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HEALTH KNOWLEDGE OF PROSPECTIVE AND EXPERIENCED TEACHERS OF OKLAHOMA

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CHAPTER I

INTRODUCTION

Statement of the Problem

One of the most important problems in the field of education is that of the professional preparation of teachers for their work in the school health program. The present study is concerned with the preparation of both prospective and experienced teachers for their responsibility in the field of health as it applies to healthful living and direct health instruction. The problem can be stated as follows: "Do prospective teachers differ significantly from experienced teachers in their knowledge of selected items of health information?"

The purposes of this study are: (1) to ascertain the extent to which selected items of health information, including knowledge and application, are known by senior prospective teachers as well as by experienced teachers, (2) to make comparisons of test scores between prospective teachers on the basis of sex, type of certificate, and hours credit in

health and related courses, (3) to make comparisons of test scores between experienced teachers on the basis of sex, years and type of experience, amount of responsibility for health instruction, and hours credit in health and related courses, (4) to make pertinent comparisons of test scores between prospective teachers and experienced teachers on the basis of selected criteria such as sex, years and type of experience, hours credit in health and related courses, type of certificate, and amount of responsibility for health instruction, (5) to make comparisons of test scores between prospective and experienced teachers in selected areas of health, such as nutrition, mental health, school and community health, and safety and first aid.

Background and Need for the Study

Public education has accepted, at least in theory, the responsibility of providing systematic health instruction to all pupils. The past decades have seen a considerable expenditure of time and energy in an effort to discharge this responsibility. Leaders in the educational field, while granting the existence of a serious desire on the part of school authorities to formulate and carry on effective health education programs, admit that only a beginning has been made. The health education of prospective as well as experienced teachers varies widely as to method, content, and hours credit. Rhoton, at Pennsylvania State College, made a statement in

1932 that is still pertinent:

> Comparatively, the greatest progress has probably been made in the training of elementary teachers but even here progress has been slow. Add the fact that our high school teachers represent probably the weakest link in the public school health education chain and we can expect little uniformity or excellence of health knowledge or practices among the students graduating from our high schools.[1]

The Commission on the Reorganization of Secondary Education listed health as the first objective of public education.[2] And, if the effectiveness of the teacher is limited by her professional preparation, then the question of training of the teacher for her duties in achieving this first educational objective becomes challenging from the point of view of its implications for the children with whose education she will be charged.

Health information may be gained from definite and organized school and college curricula, or it may be a partial resultant of informal contacts at home or school, on the street, or with the press, radio or television. Regardless of where the information is obtained the correct information and the ability to apply it effectively in a school health program requires personnel well prepared for their tasks and well qualified to solve the day-by-day problems arising from

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[1]Paul Rhoton, Health Misconceptions of Prospective Teachers, p. 2. Pennsylvania State Studies in Education No. 5. State College Pennsylvania: Nittany Printing and Publishing Co., 1932.

[2]Cardinal Principles of Secondary Education, p. 9. United States Bureau of Education, Bulletin No. 35. Washington: Government Printing Office, 1918.

continuing and shifting health needs of boys and girls in school.

Because the teacher has such an important role in the school health program, teacher training institutions need effective programs of health education. Courses in personal and community health should be required for all prospective teachers. These courses should be directed primarily toward helping the prospective teacher maintain or improve her own health and increase her knowledge of personal, school, and community health.[1]

Teacher training institutions need to offer a parallel program to prepare certain individuals for giving direct health instruction. The need for well prepared teachers in this area is probably now more generally recognized than in former years, and the number of teachers so prepared should be increased to meet the demands. Whether or not special health teachers are employed in the schools, all prospective elementary and secondary teachers should have pre-service preparation in health education. This need is far from being met at the present time. A study of "Health Education as a Requirement for Certification of Secondary School Teachers" in 1951 showed that only 16 states listed health education as part of either general education or professional education

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[1] Suggested School Health Policies: A Charter for School Health, p. 46. Compiled by National Committee on School Health Policies. New York: Health Education Council, 1946.

requirements for secondary teachers in academic fields.[1]

Observation of school health programs by Stafford in the state of Indiana in 1941 produced evidence that teachers and school administrators were not adequately prepared to teach and administer health programs. Graduates in science, physical education, and home economics were found to be better prepared to assume their responsibilities in a health education program, than were other teachers at the elementary and secondary levels. But the paucity of opportunities for observation and participation in well-organized school health programs offsets the possibility that even these former students will benefit sufficiently from their didactic instruction to enable them to deal effectively with the health problems of children. It is quite possible that once they have obtained positions this lack of preparation may be overcome through in-service training and experience.

Of importance also was Stafford's observation that students preparing for a career in rural education were receiving little, and in some cases no training at all, for health education. Another characteristic finding common to nearly all health programs in Indiana was the deplorable lack of basic health science courses required of students.[2]

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[1]Jessie H. Haag, "Health Education as a Requirement for Certification of Secondary School Teachers," The Research Quarterly, XXIII (May, 1952), 169.

[2]Frank S. Stafford, "The Consideration of Fundamentals--Health Education," Monthly Bulletin, Indiana State Board of Health, XLIV (May, 1941), 111.

In North Carolina the rapidly developing school health program has thrown a spotlight on the average teacher's lack of training in health education. While much attention has been given to programs of "in-service" education for teachers on the job, the need for "pre-service" training in health for prospective teachers has become increasingly evident. Official recognition of this need was demonstrated recently when the Division of Certification of that State Department of Education increased the requirements in health education for teachers' certificates.[1]

Further indications of the importance of meeting the needs of the teacher and administrator in health education can be found in several sources. Mabel E. Rugen states:

> The aims of health education will not be attained until all teachers and administrators share, with the health "specialist", the responsibility for this attainment. This means that a better understanding of health education and the contributions which various individuals and groups can make must become an area of competency for all prospective teachers as well as those now in service.[2]

The increased interest in school health programs has brought with it the realization that administrators as well as teachers need better preparation in health education. School administrators have an obligation to initiate broad

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[1]Robert R. King and A. Madeleine McCain, "Future Teachers Learn About Health," High School Journal, XXXII (October, 1949), 207-8.

[2]Mabel E. Rugen, "Implications for Health," Journal of the American Association for Health-Physical Education-Recreation, XVI (December, 1945), 543.

school health programs. The development of these local programs depends to a great extent on the administrators' understanding of and attitude toward school health and its implications. In its 20th Yearbook, The American Association of School Administrators states:

> Every institution for teacher education should provide pre-service preparation for administrators in such areas as principles of health education and school health problems and administration. Likewise, no school administrator should be certified to practice unless his training reveals an adequate health background.[1]

In the elementary school, the classroom teacher is recognized as the key person in the health program. The following statement concerning elementary teachers was also made by the American Association of School Administrators, "Elementary school teachers should be well-grounded in the principles bearing on health, and alert and skillful in applying them."[2]

At the secondary level, it is recognized that teachers in some subject areas have more opportunity and therefore should have more responsibility in the health program than others; however, it is felt that all secondary teachers should have an understanding of the total health program, take responsibility for the aspects of health that are inherent in their particular subject areas, and work toward a

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[1] Health in Schools: 20th Yearbook, p. 22. American Association of School Administrators. Washington: National Education Association, 1951.

[2] Ibid. p. 26.

coordinated health program.[1]

Strang and Smiley ask the question, "Why do health programs fail to function in the lives of children?" Some of the most obvious reasons are as follows:

1. Teachers are unaware of the need for health instruction or are inadequately prepared to teach children to live healthfully.

2. Leadership and guidance of teachers, in respect to this responsibility, are lacking.

3. Administrators fail to promote and support the health education program.[2]

In a recent article, Wallace F. Janssen writes:

> Quackery, of whatever kind, thrives on the combination of ignorance and fear. Education is the greatest of all weapons against this evil. Knowledge of even a few fundamentals about health and disease may be sufficient to save a life. The teacher is therefore in the first line of defense against the menace of pseudo-science in the field of health.[3]

It is recognized by the various conferences that have been held and that are being held, that administrators and teachers, regardless of whether they are to be elementary or secondary school teachers in non-health fields, need to have a certain minimum understanding of the general, over-all

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[1]Patricia J. Hill, "Unmet Needs in Teacher Education for Health," Journal of the American Association for Health-Physical Education-Recreation, XXV (January, 1954), 21.

[2]Ruth M. Strang and Dean F. Smiley, The Role of the Teacher in Health Education, p. 10, New York: The Macmillan Co., 1941.

[3]Wallace F. Janssen, "Quackery Can Kill," Journal of the American Association for Health-Physical Education-Recreation, XXV (March, 1954), 17.

school health program, health education, health services, and healthful environment. This preparation should be in addition to that in personal and community health.

Thus, as pointed out by Charles H. Keene, it can be seen, that all indications point toward the need for non-health as well as health teachers and administrators to be adequately prepared to assume responsibility for their part in the school health program.[1]

So far as can be determined, no attempt has been made to study the professional preparation in the area of health of either prospective or experienced teachers in Oklahoma. It is further believed that the interests of public education will be greatly served if information concerning the preparation of teachers for their part in the school health program could be ascertained for the state of Oklahoma.

Review of Related Literature

A review of the educational literature revealed the majority of studies related to the present study could be listed under the following three categories: (1) studies of school health programs, (2) studies of college curricula in the area of health, and (3) studies of what teachers know about health.

These studies and a summary of their findings are

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[1]Charles H. Keene, "Editorial," Journal of School Health, XXI (May, 1951), 173-6.

presented in chronological order.

One of the earliest studies of teacher preparation was by Storey in 1927. This was a comprehensive survey, concerned with elementary teachers' preparation for health education, under the auspices of the President's Committee of Fifty on College Hygiene. Storey concluded that the prospective teacher on graduation from the normal school or teachers college is usually unprepared for the instructional and administrative health responsibilities that are required of teachers in the elementary schools.[1]

Another early study was a 4 year investigation by Wickman, completed in 1928. This study centered in an investigation of behavior problems of children in a public school in Cleveland, Ohio. Following a summary of teacher attitudes toward the behavior problems of children, Wickman set forth some needs he considered essential to teachers in the understanding of children and their problems. Among these needs one is pertinent to this study and is as follows:

> Teachers need a dynamic picture of the social and experiential backgrounds of children, as well as of their physical and mental capacities, which operate in the production of health and unhealth modes of child behavior. Teachers need to have a more general knowledge of what constitutes normal child behavior.[2]

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[1]Thomas A. Storey, Status of Hygiene Programs in Institutions of Higher Learning, Stanford: Stanford University Press, 1927.

[2]E. K. Wickman, Children's Behavior and Teachers' Attitudes, p. 40. New York: The Commonwealth Fund, 1929.

Rhoton of Pennsylvania State College in 1931, in an effort to discover prevalent health misconceptions held by prospective teachers, administered a true-false health knowledge test of 125 items to 2,379 subjects who were completing teacher training courses in schools in 3 Middle Atlantic states, 4 South Atlantic states, 4 North Central states, and 2 South Central states. The results obtained were compared with those from 128 experienced teachers completing summer session courses at Pennsylvania State College, to the distinct advantage of the latter group. This study sets forth 14 conclusions based upon a statistical analysis of the data. The following are particularly pertinent for the present study:

1. Subjects completing courses in Health and Physical Education give evidence of a higher aggregate of health information than do other student groups. There are indications that this superiority is due to a greater knowledge of matters involving exercise, games, and play, rather than to any superiority of knowledge of all phases of health.

