

**A MODEL FOR ASSESSING
STUDENT LEARNING IN WELLNESS
AT A
STATE-SUPPORTED REGIONAL UNIVERSITY**

by

*Jeffrey W. Wimer, Ph.D., ATC
Stratton C. Schaeffer, Ph.D.
Julie A. Lombardi, P.E.D.*

Abstract

The purpose of this article is to describe Millersville University's approach to assessing Wellness—a required course that blends traditional health and physical education courses into a comprehensive program aimed at enhancing students' lives through a balanced lifestyle integrating body, mind, spirit and the environment. A state-supported, regional university enrolling approximately 7,000 undergraduates and 1,000 graduate students, Millersville is located near Lancaster, Pennsylvania, a vital and historic city of 55,000 in a metropolitan area of 350,000. In this article, we explain the concept of wellness (and its role at Millersville University), how accreditation standards influenced our assessment efforts, and finally, how the department implemented an instrument to measure wellness related to the university's general education objectives.

Key Words: traditional health and physical education, wellness, assessment

Defining Wellness

Originally, the idea of wellness was first introduced in the United States by Halbert Dunn, M.D., Ph.D. in the late 1950s. Dunn served as the first director of the National Office for Health Statistics and defined high-level wellness as an integrated method oriented toward maximizing one's potential in difficult situations (Dunn, 1961). Dunn believed that

ordinary people could learn to know themselves, and thus, become better balanced and able to deal adequately with the problems they faced (Columbia University, 2003). Today, wellness is an expanded idea of health that encompasses not only physical and psychological well-being, but also an appreciation for the environment, life-long learning, community participation, and spirituality (Fahey, Insel & Ross, 2002).

Wellness Requirement at Millersville University

In an effort to curb the increasing incidence of obesity and other health-related behaviors, and to show students how they can become fit and well by taking responsibility for their health, undergraduates enrolled at Millersville University are required to pass a three-credit course in wellness. Research indicates that college students engage in behaviors that place them at risk for serious and chronic health problems (Lowry et al., 2000). While some unhealthy behaviors begin in high school, many behaviors are aggravated during the ages of 18-24; therefore, colleges and universities are important settings to teach awareness and promotion of healthy behaviors (Leenders et al, 2003). In fact, the importance of positively influencing health behaviors among college populations is an important objective defined in Health People 2010, a US government publication designed to identify specific strategies for improving the nations' health.

Taught by faculty in the Wellness & Sport Sciences Department, the wellness course blends cognitive and affective domains of health and medicine with the psychomotor components of physical activity. Each week, approximately 100-minutes of class, (or two-thirds of the course) is focused on learning about areas of wellness such as nutrition, stress and depression, healthy blood lipid profiles, chronic diseases, addictive behaviors, responsible sexual behavior, and fitness. The remaining 50-minutes (or other third of the course) includes student learning experiences in fitness, which can range from fitness walking and bench stepping to the forms used in Tai Chi—one of the oldest systems of Chinese martial arts. During weekly exercise sessions, time is often devoted to measuring blood pressure, body fat, cardiovascular fitness, strength, and flexibility. Previously, students at Millersville were required to take one Health course (2 credits) and two (2) Physical Education activity classes (.5 credits each), which typically included swimming or walking/jogging.

The Department

In February 2000, Millersville University changed the name of its Health and Physical Education Department to Wellness & Sport Sciences to more properly reflect the nature of its programming. This change resulted from the faculty's adoption of the wellness paradigm and the renewed emphasis on health promotion and physical fitness to counter the increasing incidence of obesity, diabetes and heart disease.

The department is currently comprised of twelve full-time and two part-time faculty members who teach various sections of the wellness course each semester. In addition, the department offers a Master's degree in Sport Management, and an athletic coaching minor—one of the largest on campus. On average, each section of the wellness course consists of 30-35 students per class with first year students composing the largest percentage of the enrollment. Approximately 800 students take the wellness course each semester.

Accreditation and Assessment

Across the nation, accreditation standards and accountability strategies have become a national phenomenon (Erwin, 1991). From federal legislation such as "No Child Left Behind" to local benchmarking and peer institution comparisons, the systematic assessment of student learning is indeed an essential component of the American educational system. Assessment helps to document the contribution (or lack of contribution) that an educational program has on students. In essence, assessment helps to determine if certain courses (or patterns of courses) are associated with overall learning.

