

PROJECT IN RESEARCH IN UNIVERSITIES

Student
Interests and Needs
in Hygiene

BULLETIN 1937, NO. 16



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Foreword

THIS BULLETIN is one of a series of publications reporting the findings of investigations undertaken during 1936-37 under the Project in Research in Universities of the Office of Education. The project was financed under the Emergency Relief Appropriation Act of 1935, and conducted in accordance with administrative regulations of the Works Progress Administration. Study findings in addition to those reported in this bulletin will be made available in other Office of Education or institutional publications.

The Project in Research in Universities represents a unique and significant innovation in cooperative research. Sixty universities and comparable institutions located in 32 States, the District of Columbia, and Hawaii combined efforts with the Office of Education to conduct 40 studies, 23 of which were proposed by the Office and 17 by the institutions. Each institution was invited to participate in all of the approved studies that it was in a position to undertake. From 1 to 14 studies were conducted in each institution, and a total of more than 150 separate study reports were made to the Office of Education.

An important feature of the project was the widespread and coordinated attack on each problem by a number of universities at the same time. Each study proposed by the Office of Education and accepted by the universities was conducted by two or more institutions. As many as 31 institutions, located in 20 States representative of each major geographical division of the country, participated in one study alone. The task of planning, administering, and supervising the many projects and studies on a national scale, under complex and often difficult conditions, demanded the finest type of cooperative endeavor. Except in two places where qualified relief workers could not be found or retained, every institution which actually began work on the project carried it through to successful completion. The fine professional spirit in which responsibility for the work was accepted and maintained by the institutions made possible the successful completion of the project within approximately 1 year.

With this professional spirit of cooperation in worth-while research and study of educational problems, was manifested a strong humanitarian desire

to join hands with Federal agencies striving during the years of the depression to afford gainful and socially desirable employment to college graduates or former college students in the type of work for which they were best prepared. For these contributions to educational research and to the social good of the Nation, the Office of Education extends to its colleagues and helpers in the universities of the country its grateful acknowledgment and appreciation.

A decided interest was exhibited in the study reported in this bulletin, although only four institutions were able to make this a part of their program. The studies by these 4 universities were regional and involved the cooperation of 111 colleges and universities in 15 States. Except for the New England States and the South, the data secured can be considered as fairly representative of the country at large.

BESS GOODYKOONTZ,
Assistant Commissioner of Education.

Student Interests and Needs in Hygiene

HEALTH has been proclaimed as the first objective in education. One means of reaching this objective would seem to be the furnishing of adequate instruction in physiology, personal hygiene, and public health through teachers who are as thoroughly prepared for this work as are instructors in mathematics, English, or any other subject. At last accounts however, the proportion of high-school students receiving instruction along these lines was less than 10 percent. Nor is the quality of health teaching above reproach. Miss Cairns, from her study in California,¹ concluded that where offered, the content of courses was often faulty, essentials were omitted and nonessentials included, and "in many instances because of erroneous ideas as to what should be included in health instruction, the time which the teachers have allotted to the subject is actually spent in the presentation of subject matter which has little or nothing to do with health. Frequently the teachers reported that the health instruction is 'incidental' * * * if the weather keeps the pupils indoors the time may be devoted to lectures on health." Since the publication of Miss Cairns' study, the University of California has recognized physiology, given in high schools, as an advanced science, and doubtless there has been much improvement in the presentation of this subject in that State but this does not affect the situation elsewhere.

Dr. John R. Cain recently made an investigation of the health education of high-school graduates entering the University of Illinois.² He says:

The results of the survey show conclusively that health education in high schools is, in quantity, much below what is commensurate with the needs of individuals in our complex civilization and that in quality of instruction no subject given in the secondary schools is treated so haphazardly, or its teachers, as a rule, have so little special training in the subject they are trying to teach.

Of 4,540 high-school graduates, less than 9 percent had received instruction in hygiene although 22 percent had been taught physiology. Of the teachers of hygiene, 80 percent, and of the instructors in physiology, 58 percent, were teachers of other subjects. "The practice of drafting whoever might be willing to attempt to teach hygiene and sanitation is clearly shown by the fact that teachers of English, mathematics, physics, history,

¹ Cairns, Laura. *A Scientific Basis for Health Instruction in Public Schools*, Berkeley, Calif., University of California Press, 1929.

² Twentieth Annual Report of the University of Illinois Health Service, 1935-36.

agriculture, physiography, and chemistry were given an opportunity to instruct high-school-students in preventive medicine."

The amount and quality of instruction in physiology and hygiene is of especial concern to a university such as that of Illinois, inasmuch as in this institution these subjects are required in the freshman year and matriculants come to the college classes in all states of preparation or no preparation.

Taking the colleges and universities the country over, only about one-third have a required course in these fields and about 15 percent more offer a course which is elected by some 5 to 10 percent of students.³ The amount of time devoted to these courses is often very brief, the equipment for instruction is frequently inadequate, and the instructors are not always fully prepared for their work, for in not a few instances these teachers were trained and are especially interested along other lines. Details with regard to instruction in hygiene in institutions of higher education were recently collected by the Office of Education and will be found in a publication with that title.⁴

It occurred to those who selected the projects for research in universities that here was an opportunity to find out from students who had recently been exposed to health instruction in high schools and colleges what they thought of the matter and methods used in the courses attended. Students in their senior college year would seem to be in a position to render valuable service in this appraisal and a questionnaire was prepared for presentation to such students. The universities which elected to participate, and their staffs concerned in this study, are given on a preceding page.

In each case, the university secured the cooperation of a number of colleges in its section of the country, to which questionnaires were sent for presentation to seniors. The following institutions responded to the request of the University of Toledo for assistance in this study:

Indiana

Butler University.
Evansville College.
Hanover College.
St. Mary's College.
Valparaiso University.

Michigan

Albion College.
Alma College.
Battle Creek College.
Kalamazoo College.