2. The marked superiority shown by the experienced teacher group may be indicative of the effect of maturation, training and teaching experience.

3. In general, the number of health misconceptions subscribed to decreases as the length of the training period increases. This may be the result of an increase in information due to (a) the additional formal training received, (b) extra-curricular educative factors, or (c) a combination of both.[1]

The purposes of a study in 1937, by Hobson at the University of North Dakota, was an attempt to discover how

[1]Rhoton, op. cit., p. 64.

much teachers know about important principles of mental hygiene. He administered to 1,600 individuals a test composed of 42 selected items in the area of mental hygiene. He found that: (1) enough teachers show a lack of knowledge in mental hygiene to justify the conclusion that some method should be used to require those who lack information to take some up-to-date training in the subject, (2) experienced teachers as a group have better knowledge of mental hygiene than inexperienced teachers, and (3) teachers reporting the greater number of college hours, as a group, have a better knowledge of mental hygiene than teachers reporting fewer college hours.[1]

In New York state late in 1935, an inquiry was organized under the direction of a Special Committee of the Board of Regents in order to find out what the educational system of the state was accomplishing. The study of the school health program was under the supervision of C.-E. A. Winslow and the report was published in 1938. The study required numerous visits to schools selected for observation. School administrators and teachers were interviewed; programs examined, and in some cases, the sociological problems of the community and the general cultural and educational level of the school population, were studied. It was expected when

[1] C. V. Hobson, "How Much Do Teachers Know About Mental Hygiene?" Unpublished Dissertation, University of North Dakota, 1937.

the study began that the classroom teacher would be strong on formal content and weak on practical application; but the reverse appeared to be the case. Observations showed that the majority of elementary grade teachers possessed an encouraging degree of sensitiveness to the health problems and conditions of their pupils. The extent of this awareness varied in the different schools. It was also noted that teachers were probably better equipped to participate in the guidance of children in the meeting of daily living situations in terms of personal health habits than to assist them in obtaining the basic understanding on which this conduct rests. The instructional program seemed in several places to have caught up to the knowledge which teachers themselves have, and if with their present preparation they attempt to carry the instruction much farther they find themselves beyond their depths particularly in the fields of biological science, nutrition, and community hygiene.[1]

Bosley of Southern Illinois Normal University completed a survey in August, 1938, concerning the training in health needed by teachers and it was his opinion that two clear cut objectives must be met before health teaching and health services in the public schools can be made to approach the efficiency already attained in other school subjects and activities. (1) Teachers of health must be as carefully

[1]C.-E. A. Winslow, The School Health Program, p. 55. New York: The McGraw Book Co., 1938.

and as thoroughly trained in content and method as are teachers of other subjects. (2) More attention must be given by the teacher's colleges to the provision of curricula which will serve to supply training in those health activities which all teachers need.

Achievement of the first objective would provide well-trained specialists in health instruction such as are now found in all other major fields. Attainment of the second objective would insure a broader base of those general health knowledges and facts which teachers of all subjects should possess.[1]

In 1938, the Educational Policies Commission, in its discussion of the "objective of self realization," included the following statement: "The schools would save more than their own total cost if they could see to it that the oncoming generation of adults used its resources for health more wisely." This statement summarizes the thinking of many educational leaders and clearly demonstrates the economic potential and value to society which might result from effective programs of health in our schools.[2]

On the basis of health knowledge tests given to

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[1]Howard E. Bosley, "Training in Health Needed by Teachers," Elementary School Journal, XLI (September, 1940), 52-8.

[2]Purposes of Education in American Democracy, Educational Policies Commission. Washington: National Education Association, 1938.

elementary school teachers, Moran, at the University of Michigan, was able to discover wide gaps in the health knowledge possessed by both experienced and inexperienced teachers.[1]

A survey by Kleinschmidt, during the 1940-41 school year, was concerned essentially with trends of health instruction practices in 20 representative teachers colleges in as many states in an effort to ascertain the provisions being made for health instruction of students in the several curricula offered. The survey indicated that teachers and school administrators in public schools are inadequately prepared to participate in and supervise health programs for school children. From available evidence it appeared that teachers in service are inclined to teach as they were taught in the respective colleges from which they were graduated. If the colleges have not given the teachers an appreciation of health education, it appears very unlikely that they acquire such an interest once they graduate unless required to do so by administrative action.[2]

In December, 1951, President Truman established a commission now known as the President's Commission on the

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[1] J. Moran, "A Study of the Health Knowledge of Elementary School Teachers," Unpublished Master's Thesis, University of Michigan, 1940.

[2] Earl E. Kleinschmidt, Opportunities for the Preparation of Teachers in Health Education, p. 112. United States Office of Education, Bulletin No. 45. Washington: Government Printing Office, 1942.

Health Needs of the Nation. The commission was authorized and directed to inquire into and study practically every aspect of national health, including local, state, and federal health services.

While stressing public responsibilities, the Report made it clear that individual effort towards health maintenance and improvement is increasingly essential. Among the findings and recommendations of the commission was the following statement:

> Now, however, with prevention in every segment recognized as being fundamental, the health of the people depends to a much greater degree upon the individual responsibility. It is up to the individual to consult his physician or his public health department for early care; to avoid obesity and alcoholism, to drive his automobile safely. Those acts cannot be performed for him by his government. They require both information and motivation.[1]

In a study by Moorhead, as part of the research program of the School of Health and Physical Education, at the University of Oregon, the primary interest was in the preparation of all prospective teachers to teach health. The over-all view of the preparation of these prospective teachers shows a very spotty preparation with no apparent systematic and graded program of study leading to essential knowledge for teaching in health. The only exception was the physical education majors who came somewhat nearer meeting

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[1] Building America's Health, p. 8. Compiled by President's Commission on the Health Needs of the Nation. Washington: Health Publications Institute Inc., 1953.

the standards as set. Prospective teachers other than physical education majors reported they had enrolled in health and related courses by chance rather than with the knowledge that they were essential to health teaching. Further evidence was presented that teachers not in the field of health and physical education were relatively unprepared for health teaching.[1]

Dvorak reported, following a study of the preparation of health teachers in Minnesota, that in general, they were not well qualified. More schools were said to be adding health courses to their curricula each year; consequently, there is an ever-increasing need for more qualified health teachers. This situation was said to challenge teacher-training institutions to examine their curricula to determine whether their graduates are being adequately prepared to assume their health teaching responsibility in Minnesota schools.

The above situations also demonstrated the need for more intensive in-service training programs for health teachers now on the job.[2]

The purpose of an investigation by Blanchet, of Fort Valley State College in Georgia, was to determine the

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[1]Jennelle Moorhead, "What Is the Training of Health Teachers in Oregon High Schools?" Journal of School Health, XXII (April, 1952), 95-101.

[2]Edward J. Dvorak, "The Preparation of Health Teachers in Minnesota," Unpublished Master's Thesis, University of Minnesota, 1934.

prevalence of certain science misconceptions among a group of experienced teachers in the common schools for Negroes in Georgia. These "science" misconceptions were practically all misconceptions concerning general health and healthful living.

One hundred science misconceptions made up the instrument used in this study. A group of 318 experienced teachers attending the summer quarter at the Fort Valley State College, Fort Valley, Georgia, were included in this study.

When the findings were analyzed the following conclusion seems justified:

"The prevalence of misconceptions held by a relatively high percentage of the teachers tested indicates that these misconceptions might be widespread among other teachers in the common schools for Negroes in Georgia."[1]

In a survey by Hinrichs at the University of Illinois some interesting information was obtained concerning freshmen. The test scores of these freshmen students indicated a lack of health information which could have been a result of health not being included in the curriculum and/or teachers not adequately prepared for health teaching.

On an analysis of a 70 question Hygiene Proficiency Test answered by more than 1,100 college freshmen at the

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[1]W. W. E. Blanchet, "Prevalence of Belief in Science Misconceptions Among a Group of In-Service Teachers in Georgia," Science Education, XXXVI (October, 1952), 221-7.

University of Illinois in 1951, it appeared that only one student in every three presenting himself for this test had the background or knowledge to pass with a grade of 75 per cent. Ninety one students, or one in every twelve, missed more than one half of the total questions. Hinrich concluded that there is a need for more study to discover where the lack of preparation at lower grade or high school levels should be supplemented, and where the greater emphasis should be placed in college health teaching.[1]

Mason, of the Georgia State Health Department, in an effort to determine teacher needs and interests in health education, did a study in 1953 in 10 randomly selected counties in Georgia. The sample consisted of 49 classroom teachers, 50 senior-high-school pupils, and 25 supervising teachers. The expressed purposes of this study were: (1) to determine the health education knowledge level of classroom and supervising teachers as revealed by a specific instrument, (2) to similarly ascertain the health education knowledge level of senior-high-school pupils, (3) to ascertain teacher and pupil needs in health education as revealed by the instrument, (4) to discover certain felt needs of teachers in the area of health education, (5) to relate these discovered needs to the health education program, particularly

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[1]Marie A. Hinrichs, "Some Notes on a College Proficiency Test in Hygiene," The Research Quarterly, XXIV (March, 1953), 18-21.

in summer school college health classes and workshops, and (6) it was hoped also that such facts as would be revealed by the test might stimulate colleges in the state to re-evaluate their curricula in health in the light of test results.

The instrument used by Mason for measuring health information was the same one used by the writer in the present study.[1] For this reason the scores made by teachers and supervisors in Mason's study are of particular importance. Of a possible score of 100, supervisors had a mean score of 61.00 and classroom teachers had a mean score of 55.32.

An analysis of the data indicated that in terms of this specific test, teachers ranked on a 9th grade level, and supervisors on an 11th grade level. This was determined by comparing scores with the norms established for the test. There was no statistically significant difference found between the mean scores for the two groups mentioned above.[2]

A study of college health programs for prospective teachers was made by Young in 1954. It actually consisted of a survey of 40 teachers colleges which were accredited by the American Association of Colleges for Teacher Education. While this survey was not too pertinent for the present study

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[1] Health Education Test, Knowledge and Application: A test constructed by Dr. John H. Shaw, and Dr. Maurice E. Troyer of Syracuse University, and edited by Dr. Clifford L. Brownell, Columbia University. New York: Acorn Publishing Co., 1946.

[2] W. A. Mason, "Teacher Needs in Health Education," The Research Quarterly, XXV (March, 1954), 58-64.

it did contain one or two implications that should be mentioned. Only about half the colleges had a required basic personal health course and only 16 of the 40 colleges required a professionalized course designed to assist prospective teachers to understand their specific functions and responsibilities in the school health program.

In general, those majoring in elementary education have more and better curricular and practice teaching experiences in the area of health than do secondary majors.[1]

A study by Yancey, designed to discover some of the health misconceptions held by prospective secondary and elementary teachers in Negro colleges of North Carolina is the latest reported information related to the present study. The misconceptions treated in the study related to 11 major problem areas of health in North Carolina. The selected areas were nutrition, alcohol and tobacco, mental health, sex education, venereal disease, tuberculosis, other communicable diseases, oral hygiene, personal and environmental health, chronic diseases, and maternal and child health. The factors considered were the health problem areas listed above, the college attended, the sex classification, field of specialization, and residence of the student.