In an effort to better gauge student learning at Millersville University, the Wellness & Sport Sciences Department established an assessment committee, which in large part began in response to the University's efforts to satisfy regional accreditation criteria established by the Middle States Commission on Higher Education. Although accreditation and assessment may seem to be recent national developments, the concept is not new. In fact, accreditation agencies formed as self-regulatory and evaluative forces for higher education in the United States over a century ago (Blauch, 1969; Harclerod, 2000; Haroian-Guerin, 2000; Riesman, 1980; Silva, 1997; Stark & Lattuca, 1997). Today, there are regional

and specialized accreditation agencies.

Regional agencies grant institutional accreditation to an entire college or university whereas specialized accreditation agencies certify specific educational programs. Across the United States there are six regional accreditation agencies representing different geographic locations (i.e., New England, Middle States, North Central, Southern, Northwest, and Western). The primary goal of regional accreditation is to ensure quality teaching and learning vis-à-vis established standards (Eaton, 2001). Specialized accreditation agencies vary widely and represent the needs of various professions whereas regional accreditation "assures the public that the goals of higher education have been achieved by evaluating each institution within the context of its mission" (Middle States Commission on Higher Education, 2003, p.1.). In all, both regional and specialized accreditation requires institutions of higher learning to demonstrate their effectiveness to students and the broader public.

Meeting Accreditation Standards for Assessment

In order to begin preparing for an impending Middle States Commission regional accreditation visit, a departmental committee of volunteer faculty members was assembled for the purpose of developing a departmental assessment plan. Several of the faculty joining this committee recognized that outcomes assessment plays an important role in higher education as evidenced by their utilization of various assessment strategies in their courses. For example, many of the faculty committee members were performing pretest-posttest assessments of their student's physical fitness levels.

The first step the assessment committee completed was to review the University catalog and read the wellness course description. Next, the committee examined the written course objectives for the course. Each step of the process is outlined in Table 1. The degree of alignment between the course objectives and the course content is critical to assessment procedures. According to Erwin (1991), "Objectives established prior to actual assessment of students can guide the selection of assessment methods. The program objectives must drive the assessment methods and instruments, not the other way around" (p. 37).

TABLE 1
Steps in the Millersville University Wellness Assessment Model

<i>Step</i>	<i>Process</i>
1	Formulate a committee
2	Examine available documents
3	Develop a blueprint
4	Select an assessment method
5	Align the assessment instrument to the blueprint
6	Develop test content using a modified-Delphi-technique
7	Pilot the instrument
8	Analyze pilot data and make changes if necessary
9	Administer the assessment
10	Write a summary report
11	Share findings

Course Description in Academic Catalog

The course description (as approved by the faculty and printed in the academic catalog) states:

This [100-level] course offers a comprehensive discussion of the dimensions of wellness including such topics as physical fitness, nutrition, psychological well-being, stress management, AIDS and STDs prevention, addictive behaviors, responsible sexual behavior, and chronic diseases. The course also includes practical advice for adopting a wellness lifestyle that takes into account individual interests, goals, and life situations (Millersville University 2002-2004 undergraduate catalog, p. 239).

Learning Objectives

The thirteen learning objectives for the course are as follows:

1. Describe the benefits of a comprehensive wellness lifestyle.
2. Define the health related components of physical fitness and explain the importance of each to the student's overall fitness and health.

3. Explain the benefits of aerobic fitness.
4. Differentiate between muscular fitness, muscular strength and muscular endurance and develop a personalized beginning weight training program.
5. Demonstrate how to maintain or increase flexibility and prevent lower back pain.
6. Explain techniques for preventing injury, as well as some of the most common fitness related injuries and methods for treating those injuries.
7. Describe the importance of good nutrition and use this information to make dietary choices that contribute to wellness.
8. Learn how to establish a healthful and realistic expectation for personal level of body fitness as well as the appropriate means for reducing body fat when such is called for.
9. Define the key aspects of psychological wellness and the factors that influence psychological health.
10. Examine how stress affects health and well-being, including the appropriate methods for reducing negative influences.
11. Learn about the process of addiction, and methods used to prevent and cease addictive behaviors.
12. Define the symptoms, diagnosis, and treatment for common sexually transmitted diseases including those that are caused by bacteria and those that are caused by viruses.
13. Discuss the major chronic diseases affecting people today such as cardiovascular (heart) diseases, cancer, diabetes, and osteoporosis.