Ohio

Miami University.
Baldwin-Wallace College.
College of Wooster.
Defiance College.
Kent State University.
Kenyon College.
Lake Erie College.
Muskingum College.
Ohio State University.
St. Mary's of the Springs.
University of Cincinnati.
University of Dayton.
Wittenberg College.

³Rogers, J. F. Instruction in Hygiene in Institutions of Higher Education. United States Department of the Interior, Office of Education, Bulletin 1936, No. 7. United States Government Printing Office, Washington, D. C.

⁴Ibid.

The University of Colorado had the assistance of the following colleges and universities: University of Arizona, University of California at Los Angeles, University of Nevada, University of New Mexico, University of Montana, University of Oregon, University of Utah, University of Wyoming, and the State College of Washington.

The Western Reserve University secured information from Cleveland College, Ursuline College, and Flora Stone Mather College of Western Reserve University.

Duquesne University had returns from the following institutions of Pennsylvania:

Allegheny College.	Westminster College.
Bryn Mawr College.	Lincoln University.
Cedar Crest College for Women.	Beaver College.
Elizabethtown College.	Bucknell University.
Haverford College.	Drexel Institute of Technology.
La Salle College.	Grove City College.
Lehigh University.	Lafayette College.
Moravian College for Women.	Lebanon Valley College.
Muhlenberg College.	Marywood College.
Philadelphia College of Pharmacy and Science.	Mount St. Joseph College.
Seton Hill College.	Pennsylvania State College.
State Teachers Colleges at Bloomsburg, California, East Stroudsburg, Indiana, Mansfield, and Shippensburg.	Rosemont College.
University of Pittsburgh.	St. Thomas College.
Villanova College.	Temple University.
	Villa Maria College.
	Washington and Jefferson College.
	Wilson College.

The University of Chicago questioned students and graduates of that institution and those in: Aurora College, Armour Institute of Technology, Augustana College, Bradley Polytechnic Institute, Central Y. M. C. A. College, Chicago-Kent College of Law, Eureka College, Greenville College, Illinois College, University of Illinois, Illinois State Normal University, Illinois Wesleyan University, James Millikin University, Knox College, Lewis Institute, Loyola University, MacMurray College for Women, McKendree College, Monmouth College, National College of Education, Mundelein College, North Central College, Northern Illinois State Teachers College, Eastern Illinois State Teachers College, Presbyterian Theological Seminary, Rockford College, College of St. Francis, St. Procopius College, St. Viator College, St. Francis Xavier College for Women, Rosary College, Northwestern University, Southern Illinois State Normal University, Western Illinois State Teachers College, and Wheaton College.

The questions presented to college seniors were as follows:

Did you attend a public high school? Private high school?

In your high-school (not junior high) course was hygiene or physiology and hygiene (as a separate study) required? In what year? For how many semesters? How many times did the class meet per week?

In your high-school course was hygiene or physiology and hygiene offered but not required? In what year? For how many semesters? How many times did the class meet per week? Did you elect this course?

Were you taught in the above courses what you now think you should have been taught at that time?

If not, what were the important omissions?

Was sufficient time devoted to the subject? Was too much time given to it?

Was the instruction by text or reference books and recitations? By lectures? By both?

Were there demonstrations by means of a skeleton? Casts of models? Microscopic specimens? Physiological demonstrations on members of the class? Cultures of bacteria? Laboratory experiments? Motion pictures?

Do you feel that the method of instruction was satisfactory?

If not, what was wrong with the method and what suggestions would you make for its improvement?

Similar questions were asked concerning college courses.

The following items were added to the questionnaire used by Duquesne University:

Do students, in your opinion, approve of mixed classes in hygiene?

Did your high-school or college course in hygiene influence you to alter any of your physical habits or care? Your diet?

Did you receive adequate sex instruction?

Did you receive adequate information about venereal infection?

RESULTS OF THE STUDY

HYGIENE IN HIGH SCHOOLS

The returns from more than 2,500 students were found suitable for statistical tabulation although information on each point was not furnished by all. Of those giving information on the subject, about 90 percent attended a public and 10 percent, a private high school. Of those attending a public school, 70 percent had been exposed to a required course in hygiene and 30 percent to an elective course. Of those giving information concerning private schools, about 68 percent had attended a required course. Apparently where a course in physiology and hygiene was offered in private schools it was usually required in the same relative number as in public schools.

Length of course and schedules.—Of public schools with a required course, 30 percent complete the work in one semester; 45 percent in two; and 25

percent continue it over a period of three or more semesters. In private schools, 42 percent finish the course in one semester; 42 percent in two; and 6 percent covers it in three or more semesters. Where the subject is elective, the length of the course is comparatively shorter; 53 percent complete it in one semester; 42 percent in two; and in only 5 percent does it cover a longer period. In private schools the corresponding percentages are: 64, 29, and 7. (Detailed statistics will be found in tables on pp. 16 to 20.)

Of the required courses in public high schools, 60 percent were scheduled for 1 hour per week; 19 percent for 2 hours; 10 percent for 3; 2 percent for 4; and 9 percent for 5. In private schools the classes in 43 percent met only once a week; in 18 percent, twice; in 17 percent, three times; in 4 percent, four times; and in 18 percent, five times. In the elective courses for public schools the classes met once a week in 14 percent; twice a week in 14; three times in 18; four times in 10; and five times in 44 percent. In private schools the corresponding percentages are: 38, 16, 14, 0, and 32.

The frequency with which a class meets has much to do with the maintenance of interest in the subject, and one period a week is not considered desirable. This schedule would hardly be followed in mathematics, chemistry, or English. The fact that this is the practice in 6 out of 10 public schools would indicate that the subject is not taken with the seriousness it deserves by curriculum makers and hence by students. Since in 75 percent of schools the course in health instruction is completed in two semesters (and in 30 percent in only one) it is probable that the course encountered by the students was covered, in a majority of instances, in 1 hour per week for only one or two semesters. Where the courses in public schools were elective there was a better arrangement, as in 44 percent, the students met five times a week.