A true-false type of checklist of 170 statements was

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[1]Marjorie A. C. Young, "A Study of College Health Programs for Prospective Teachers," The American Journal of Public Health, XLIV (February, 1954), 211.

the major instrument used in the collection of data. The test was completed by 1,115 prospective teachers in Negro colleges of North Carolina. Analysis of the data showed health misconceptions were prevalent among all groups studied. Sixty-six per cent believed more than one-fourth of the misconceptions, and 21 per cent believed more than one-third. On the average, 28.5 per cent of the statements were missed per student.

Young concluded that prevalence of these health misconceptions was not influenced greatly by the college attended, the sex classification, or the field of specialization of the student. A difference was found in the prevalence of health misconceptions between secondary and elementary education students. The elementary education students believed an average of 30.6 per cent of the misconceptions and the secondary education students believed an average of 26.5 per cent of the misconceptions. The difference found, however, was not statistically significant. The findings further indicated that females believed slightly more misconceptions than did the males. Also that students living in rural areas believed in a larger number of misconceptions than did the students living in urban areas. Misconceptions were most prevalent in the areas of personal and environmental health, and tuberculosis. The most frequent misconceptions in one group of prospective teachers were generally the most frequent in the other group.

The study showed that the educational experiences provided for the prospective teachers in Negro colleges of North Carolina have failed markedly to eliminate unfounded beliefs about health.[1]

The findings of the studies reviewed in the present chapter are summarized in the following general statements:

1. Many school health programs lack some of the essentials for a well rounded program.

2. Teacher education institutions should provide graded and progressive curricula in health which are considered necessary to give teachers information for their active participation in the school health program.

3. Experienced and prospective teachers, as groups, were not so well informed on various aspects of health as they needed to be in order to carry out their health responsibilities.

[1]Maude J. Yancey, "Teachers Need Health Facts," Journal of the American Association for Health-Physical Education-Recreation, XXV (December, 1954), 14.

CHAPTER II

METHOD OF PROCEDURE

The purposes of this chapter are to explain the test and answer sheets used, report the procedures followed in setting up the problem, discuss the collection and treatment of the data, and define a few of the important terms used.

The Test

The instrument used for measuring health information of prospective and experienced teachers was the Acorn Health Knowledge and Application Test.[1] This test consists of 100 multiple-choice and true-false items. The multiple-choice items, 60 in number, deal with selected health facts and concepts. The remaining 40 are true-false items which are supposed to test the ability of teachers and students to apply health knowledge to problem situations. Questions about each of the following four broad areas of health information are included in the test: food and nutrition; mental aspects of health; health in home, school, and community; safety and first aid. The number of questions under each of the four

[1] Shaw, Troyer and Brownell, op. cit.

major categories is: nutrition, 28; mental health, 26; school and community health, 49; and safety, 26. This gives a sub-score total of 129. Because of the inter-relationships between the above topics in normal healthful living, many test items contain significant applications to two or more of the categories. This explains the apparent inconsistency between the sub-score total of 129 and the maximum possible test score of 100. One item for example is found under the categories nutrition, mental health, and health in the home, school and community.

The validity of the test was established by analysis of health syllabi, textbooks, bulletins and other printed materials. All items were checked and approved by experts in nutrition, public health and medicine; and by teachers of health, biology and physical education.

For establishing reliability, the experimental forms of the test included a wide variety of health items. The items finally selected range in difficulty from ten to ninety per cent, and differentiate clearly between "good" and "inferior" students. Reliability of the form used, which was Form A, is reported to be .92 as determined by the corrected split-halves method.

The norms[1] for all grades including college scores are based on scores of 6,753 students in schools in the East, West, Central and Southern sections of the United States.

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[1] A copy of the norms is included in Appendix E.

Administering the Test

Permission to administer the test to prospective teachers was sought by writing a letter[1] to all Oklahoma college and university presidents explaining the purposes of the study and requesting from them the name of the person at their school who was in charge of teacher training. All of the school presidents responded with the name of their dean or director of the school or department of education. The person so designated by the presidents was then invited by letter[2] to cooperate in the study. If his particular school elected to participate, he reported on an enclosed postal card[3] by circling a convenient date and time for testing. Unless a conflict arose the dates thus proposed were the dates and times that the various schools were visited and the testing completed. Ten colleges and universities accepted the opportunity to have their students participate in the study. The colleges and universities together with the number of persons tested and the date of the test were as follows:

1.	Bethany Peniel College	17	May 12th
2.	Central State College	31	April 14th

[1] A sample copy of the letter is included in Appendix A.

[2] A sample copy of the letter is included in Appendix B.

[3] A sample copy of the postal card in included in Appendix C.

3.	Langston University	32	May 4th
4.	Northeastern State College	70	April 20th
5.	Northwestern State College	15	May 18th
6.	Oklahoma A. & M. College	72	May 6th
7.	Oklahoma College for Women	41	April 6th
8.	Southeastern State College	39	May 20th
9.	Southwestern State College	25	April 29th
10.	University of Oklahoma	59	May 11th

From the above listed colleges and universities, all available seniors who expected to teach, and were to graduate in June or August of 1954, were tested. The tests were administered in the spring of 1954 between April 6th and May 20th. The participating schools made the necessary arrangements for securing as many prospective teachers as possible. The selection of prospective teachers by the participating schools followed no set or planned method. The majority of students tested were volunteers who were asked to assemble at a pre-arranged date and time. Many were excused from other classes to participate in the testing. In two schools, however, two senior classes were tested as groups during the regular class period. Except for two groups all prospective teachers were tested by the writer. One group, at the Oklahoma College for Women, was tested by Mrs. Thelma Hadden, a professor at the college. The other group, at Northwestern State College was tested by Dr. Jack Balentine, a faculty member at Northwestern.

Permission to administer the test to experienced teachers was secured from individual members of the faculty of the College of Education at the University of Oklahoma who were conducting campus Saturday classes or extension courses at various points in the state. These students were not volunteers except to the extent that the professor in charge of the class gave his permission for part of the regular class period to be used for testing. The campus Saturday classes and extension classes, number of persons tested, and date of testing were as follows:

1.	Campus classes	16 15 43	April 5th April 20th May 8th
2.	Chickasha	16	April 10th
3.	Duncan	31	May 17th
4.	Fox	15	April 21st
5.	Oklahoma City	40	April 14th
6.	Sapulpa	90	May 5th
7.	Valliant	44	April 28th

The tests were administered to the experienced teachers in the spring of 1954 between April 5th and May 17th. Except for one group, all experienced teachers were tested by the writer. This group, at Duncan, was tested by Dr. Robert E. de Kieffer, a member of the faculty of the University of Oklahoma.

The test requires approximately 45 minutes of working time. However, no definite time limit is established

for Part 1 (multiple-choice items), or for Part 2 (problem items). After 20 minutes of working, students or teachers were reminded that within five minutes they should be ready for the problems beginning with item 61. In all schools, extension and Saturday classes, the test, including directions took no more than one hour for completion. After the instructions had been given, no further questions were answered.

The Answer Sheets

To permit re-use of the test booklets a separate answer sheet[1] for prospective and experienced teachers was constructed and then mimeographed.

It was decided that information would be obtained on three identifiable characteristics of prospective teachers, which might be presumed to have the most influence on the test scores. The three characteristics were:

1. Approximate number of college hours credit in health and related courses, including current enrollment in health or related courses.

2. Teaching certificate area as taken from an approved list by the State Board of Education.[2]

3. Sex.

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[1]Sample copies of both answer sheets are included in Appendix D.

[2]Laws and Regulations for the Certification of Teachers and Administrators, State Department of Education, State of Oklahoma, October, 1953.

A student who expected to qualify for more than one certificate was instructed to check the field in which he had the most hours or considered his major field.

The answer sheet used for the experienced teachers contained six characteristics to be filled in or checked. It was believed these six characteristics would be most likely to influence the test scores. They are as follows:

1. Approximate number of college hours credit in health and related courses, including current enrollment in health or related courses.

2. Years of teaching experience.

3. Grade taught or administrative duty at time of testing.

4. Whether or not they have ever taught health.

5. Responsibility at time of testing for health instruction, according to number of class periods per week.

6. Sex.

Both answer sheets contained numbers from one to 100 with a blank space following each number for filling in the selected answer. Included on the answer sheet also was a series of coding numbers which were later used in tabulating the data.

After completion of all testing, the answers were transferred from the individual answer sheet to a correspondingly coded International Business Machine answer sheet for electrical scoring. Scores were determined for the

following:

1. Total Test (Parts 1 and 2), 100 questions.
2. Knowledge (Part 1), 60 questions.
3. Application (Part 2), 40 questions.
4. Nutrition, 28 questions.
5. Mental health, 26 questions.
6. School and community health, 49 questions.
7. Safety and first aid, 26 questions.

Limitations of the Study

The study was limited to colleges and universities in Oklahoma, which were approved for teacher education by the State Board of Education and whose supervisor of teacher education had indicated by letter a willingness to cooperate in the study. Two different groups of students were selected for testing. They were: (1) senior prospective teachers currently enrolled in one of the cooperating schools, and (2) experienced teachers currently employed and enrolled in campus Saturday classes and extension courses conducted by the University of Oklahoma. The problem is limited to the study of health knowledge and its application as measured by the selected standardized test.

Sources of Data

The data were obtained from two sources. One source was composed of experienced teachers who were currently employed and enrolled in campus Saturday classes at the

University of Oklahoma or were enrolled in an extension course conducted by the University. These extension classes were at various points in the state. This group, although perhaps not entirely representative of all experienced teachers in Oklahoma, did provide a broad geographical distribution of the sample. Various areas of the state were represented. Samples were obtained from Sapulpa in the northeast, Fox in the south, Valliant in the southeast, Duncan in the southwest, Chickasha in the southwest-central, Norman in the south-central, and Oklahoma City in the central sections of Oklahoma. Although the actual classes were held in the above mentioned towns and areas of the state, the teachers enrolled for the most part represented both large and small schools from the town and neighboring communities. Three hundred twenty-six experienced teachers were tested. However, 16 of the tests could not be used. Those discarded had unanswered questions and/or omitted some or all of the information asked for at the top of the answer sheet. This left a total of 310 experienced teachers whose test scores were included in the final sample.

The other source of data was senior prospective teachers who were enrolled in selected colleges and universities in Oklahoma. These students had taken, or were currently enrolled in, practice teaching and expected to graduate in June or August of 1954. In addition they expected to receive a certificate in some teaching field upon graduation.

From 428 prospective teachers tested, 24 could not be used. These 24 had left questions unanswered and/or omitted some or all of the information asked for at the top of the answer sheet. A total of 404 prospective teachers composed the sample used.

The prospective teachers came from 10 colleges and universities which were approved for teacher certification by the State Board of Education.[1] The person in charge of teacher education at these 10 institutions had also indicated by letter a willingness to cooperate in the study. Included among the colleges and universities were five state colleges, one university for Negro students, one denominational college, one college for women, one agricultural and mechanical college, and the state university.

In obtaining the data for this study, a promise of anonymity was made to the participating schools and the individuals tested so far as the test results were concerned. Consequently, the individuals and groups providing data are referred to only by number, teaching field, or current type of employment.

Treatment of the Data

The data were first organized for presentation in tables showing mean scores for the total test and the 6 test parts, mean number of reported hours of college credit in

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[1] State Department of Education, op. cit.

health and related courses, and mean number of reported years of teaching experience. From these tables pertinent findings are noted and the following sets of comparisons are made.

