Volume 8, Number 3
Winter 1983

# JOURNAL OF OPTOMETRIC EDUCATION

## Developing The Model Contact Lens Curriculum

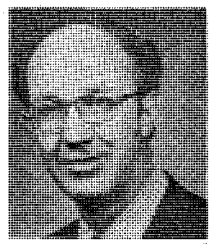
ALSO:

■ The Use of Non-Print Media in Continuing Education Programs
■ Analysis of Optometric Practices in Ohio ■ Good Teaching—A Rewardable Feat
■ A Computer Assisted Method for Analyzing Curriculum Content

# ASSOCIATION of SCHOOLS and COLLEGES of OPTOMETRY

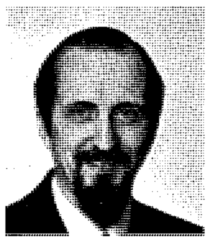
**The Association of Schools and Colleges of Optometry (ASCO) represents the professional programs of optometric education in the United States and Canada. ASCO is a non-profit, tax-exempt professional educational association with national headquarters in Washington, D.C.**



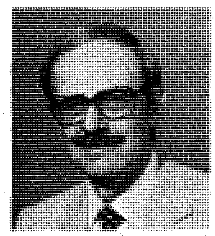


*President*
Willard B. Bleything, O.D., M.S.
Dean, Pacific University
College of Optometry

*President-Elect*
Richard L. Hopping, O.D.
President, Southern California
College of Optometry



*Vice-President,*
Edward R. Johnston, O.D., M.P.A.
President, State University of New York
State College of Optometry



*Secretary-Treasurer*
Jack W. Bennett, O.D.
Dean, Ferris State College
College of Optometry

ISSN 0098-6917

# Table of Contents
# Winter, 1983
# Volume 8, Number 3

JOURNAL OF OPTOMETRIC EDUCATION

Official Publication of the Association of Schools and Colleges of Optometry



## DEPARTMENTS



*Special thanks and appreciation is extended to Dr. Barry Ephraim for his loan of the contact lenses photographed on this cover.*

*Cover photograph by Jack Douthitt*
*Typesetting: Bobbie Peters Graphics*

The **JOURNAL OF OPTOMETRIC EDUCATION** is published by the Association of Schools and Colleges of Optometry (ASCO). **Managing Editor:** Harriet E. Long. **Art Director:** Dan Hildt, Graphics in General. Business and editorial offices are located at 600 Maryland Ave., S.W., Suite 410, Washington, D.C. 20024. **Subscriptions: JOE** is published quarterly and distributed at no charge to dues-paying members of ASCO. Individual subscriptions are available at \$10.00 per year, \$15.00 per year to foreign subscribers. Postage paid for a non-profit, tax-exempt organization at Washington, D.C.  Advertising rates are available upon request.

# Health Care: A Profession or a Business?

Well over one hundred years ago, the perceptive Frenchman, Alexis de Tocqueville, wrote: "Americans have a passion for health, well-being and equality." Perhaps if he were viewing the scene in the United States today he would say, "Americans have a passion for health and well-being at the lowest possible price." The concern about the cost of health care that pervades the thinking of policymakers in the United States in our day is not in itself detrimental or ill-conceived. Utilization of human resources and material goods in a manner that benefits all members of society is of ethical concern as well as of economic concern. If the cost of health care continues to escalate it is clear that many people, usually the poor, will not be able to afford adequate health care. Moreover, other needs of society, such as education and care for the mentally ill, will receive enough support if more and more funds are devoted to health care. Hence, my concern is not about the effort to contain rising costs in health care. Rather, by reason of the methods employed in the effort to contain health care costs, I fear that health care will be transformed from a humanitarian to an economic endeavor.