In public schools, 30 percent of the students in required courses received their instruction in the freshman year; 23 percent, in the sophomore; 19, in the junior; and 28, in the senior year. In private schools the corresponding percentages were: 44, 20, 16, and 20. The elective courses were scheduled in much the same way.

With regard to the length of the course to which they were exposed in public high schools, only 42 percent of the 1,500 students who responded to this inquiry thought that sufficient time had been given to the subject. Of those coming from private schools, 59 percent were satisfied with this feature of their course. It will be noted that these proportions are in close agreement with those expressing dissatisfaction with the content of their course. This is also the case by sex, as 65 percent of all men found the course too brief, while 47 percent of all women were of the same opinion.

Only 4 percent of the public high-school graduates and 11 percent of those from private schools thought that too much time had been given to this subject.

As might be expected from the comments in our introduction, only 36 percent of all students from public schools thought that the instruction was, in general, satisfactory, although 52 percent from private schools were satisfied with the teaching. By sex, the figures for all students are 29 percent for men and 46 percent for women.

Comments on courses.—Courses in hygiene are not always planned with the interests and needs of the student in view. Nearly 2,000 respondents expressed an opinion concerning the content of their courses in high school. Of the 1,500 coming from public schools, 45 percent thought they were taught what they should have been taught, while 55 percent were not of this opinion. The teaching seems to have been somewhat better in private institutions, for 59 percent were satisfied with what they learned. Of the total number of students, the men found nothing lacking in only 38 percent of cases, while the women, 54 percent were taught what they, at senior college age, thought they should have been taught.

Omissions in content.—What they considered important omissions from the content of the courses in hygiene were mentioned by 575 of the 750 men coming from public high schools. The more general items mentioned by students were: Health, 10; personal hygiene, 92; public health, 3; physiology, 1; first aid, 9.

The more specific items mentioned were: Sex and reproduction, 297; venereal disease, 54; disease, 20; diet and nutrition, 35; alcohol and tobacco, 16; exercise, 12; clothing, 3; parenthood education, 3; mental hygiene, 1.

It will be noted above that a smaller percentage of women students were discontented with the instruction received, but 335 items of omission mentioned by these girls were as follows: Health, 9; personal hygiene, 69; public health, 5; anatomy, 3; physiology, 1; first aid, 3; sex, 152; venereal disease, 16; marital relations, 7; disease, 7; diet and nutrition, 14; alcohol and tobacco, 4; patent medicines, 2.

The 37 items mentioned by men and 36 by women from private high schools were much the same. Even here, "health" was mentioned twice as omitted. Unless used in the sense of sarcasm, it is difficult to understand why this word appears, but it is used by twice as many men with reference to omission from their college course.

On the side of overdoing, we have mention, by public-school graduates, of anatomy (2), physiology (2), first aid (1), and athletics (14). Just how "athletics" could be overdone in connection with a course in informational hygiene is a mystery.

Means and methods of instruction.—As to general methods of instruction in public schools, 25 percent of students reported the use of textbooks and recitations, 25 percent used lectures, and the remaining 50 percent a combination of these methods. In private schools, 21 percent used textbooks and recitations; 27 percent, lectures; and 52 percent, all of these. There

was no marked difference of opinion with regard to the effectiveness of these methods.

The means and methods of demonstration were reported as follows:

Methods and means	Public schools	Private schools
	Percent	Percent
Skeleton	31	25
Casts or models	25	22
Microscopic specimens	16	18
Experiments on students	22	19
Laboratory experiments	16	23
Motion pictures	20	14
Cultures of bacteria	11	13
None	25	20

The general nature of the instruction was considered "too elementary" by 20 men and 65 women; "too general" by 36 men and 30 women; and "incomplete" or "inadequate" by 56 men and 13 women. Fifty-six men from public schools labeled their instruction "poor" and 29 women were of the same opinion. With reference to organization and technique of teaching, the following items were mentioned by public-school graduates:

Item mentioned	Men	Women
Conditions:		
Classes too large	2	3
Sexes not segregated	2	
Materials:		
Too few visual aids	8	12
Too little equipment	7	3
Inadequate textbook	1	2
Techniques:		
Lack of interest by instructor	23	17
Taken too lightly by instructor	18	1
Too formal	9	7
Inadequate or morbid treatment of sex	31	2
Poor method	5	5
Poor use of time	7	2
Too few demonstrations	44	8
Too few tests	4	
Too little student participation	1	6
Too little laboratory instruction	1	3
Too little attention to individual	1	1
Too much lecture	3	2
Too much textbook	15	8
Too much theory	1	3
Too much repetition	1	3
Too technical	6	1
Need of a textbook	1	

A review of the reports from the different sections of the country shows no marked difference in the opinions of their high-school experience as expressed by the students participating in this study.

HYGIENE IN COLLEGES

Somewhat more than 3,000 students furnished data concerning the instruction in hygiene received in college. Not all points, however, were covered, in a way which rendered their tabulation possible.

Length of course and schedules.—Details concerning semesters of work were given by 1,573 and of this number, 1,048 attended courses which were obligatory and 525 elected this study. In the required course, 40 percent of students had one semester of instruction; 31 percent, two; and 29 percent, three or more semesters. The elective work was usually given in one semester as 71 percent so reported, while 23 percent of students attended for two semesters and only 6 percent for a longer period. The percentages giving one- and two-semester courses are double those for the public high schools.

The number of class meetings per week was as follows:

Sessions	Required course	Elective course	Sessions	Required course	Elective course
	<i>Percent</i>	<i>Percent</i>		<i>Percent</i>	<i>Percent</i>
1.....	40	20	4.....	5	10
2.....	26	33	5.....	3	9
3.....	19	25	6 or more.....	7	3

By comparison with high schools, fewer colleges space their lessons at the longer intervals of once or twice a week, and this is especially true of elective courses. However, since two-thirds of the colleges confined their lessons to 1 or 2 hours per week, the courses were probably measured, in the great majority of cases, as 1 or 2 semester-hours. From the study recently made by the Office of Education⁴ we know that in one-third of all colleges and universities the course is completed in 1 or less semester-hours and in 70 in 2 or less semester-hours.