One set of comparisons is between 404 prospective and 310 experienced teachers and shows:

1. Mean scores for the total test and 6 test parts.
2. Mean number of reported hours of college credit in health and related courses.

These comparisons were carried one step further by subdividing each of the two samples into male and female.

Another set of comparisons is between prospective teachers divided according to the 10 areas of teaching specialization represented in the sample and shows:

1. Mean scores for the total test and 6 test parts.
2. Mean number of reported hours of college credit in health and related courses.

These comparisons include a classification of the 10 areas into male and female.

The final set of comparisons is between 310 experienced teachers divided into 5 groups on the basis of current reported type of employment and shows:

1. Mean scores for the total test and 6 test parts.
2. Mean number of reported hours of college credit in health and related courses.
3. Mean number of reported years of teaching experience.

These comparisons include a division of the 5 teaching areas into male and female.

Further analysis of the data involves the application of a test to determine the statistical significance of the differences found between the total test means. The H Test developed by Kruskal and Wallis[1] was selected for use in testing for significant differences. Description of the H test and its application is made in Chapter III.

Definition of Terms

For the purposes of this study, the following definitions are used:

Prospective teacher is used throughout to designate a senior college student who has completed, or was at the time of testing, enrolled in student teaching and expected to graduate with a teaching certificate in June or August, 1954.

Experienced teacher is the term used to designate a person holding a valid teaching or administrators certificate and currently employed in a public school in Oklahoma.

Health courses refers to courses in the area of school and community health such as those offered to teachers. For assisting students in checking academic exposure to such courses in this study, the following designations appeared:

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[1]Allen L. Edwards, Statistical Methods for the Behavioral Sciences, p. 423. New York: Rinehart and Co., Inc., 1954.

personal hygiene, school or community hygiene, school or public health education, safety, first aid, and mental hygiene.

Related courses refers to courses which are closely associated in content or contribute much to understanding of important areas of school and community health. In this study they were designated as zoology, biology, bacteriology, anatomy, physiology, home economics, child development, and child psychology.

Primary teachers is the term used to designate the 1st, 2nd, and 3rd grade teachers as a group.

Intermediate teachers is the term used to designate the 4th, 5th, and 6th grade teachers as a group.

Administrators is the term used to designate superintendents or principals who devote at least one-half time or more to administrative duties.

CHAPTER III

DESCRIPTION AND ANALYSIS OF THE DATA

The purposes of this chapter are to present a description of the prospective and experienced teachers and to make the comparisons proposed in chapter II.

Description of Prospective Teachers

The prospective teacher sample includes 272 females and 132 males making a total sample of 404 students. Responses of these 404 students indicated they represented 17 different fields of certification. In four instances two or three teaching fields in which the health functions of the teacher are considered to be quite similar were combined into one group. The groups combined are:

1. Vocational and general home economics
2. Bookkeeping, clerical, and business education
3. Language arts, speech, and librarians
4. Art and music

After these combinations a total of 10 groups of prospective teachers remained as the final sample. The teaching area, number tested, and per cent tested of the total sample are shown in table 1.

TABLE 1

NUMBER TESTED AND PER CENT TESTED OF 404 PROSPECTIVE TEACHERS GROUPED BY TEACHING AREAS

Teaching Area	Number Tested	Per Cent of Sample
Art and Music	17	4
Bookkeeping, Clerical, and Business Education	48	12
Elementary	163	40
Health and Physical Education	47	11
Industrial Arts	12	3
Language Arts, Speech, and Librarians	31	8
Mathematics	11	3
Science	16	4
Social Studies	32	9
Vocational and General Home Economics	27	6
Totals	404	100

It is noted in table 1 that prospective elementary teachers compose 40 per cent of the total sample. All other areas are considerably smaller.

The range of total test scores for the 404 prospective

teachers is 46-89, with a mean of 73.67 and a median of 74.50.

Description of Experienced Teachers

The experienced teacher group is composed of 199 females and 111 males, making a total sample of 310 teachers. Teachers reporting current employment as teachers in elementary grades were divided into two groups, those teaching primary (grades 1, 2 and 3), and those teaching intermediate (grades 4, 5 and 6). The final sample of experienced teachers consisted of 5 groups which were classified by current employment as follows:

1. Administrators
2. High school teachers
3. Junior high school teachers
4. Intermediate teachers
5. Primary teachers

The range of total test scores for the 310 experienced teachers is 42-92, with a mean of 73.86 and a median of 74.50.

Table 2 shows the number of years teaching experience and type of position currently held by experienced teachers. It is noted from table 2 that approximately two-thirds of the administrators reported 12 or more years of school experience. Only one administrator reported less than 6 years of school experience. Approximately one-third

of the total sample of experienced teachers reported less than 6 years of teaching experience.

TABLE 2

310 EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE AND REPORTED YEARS OF TEACHING EXPERIENCE

Current Type of Teaching Experience	Years of Teaching Experience				
	1-5	6-11	12-17	Over 18	Number
Administrator	1	6	9	8	24
High School	34	22	13	13	82
Junior High	18	14	7	11	50
Intermediate	30	13	20	18	81
Primary	26	17	16	14	73
Totals	109	72	65	64	310

Table 3 summarizes the distribution of total test score means of experienced teachers grouped by reported years of teaching experience.

Before presentation of the test scores and related data it seems desirable to report that the comparison of the various test parts is by use of mean scores. It should also be pointed out that the reliability of the total test of 100 questions is .92.[1] No reliability has been reported in the

[1]Shaw, Troyer, and Brownell, op. cit.

literature for any of the test parts. Since the number of items in each of the test parts varies and in each instance is considerably less than the 100 questions included on the total test, it is assumed the reliability of these test parts is lower than the reliability for the total test. Therefore, only differences between the total test mean scores for

TABLE 3

FREQUENCY DISTRIBUTION OF THE TOTAL TEST SCORES OF 310 EXPERIENCED TEACHERS GROUPED BY REPORTED YEARS OF TEACHING EXPERIENCE

Total Test Scores	Years of Teaching Experience				
	1-5	6-11	12-17	Over 18	Number
90 - 94	1	1	0	0	2
85 - 89	2	7	4	1	14
80 - 84	25	16	11	15	67
75 - 79	26	11	23	13	73
70 - 74	30	20	15	15	80
65 - 69	14	10	3	10	37
60 - 64	7	2	7	4	20
55 - 59	2	1	2	3	8
50 - 54	1	4	0	0	5
45 - 49	1	0	0	1	2
40 - 44	0	0	0	2	2
Totals	109	72	65	64	310

experienced and prospective teachers were tested for statistical significance.

Comparison of Experienced and Prospective Teachers

The comparison of experienced and prospective teachers, based on the total sample for both groups, is shown in table 4.

TABLE 4

MEANS OF THE TOTAL TEST SCORES AND THE 6 TEST PARTS FOR 310 EXPERIENCED AND 404 PROSPECTIVE TEACHERS

Total Test and Test Parts	No. of Items	Experienced Teachers	Prospective Teachers
Total Test	100	73.86	73.67
Knowledge	60	42.19	41.71
Application	40	31.67	31.98
Nutrition	28	19.63	19.13
Mental Health	26	21.42	21.93
School and Community Health	49	36.61	36.14
Safety and First Aid	26	18.90	19.53

In reporting hours of college credit in health courses, experienced teachers reported a mean of 5.66 hours and prospective teachers reported a mean of 4.23 hours. In reporting hours of college credit in related courses,

experienced teachers reported a mean of 18.62 hours and prospective teachers reported a mean of 17.90 hours.

Table 5 shows the mean scores for the total test and the 6 test parts achieved by experienced and prospective teachers grouped by sex.

TABLE 5

MEANS OF THE TOTAL TEST SCORES AND THE 6 TEST PARTS FOR 310 EXPERIENCED AND 404 PROSPECTIVE TEACHERS GROUPED BY SEX

Total Test and Test Parts	No. of Items	Male Exp. Teach. N= 111	Male Prosp. Teach. 132	Female Exp. Teach. 199	Female Prosp. Teach. 272
Total Test	100	74.09	72.25	73.73	74.36
Knowledge	60	42.64	41.00	41.92	42.05
Application	40	31.45	31.25	31.81	32.31
Nutrition	28	19.44	18.37	19.73	19.50
Mental Health	26	21.20	21.33	21.84	22.22
School and Community Health	49	36.04	34.84	36.92	36.77
Safety and First Aid	26	19.37	19.77	18.63	19.41

The highest total test mean was made by female prospective teachers and the lowest total test mean was made by male prospective teachers. The difference between the means of these two groups is 2.11. This was the largest mean difference for any group on either total test or test part scores.

Table 6 presents a summary of the hours of college credit in health and related courses reported by experienced and prospective teachers grouped by sex.

TABLE 6

MEAN NUMBER OF HOURS COLLEGE CREDIT IN HEALTH AND RELATED COURSES REPORTED BY 310 EXPERIENCED AND 404 PROSPECTIVE TEACHERS GROUPED BY SEX

Health and Related Courses N=	Male Exp. Teach. 111	Male Prosp. Teach. 132	Female Exp. Teach. 199	Female Prosp. Teach. 272
Hours Credit in Health Courses	5.91	4.87	5.51	3.92
Hours Credit in Related Courses	16.08	12.57	20.03	20.49

Comparison Between Groups of Prospective Teachers

The groups compared in this section are the 10 teaching areas into which all prospective teachers were divided according to the reported field of preparation.

Table 7 shows the mean scores for the total test and the 6 test parts of all prospective teachers grouped by their chosen teaching area. It is noted in table 7 that students in the area of vocational and general home economics have the highest mean scores for the total test and for the test parts identified as: application, nutrition, mental health, and school and community health.

TABLE 7

MEANS OF THE TOTAL TEST SCORES AND THE 6 TEST PARTS FOR 404 PROSPECTIVE TEACHERS GROUPED BY TEACHING AREAS

Total Test and Test Parts	Number of Items	Art and Music N= 17	Bookkeeping, Clerical, and Business Edu. 48	Elementary 163	Vocational and General Home Economics 27	Health and Physical Education 47	Industrial Arts 12	Language Arts, Speech, and Librarians 31	Mathematics 11	Social Studies 32	Science 16
Total Test	100	72.70	69.83	74.32	76.51	74.49	69.75	74.74	71.54	72.94	76.18
Knowledge	60	40.70	38.62	42.24	43.07	42.42	38.92	43.03	40.09	41.18	44.00
Application	40	32.00	31.21	32.08	33.44	32.07	30.83	31.71	31.45	31.76	32.18
Nutrition	28	19.00	18.02	19.47	20.74	18.91	17.50	19.13	18.45	18.59	19.93
Mental Health	26	21.88	21.00	22.23	22.66	21.53	20.75	22.13	21.54	21.87	22.50
School & Commu. Health	49	36.88	34.06	36.78	37.77	35.70	33.58	36.90	34.82	35.31	36.56
Safety and First Aid	26	19.35	18.85	19.32	19.70	21.15	19.83	19.58	19.09	19.34	19.25

Students in the field of health and physical education had the highest mean score for safety and first aid.

Students in the field of science had the highest mean score for the test part identified as knowledge.