Developing a Blueprint

An educational blueprint or "table of specifications" as it is sometimes termed, is meant to give guidance to an organization's educational priorities. Often, it consists of key learning objectives to be assessed or the number of points (or weight) that will be devoted to a specific area of the

curriculum. Different from a rubric, an educational blueprint is a useful step for ensuring an alignment between the instructional goals and what is taught. Additionally, it serves as a way to document what items will be measured.

The next step the committee took after examining the documents was to create a blueprint. To do so, a brief survey was developed. The purpose of the survey was to provide the assessment committee with baseline data that could be used to guide the blueprint process. The committee asked faculty teaching the course to rate the level of emphasis they placed on each of the objectives in the course on a scale of Low, Medium, High or Not covered.

Results from the survey revealed that faculty emphasized content areas such as aerobic fitness, muscular strength and endurance, flexibility, and nutrition, and focused less of their instruction on lifestyle, injury prevention, psychological issues, addictive behaviors, and sexuality-transmitted diseases.

Selecting an Assessment Instrument

Before developing an instrument, the committee had to decide upon a method. Generally, learning objectives in health and physical education courses are assessed differently than learning objectives in other courses. One explanation for this variance is that health and physical education courses typically involve individual psychomotor (or hands-on) components rather than purely cognitive learning often found in traditional courses. Assessing courses differently does not mean a course is anymore (or less) valued. Rather, it may mean that a college or university recognizes that there are various methods for assessing learning outcomes. Due to the highly individualized nature of the courses taught within the department, rarely had the faculty formally assessed, (aggregately at least) the level of student learning as a whole. Members of the department, however, had conducted individual skill and performance assessment measures.

Initially, the assessment committee explored several options for meeting the assessment standard outlined in the accreditation materials such as an on-line alumni survey, focus group/exit interviews, syllabus checklists, and a pretest-posttest. To expedite the process, these options were divided into short-term goals and long-term goals. The committee selected the pretest-posttest method as the first short-term goal.

In assessment terms, multiple choice pretest-posttest methods are known as "direct formats" for assessing student learning. Other direct formats include standardized tests, term papers and reports, rubric score (i.e., criterion-based rating scale) for writing, oral presentations and performance work, and case study analysis (Middle States Association on Higher Education, 2003). For assessing student learning, multiple-choice direct formats have several advantages over other indirect formats such as self-reported attitudes. For example, multiple-choice items are easy to administer, score, and can accurately measure multiple items (Morrow et al, 1995). Furthermore, instruments composed of well-written multiple-choice items are highly reliable and preferred in some circles for their statistical interpretation and generalizability (Nunnally, 1972).

Aligning the Test to the Objectives

Based on results from the faculty survey, the educational blueprint was aligned to each of the thirteen learning objectives (i.e., content areas). In other words, at least two test questions represented all areas. Additional test questions were developed for the learning objectives emphasized by the department faculty. That is, there were more questions developed for aerobic fitness than sexually transmitted diseases. Table 2 represents each of the learning content areas and the actual number of test items developed for each objective.

Developing Test Content

Designing one's own instrument to fit departmental assessment needs is hard work—much harder than, for example, constructing a classroom test (Erwin, 1991). Not only are there issues of reliability and validity, but there are also issues of faculty consensus that must be taken into account.

To address the issue of consensus, the Wellness & Sport Sciences Department assessment committee used a modified Delphi technique for test item selection. In short, the Delphi technique is a methodology for obtaining consensus from a panel of experts (Skutsch & Hall, 1973). Typically, each expert selected to the panel is required to review and offer comment on the appropriateness of test items, survey questions, phraseology, and the format of an instrument (Weaver, 1973). The modified

TABLE 2
Table of Specifications and Average Posttest Improvement by Content Area

Wellness Content Areas	Number of Test Items	Item Number on Test	Average Improvement
Lifestyle	2	1, 2	3
Components of fitness	2	3, 4	16
Aerobic	5	5, 6, 7, 8, 9	14
Muscular	5	10, 11, 12, 13, 14	13
Flexibility	5	15, 16, 17, 18, 19	14
Injury Prevention	2	20, 21	9
Nutrition	5	22, 23, 24, 25, 26	17
Body Composition	4	27, 28, 29, 30	10
Psychological	2	31, 32	10
Stress Management	3	33, 34, 35	8
Addictive Behaviors	2	36, 37	3
Sexually transmitted diseases	2	38, 39	8
Cardiovascular disease	4	40, 41, 42, 43	4
Cancer	4	44, 45, 46, 47	11
Chronic disease	3	48, 49, 50	12

Delphi technique was selected in part because it allows test developers to see how closely they responded to the rest of the field of experts, as well as to justify their thinking about particular questions (McKillip, 1987).