## Changing Terminology

What are the signs that health care is being transformed from a profession into a business? For the most part, the signs are subtle, and the process is unconscious, though nonetheless effective. Consider that the language people use to describe their occupation is often an accurate indication of the way they conceive of themselves and their occupations. Consider also how the emphasis upon economic factors has changed the language of health care. Whereas we used to speak about the profession of medicine or health care, we now speak about the health care *industry*. Whereas we used to speak about patients, we now speak about health care *consumers*. Doctors, nurses and hospital personnel have become *providers*. Health care professionals used to offer health care; they now *deliver* health care. Medicine, medical procedures and practices used to be evaluated in regard to their power to alleviate pain or to heal the human person; now *cost-effectiveness* is all-important and the ultimate evaluation of medical practice is whether it enables people to become, once again *productive members of society*. Service used to be a watchword for physicians and health care facilities. Now *competition* is all-important, especially if we listen to the people trying to formulate federal policy.

The list of words could be multiplied but I am sure the implication is clear. The effect of this terminology is to make medical care a commodity; something akin to wheat, sand irons or popcorn, and thus the "laws" of economics become the all-controlling influence for health care policy. As a result, the important objectives of adequate health care for all, service to underserved persons and areas, and high-quality patient care no longer receive even lip service in the public planning and discussion of health care.

## Shift of Focus

Another phenomenon which indicates the transformation of health care is the subjects discussed at national meetings of health care organizations. How extensive is the assumption that cost-effectiveness is the "final solution" to all current problems? Study the programs of the annual meetings of the various hospital associations, the American Medical Association, and The College of Hospital Administrators to see how many topics concern legal or economic issues as opposed to humanitarian patient care. Recall, however, that professional associations or societies were founded to improve the standards of patient care, whether this care was offered inside or outside of health care facilities. Is the emphasis of these organizations today upon protection of the patient or upon self-protection of the persons and institutions who make up the association? Granted, professionals and institutions offering health care need to be concerned about their own welfare. But this concern should be ordered explicitly to improved patient care. Has the concentration upon economic issues brought about a confusion of goals in professional organizations?

Finally, the transformation of medicine is signed by the fact that some health care professionals even use wealth as a measuring device of their professional accomplishments; the amount of money they earn, the number of homes they possess or how many successful real estate investments they make, becoming for some the criteria that give them worth and meaning. How far removed these criteria are from those associated with medicine as a profession.

## Medicine as a Profession

Looking upon the profession of medicine and health care exclusively as a business destroys its essential meaning. Medicine and health care as a profession are founded upon the realization that human beings have a set of needs which are interactive. These needs usually are enumerated as physiological, psychological, social and spiritual. Most health care professionals serve people directly in regard to two of these needs: the physiological and the psychological. But the needs of the human person are so intertwined and interactive that health care professionals influence indirectly, and sometimes directly, the social and spiritual needs of the human person as well. The health care professional does not work with a biological specimen or with an isolated quantitative part of the human person. Rather, he or she works with an integrative sensing, feeling, thinking, loving human person. To help a person integrate his or her needs, to help a person maintain or regain human health and well-being requires in the character of the physician such talents as wisdom, compassion, service and human concern. The health care professional who is truly humanitarian says to the patient, "I shall try to heal you at every level of your being and help you become a whole person. In so doing, I shall respect your integrity as a person and treat you as an equal."

The professional in any field offers to another person knowledge, skill and, above all, concern. A professional is differentiated from people in other occupations by the fact that the professional must "get inside" the person he is trying to help. Hence in the profession of health care, personal concern for the patient is not something "nice" or extraneous, nor something added to avoid malpractice litigation. Rather, it is an integral element in the science and art of the healing profession. Moreover, the concerned and perceptive health care professional realizes that many of the really important questions (for example, is there a God? does life have meaning? will I exist after death?) surface only at the time of serious illness. The competent and compassionate health care professional is concerned that patients be able to address these questions and live with the uncertainty they generate. Though the person offering health care will not always feel competent himself to help the patient address these questions, he will make sure that counselors or pastoral care personnel are available who will assist the patient.