Further analysis of table 7 shows that prospective teachers in the field of industrial arts had the lowest mean scores for the total test, and test parts which were mental health, application, nutrition, and school and community health. The lowest mean scores for the test parts knowledge, and safety and first aid were made by students in the area of bookkeeping, clerical, and business education.

Table 8 lists the mean number of college hours credit in health and in related courses reported by prospective teachers grouped into their reported teaching areas. It may be seen in table 8 that prospective teachers in the area of vocational and general home economics reported the highest mean number of hours college credit in related courses. Prospective teachers in the field of health and physical education reported the highest mean number of hours college credit in health courses.

Table 9 lists the total test and the 6 test parts with the number of questions in each part. Also listed are the differences between the highest and lowest mean scores and the prospective teacher groups making these scores.

The final presentation of information about the health knowledge of prospective teachers is by classifying

TABLE 8

MEAN NUMBER OF HOURS COLLEGE CREDIT IN HEALTH AND RELATED COURSES REPORTED BY 404 PROSPECTIVE TEACHERS GROUPED BY TEACHING AREAS

Health and Related Courses N=	Art and Music 17	Bookkeeping, Clerical, and Business Edu. 48	Elementary 163	Vocational and General Home Economics 27	Health and Physical Education 47	Industrial Arts 12	Language Arts, Speech, and Librarians 31	Mathematics 11	Social Studies 32	Science 16
Hours Credit in Health Courses	2.00	2.89	4.51	3.88	7.10	3.83	2.13	3.45	4.12	5.06
Hours Credit in Related Courses	9.52	8.96	18.86	53.15	17.43	7.67	11.38	10.91	10.85	25.06

TABLE 9

DIFFERENCES BETWEEN THE HIGHEST AND LOWEST MEAN SCORES FOR THE TOTAL TEST AND 6 TEST PARTS FOR 404 PROSPECTIVE TEACHERS

Total Test and Test Parts	Number of Items	Bookkeeping, Clerical, and Business Edu. N= 48	Vocational and General Home Economics 27	Health and Physical Education 47	Industrial Arts 12	Science 16	Greatest Difference
Total Test	100		76.51		69.75		6.76
Knowledge	60	38.62				44.00	5.38
Application	40		33.44		30.83		2.61
Nutrition	28		20.74		17.50		3.24
Mental Health	26		22.66		20.75		1.91
School and Community Health	49		37.77		33.58		4.19
Safety and First Aid	26	18.85		21.15			2.30

the total sample on the basis of sex. Table 10 shows the mean scores for the total test and the 6 test parts for male prospective teachers grouped by teaching areas.

It may be seen in table 10 that male prospective teachers in the field of science made the highest total test mean score and male prospective teachers in the area of art and music made the lowest total test mean score.

Table 11 lists the mean number of hours of college credit in health and related courses reported by male prospective teachers grouped by teaching areas.

An examination of table 11 shows that male prospective teachers in the field of health and physical education reported the highest mean number of hours college credit in health courses. Also for male prospective teachers those in the field of science reported the highest mean number of hours college credit in related courses.

Table 12 shows the mean scores for the total test and the 6 test parts for female prospective teachers grouped by teaching areas.

Table 12 also shows that female prospective teachers in the field of health and physical education made the highest total test mean score and female prospective teachers in the area of bookkeeping, clerical, and business education made the lowest total test mean score.

Table 13 lists the mean number of hours of college credit in health and related courses reported by female

TABLE 10

MEANS OF THE TOTAL TEST SCORES AND THE 6 TEST PARTS FOR 132 MALE PROSPECTIVE TEACHERS GROUPED BY TEACHING AREAS

Total Test and Test Parts	Number of Items	Art and Music N= 4	Bookkeeping, Clerical, and Business Edu. 17	Elementary 9	Health and Physical Education 36	Industrial Arts 12	Language Arts, Speech, and Librarians 9	Mathematics 8	Social Studies 25	Science 12
Total Test	100	68.75	71.00	75.00	73.08	69.75	70.66	70.50	72.28	75.33
Knowledge	60	37.50	40.06	43.67	41.52	38.92	41.11	39.63	40.40	44.18
Application	40	31.25	30.94	31.33	31.56	30.83	29.55	30.87	31.88	31.15
Nutrition	28	18.00	17.70	20.33	18.72	17.50	17.22	17.62	18.12	19.75
Mental Health	26	22.25	21.23	21.33	21.02	20.75	20.11	21.50	21.96	22.16
School & Commu. Health	49	35.25	34.76	36.00	34.80	33.58	35.33	33.75	34.72	35.91
Safety and First Aid	26	18.00	19.53	19.44	20.77	19.83	19.77	19.00	19.52	18.91

TABLE 11

MEAN NUMBER OF HOURS COLLEGE CREDIT IN HEALTH AND RELATED COURSES REPORTED BY 132 MALE PROSPECTIVE TEACHERS GROUPED BY TEACHING AREAS

Health and Related Courses N=	Art and Music 4	Bookkeeping, Clerical, and Business Edu. 17	Elementary 9	Health and Physical Education 36	Industrial Arts 12	Language Arts, Speech, and Librarians 9	Mathematics 8	Social Studies 25	Science 12
Hours Credit in Health Courses	1.50	3.18	4.77	7.00	3.83	3.33	4.25	4.36	5.83
Hours Credit in Related Courses	8.00	6.67	16.67	15.97	7.67	10.78	7.87	9.20	25.42

TABLE 12

MEANS OF THE TOTAL TEST SCORES AND THE 6 TEST PARTS FOR 272 FEMALE PROSPECTIVE TEACHERS GROUPED BY TEACHING AREA

Total Test and Test Parts	Number of Items	Art and Music N= 13	Bookkeeping, Clerical, and Business Edu. 31	Elementary 154	Vocational and General Home Economics 27	Health and Physical Education 11	Language Arts, Speech, and Librarians 22	Mathematics 3	Social Studies 7	Science 4
Total Test	100	73.92	69.19	74.28	76.51	79.09	76.40	74.33	75.28	78.75
Knowledge	60	41.69	37.84	42.16	43.07	45.36	43.81	41.33	44.00	43.75
Application	40	32.23	31.35	32.12	33.44	33.73	32.59	33.00	31.28	35.00
Nutrition	28	19.30	18.19	19.42	20.74	19.90	19.55	20.66	20.28	20.50
Mental Health	26	21.76	20.87	22.28	22.66	23.18	22.95	21.66	21.57	23.50
School & Commu. Health	49	37.38	33.70	36.83	37.77	38.63	37.54	37.66	37.42	38.50
Safety and First Aid	26	19.76	18.48	19.30	19.70	22.36	19.50	19.33	18.71	20.25

TABLE 13

MEAN NUMBER OF HOURS COLLEGE CREDIT IN HEALTH AND RELATED COURSES REPORTED BY 272 FEMALE PROSPECTIVE TEACHERS GROUPED BY TEACHING AREAS

Health and Related Courses N=	Art and Music 13	Bookkeeping, Clerical, and Business Edu. 31	Elementary 154	Vocational and General Home Economics 27	Health and Physical Education 11	Language Arts, Speech, and Librarians 22	Mathematics 3	Social Studies 7	Science 4
Hours Credit in Health Courses	2.15	2.74	4.50	3.88	7.45	1.63	1.33	3.28	2.75
Hours Credit in Related Courses	10.00	10.16	18.99	53.15	22.18	11.64	19.00	16.72	24.00

prospective teachers grouped by their reported teaching areas. It may be noted in table 13 that female prospective teachers in the field of health and physical education reported the highest mean number of hours of college credit in health courses. Also from table 13 it may be seen that female prospective teachers in the area of vocational and general home economics reported the highest mean number of hours of college credit in related courses.

Comparisons Between Groups of Experienced Teachers

The comparisons between the several groups of experienced teachers which follow are based on the 5 groups into which all experienced teachers were divided.

Table 14 shows the mean scores for the total test and the 6 test parts for experienced teachers grouped by current reported type of teaching employment.

From table 14 it may noted that administrators made the highest mean scores for the total test and the 5 test parts identified as: knowledge, application, nutrition, mental health, and school and community health.

High school experienced teachers made the highest mean score for the test part safety and first aid.

It may also be seen from table 14 that junior high school experienced teachers made the lowest mean scores for the total test and 4 test parts which were application, nutrition, mental health, and school and community health.

TABLE 14

MEANS OF THE TOTAL TEST SCORES AND THE 6 TEST PARTS FOR 310 EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Total Test and Test Parts	No. of Items	Administrators N= 24	High School 82	Junior High 50	Intermediate 81	Primary 73
Total Test	100	77.45	75.07	72.50	73.00	73.21
Knowledge	60	44.45	43.17	41.60	41.37	41.63
Application	40	33.00	31.90	30.90	31.63	31.58
Nutrition	28	20.33	19.56	19.14	19.64	19.78
Mental Health	26	22.87	21.50	21.40	21.72	21.61
School and Community Health	49	38.58	36.76	35.28	36.48	36.85
Safety and First Aid	26	19.12	19.82	18.86	18.42	18.35

Experienced teachers of the intermediate grades made the lowest mean score for the test part knowledge.

Experienced teachers of the primary grades made the lowest mean score for the test part safety and first aid.

Table 15 shows the mean number of college hours credit in health and related courses reported by 310 experienced teachers grouped by current type of teaching.

It is noted in table 15 that experienced high school teachers reported the highest mean number of hours of college credit in health courses. From table 15 it is also noted

that experienced primary teachers reported the highest mean number of hours of college credit in related courses.

TABLE 15

MEAN NUMBER OF HOURS COLLEGE CREDIT IN HEALTH AND RELATED COURSES REPORTED BY 310 EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Health and Related Courses N=	Administrators 24	High School 82	Junior High 50	Intermediate 81	Primary 73
Hours Credit in Health Courses	3.87	6.10	5.52	5.28	6.28
Hours Credit in Related Courses	16.25	19.31	17.52	17.35	20.78

Table 16 shows the mean number of years experience reported by 310 experienced teachers grouped by current type of teaching.

TABLE 16

MEAN NUMBER OF YEARS EXPERIENCE REPORTED BY 310 EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Experience N=	Administrators 24	High School 82	Junior High 50	Intermediate 81	Primary 73
Years Experience	15.00	9.36	10.32	10.92	10.48

From table 16 it may be observed that administrators reported one-third more years of school experience than each of the other 4 groups of experienced teachers.

Table 17 shows the total test mean scores for the 5 groups of experienced teachers grouped by reported years of teaching experience.

TABLE 17

MEANS OF THE TOTAL TEST SCORES FOR 310 EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE AND REPORTED YEARS OF TEACHING EXPERIENCE

Current Type of Teaching	N	Years of Teaching Experience							
		1-5	N	6-11	N	12-17	N	Over 18	N
Administrator	24	65.00	(1)	80.00	(6)	78.22	(9)	76.25	(8)
High School	82	74.11	(34)	76.04	(22)	75.07	(13)	75.92	(13)
Junior High	50	73.16	(18)	72.42	(14)	73.71	(7)	70.72	(11)
Intermediate	81	74.66	(30)	71.07	(13)	73.95	(20)	70.55	(18)
Primary	73	73.65	(26)	74.34	(17)	74.18	(16)	69.92	(14)

It is noted in table 17 that the highest total test mean scores for administrators, high school teachers, and primary grade teachers appear under the column indicating 6 through 11 years of teaching experience. For intermediate grade teachers the highest total test mean score appears under the column headed 1 through 5 years of teaching experience.