As is to be expected from previous studies, most of the colleges give their courses in hygiene in the freshman year. The percentage reported in the present project was 71, while 20 percent took this work in the sophomore year, 5 in the junior, and 4 in the senior year. The corresponding percentages for the elective courses were 84, 10, 2, and 4.

Thirty-eight percent of students were of the opinion that their college course was too brief. Of the men, 52 percent gave this reply, and of the women, 28 percent. Five percent of men and 10 percent of women found the course too long.

⁴ Ibid.

Content of courses.—A larger percentage of students thought they had been taught what they should have been taught by college professors than by high-school teachers. The percentage saying "No" was 31. Men were more discontented (39 percent) than women (23 percent).

Methods and materials.—With regard to instructional methods, only 11 percent of colleges used readings and recitations as compared with 26 percent of high schools. Twenty-eight percent used lectures and 61 percent used both methods.

Although only about half of the colleges possessed a skeleton for teaching purposes, the colleges are evidently twice as well equipped with materials and apparatus for demonstration as are the high schools.

The percentages of more than 3,000 students reporting various equipment were: Skeleton, 52; casts and models, 46; laboratory apparatus, 34; motion pictures, 36; physiological experiments on students, 33; microscopic specimens, 33; cultures of bacteria, 25; no material for demonstrations, 17.

Comments on courses and instruction.—Although exposed more recently to their college course, the memory of faulty instruction in high school had not faded, for this received more criticism. Only 24 called their college teacher poor, whereas 125 so labeled the high-school teacher. Seventy-five labeled the course "too elementary", 50, "too general" or "not practical"; and 25, as "incomplete" or "inadequate." A more specific complaint of content of courses by five students was "too much athletics", a criticism which was even more frequent in connection with high-school courses.

In reference to techniques, 12 found the course taken too lightly by the teacher; 4 said it lacked interest; 4 found it too formal; and 14 mentioned an inadequate or morbid presentation of sex. Classes were thought too large by six students.

The following specific omissions in college courses were mentioned: Health, 5; personal hygiene, 187; disease, 33; public health, 10; alcohol and tobacco, 16; clothing, 6; sex, 328; marital relations, 27; parenthood, 2; physiology, 30; anatomy, 6; first aid, 11; diet, 30; mental hygiene, 9; exercise, 3; birth control, 15; venereal disease, 49; patent medicine, 2. Just how health or personal hygiene should, or could, get left out of such a course is a mystery.

Complaints of courses are chronic with most students during the period of their attendance on those courses, although probably the reminiscent attitude is more tolerant. However, bearing this in mind, certain faults of material and method in the presentation in hygiene are all too evident, for among suggestions for improvement, 58 students recommend that in their high-school experience more time should have been given to the subject and 133 say the same for their college course. It is evident that these students look back upon this work as of more importance than it was considered by the school or college attended. Although only 652 men-

tioned that their course in high school was elective, 103 recommend that it should have been required, and of 525 taking an elective course in college, 188 would have it required. Eleven high-school and 48 college courses were managed in classes which were considered too large, and 22 students recommend that the sexes be segregated in high school and college. (Probably in most schools and colleges this separation was made.)

For high school, 80 students recommend a better teacher and 99 make a similar suggestion concerning the college attended. Forty students recommend that this teacher should be a physician or at least someone trained for the position.

Two hundred and sixty recommend more demonstrations in high schools and 406 more in colleges, while 88 mention the need for visual aids. Only 32 suggest a better textbook in high school and 23 a better one in college.

Specimen comments of students.—The following are typical of the comments of students:

We were taught by the coach who was not a specialist in the field. Only the most elementary information was given as a required course in our school.

The required freshman course in college was taught by a man untrained in the field. Outside of one elementary book which he had read, he was ignorant of the subject. Course was lacking in all details.

We should have had some teacher with training in that one line of work; one capable of handling the subject.

The instruction in college was not satisfactory * * * the professor's method was merely to repeat what we could read in the book.

We had incapable instruction in our high-school course.

Not a single demonstration was used. Frogs at least could have been used to give us an idea of how the human body functions.

We didn't have any specimens to study; we just went by the pictures in the book.

Not adequate equipment to do justice to the subject.

It would help if more varied instruction were given, with not so much emphasis on reading. One is apt to learn more by sight and visual education since that holds the attention better.

Laboratory experiments and demonstrations would have added value.

A longer course is needed, with more definite study of individual problems. Something is needed to change the attitude of the student from an idle and silly exposure to the subject to a genuine interest in it and a realization of the value of such instruction.

Too little time was spent on the subjects of hygiene and physiology. If more time were put on the subject, high-school students would be much healthier and happier.

Too little time spent on it in the general science course.

The subject should have been required.

Absence of a physiology course was a serious omission. Other courses purporting to cover the material did not do so.

I didn't study physiology, but in hygiene more time could have been used. I think books would have helped.

I only had hygiene in connection with physical education and we didn't cover any of the things you ask about.

We had no training in hygiene whatsoever. We had only gym classes, consisting of calisthenics and games.

Personal problems should be considered such as eugenics, of which the greater run of modern youth is woefully and destructively ignorant.

The differences of the sexes and questions pertaining thereto were adroitly evaded, but with the unhappy result that the question of sex was even more intriguing to the average student (myself included) than it would have been had it been presented with tact, finesse, and understanding. Most often young boys and girls acquire knowledge about sex not too early but rather from sources which give them the wrong "slant" on the subject.

Some of the topics taken up were naturally delicate, but our professor (an M. D.) "went the route" in a very thorough manner. Of all methods of teaching hygiene, this gives promise of the best results.

The high-school class was given work-books and the course was built up around the interests of the group. More tie-up could have been made between the natural functions of plant and animal life such as reproduction, respiration, etc., so that students passing through a difficult period of growth and social adjustment could gain knowledge from the course in a normal way.

