNSTON

*State Teachers College, Bemidji*

1 1 1

### CHEMISTRY—RESTRICTED

ROBERT MOLKENBUR

*Central High School, St. Paul*

Throughout the United States today, people commonly and casually believe that the average high school is preparing their children for living in a democracy. They know in a general way that in assuming this responsibility our schools must offer many differing services, including that of college preparatory training. However, many patrons fail to realize that their schools frequently over-emphasize this service which certainly benefits those few students who enter college but just as definitely ignores the needs of those many pupils who complete their formal education with high school graduation.

In the average high school of today you will find many subjects taught in a technical manner that renders them more or less useless except to those students planning for advanced education. Since I am especially interested in the field of chemistry, and since this subject is a common offender, I decided to investigate how some of our former Central High School graduates were now using their high school technical chemistry.

To give a complete picture, here is the background of our school. It is a high school of 1600 students and fifty-seven classroom teachers. The students come from better than average homes as far as social and economic factors are concerned. The average I.Q. is 109 and the school lists more Rhodes scholars to its credit than any other public high school in the country. Of the 412 seniors in this year's class, 110 of them are taking chemistry and a goodly number of them are taking or have taken physics. Since the holding power of the subject seems to be fairly good, about twenty-five percent, we should expect to find that many of them are using their chemistry in college. In the light of this situation, I request your consideration of the following study.

The initial step of this investigation consisted of an explanatory

letter which we sent to former chemistry students of 1945-'46 and 1946-'47 requesting their cooperation in supplying the needed information on return cards. For some, it was necessary to check college registers to obtain accuracy of data. In view of the planning and care given to this study, it appeared to provide about as reliable results as we could expect. The following tables summarize these results.

TABLE I  
Summary for Chemistry Classes of 1945-46

Number of students in class .....	101
Number of students reporting .....	87
Per cent of students reporting.....	86%
Number of students in college.....	65
Per cent of students in college.....	74.7%
Number of students not in college.....	22
Per cent of students not in college.....	25.2%
Number of students taking chemistry in college....	29
Per cent of students taking chemistry in college....	33%
*Number of students not taking chemistry.....	58
Per cent of students not taking chemistry.....	67%

TABLE II  
Summary for Chemistry Classes of 1946-47

Number of students in class .....	105
Number of students reporting .....	84
Per cent of students reporting .....	80%
Number of students in college .....	76
Per cent of students in college.....	90%
Number of students not in college.....	8
Per cent of students not in college.....	10%
Number of students taking chemistry in college.....	28
Per cent of students taking chemistry in college....	33%
*Number of students not taking chemistry.....	56
Per cent of students not taking chemistry.....	67%

\* Students not taking chemistry in college also includes those who are not in college.

An analysis of these returns indicates that: (1) most of these former chemistry students went on to college, and (2) only slightly more than one fourth of them continued their study of chemistry.

If we are teaching chemistry in a manner that makes it of little value for two thirds of the students who study it in high school,

then the question arises—are we teaching in the best interest of the majority of students? Democracy is founded on the rule of the majority, but this does not seem to be the case in the present situation. Here the minority rules, and not too wisely. While we should take care of the students who are going on with their education, we must make the work valuable to the students whose interests in chemistry are more or less temporary. I do not advocate the teaching of a general course in chemistry for everyone, but I do think and believe that some differentiation must be made. In the succeeding paragraphs I shall try to give some idea of what I have in mind.

There would be nothing easy about a general course in chemistry as I think of it. I would eliminate quite a bit of chemical theory and all drill work on problems. While I would still demand a knowledge of the structure of the atom, I should not ask the student who is not going on to college to be able to balance chemical equations with the facility of the college preparatory student. I would rearrange the laboratory work and put greater emphasis on testing everyday products and less on finding equivalent weights of metals. These are indicative of many other revisions we could well initiate.

In the group of students who would be working toward further work in chemistry in college, I should step up the work on qualitative analysis. I would also try to work on the quantitative collection of gases and work on molecular weights. Another aim would be to show closer relationship between chemical theory and laboratory work.

Further refinements could be worked out as time went along and as the nature of the group dictated. Changes could be made as reports of success or failure of such a divided course of study were obtained. I believe such a course of study would work in a large high school, as I have seen it work on a small scale.

If such a program were successful and students had a sound background in the fundamentals of chemistry, then the colleges would have to do their part and step up their training so the student would not have to mark time for a quarter or half a semester while less fortunate people caught up. I believe that such a course could not only aid the college preparatory student, but also make possible the construction of a more interesting and valuable course for the student whose study of chemistry stops with high school graduation. It would take some of the unwritten requirements off of the subject and change our chemistry course from chemistry restricted to chemistry unrestricted.