Using a rating process, each potential test item selected by the committee was reviewed by three departmental faculty members for content validity, accuracy and clarity. Each expert rated the potential test items using the following scale: 1) acceptable as written, 2) acceptable only with recommended revisions, or 3) unacceptable. Test items were sent electronically to other departmental faculty via an e-mail attachment that indicated scoring results. Results were differentiated by font colors (i.e., green text for acceptable, yellow text for revisions, red text for unacceptable) for test items.

After the e-mail exchanges, results were compiled and the following set of criteria were used to determine content for the wellness instrument: To begin, any item judged to be acceptable as written by three or more of the faculty experts was included in the pool of acceptable items. Secondly, any item unanimously rejected by all of the experts was automati-

cally deleted from the pool of acceptable items. Thirdly, selected items recommended with revisions were revised and were included in the pool of acceptable items. In many instances, long and seemingly trivial questions were eliminated. After the rating process was completed, the selected test items were reconfigured into a subsequent draft exam, which was forwarded to the committee for review. The committee selected acceptable test items for inclusion on the test based on these selection criteria.

In order to increase an assessment instrument's power, Nunnally (1972) recommends at least twice as many test items be written for a test. In other words, as the number of items in the selection pool increases, so does the instrument potential ratings of reliability (Morrow et al, 1995; Nunnally, 1972). Following this logic, the assessment committee selected test items from a computer bank of examination questions produced by the publisher of a popular wellness textbook (Schurrer, 2001) used by the majority of faculty within the department.

Pilot Procedures

To ensure an accurate test, six faculty members agreed to pilot the instrument during the Spring of 2003. A pilot study is a preliminary study used to test a procedure or to refine the methodology or design. The pilot pretest included 288 students, but as a result of student withdrawals and illness, the posttest included 222 students. All pretests were administered in the first week of classes and the posttest during the week before final exams. While there was no provision to ensure that students applied their best effort, it was the general sense among those proctoring and those scoring the tests that students took the test seriously and were actively engaged.

Specific testing instructions were developed and given to the faculty proctors in advance. These materials also included 35 copies of the instrument and accompanying answer (bubble) sheets for electronic scanning via a Scantron™ computerized reading machine. Number 2 pencils were also provided to all faculty to assist in the process. To alleviate potential fears, the committee was mindful to explain procedures and how the results would be used in advance, emphasizing that neither instructor nor student results would be reported in final reports, only aggregate data.

Pilot Data Analysis

In order to determine which test items needed improvement, a procedure known as an "index of discrimination" was used. In short, this procedure helps to identify the internal validity of test items by producing a spread of scores that reflect differences in student achievement. The scores are then used to make distinctions about the performances of examinees (Michigan State University, 2003).

To create the index of discrimination, the following procedure was utilized: First, individual total scores were ranked from highest to lowest and arranged into three groups: (upper 27%, lower 27%, and middle 46%). Second, the frequency and selection of each possible response by the upper group was counted and recorded. Third, the frequency and selection of each possible response by the lower group was counted and recorded. Finally, the number of correct responses of the lower 27% were subtracted from the number of correct responses of the upper 27% and divided by the number of examinees in the upper 27%. This calculation yielded a result known as the quantitative "discriminating power" of each test item. Test items that received a negative discrimination score were reexamined in order to rework the question, or possibly delete the question from the future instruments. Items that were answered correctly by more than 85% of the students or less than 15% of the subjects score were deleted from the pretest-posttest instrument. The Millersville pilot test was determined to have good discriminating power.

To determine whether there was a significant difference between the pilot pretest and posttest scores, a paired samples *t*-test was performed ($n=222$), which revealed a significant difference ($p<.001$) between the pretest and posttest scores. In other words, student increased their knowledge. The students in the pilot study performed better (scored higher) after taking the wellness course than before the course. Pilot pretest scores were $M=22.4$, $SD=4.71$. Posttest scores were $M=29.8$, $SD=5.64$. The average overall improvement was 15%.