TABLE 18

DIFFERENCES BETWEEN THE HIGHEST AND LOWEST MEAN SCORES FOR THE TOTAL TEST AND 6 TEST PARTS FOR 310 EXPERIENCED TEACHERS

Total Test and Test Parts	No. of Items	Administrator N= 24	High School 82	Junior High 50	Intermediate 81	Primary 73	Greatest Difference
Total Test	100	77.45		72.50			4.95
Knowledge	60	44.54			41.37		3.17
Application	40	32.91		30.90			2.01
Nutrition	28	20.33		19.14			1.19
Mental Health	26	22.87		21.40			1.47
School and Community Health	49	38.58		35.28			3.30
Safety and First Aid	26		19.82			18.35	1.47

The highest total test mean score for junior high teachers appears under the column indicating 12 through 17 years of teaching experience.

Table 18 lists the total test and the 6 test parts with the number of questions in each part. Also listed are the differences between the highest and lowest mean scores and the experienced teacher group making these scores.

Table 19 shows the total test mean scores for the entire sample (male and female) of experienced teachers grouped by the reported number of years teaching experience.

TABLE 19

MEANS OF THE TOTAL TEST SCORES FOR 310 EXPERIENCED TEACHERS GROUPED BY REPORTED YEARS OF TEACHING EXPERIENCE

Test Mean	Years of Teaching Experience			
	1-5	6-11	12-17	Over 18
Total Test Means	73.91	74.37	74.80	72.25

The highest total test mean score for experienced teachers as a group, appears under the column indicating 12 through 17 years of teaching experience.

Further comparisons of experienced teachers by use of mean scores are made with the sample divided into male and female. The first group analyzed is male experienced

teachers. Table 20 shows the mean scores for the total test and the 6 test parts for male experienced teachers grouped by current reported type of teaching experience.

TABLE 20

MEANS OF THE TOTAL TEST SCORES AND THE 6 TEST PARTS FOR 111 MALE EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Total Test and Test Parts	No. of Items	Administrators N= 19	High School 43	Junior High 29	Intermediate 20
Total Test	100	78.21	74.76	71.93	71.85
Knowledge	60	45.42	43.07	41.03	41.50
Application	40	32.79	31.69	30.90	30.35
Nutrition	28	20.47	19.51	18.72	19.40
Mental Health	26	22.89	20.95	20.58	21.50
School and Community Health	49	39.05	35.93	34.55	35.60
Safety and First Aid	26	19.42	20.14	19.10	18.10

Inspection of table 20 shows that for male experienced teachers, administrators made the highest total test mean score and teachers of intermediate grades made the lowest total test mean score.

Table 21 lists the mean number of hours of college credit in health and related courses reported by 111 male experienced teachers grouped by current type of teaching.

TABLE 21

MEAN NUMBER OF HOURS COLLEGE CREDIT IN HEALTH AND RELATED COURSES REPORTED BY 111 MALE EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Health and Related Courses N=	Administrators 19	High School 43	Junior High 29	Intermediate 20
Hours Credit in Health Courses	3.73	7.46	4.82	6.25
Hours Credit in Related Courses	17.00	18.19	12.62	15.65

It may be seen from table 21 that male experienced high school teachers reported the highest mean number of hours of college credit in both health and related courses.

Table 22 shows the mean number of years of teaching experience reported by 111 male experienced teachers grouped by current type of teaching.

TABLE 22

MEAN NUMBER OF YEARS EXPERIENCE REPORTED BY 111 MALE EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Experience N=	Administrators 19	High School 43	Junior High 29	Intermediate 20
Years Experience	14.68	8.00	8.17	6.90

From table 22 it may be noted that for male experienced teachers, administrators reported the highest mean number of years of experience and teachers of intermediate grades reported the lowest mean number of years of experience.

The next comparisons are between groups of female experienced teachers. Table 23 shows the mean scores for the total test and the 6 test parts for female experienced teachers grouped by current type of teaching.

TABLE 23

MEANS OF THE TOTAL TEST SCORES AND THE 6 TEST PARTS FOR 199 FEMALE EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Total Test and Test Parts	No. of Items	Administrators N= 5	High School 39	Junior High 21	Intermediate 61	Primary 73
Total Test	100	74.60	75.41	73.28	73.37	73.21
Knowledge	60	41.20	43.28	42.38	41.32	41.63
Application	40	33.40	32.13	30.90	32.05	31.58
Nutrition	28	20.00	19.61	19.71	19.73	19.78
Mental Health	26	22.80	22.10	21.66	21.95	21.61
School and Community Health	49	36.80	37.69	36.28	36.52	36.85
Safety and First Aid	26	18.00	19.49	18.52	18.77	18.35

It may be noted from table 23 that female experienced high school teachers made the highest total test mean score

and female experienced teachers of primary grades made the lowest total test mean score.

Table 24 lists the mean number of hours of college credit in health and related courses reported by 199 female experienced teachers grouped by current type of teaching.

TABLE 24

MEAN NUMBER OF HOURS COLLEGE CREDIT IN HEALTH AND RELATED COURSES REPORTED BY 199 FEMALE EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Health and Related Courses N=	Administrators 5	High School 39	Junior High 21	Intermediate 61	Primary 73
Hours Credit in Health Courses	4.40	4.61	6.47	4.96	6.26
Hours Credit in Related Courses	13.40	20.54	24.24	17.91	20.78

It may be seen in table 24 that for female experienced teachers, junior high teachers reported the highest mean number of hours of college credit in both health and related courses.

Table 25 shows the mean number of years of teaching experience reported by 199 female experienced teachers grouped by current type of teaching.

From table 25 it may noted that for female experienced teachers, administrators reported the highest mean number of years of school experience and teachers of primary

TABLE 25

MEAN NUMBER OF YEARS EXPERIENCE REPORTED BY 199 FEMALE EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Experience N=	Administrators 5	High School 39	Junior High 21	Intermediate 61	Primary 73
Years Experience	16.20	10.87	13.29	12.24	10.48

grades reported the lowest mean number of years of experience.

The final comparison of experienced teachers is based on the reported responsibility for health teaching. The 3 categories of responsibility for health teaching are: (1) teachers who have taught health, (2) teachers who have not taught health, and (3) teachers who were at the time of this study teaching health.

When the 5 groups of experienced teachers were subdivided according to the above listed categories it was found that only 2 of the groups had differences between the total test mean scores of more than .84. These 2 groups were administrators and high school teachers.

Table 26 shows the total test mean scores for administrators (male and female) grouped by reported responsibility for health teaching.

It is noted in table 26 that administrators now teaching health had the lowest total test mean score and

TABLE 26

MEANS OF THE TOTAL TEST SCORES FOR ADMINISTRATORS GROUPED BY REPORTED RESPONSIBILITY FOR HEALTH TEACHING

Test Mean N=	Health Teaching Responsibility		
	Have Taught Health 9	Have not Taught Health 15	Now Teaching Health 5
Total Test Mean	76.22	78.20	72.20

administrators who have not taught health made the highest total test mean score.

Table 27 shows the total test mean scores for experienced high school teachers grouped by reported responsibility for health teaching.

TABLE 27

MEANS OF THE TOTAL TEST SCORES FOR EXPERIENCED HIGH SCHOOL TEACHERS GROUPED BY REPORTED RESPONSIBILITY FOR HEALTH TEACHING

Test Mean N=	Health Teaching Responsibility		
	Have Taught Health 27	Have not Taught Health 55	Now Teaching Health 14
Total Test Mean	79.14	73.03	79.35

It may be seen in table 27 that experienced high school teachers now teaching health made the highest total test mean score and teachers who have not taught health made the lowest total test mean score. This pattern of health responsibility is just reverse of that found for administrators in table 26.

Table 28 shows the total test mean scores for experienced teachers (male and female) grouped by their reported responsibility for health teaching.

TABLE 28

MEANS OF THE TOTAL TEST SCORES FOR EXPERIENCED TEACHERS GROUPED BY REPORTED RESPONSIBILITY FOR HEALTH TEACHING

Test Mean N=	Health Teaching Responsibility		
	Have Taught Health 180	Have not Taught Health 130	Now Teaching Health 126
Total Test Mean	74.13	73.50	73.65

It can be seen from table 28 that the differences in the total test mean scores are very small with the greatest difference being only .63.

Table 29 shows the mean number of hours of college credit in health and related courses as reported by the total sample of experienced teachers (male and female).

In table 29 it can be seen that experienced teachers

TABLE 29

MEAN NUMBER OF REPORTED HOURS COLLEGE CREDIT IN HEALTH AND RELATED COURSES FOR EXPERIENCED TEACHERS GROUPED BY REPORTED RESPONSIBILITY FOR HEALTH TEACHING

	Health Teaching Responsibility		
Health and Related Courses N=	Have Taught Health 180	Have not Taught Health 130	Now Teaching Health 126
Hours Credit in Health Courses	6.78	4.09	6.91
Hours Credit in Related Courses	20.90	15.41	20.87

who reported they have not taught health had the lowest mean number of hours of college credit in both health and related courses. Experienced teachers who are either now teaching or who have taught health reported approximately the same mean number of hours of college credit in both health and related courses.

Significant Differences

In order to test for possible differences in terms of being statistically significant from zero, the distribution of total test scores was, of course, examined first. Upon inspection it became apparent that some amount of skewness was present in the data. Since any rigorous use of a parametric test of significance such as "T" is predicated upon

the mathematical model of "normality" including homogeneity of variance, it was deemed wiser to employ an alternative test, non-parametric in nature, that could better handle the present "skewed" data.

The non-parametric test employed in the ensuing analysis was the H test derived by Kruskal and Wallis.[1] The H test is based upon rank order of scores which requires that all the observations be ranked together, and the sum of the ranks obtained for each sample. If there are ties, each observation is given the mean of the ranks for which it is tied. The formula for calculating the H value is:

$$H = \left[\frac{12}{N\,(N+1)}\right]\left[\sum_{1}^{K}\frac{T_i^2}{N_i}\right] - 3(N+1)$$

in which K = the number of groups;
N_i = the number of observations in the $_i$th group;
$N = N_i$, the total number of observations;
T_i = the sum of ranks for the $_i$th group.

It was decided to compute H values beginning at the widest divergence between group total test mean scores and to terminate the analysis when the first H value proved of no statistical significance.

Tables 30, 31, 32, and 33 summarize the results of 12 non-parametric H tests carried out to test for significant differences in health information.

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[1] Edwards, op. cit., p. 423.

Table 30 shows the significant difference found between total test mean scores for male and female prospective teachers.

TABLE 30

SUMMARY OF NON-PARAMETRIC (H-Test) ANALYSIS FOR SIGNIFICANT DIFFERENCES IN HEALTH INFORMATION BETWEEN MALE AND FEMALE PROSPECTIVE TEACHERS*

Male Prosp. Teachers VS:	Mean for Male Prosp. Teach.	Mean for Female Prosp. Teach.	H Value
Female Prosp. Teachers	72.25	74.36	8.70

*To read significance at the 5% level an H value must exceed 3.841, (1df), as H is distributed on Chi^2.

Tables 31 and 32 show the significant differences found between total test mean scores for various teaching areas of the prospective teacher sample.