## Health Care Professionals Vulnerable

Is this an idealistic view of health care? Yes, it is. But unless people have ideals that are challenging and altruistic, eventually they lose interest in what they are doing and very often become cynical, depressed or, as the popular phrase has it today, burned out. Health care professionals are especially endangered by this syndrome of cynicism and depression. The statistics show, for example, that physicians are more likely to be depressed, chemically dependent or prone to suicide than are other members of society. While some would attribute these self-destructive tendencies to the personality type who is attracted to medicine, it seems environmental factors apply as well (McCue, M.D., "The Effects of Stress on Physicians and Their Medical Practice," *NEJM*, 2/25/82, p. 458). Health care professionals experience and share the intense human suffering of their patients, suffering which often does not seem to have any meaning. Moreover, they often give time and energy to people who do not seem to have self-respect or a desire to care for themselves. Unless their ideals enable them to transcend the suffering, sorrow and squalor of the hour and day, there is danger that physicians, nurses and other clinical personnel will be overpowered by their experience and become depressed or seek relief in frenetic activity. While there is no easy solution to the dangers that beset people who offer health care, a concept of health care which is founded upon sound ideals will help them overcome depressive tendencies.

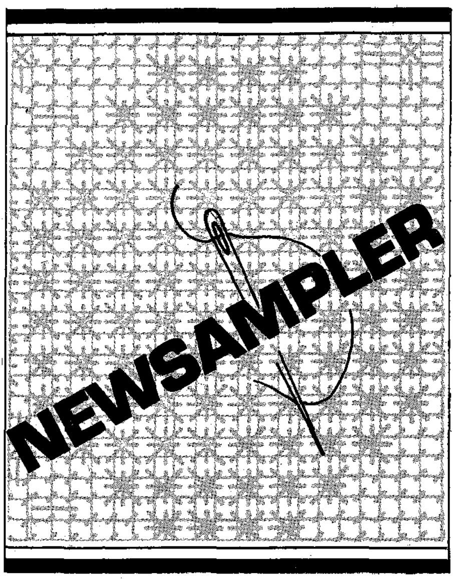
If there is any truth to the concept of health care as a profession described briefly above, then one realizes immediately the implications of allowing economic factors to dominate thinking and planning in health care. Qualities such as wisdom, compassion, human concern and service do not translate into economic values. If the present trend to use economic terminology and economic evaluative criteria continues, the realities these words represent, as well as the words themselves, will be removed from the profession of health care. Thus one of the professions which for centuries has called forth the very best in human beings will become just another fungible element in the rapacious diversion called the world of business.

## Conclusion

There is no easy way to reverse the transformation of medical and health care from a profession into a business. But perhaps a start could be made if people in the profession of medical and health care would be careful about the words they use to describe and discuss their occupations, the people and institutions associated with that occupation, as well as the relationships to the people they serve. Let all terms which designate medicine and health care as though it were merely a business be eliminated from the vocabulary of health care professionals. Moreover, whenever cost-effectiveness is discussed, let some of the other objectives of health care, such as quality patient care, equal access to health care, and preventive health care, also be introduced into the conversation in order to give a more balanced perspective. □

**The Rev. Kevin D. O'Rourke, O.P.**

Reprinted from *Parameters in Health Care*, Vol. 7, No. 1, Spring 1982, with permission of the St. Louis University Medical Center, St. Louis, Missouri. The Rev. Kevin D. O'Rourke, O.P., is director of the Center for Health Care Ethics at the St. Louis University Medical Center.




## Eye Institute Celebrates Five Years

Saturday, December 11, 1982, marked the fifth anniversary of The Eye Institute, clinical education/patient care arm of the Pennsylvania College of Optometry in Philadelphia.

The Eye Institute, completed in 1978, has experienced more than 245,000 total outpatient visits in its first five years of service. Current annual rates of activity are 65,000 total outpatient visits, including 21,000 primary care and 5,500 secondary care initial visits. The $2 million operation, in the black since 1982, has contributed nearly $750,000 in free or underwritten community services since opening its doors.