A more candid discussion of sex problems and venereal diseases is needed. My contacts with my college fraternity brothers made me aware of the appalling lack of information as regards sex, disease, marriage, etc. The discussion of sex should be elevated from the corner curbstone to the high-school and college classrooms. It should be discussed frankly and not in subdued tones as an almost tabooed thing. Venereal diseases and misinformation are too prevalent for us to think that only the lower strata of society are lacking knowledge. Do something about it, please!

The course was too vague and didn't deal enough with problems of personal hygiene. More good information on sex should be given in high school. Too many girls go through college with a horror of married life and sexual relationship.

No information at all was given in high school on problems of hygiene. The only reference made in college to sex hygiene was in the form of description of bad results of venereal infections—giving a distorted and unreal picture of the whole sex problem. The course should be taught by an M. D., and treat such problems in a frank and thorough manner.

The college course should be required and a full year in length. Would suggest a separate course in marriage problems.

Course should have been better outlined and material selected and handled to suit age of students.

Would like to see a hygiene course of 2 semester-hours and a physiology course of 4 semester-hours required of all college students.

Pupils should be allowed to ask personal questions and these questions should be answered.

Senior women in high school should be compelled to take a course in personal hygiene and healthful environment.

A thorough course in hygiene would, I believe, cut down the number of forced high-school marriages.

Sex knowledge should be learned in school and not from the street.

Absence of a course in hygiene is one of the greatest failings in many high schools.

There was no course in high school and I did not take it in college because it did not fit into my schedule and for this reason it should be required.

In my opinion, the utter lack of a proper system of education in the field of hygiene in the schools and colleges of this country is a disgrace and is dangerous to the youth of the country.

Have been glad to be of this small assistance and sincerely hope that this very worth-while project may meet with some success. The record of this country with regard to venereal disease in particular testifies to the need of a strong educational program.

The hygiene instruction was satisfactory and the lecturer good, but the course should be required.

Students should be first interested in their own bodies and then taught how to care for them.

I believe that more hygiene should be given from practical instruction in high school through a more comprehensive course in college. As a majority of high-school students do not have a chance to go to college, perhaps it would be still better if there was a complete hygiene course in high school treating of sex, diet, and personal care.

Young people in high school and college need information about quacks and quack remedies.

All memory work which was soon forgotten.

Subject needs to be made more real by use of skeleton, casts of body, and other helps.

Instructors themselves need instruction in the subject before they attempt to teach it, at least they need to realize its importance.

A concise-to-the-point course in hygiene should be a required subject for all college students and given preferably in the freshman year.

I feel that the high school and college are both at fault if they do not offer at least a simple course in hygiene.

ADDITIONAL DATA

As previously stated, five questions, in addition to those from which data have already been given, were asked of the participating students in the colleges of Pennsylvania.

To the inquiry as to whether they approve of mixed classes in hygiene, 30 percent of the men answered "Yes"; 60 percent, "No"; and 10 percent gave no reply. Of the women students, 35 percent answered "Yes"; 55 percent "No"; and 10 percent made no response. (The question did not include classes in sex instruction.)

Fifty percent of the men and 50 percent of the women stated that their high-school or college course "had influenced them to alter physical habits or care"; 40 percent of the men and 35 percent of the women said "No"; and the remaining 10 percent of the men and 15 percent of the women did not reply. One-third of the men and 45 percent of the women said they had been influenced in their dietary habits.

Only 40 percent of the men thought they had received adequate instruction concerning matters of sex, but 50 percent had acquired sufficient information about venereal disease. As the questions were worded, one cannot know whether this information was received in high school or college. Of women, 36 percent found the sex instruction adequate and as many received sufficient knowledge concerning venereal disease.

REVIEW AND SUMMARY

Whether in high school or college, it is the custom of many, if not of most, students to find fault with their courses (especially prescribed courses) and with their instructors. The criticisms both of subject-matter and presentation are often just, though it is not to be expected that all persons will find every subject of absorbing interest, and most teachers are far from being masters of the art which they practice. Just how philosophic in retrospection college students become in their senior years we have no means of knowing. Taking these facts into account and adding some salt to the strictures placed on the matter of instruction in physiology and hygiene in the statistics acquired from this study, we believe that the picture presented is not nearly so pleasing as it would be if the subjects involved were taken seriously by all school and college officials who plan and man these courses. When any student complains of the brevity of such a course, we can feel sure that it was too short and of the students from public high schools, 58 percent were of this opinion. With reference to the course in college, 38 percent, or more than a third, were dissatisfied. The returns from this one question would seem to indicate that most of the answers to the other inquiries are well weighed and just.

With reference to the actual length of the course complained of for its brevity, this was probably usually of only 1 semester-hour and rarely of

more than 2 semester-hours and besides it was often, if not usually, scheduled for only one period a week. From other sources we know that in our colleges and universities a third of the courses in hygiene cover only 1 semester-hour and this corresponds closely with the percentage of those dissatisfied with the number of exercises as mentioned above.

It should not be overlooked that 4 percent of respondents found their high-school courses too long and 7 percent, their college courses. There is such a thing as overdoing instruction in this field. Nevertheless, the number who found this work overdone is small compared with those who considered it underdone.

It will be noted that nearly a third of these students received their instruction in physiology and hygiene in high school in the ninth grade and about a half in the ninth or tenth grades. It would seem that so important a subject (except as covered in general science or biology) should be postponed until the last or last 2 years. In these years the students are usually from 16 to 18 years of age. Life with all its manifold activities and responsibilities is opening before them. There are things they want to know, need to know, and ought to know. It is the time to present this information in a thorough-going manner, and the great majority will never obtain such instruction elsewhere.

In history or physics a student who has not pursued such studies could hardly be expected to judge of omissions, and probably such criticisms are seldom made. In hygiene and even in physiology we are dealing with matters with which the student is concerned first hand, and of which he realizes that his information is not so complete as he should like. Sex is of most absorbing interest at high-school and college age, and we may be assured that when 300 out of 750 students complain of shortcomings in instruction in this field, such instruction was lacking or incomplete.