TABLE 31

SUMMARY OF NON-PARAMETRIC (H-Test) ANALYSIS FOR SIGNIFICANT DIFFERENCES IN HEALTH INFORMATION BETWEEN INDUSTRIAL ARTS AND 2 OTHER TEACHING AREAS

Industrial Arts VS:	Means for Ind. Arts	Means for Other Areas	H Value
Vocational and General Home Economics	69.75	76.51	5.85
Science	69.75	76.18	4.73

TABLE 32

SUMMARY OF NON-PARAMETRIC (H-Test) ANALYSIS FOR SIGNIFICANT DIFFERENCES IN HEALTH INFORMATION BETWEEN BUSINESS EDUCATION AND 5 OTHER TEACHING AREAS

Business Education VS:	Means for Bus. Edu.	Means for Other Areas	H Value
Vocational and General Home Economics	69.83	76.51	14.62
Science	69.83	76.18	17.79
Language Arts, Speech, and Librarians	69.83	74.74	10.15
Health and Physical Education	69.83	74.49	9.68
Elementary	69.83	74.32	15.80

Table 33 shows the significant differences found between total test mean scores for administrators and 4 other groups of experienced teachers.

TABLE 33

SUMMARY OF NON-PARAMETRIC (H-Test) ANALYSIS FOR SIGNIFICANT DIFFERENCES IN HEALTH INFORMATION BETWEEN ADMINISTRATORS AND 4 OTHER GROUPS OF EXPERIENCED TEACHERS

Administrators VS:	Means for Admin.	Means for Other Groups	H Value
High School Teachers	77.45	75.07	7.85
Primary Teachers	77.45	73.21	9.62
Intermediate Teachers	77.45	73.00	5.43
Junior High Teachers	77.45	72.50	4.80

Comparison to Norms

Tables 34 and 35 present the percentile ranges of the total test mean scores for groups that are represented within the experienced and prospective teacher samples.

The percentile ranges are taken from norms[1] based on scores of 6,753 students sampled from several regions of the United States. However, it is not stated what proportion of the total sample was used to determine norms for college students.

Table 34 shows the number, total test mean score, and percentile ranges of 310 experienced teachers grouped by current type of teaching.

TABLE 34

NUMBER, TOTAL TEST MEAN, AND PERCENTILE RANGES OF 310 EXPERIENCED TEACHERS GROUPED BY CURRENT TYPE OF TEACHING

Current Type of Teaching	Number	Total Test Mean	Percentile Ranges
Administrators	24	77.45	81 - 90
High School Teachers	82	75.07	71 - 80
Junior High Teachers	50	72.50	61 - 70
Intermediate Teachers	81	73.00	61 - 70
Primary Teachers	73	73.21	61 - 70

[1] A copy of the norms is included in Appendix E.

It may be noted in table 34 that all groups of experienced teachers had percentile ranges which were in the upper 50 per cent of ranges as reported on the norms for college students.

Table 35 shows the number, total test mean score, and percentile ranges of 404 prospective teachers grouped by teaching areas.

TABLE 35

NUMBER, TOTAL TEST MEAN, AND PERCENTILE RANGES OF 404 PROSPECTIVE TEACHERS GROUPED BY TEACHING AREAS

Teaching Areas	Number	Total Test Mean	Percentile Ranges
Art and Music	17	72.70	61 - 70
Bookkeeping, Clerical and Bus. Education	48	69.83	51 - 60
Elementary	163	74.32	71 - 80
Vocational and General Home Economics	27	76.51	71 - 80
Health and Physical Education	47	74.49	71 - 80
Industrial Arts	12	69.75	51 - 60
Language Arts, Speech and Librarians	31	74.74	71 - 80
Mathematics	11	71.54	61 - 70
Social Studies	32	72.94	61 - 70
Science	16	76.18	71 - 80

It may be seen from table 35 that all groups of prospective teachers had percentile ranges which were in the upper 50 per cent of ranges as reported on the norms for college students.

CHAPTER IV

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The hypothesis, that all teachers are to some extent health teachers, is widely accepted by health education authorities. However, teachers in certain fields have more responsibility for health education than do teachers in other teaching fields.

Among prospective teachers those preparing in the fields of home economics, science, and elementary may expect to have responsibility for broad areas of health, including health instruction. Prospective teachers in the field of health and physical education will most frequently have major responsibility for whatever health education is offered at their particular school as an organized course offering.

Among experienced teachers those teaching in the elementary grades usually have responsibility for some health education. Administrators, including superintendents and principals have a definite responsibility to initiate and implement effective school health programs.

Summary and Conclusions

Prospective and Experienced Teachers

When comparing 310 experienced and 404 prospective teachers of Oklahoma the data show:

1. No statistically significant differences between the total test scores made by prospective and experienced teachers.

2. A statistically significant difference between the total test scores made by male and female prospective teachers. Female prospective teachers made the higher mean score.

3. Female prospective and experienced teachers reported slightly more hours of college credit in related courses than did male prospective and experienced teachers.

Therefore, it may be concluded from the above findings, that as measured by this test there are no significant differences in health information of prospective and experienced teachers. It may also be concluded that female prospective teachers are better informed about health than male prospective teachers and are therefore, in this respect more adequately prepared to assume responsibilities for health teaching.

Prospective Teachers

The comparisons of 404 prospective Oklahoma teachers were made after classification into teaching areas. An

analysis of the data shows:

1. A statistically significant difference between the total test scores made by prospective teachers in the area of bookkeeping, clerical, and business education (48 in number) and 5 other teaching areas: elementary (163); health and physical education (47); science (16); language arts, speech, and librarians (31); and vocational and general home economics (27). In each difference students in the area of bookkeeping, clerical, and business education made the lowest score.

2. A statistically significant difference between the total test scores made by prospective teachers in the area of industrial arts (12 in number) and 2 other teaching areas: vocational and general home economics (27), and science (16). In each difference students in the area of industrial arts made the lowest score.

3. Among prospective teachers, those in the fields of home economics, science, elementary, and health and physical education--who will usually have responsibilities for health teaching--made test scores which were among the highest 5 scores made by (the 10 groups of) prospective teachers.

4. Of 10 prospective teacher groups, the 2 groups reporting the most hours of college credit in health and related courses also made the highest total test scores. This pattern was not consistent beyond these 2 groups.

A significant difference was found between the health

knowledge of prospective teachers in the field of health and physical education and only 1 other teaching field. Therefore, it may be concluded that prospective health and physical education teachers, as a group, are no better prepared to teach health than prospective teachers of other areas with the exception of those in the field of bookkeeping, clerical, and business education.

A significant difference was also found between the health knowledge of prospective teachers in the elementary field and 1 other teaching field. It may therefore be concluded that prospective teachers of the elementary grades, as a group, are no better prepared to teach health than prospective teachers of other fields with the exception of those in the field of bookkeeping, clerical, and business education.

A significant difference was found between the health knowledge of prospective teachers in the fields of science, home economics and 2 other teaching fields. The information at hand suggests that prospective science and home economics teachers, as groups, are no better prepared to teach health than prospective teachers of other teaching fields with the exception of those in the fields of business education and industrial arts.

Male and Female Prospective Teachers

When the sample of 404 Oklahoma prospective teachers was divided according to their chosen teaching fields and

further classified into male (132 in number) and female (272 in number) the data show that:

1. Among male prospective teachers the 3 groups usually given some responsibility for health teaching made the highest scores of the 9 groups tested. The order of rank was: (1) science, (2) elementary, and (3) health and physical education.

2. Among female prospective teachers, 4 groups are considered to have responsibility for health teaching. Three of these 4 groups made the highest scores with the 4th group somewhat below. They were in order of rank: (1) health and physical education, (2) science, (3) vocational and general home economics, and (7) elementary.

Experienced Teachers

The comparisons of 310 experienced teachers of Oklahoma were made on the basis of current type of teaching, reported years of teaching experience, and current reported responsibility for health teaching. An analysis of the data shows:

1. A statistically significant difference between the total test scores made by administrators (24 in number) and all other groups of experienced teachers which were: High school (82), junior high school, (50), intermediate (81), and primary (73). In each difference administrators made the highest score.

2. No statistically significant difference between the total test scores of elementary teachers (primary and intermediate grades) and any other group of experienced teachers except administrators.

3. Among the 310 experienced teachers no consistent pattern was apparent to indicate that teachers reporting a high number of hours of college credit in health and related courses also made high test scores.

4. Also among the 310 experienced teachers no consistent pattern that indicated teachers reporting more years of teaching experience also made higher test scores.

5. That for 310 experienced teachers those who are currently teaching health or who have taught health reported more hours of college credit in health and related courses than teachers who have never taught health.

From the findings it is seen that a significant difference was found between the health knowledge of administrators and all other groups of experienced teachers tested. Therefore, it may be concluded that administrators are better prepared in health knowledge to assume responsibility for health in the school than are elementary, junior high school, or senior high school teachers.

No significant differences were found between test scores of experienced teachers of elementary grades and experienced junior or senior high school teachers. Therefore, it is concluded that elementary teachers--who are expected to

have some responsibility for health teaching--are no better prepared in health knowledge to teach health than are junior or senior high school teachers.

It may also be concluded that when the scores for experienced teachers are analyzed those reporting (1) more years of teaching experience, (2) more hours of college credit in health and related courses, and (3) current responsibility for health teaching did not make the higher test scores.

Male and Female Experienced Teachers

When the sample of 310 Oklahoma experienced teachers was divided according to current type of teaching and further classified into male (111) and female (199) the data show:

1. Among male experienced teachers the 2 groups having responsibility for health teaching made the highest and lowest scores for the 4 groups tested. The order of rank was: (1) administrators and (4) intermediate grade teachers.

2. Among female experienced teachers the 3 groups having responsibility for health teaching made scores which place them at the top, bottom, and in the middle of all the groups tested. The order of rank was: (1) administrators, (3) intermediate grade teachers, and (5) primary teachers.

Comments

An important factor to be considered in this, or any similar study, is the type of instrument used for measuring health information. So far as can be determined no instrument

has been devised to measure what teachers, either prospective or experienced, should know about health. It is possible that the test used in this study did not differentiate between the various groups tested as much as might be desired. However, when the scores made by experienced teachers of Oklahoma were compared to scores reported for teachers from Georgia on a similar study using the same health test, the differences found were large.[1]

Table 36 shows the scores for the total test and the 6 test parts for administrators and experienced high school teachers of Oklahoma and Georgia.

TABLE 36

MEANS OF THE TOTAL TEST SCORES AND 6 TEST PARTS FOR ADMINISTRATORS AND HIGH SCHOOL TEACHERS OF OKLAHOMA AND GEORGIA

Total Test and Test Parts	No. of Items N=	Oklahoma		Georgia	
		Adm. 24	High School Teachers 82	Super-visors 25	High School Teachers 49
Total Test	100	77.45	75.97	61.00	55.32
Knowledge	60	44.54	43.17	36.09	32.02
Application	40	32.91	31.90	24.91	23.30
Nutrition	28	20.33	19.56	15.00	15.40
Mental Health	26	22.87	21.50	18.79	16.19
School & Commu. Health	49	38.58	36.76	28.46	28.37
Safety & F.A.	26	19.12	19.82	13.91	12.89

[1]Mason, op. cit., p. 60.

From tsble 36 it may be seen that Oklahoma school administrators made higher scores for the total test and the 6 test parts than supervisors from Georgia. These actual differences are: total test, 16.45; knowledge, 8.45; application, 8.00; nutrition, 5.33; mental health, 4.08; school and community health, 10.12; and safety and first aid, 5.21.