The Institute's service capability is comprised of the Lynch Pediatric Unit, with new Sports Vision Center; the William Feinbloom Vision Rehabilitation Center; five primary care service modules and one specialty consultation module; and a full Optical Service and Pharmaceutical Service. It is most widely known for the Feinbloom Center, the donated practice of world-renowned optometric scientist and honeybee lens developer, William Feinbloom, Ph.D., which treats low vision patients from around the world.

The Institute's anniversary was celebrated a month early so as to piggyback on the 59th annual meeting of the American Academy of Optometry in Philadalphia. Some 400 of TEI's guests for the reception and formal rededication ceremony were Academy members.

## PCO Establishes Master's Program in Vision Rehabilitation

The Pennsylvania College of Optometry (PCO) has received an $840,300 grant from The Mary Ethel Pew Medical Trust, administered by The Glenmede Trust Company, to initiate the nation's first Master of Science degree program in Visual Rehabilitation.

Both the design of the program and the dollar amount granted represent milestones in special education by colleges of optometry. PCO will offer the only master's program in the U.S. training professionals with exclusive emphasis on serving the low vision and partially sighted population. (Traditional graduate level courses have focused on the totally blind population.)

The master's program will build on the educational and clinical reputation of the William Feinbloom Vision Rehabilitation Center, internationally known component of the college's clinical patient care facility, the Eye Institute. There will be 10-12 students per class representing an interdisciplinary mix of O.D.'s, M.D.'s, orientation and mobility specialists, special educators, rehabilitation counselors and teachers, social workers, and other rehabilitation and education specialists.

The program expects to begin accepting students in the fall of 1983, after a year of concentrated planning and development. By its third year, both a full-time program and a part-time program for professionals who cannot afford a full year away from employment are expected to be fully implemented.

## SCO Files Lawsuit Against Tennessee Ophthalmology

On December 16, 1982, Southern College of Optometry (SCO) filed a lawsuit asking $15 million in damages on three counts from the Tennessee Academy of Ophthalmology, Inc., its president, three former presidents and a member of the sociology department at the University of Tennessee.

While college officials decline comment on the action, the lawsuit as filed charges that the academy published and circulated a report which contained "defamatory statements that were libelous" against SCO.

The report, entitled, "Optometry in Tennessee in 1981," says that almost all Tennessee optometrists graduated from Southern College of Optomtry and that at least 37 percent of these "practice optometry today at an unacceptable level."

SCO avers that the material published by the defendants " is not only defamatory against the plaintiff, but is unequivocally false, incorrect, and untrue and constitutes a malicious and vicious attack against the moral integrity and reputation of Southern College of Optometry."

The suit will be heard in the circuit court of Shelby County, Tennessee, in the near future.

## NEWENCO Professor Receives NEI Grant

Dr. Frank Thorn, associate professor of visual science at the New England College of Opeomtry (NEWENCO), has been awarded a $15,000 grant by the National Eye Institute (NEI) for research on spatial distortions tested by dichoptic apparent movement. Dr. Thorn intends to study how spatial distortions can be used in early diagnosis of visual problems and how they can cause patient discomfort.

The research centers on patients experiencing distortions in one or both eyes, often due to retinal tears, amblyopia, or high cylindrical and aphakic lenses. The patient perceives images in the area of the distortion to be in a different spatial location in each eye. The patient may even see the image move when he uses one eye, and then switches to the other.

Dr. Thorn earned his Ph.D. in neuropsychology at the University of Rochester and his O.D. at The New England College of Optometry. He has taught at the college since 1977, and resides in Newton, Massachusetts, with his wife and four daughters.