By far the most numerous complaints of omission, and suggestions for addition, refer to matters concerning sex. When this is taken into account the teaching, otherwise, would seem to be more satisfactory, but there still remains the general objection to the brevity of the course.

The complaints of the omission of "health" are inexplicable and the absence of "personal hygiene" from the menu can only be interpreted as meaning that the course was not sufficiently personal or did not answer all the questions which arise in this connection.

Physiology and hygiene are more difficult of presentation than some objective subjects, and one is surprised that the teacher does not come in for more frequent criticism. This is especially unexpected when we realize the lack of interest and poor preparation on the part of a very large number of such teachers, but then the student does not know what he has missed in not having a really inspired and informed instructor. For a hundred years there has been complaint by teachers of physiology and hygiene in high

schools and colleges of the textbooks available, and yet few of these students made such a complaint, but again, the student cannot be expected to know the possibilities of such books, although the conscientious teacher is troubled with the difficulty which he knows he must overcome in trying to make his subject clear.

In teaching physics, one would expect the instructor to be provided with at least a magnet and a tuning fork but evidently a large proportion of teachers of physiology and hygiene have no means whatever of making intricate phenomena comprehensible. Not even a third of the high schools possess a cast or dissectible model of the human body. However, three-fourths of the instructors in high schools and two-thirds of those in college missed their opportunities (if they realized them) in not making use of their students for physiological demonstration, but, then, what can one do in 20 lessons?

The answers to the questions asked by Dr. Rosanoff would seem to emphasize the need for information and the effectiveness of some of the teaching, for half of the students stated that they had been influenced in their daily habits by the instruction they had received in school.

Dean Rosanoff thus writes of the results of the study conducted by his university:

If I were to sum up our findings I would say that graduates of colleges and universities of Pennsylvania are predominantly displeased, and very much displeased, with the way in which hygiene is taught in high schools and colleges. While this feeling is not nearly unanimous the majority who expressed dissatisfaction are emphatic and their replies to our questionnaire are thoughtful and conscientious.

So much for the 10 or 15 percent of high-school students and the 30 or 35 percent of college graduates who have been exposed to instruction in physiology, hygiene, and public health, but what of the 65 or 70 percent of college students and the 85 or 90 percent of high-school students who have received no instruction whatsoever along these lines?

Altogether we can conclude that 65 percent of college students receive no instruction concerning personal or public health and that the instruction received by the remainder is not altogether what it should be, and that 85 percent of senior high school students go hungry along these lines and that, of the remainder, half receive bread that is more or less petrified or is lacking in certain nutritive elements.

The recommendations which follow from this interview with students are the same as those of educators especially interested in health instruction. For college curricula these have been recently presented in detail by the Second National Conference on College Hygiene conducted by the National Tuberculosis Association.⁵

⁵ Health in Colleges. Proceedings of the Second National Conference on College Hygiene. New York, National Tuberculosis Association, 1937.

Instruction in high schools is of more concern than in colleges for the reason that comparatively few young people go to college and because of these few, only about a third are exposed to teaching concerning health. This subject was discussed recently in a publication of this Office.⁶

The following suggestions would seem to be indicated by the results of the present and other investigations:

(a) A place for health instruction should be provided in the curricula of the eleventh or twelfth grades or in both—a place which cannot be preempted by any other subject. This curricular provision should be for at least 4 semester-hours scheduled at least twice a week.

(b) Ample equipment for teaching should be furnished as for such less difficult and admittedly less important matters as chemistry or physics.

(c) Last, but not least, a teacher should be chosen who is immensely interested in his students and in his subject, who knows that subject from A to Z, and who knows how to fit his subject to his students. His method of teaching should be left entirely to his discretion. There is much talk of co-ordination, correlation, integration, and other high-sounding terms in connection with health teaching. Other departments should contribute what they can, but such contributions are likely to be haphazard and ineffective, and they are too often an excuse for the omission of really thorough-going instruction in what is said to be the most important of all branches of knowledge.

In a sentence, there is need of time and equipment for, and a real teacher of, physiology, hygiene, and public health.

TABLE 1.—Student responses concerning semesters of work in hygiene, both required and elective, offered by the high schools and colleges they attended

Number of semesters by educational level	REQUIRED								ELECTIVE							
	Public		Private		Unclassified ¹		Total		Public		Private		Unclassified ¹		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
High school:																
1.....	338	30	37	42	135	73	510	36	234	53	26	64	106	64	366	56
2.....	508	45	37	42	49	27	594	43	189	42	12	29	59	36	260	40
3 or more.....	278	25	14	16	0	0	292	21	23	5	3	7	0	26	4	
Total.....	1,124	100	88	100	184	100	1,396	100	446	100	41	100	165	100	652	100
College:																
1.....	281		49		91		421	40	219		13		142		374	71
2.....	144		15		162		321	31	92		7		21		120	23
3 or more.....	156		7		143		306	29	19		0		12		31	6
Total.....	581		71		396		1,048	100	330		20		175		525	100

¹ Information not available concerning type of high school attended.

⁶ Rogers, J. F., Health Instruction in Grades IX-XII. U. S. Department of the Interior, Office of Education, Pamphlet No. 432. U. S. Government Printing Office, Washington, D. C., 1933.