Using Data from the Pilot Study

During the summer of 2003, the committee met to discuss the pilot test and to discuss potential changes to the instrument. Specifically, two test questions were modified based on the results of the index of discrimi-

nation. These questions were from the lifestyle and aerobic fitness content areas. Improvements were made to multiple-choice test answer selections and wording.

Results

Using the same procedures developed for the pilot study, (i.e., proctoring instructions, confidentiality, and Scantron™ scoring, etc.) the revised pretest-posttest was administered in the Fall of 2003. Eight faculty members were recruited to administer the instrument to a representative sample of 301 students. To determine whether there was a significant difference between the student scores, a paired samples *t*-test was performed. The statistical test revealed a significant difference ($t(299) = 19.35$, $p<.001$) between the pretest and posttest scores. In other words, student knowledge increased on the assessment study similar to the student improvement on the pilot study. The pretest scores were $M=22.2$, $SD=5.05$. The posttest scores were $M=28.1$, $SD=5.83$. The average improvement on this instrument was 10%. Table 2 shows the table of specifications used in creating the instrument and the overall percentage of student improvement for each content area. Specifically, content item knowledge increased, on average, anywhere from 3% to 17%.

The index of discrimination value for each of the 50 individual test items was encouraging. There were four questions from the test with deficient discrimination. For example, the lifestyle questions (Question 1), was answered correctly by 80% of the students on the pretest. The high number of students answering correctly indicates the question should be reviewed and possibly replaced, in part because it may be too easy. The mean scores for the pilot study and assessment study were nearly identical, which suggests the pretest-posttest instrument had good reliability. The percent correct for each question from the pretest and posttest is located in Table 3. Table 4 shows the means and standard deviations for the pretest and posttest. The student scores imply that students who enroll in the course have very little prior knowledge about wellness content, and their improvement, albeit statistically significant, was not exceptional.

TABLE 3
Percent Correct for each Test Item on the Pretest and Posttest Assessments

Test Question	Pretest % Correct	Posttest % Correct	Test Question	Pretest % Correct	Posttest % Correct
1	80	81	26	30	40
2	87	92	27	6	16
3	52	78	28	11	24
4	32	38	29	27	35
5	33	40	30	27	36
6	39	51	31	55	62
7	38	66	32	45	57
8	43	62	33	73	81
9	38	44	34	36	40
10	63	75	35	40	51
11	73	77	36	30	26
12	46	79	37	41	50
13	20	29	38	53	61
14	49	57	39	69	77
15	26	33	40	67	72
16	43	52	41	77	84
17	30	47	42	30	39
18	38	60	43	75	70
19	28	42	44	75	84
20	70	80	45	52	72
21	24	32	46	47	57
22	13	31	47	53	68
23	9	25	48	45	55
24	22	53	49	46	48
25	59	69	50	58	83

TABLE 4
Overall Performance on Pretest and Posttest Assessments

Test	<i>N</i>	%	<i>M</i>	<i>SD</i>
Pretest scores	301	44.5	22.24	5.83
Posttest scores	301	56.1	28.05	5.05

Discussion

Accreditation agency requirements will continue to be a driving force for assessment activities on college campuses well into the future. Therefore, the implementation and development of ongoing assessment strategies aimed at exploring pedagogies that foster greater cognitive and physical learning will remain an important process in higher education. More importantly, sharing assessment examples and models from typically underrepresented disciplines such as wellness or health and physical education will not only help to improve higher education, but also the teaching and learning process. It became evident to the Millersville University Wellness & Sport Sciences Department that a formalized assessment model provides evidence of instructional effectiveness. Furthermore, the acquisition of new data helped the department make effective resource allocation decisions in the area of professional development. For example, the department purchased new videotapes and DVDs so faculty could learn more about the content areas where the students had low performance gains. Although the data showed many areas of student improvement, the department also focused attention on the possible reasons for student deficiency. For example, the committee discussed the inadequate academic preparation of students, including their study habits, as well as the perceived importance of the course by students, and the emphasis departmental faculty put on particular content areas. Moreover, discussion centered on moving beyond multiple-choice tests toward a quest for authentic testing that encompasses the multiple intelligences of students.