## ASCO Distributes Endowment Monies

The Association of Schools and Colleges of Optometry (ASCO) distributed nearly $11,000 in student endowment fund monies in September, 1982, for financial support to optometry students. The funds, distributed among the 16 U.S. member institutions of ASCO, were the first disbursement of earnings accrued on a capital invested fund established in 1981 as the result of a gift to the association.

The monies were distributed on a per capita basis according to student enrollment at each of the schools. Each school received the equivalent of $2.32 per student for a total distribution of $10,972.

ASCO also contributed $2,500 to the United Student Aid Fund (USAF) from its endowment fund earnings this past year. USAF provides an additional source of financial aid for optometry students.

The association welcomes additional contributions to the Student Endowment Fund which are tax deductible and can be made by individuals or business entities. Interested persons should contact ASCO Executive Director Lee W. Smith, 600 Maryland Ave., S.W., Suite 410, Washington, D.C. 20024, (202) 484-9406.

### AOA Government Information Library

The American Optometric Association's Washington office maintains a Government Information Library which contains a collection of primarily government documents including federal and regulatory reference and research material. The library's holdings include numerous governmental and vision-care related reference sources, 25 newsletters, 40 periodicals, over 1,000 books, and 1,000 subject files. The library will conduct legislative and regulatory searches, including status reports, legislative histories and bibliographies.

Interested persons can contact Librarian Robin Yarmovsky, American Optometric Association, 600 Maryland Avenue, S.W., Suite 400, Washington, D.C. 20024, (202) 484-9400. Services are provided to members, staff, government agencies, other professions, organizations, and the public. Hours are 9 a.m. to 5 p.m. daily; visitations are welcome if prior arrangements are made.

# Keeping Up with People...

Several Illinois College of Optometry (ICO) student research projects will be partially funded through grants totaling $1,835 from Beta Sigma Kappa this year.

**Loren Lee, Bruce Gaynes,** and **Robert Rowan** were awarded $200 for their study, "The Effect of Yellow Goggles on Face Detection and Discrimination;" **Rodney S.O. Fong's** study on "The Role of Hard Contact Lenses in a Program of Functional Myopia Control" received $500; the study of "Long Term Effects of Low Plus Lenses on Eye Movements and Reading Performance" by **Susan Cotter-Friedman** and **Donna Buraczewski** was awarded $310; **Debby Feinberg's** "A Comparative Study: Bifocals with Visual Therapy in a Program of Functional Myopia Control" was awarded $500; "Possible Effects of Fixation Disparity on Blood Pressure" conducted by **Marc Babin** and **Michael Montgomery** received $200; and **Jeffrey B. Becker** and **Douglas Batchelder** were awarded $125 for their study, "Threshold Stereopsis in Infants."

**Dr. Neil Hodur** and fourth-year students **Martin Kornblatt** and **Mike Saul** of ICO also received a $2,000 grant from Dow Corning Ophthalmics, Inc., a division of Dow Corning Pharmaceuticals, for their study. The money will be used, in part, to purchase an 8mm camera to photograph lens movement dynamics of the Silsoft contact lens.

The Board of Directors of the Illinois Society for the Prevention of Blindness awarded $900 to third-year ICO student **Thomas Banton** for his study of rod saturation in color deficient subjects.

The Illinois College of Optometry Board of Trustees recently announced the election of **Thaddeus S. Depukat, O.D.,** of Downers Grove, Ill., to a three-year trusteeship at its annual fall meeting. Dr. Depukat's ties to ICO span more than two decades. Most recently, he served on the ICO Alumni Council as the ICO/Illinois Optometric Association liaison.

*Thaddeus S. Depukat O.D.*

The Illinois College of Optometry Board of Trustees also elected **Joseph L. Henry, D.D.S., Ph.D.,** as its first non-optometric chairman at its fall meeting. Dr. Henry, chairman and professor of the department of oral diagnosis and radiology at Harvard University School of Dental Medicine, brings more than four decades of educational and administrative expertise to ICO.