TABLE 2.—Student responses concerning class meetings per week in hygiene courses, both required and elective, in the high schools and colleges they attended

Meeting per week by educational level .	REQUIRED								ELECTIVE							
	Public		Private		Unclassified ¹		Total		Public		Private		Unclassified ¹		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
High school:																
1.....	688	60	38	43	30	15	756	53	62	14	14	38	8	15	84	14
2.....	220	19	16	18	43	22	279	20	62	14	6	16	26	18	94	15
3.....	111	19	15	17	17	9	143	10	78	18	5	14	19	13	102	16
4.....	22	2	4	4	9	5	35	2	41	10	0	0	5	3	46	7
5.....	109	9	16	18	95	49	220	15	192	44	12	32	91	61	295	48
Total.....	1,150	100	89	100	194	100	1,433	100	435	100	37	100	149	100	621	100
College:																
1.....	747		86		86		919	40	88		5		17		110	20
2.....	411		45		150		606	26	113		9		56		178	33
3.....	399		12		102		453	19	83		5		50		138	25
4.....	99		10		18		127	5	39		0		14		53	10
5.....	49		3		12		64	3	18		0		28		46	9
6 or more.....	129		26				155	7	16		3				19	3
Total.....	1,774		182		368		2,324	100	357		22		165		544	100

¹ Information not available concerning type of high school attended.

TABLE 3.—Student responses concerning year in which hygiene course, required or elective, was given in the high schools and colleges they attended

Educational level by year	REQUIRED								ELECTIVE							
	Public		Private		Unclassified ¹		Total		Public		Private		Unclassified ¹		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
High school:																
Freshman.....	506	30	52	44	123	64	681	34	164	31	25	44	53	30	242	32
Sophomore.....	399	23	23	20	37	19	459	23	104	20	8	14	41	23	153	20
Junior.....	331	19	19	16	17	9	367	18	133	26	6	11	46	26	185	25
Senior.....	470	28	24	20	16	8	510	25	120	23	18	31	36	21	174	23
Total.....	1,706	100	118	100	193	100	2,017	100	521	100	57	100	176	100	754	100
College:																
Freshman.....	1,409		171		199		1,779	71	161		18		123		302	84
Sophomore.....	427		37		41		505	20	12		0		23		35	10
Junior.....	112		5		7		124	5	4		0		4		8	2
Senior.....	81		6		1		88	4	11		4		1		16	4
Total.....	2,029		219		248		2,496	100	188		22		151		361	100

¹ Information not available concerning type of high school attended.

TABLE 4.—Student opinions concerning the amount of time devoted to instruction in the high-school and college hygiene courses they attended

Student opinion by educational level	TYPE OF HIGH SCHOOL				SEX						TOTAL		
	Public		Private		Men		Women		Unclassified ¹		Number	Per-cent	
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent			
1	2	3	4	5	6	7	8	9	10	11	12	13	
<i>Sufficient time?</i>													
High school:													
Yes.....	636	42	102	59	294	35	444	53	149	49	887	45	
No.....	865	58	71	41	537	65	399	47	155	51	1,091	55	
Total.....	1,501	100	173	100	831	100	843	100	304	100	1,978	100	
College:													
Yes.....	1,523	60	171	64	678	48	1,016	72	324	72	2,018	62	
No.....	1,029	40	95	36	734	52	390	28	123	28	1,247	38	
Total.....	2,552	100	266	100	1,412	100	1,046	100	447	100	3,265	100	
<i>Too much time?</i>													
High school:													
Yes.....	37	4	10	11	22	3	25	5	9	5	56	4	
No.....	977	96	80	89	613	97	444	95	177	95	1,234	96	
Total.....	1,014	100	90	100	635	100	469	100	186	100	1,290	100	
College:													
Yes.....	111	7	15	9	45	5	81	10	11	4	137	7	
No.....	1,403	93	148	91	817	95	734	90	249	96	1,800	93	
Total.....	1,514	100	163	100	862	100	815	100	260	100	1,937	100	

¹ Information not available concerning sex of persons responding.

TABLE 5.—Student opinions concerning the adequacy of instruction in the high-school and college hygiene courses they attended

Student opinion by educational level	TYPE OF HIGH SCHOOL				SEX						TOTAL	
	Public		Private		Men		Women		Unclassified ¹		Number	Per-cent
	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent	Number	Per-cent		
1	2	3	4	5	6	7	8	9	10	11	12	13
<i>Instruction satisfactory?</i>												
High school:												
Yes.....	544	36	88	52	240	29	392	46	130	46	762	39
No.....	973	64	82	48	589	71	468	54	154	54	1,209	61
Total.....	1,517	100	170	100	829	100	860	100	284	100	1,971	100
College:												
Yes.....	1,536	64	165	63	645	54	1,056	71	314	70	2,015	65
No.....	872	36	98	37	546	46	424	29	134	30	1,104	35
Total.....	2,408	100	263	100	1,191	100	1,480	100	448	100	3,119	100

¹ Information not available concerning sex of persons responding.

TABLE 6.—Student opinions concerning the content of the high-school and college hygiene courses they attended

Response by educational level	TYPE OF HIGH SCHOOL				SEX						TOTAL		
	Public		Private		Men		Women		Unclassified ¹		Number	Percent	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent			
1	2	3	4	5	6	7	8	9	10	11	12	13	
High school:													
Yes.....	677	45	79	59	306	38	450	54	142	50	898	47	
No.....	829	55	54	41	501	62	382	46	144	50	1,027	53	
Total.....	1,056	100	133	100	807	100	832	100	286	100	1,925	100	
College:													
Yes.....	1,683	70	178	69	738	61	1,123	77	350	78	2,211	71	
No.....	729	30	79	31	477	39	331	23	98	22	906	29	
Total.....	2,412	100	257	100	1,215	100	1,454	100	448	100	3,117	100	

¹ Information not available concerning sex of persons responding.