Also from table 36 it may be seen that Oklahoma experienced high school teachers made higher scores for the total test and the 6 test parts than experienced high school teachers of Georgia. These actual differences are: total test, 19.75; knowledge, 11.15; application, 8.60; nutrition, 4.16; mental health, 5.31; school and community health, 8.39; and safety and first aid, 6.93.

As an additional contribution to education in Oklahoma a set of norms[1] was constructed from the total test scores of experienced and prospective teachers used in this study.

Recommendations

At present, health instruction in the secondary schools of Oklahoma is usually included in occasional units in science, home economics, or as rainy day activity for physical education courses rather than being a separate course offering. There is no state curriculum nor are there adopted text books in health for the secondary schools of

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[1] A copy of the norms is included in Appendix F.

Oklahoma. On the elementary level time is often provided in the curriculum for health teaching and in many classrooms and schools a regular class period is devoted to such instruction. The following recommendations are based on the findings of this study as they bear upon situations described in the above statements:

1. Prospective teachers in fields which usually require responsibility for health teaching indicated only slight superiority in health information over prospective teachers with little or no responsibility for health teaching. Therefore, it is recommended that prospective teachers who will usually have responsibility for health teaching be sufficiently prepared to demonstrate marked superiority over non-health teachers on any suitable health information test.

2. Male prospective teachers in the field of health and physical education should have a knowledge of health facts superior to all other male high school teachers. It was found in this study that their health knowledge scores were below those of science and elementary male prospective teachers.

3. Experienced teachers of the elementary grades appear to need a more adequate preparation for teaching health. This was indicated in the present study by the rather low scores made by the elementary teachers.

4. All teachers who are primarily responsible for direct health instruction should be sufficiently informed on health to show a definite superiority in health information

over those teachers with little or no responsibility for direct health instruction.

5. Teacher education institutions should offer graded and progressive curricula for specialists in teaching health just as are found for other academic subjects. With the establishment of these curricula it would then be possible and advisable to offer a certificate in health as a teaching field on the secondary level. This certificate is now offered in eight states.[1]

Suggestions for Further Studies

In the course of this investigation, numerous questions arose which were beyond the scope of this study. In the opinion of the writer, the following are most important:

1. What information should teachers possess to enable them to do their part in meeting basic pupil health needs; personal, school, and community?

2. What gains in health information should be expected to result from teachers taking various courses in health and those fields which are closely related to health?

3. To what extent is health information possessed by teachers correlated or related to health practices existing in the school and the classroom?

4. Does intelligence or other selective factors contribute to the apparent fact that some groups of teachers

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[1] Haag, op. cit., p. 174.

and many individuals reporting few or no hours of college credit in health or related courses made scores as high and in many cases higher than teachers reporting more hours of college credit in health and related courses?

5. To what extent is health instruction included in the curricula of Oklahoma elementary and secondary schools?

6. What individual and/or collective procedures if any, are used by teacher education institutions of Oklahoma to assure a continual apprasial of the effectiveness of the health education of prospective and experienced teachers?

7. Does the Acorn Health Test discriminate sufficiently at the upper levels of knowledge among the prospective and employed teachers of Oklahoma represented in this study? This question is raised by the abnormal concentration of cases (skewness) found in the upper range of scores.

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APPENDICES

APPENDIX A

Box 599 Wilson Center
Norman, Oklahoma
February 24, 1954

The President
_____
_____, Oklahoma

Dear President _____

I have outlined a Thesis problem in which I plan to visit each of the colleges and universities in Oklahoma. In planning my visit to your campus I would like to work with the person directing or in immediate supervision of student teacher education.

I should appreciate very much your sending to me the name of the person in charge of this program.

Sincerely yours,

James A. Fikes

APPENDIX B

Box 599 Wilson Center
Norman, Oklahoma
March 22, 1954

Mr. _____, Director
Teacher Education
_____
_____, Oklahoma

Dear Mr. _____

I am planning an investigation to determine the health information possessed by senior prospective teachers in the teacher education institutions of Oklahoma. It is hoped that the material for this study can be obtained by administering a Health Knowledge Test to seniors enroled in teacher education in cooperating colleges.

President _____ gave me your name as the person to contact in making arrangements for a visit to your school. The test will take about 45 minutes to complete. The enclosed card is for your use in designating a specific day and time for me to visit your campus and administer the test to all available senior prospective teachers. It will be greatly appreciated if you can arrange for all senior prospective teachers to be tested on the same day.

Names of individuals tested or school will not be identified with results. However, participation of the cooperating schools and your assistance will be acknowledged in the completed study. I will, of course, be glad to furnish you with the results obtained from your group, as well as other significant findings of the completed study.

Sincerely yours,

James A. Fikes

Enclosure

APPENDIX C

Approximate number of senior prospective teachers who would be available at a convenient pre-arranged time for testing.

Circle two dates in each of the following months it would be most convenient to have me give the test to your students.
⊙ 1st choice ⊕ 2nd choice

April					
M	T	W	T	F	S
			1	2	3
5	6	7	8	9	10
12	13	14	15	16	17
19	20	21	22	23	24
26	27	28	29	30	

Best hour for 1st date_____
Best hour for 2nd date_____
Institution_____

May					
M	T	W	T	F	S
					1
3	4	5	6	7	8
10	11	12	13	14	15
17	18	19	20	21	22
24	25	26	27	28	29
31					

Best hour for 1st date_____
Best hour for 2nd date_____
Signature_____

APPENDIX D

PROSPECTIVE TEACHERS

Please fill in or check carefully the information indicated below

Fill in College hours (77-78) Check your major field

Sex: M____ F____ (79)

	No. of hours	course			
51-52-53		Zoology Biology	Art	Mathematics	
54-55		Bacteriology	Bookkeeping and Clerical Practice	Music (Combined)	
56-57		Anatomy Physiology	Business Educ.	Music (Instrumental)	
58-59		Personal Hygiene	Distributive Educ	Music (Vocal)	
60-61		School or Public Health Education	Elementary	Science	
62-63		Home Economics	Foreign Language	Social Studies	
64-65		School or Community Hygiene	General Home Economics	Special Education	
66-67		Safety First Aid	Health and Physical Educ.	Speech	
68-69		Mental Hygiene	Industrial Arts	Trade and Industrial Educ.	
70-71		Child Development Child Psychology	Language Arts	Vocational Agriculture	
72-73		Total	Librarian (Public School)	Vocational Home Economics	
74-76					

1.____	18.____	35.____	52.____	69.____	86.____
2.____	19.____	36.____	53.____	70.____	87.____
3.____	20.____	37.____	54.____	71.____	88.____
4.____	21.____	38.____	55.____	72.____	89.____
5.____	22.____	39.____	56.____	73.____	90.____
6.____	23.____	40.____	57.____	74.____	91.____
7.____	24.____	41.____	58.____	75.____	92.____
8.____	25.____	42.____	59.____	76.____	93.____
9.____	26.____	43.____	60.____	77.____	94.____
10.____	27.____	44.____	61.____	78.____	95.____
11.____	28.____	45.____	62.____	79.____	96.____
12.____	29.____	46.____	63.____	80.____	97.____
13.____	30.____	47.____	64.____	81.____	98.____
14.____	31.____	48.____	65.____	82.____	99.____
15.____	32.____	49.____	66.____	83.____	100.____
16.____	33.____	50.____	67.____	84.____	
17.____	34.____	51.____	68.____	85.____	

EXPERIENCED TEACHERS

Please fill in or check carefully the information indicated below

Fill in College hours (Undergrad. and Grad.)

	No. of hours	course
51-52-53		Zoology
54-55		Biology
56-57		Bacteriology
58-59		Anatomy
		Physiology
60-61		Personal Hygiene
62-63		School or Public Health Education
64-65		Home Economics
66-67		School or Community Hygiene
68-69		Safety
		First Aid
70-71		Mental Hygiene
72-73		Child Development
		Child Psychology
74-76		Total

Check years experience

- up to 6 years
- 6 to 12 years
- 12 to 18 years
- over 18 years

Sex: Male _____
Female _____

Check present position

- 1st grade
- 2nd grade
- 3rd grade
- 4th grade
- 5th grade
- 6th grade
- Jr. High
- Secondary
- Administrator

Have you ever taught health? Yes_____ No_____(79)

Are you at present responsible for any health instruction? Yes_____ No_____ If so how much?

_____ 1-5 periods per week._____ 6-10 periods per week._____ over 10 periods per week.(80)

1._____	18._____	35._____	52._____	69._____	86._____
2._____	19._____	36._____	53._____	70._____	87._____
3._____	20._____	37._____	54._____	71._____	88._____
4._____	21._____	38._____	55._____	72._____	89._____
5._____	22._____	39._____	56._____	73._____	90._____
6._____	23._____	40._____	57._____	74._____	91._____
7._____	24._____	41._____	58._____	75._____	92._____
8._____	25._____	42._____	59._____	76._____	93._____
9._____	26._____	43._____	60._____	77._____	94._____
10._____	27._____	44._____	61._____	78._____	95._____
11._____	28._____	45._____	62._____	79._____	96._____
12._____	29._____	46._____	63._____	80._____	97._____
13._____	30._____	47._____	64._____	81._____	98._____
14._____	31._____	48._____	65._____	82._____	99._____
15._____	32._____	49._____	66._____	83._____	100._____
16._____	33._____	50._____	67._____	84._____	
17.	34.	51._____	68._____	85.	

APPENDIX E

TABLE 37

TABLE OF NORMS FOR THE UNITED STATES*

Percentile Ranges	7th Year Score	8th Year Score	9th Year Score	10th Year Score	11th Year Score	12th Year Score	College Score
91-100	57-69	63-74	67-82	70-83	74-83	77-85	86-100
81-90	52-56	58-62	62-66	65-69	70-73	74-76	77-85
71-80	50-51	54-57	60-61	63-64	65-69	71-73	74-76
61-70	47-49	52-53	58-59	60-62	63-64	69-70	71-73
51-60	44-46	50-51	56-57	59-60	61-62	67-68	69-70
41-50	41-43	48-49	54-55	57-58	59-60	64-66	67-68
31-40	38-40	45-47	50-53	54-56	56-58	62-63	64-66
21-30	33-37	41-44	46-49	51-53	52-55	59-61	62-63
11-20	29-32	38-40	41-45	46-50	49-51	54-58	59-61
1-10	17-28	20-37	25-40	33-45	31-48	40-53	54-58

*The above norms are based on scores of 6,753 students in schools in the east, west, central and southern sections of the United States.

APPENDIX F

TABLE 38

TABLE OF NORMS FOR OKLAHOMA*

Percentile Ranges	Prospective Teacher Score	Experienced Teacher Score
91 - 100	87 - 100	84 - 100
81 - 90	85 - 86	82 - 83
71 - 80	83 - 84	79 - 81
61 - 70	80 - 82	77 - 78
51 - 60	76 - 79	75 - 76
41 - 50	74 - 75	73 - 74
31 - 40	71 - 73	71 - 72
21 - 30	68 - 70	69 - 70
11 - 20	64 - 67	64 - 68
1 - 10	46 - 63	42 - 63

*The above norms are based on scores of 714 teachers (404 prospective and 310 experienced) from all sections of Oklahoma.