Recently, the assessment committee developed several questions as part of a survey designed to measure student wellness behaviors before and after the wellness course. That is, do students report different behaviors having taken the wellness course in comparison to students who have

not taken it? Upon completion of this survey, a summary report will be prepared and made available to relevant members of the campus community for continuous improvement. Additionally, the committee is investigating benchmarking specific outcomes that students must demonstrate before passing the wellness course.

In conclusion, this article detailed the steps that one state-supported regional university took to address the continuing national phenomenon of accreditation and assessment. Assessment is a useful process that should not be loathed. It is a process, that in the end, helps a campus community to better understand the important contribution that wellness makes on students and society. The model presented here may assist others with their assessment procedures.

References

- Blauch, L.E. (1969). Accreditation in higher education. New York, NY: Greenwood Press.
- Columbia University. (2003, May). Go ask Alice: Why promote health care? [On-line] Available: <http://www.goaskalice.columbia.edu/0951.html>
- Dunn, H. L. (1961). High level wellness: A collection of twenty-nine short talks on different aspects of the theme: High-Level Wellness for Man and Society. Arlington, VA: R. W. Beatty Ltd.
- Eaton, J.S. (2001). Regional accreditation reform: Who is served? Change, 33,38-45.
- Erwin, T.D. (1991). Assessing student learning and development: A guide to the principles, goals, and methods of determining college outcomes. San Francisco: Jossey-Bass Publishers.
- Fahey, T.D., Insel, P.M. & Roth, W.T. (2002). Fit and well: Core concepts and labs in physical fitness and wellness. Mountain View, CA: Mayfield Publishing Company.
- Harclerod, F.F. (1980). Accreditation: History, process, and problems. Washington, D.C.: American Association of Higher Education.
- Harioian-Guerin, G. (2000, Oct. 27) Letters to the editor: The changing role of accreditation. Chronicle of Higher Education: Chronicle Review, B17.
- Leenders, N.Y., Sherman, W., & Ward, P. (2003). College physical activity courses: Why do students enroll, and what are their health behaviors? Research Quarterly for Exercise and Sport, 74, 313-318.
- Lowery, R., Galuska, D.A. Fulton, J.E., Wechsler, H. Kahn, L., & Collins, J.L. (2000). Physical activity, food choice, and weight management goals and practices among U.S. college students. American Journal of Preventive Medicine, 18, 18-27.
- Michigan State University (2003, Aug.). Interpreting the index of discrimination [On-line]. Available: <http://www.msu.edu/dept/soweb/indexdis.html>
- Middle States Commission on Higher Education (2003). Student learning assessment: Options and resources. Philadelphia, PA: Middle States Commission on Higher Education.
- Millersville University. (2002). 2002-2004 undergraduate catalog, Millersville, PA: Millersville University.
- Morrow, J., Jackson, A., Disch, J. & Mood, D. (1995). Measurement and Evaluation in Human Performance. SYSTAT, Inc., Evanston, IL.
- McKillip, J. (1987). Need analysis: Tolls for the human services and education. Newbury Park, CA: Sage publications.
- Nunnally, J. (1972). Introduction to Psychological Measurement. New York, New York: McGraw Hill.
- Riesman D. (1980). Protecting students by voluntary action: Regional accrediting associations. In: On higher education: The academic enterprise in an era of rising student consumerism. San Francisco: Jossey-Bass; 322-343.
- Silva, M.K. (2001). Accreditation, knowledge, and strategies of professionalizing occupations. Ann Arbor, MI: UMI Microfilm.
- Schurrer, R. (2001). Examination questions to accompany fit & well: Core concepts and labs in physical fitness and wellness. Mountain View, CA: Mayfield Publishing Company,
- Skutsch, M & Hall, D. (1973). Delphi: Potential Uses in Educational Planning Project Simu-School: Chicago Component. Unpublished Manuscript, Chicago Board of Education. Chicago, IL.
- Stark, J.S, & Lattuca, L.R. (1997). Shaping the college curriculum: Academic plans in action. Needham Heights, MA: Allyn & Bacon; 18, 232-233.
- U.S. Department of Health and Human Services. (2000). Healthy people 2010 (conference ed., in two volumes). Washington, DC: US Government Printing Office.
- Weaver, W. (1972). Delphi: A Critical Review. Syracuse, New York: Education Policy Research Center, Syracuse University.