TABLE 7.—Student opinions concerning important omissions in the high-school and college hygiene courses they attended

Nature of omissions	HIGH SCHOOL					Total	COLLEGE			Total	
	Public		Private		Un-classified ¹		Sex		Un-classified ²		
	Men	Women	Men	Women			Men	Women			
1	2	3	4	5	6	7	8	9	10	11	
General:											
Important fundamentals.....	7	9				16		1			1
Specific:											
Sex.....	294	143	19	16	62	534	129	134	55		318
Reproductive process.....	3	9				12	13	7			20
Marital relations.....		5		2		7	17	10			27
Birth control.....							13	2			15
Personal hygiene.....	92	69	10	12	51	234	93	70	24		187
Public hygiene.....	3	5			5	13			10		10
Mental hygiene.....	1	9	1		4	15	3	2	4		9
Venerical disease.....	54	16	2	2		74	28	21			49
Disease.....	20	7	1	1		29	19	14			33
Anatomy.....	7	3				10	5	1			6
Physiology.....	1	1	1		29	32	9	3	18		30
Parenthood education.....	3					3		2			2
First aid.....	9	3				12	6	5			11
Safety education.....	1					1					
Patent medicine.....		2				2	2				2
Diet and nutrition.....	35	14		2		51	20	10			30
Exercise.....	12					12	3				3
Alcohol, tobacco, and stimulants.....	16	4	1			21	12	4			16
Clothing.....	3					3	5	1			6
Care in illness.....		1				1	2				2
Health.....	10	9	1	1		21		5			5
Techniques and materials:											
Concrete illustrations.....		3				3		1			1
Laboratory experiments.....		5			3	8	1	2			3
Demonstrations.....	4	7	1		4	16	12	4			16
Tests.....		3				3					
Textbooks.....	1	2				3	3	3			6
Group discussion.....		1				1	1				1
Visual aids.....					1	1	1				1
Total.....	575	331	37	36	159	1,138	383	204	111		811

¹ Information not available concerning type of high school attended.

² Information not available concerning sex of persons responding.

TABLE 8.—Student responses concerning the instructional methods used in the high-school and college hygiene courses they attended

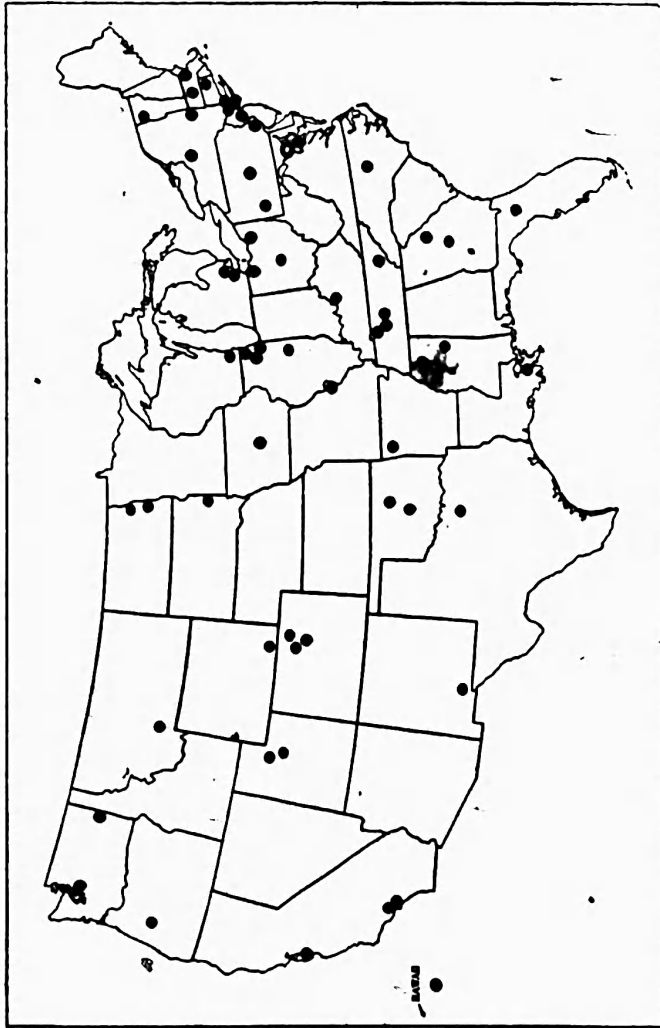
Teaching method by educational level	Public		Private		Unclassified ¹		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	2	3	4	5	6	7	8	9
High school:								
Books and recitations.....	364	23	35	21	130	39	529	25
Lectures.....	428	26	47	27	56	15	531	25
Recitations and lectures.....	772	51	92	52	140	36	1,004	50
Total persons.....	1,564	100	174	100	386	100	2,124	100
College:								
Books and recitations.....	237	-----	31	-----	96	-----	364	11
Lectures.....	688	-----	103	-----	142	-----	933	28
Recitations and lectures.....	1,514	-----	124	-----	375	-----	2,013	61
Total persons.....	2,439	-----	258	-----	613	-----	3,310	100

¹ Information not available concerning the type of high school attended.

TABLE 9.—Student responses concerning the demonstration methods used in the high-school and college hygiene courses they attended

Demonstration methods by educational level	TYPE OF HIGH SCHOOL							
	Public		Private		Unclassified ¹		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1	2	3	4	5	6	7	8	9
High school:								
Skeleton.....	478	31	46	25	117	23	641	29
Casts or models.....	380	25	40	22	89	18	509	23
Microscopic experiments.....	240	16	33	18	76	15	349	16
Physiological.....	329	22	35	19	49	10	413	19
Laboratory experiments.....	250	16	41	23	69	14	360	16
Motion pictures.....	306	20	25	14	40	8	371	17
Cultures of bacteria.....	164	11	23	13	31	6	218	10
None.....	374	25	37	20	-----	-----	415	19
Total persons.....	1,519	-----	182	-----	507	-----	2,208	-----
College:								
Skeleton.....	1,200	52	139	48	248	60	1,587	52
Casts or models.....	1,114	48	101	35	183	45	1,398	46
Microscopic experiments.....	786	34	70	24	153	37	1,009	33
Physiological.....	797	34	71	25	127	31	995	33
Laboratory experiments.....	809	35	65	23	144	35	1,018	34
Motion pictures.....	882	38	61	21	141	34	1,084	36
Cultures of bacteria.....	588	25	70	24	112	27	770	25
None.....	455	20	64	22	-----	-----	519	17
Total persons.....	2,329	-----	288	-----	411	-----	3,028	-----

¹ Information not available concerning the type of high school attended.



Location of universities cooperating in the Project in Research in Universities.