*Joseph L. Henry D.D.S., Ph.D.*

**Floyd D. Mizener, O.D.,** of Downer's Grove, Ill., became the 11th recipient of the Illinois College of Optometry Alumnus of the Year Award, September 12, at the Illinois Optometric Association's annual convention. The award recognizes outstanding optometrists for commitment to their profession, efforts to benefit the public's visual welfare, community service and dedication to ICO.

Illinois College of Optometry's Student Volunteers of Optometric Services to Humanity chapter has tentatively slated 13 trips this academic year throughout the United States and abroad. Fourth-year students **Joe Chatfield, Bruce Gaynes, Rob Felker, Beth Egan, Steve Brownmiller** and **Maureen Black** and third-year students **Tim Arbet** and **Janyce Jordahl** traveled to Beverly, Ky., at the request of the Red Bird Mission Methodist Church September 20-15.

Third-year students **Paula Moy** and **Joyce Schiermeyer** and fourth-year students **Jan Walser** and **Jacque Young** brought vision care to Indians

(continued on p. 31)

# Developing The Model Contact Lens Curriculum

*A survey of the contact lens curriculums in optometry schools reveals some generalities and differences and suggests what a "model" contact lens curriculum may contain.*

Edward S. Bennett, O.D., M.S.Ed.
and
P. Sarita Soni, O.D., M.S.

The purpose of this paper is to look at the contact lens curriculum from every optometry school in the United States and Canada and see what generalities and differences are present and to suggest what a "model" contact lens curriculum may contain. As members of the Curriculum Committee of the Association of Contact Lens Educators (A.O.C.L.E.), the authors felt it was important to know what type of contact lens program each school offered and, hopefully, to be able to show these schools components of other curriculums which may be different. A survey (see appendix) was sent to the two members of the Association of Contact Lens Educators (A.O.C.L.E.) of each school containing questions with regard to determining information as to how the clinical contact lens curriculum was structured. All but one school replied and the topics as well as a sample of the results are discussed below.

**Survey Topics**

1. *Contact lens requirements.* Most of the schools had a requirement for students to spend a certain amount of time in the clinic. Some examples were:

a. A total of 140 clinical hours seeing contact lens patients split into approximately 20 hours per quarter.

b. Four hours minimum per week for one year and 8 hours per week for one 13 week period.

c. For third year students, one quarter of orientation with fourth year students, and one quarter of 6 clinical hours per week for 6 weeks.

d. Three hours per week for 7 quarters (10 weeks per quarter).

Therefore, for the students using this type of program, it was required that they spend 125 to 225 clinic hours seeing contact lens patients prior to graduation. One school utilizes evening and Saturdays exclusively for contact lenses.

Five schools incorporate contact lenses as part of the interdisciplinary clinical curriculum without the regulation of a minimum number of hours per week in the clinic. There may be a requirement for a certain number of fittings per semester (quarter) or year—usually 5 to 10 prior to graduation. These schools usually have some type of monitoring or checks and balances system to insure that students see approximately the same amount of contact lens patients, as well as walk-ins and emergencies.

2. *Continuous patient care.* With very few exceptions, continuous patient care is given to a contact lens patient by the same clinician, at least for a minimum of 6 to 8 weeks. Student rotations, via external clinics, other module or clinic assignments, and graduation may make it necessary for students or staff members to make other arrangements for the continuation of undismissed patients.

3. *When is it necessary for a clinical instructor to consult with a student who is examining a contact lens patient?* The majority of schools require the clinical instructor to consult with a student at the following times: prior to fitting, fitting, dispensing, and examination of both corneal health and lens fit at every progress examination. The minimum requirement for a few schools is to see the clinician and patient prior to fitting, at the time of fitting, and check the corneal health and lens fit at the dismissal visit of the patient.

4. *Additional didactic and clinical experience available to interested students.* Many and varied types of additional experience is available to those students interested in furthering their contact lens education. Among the alternatives given are:

*Clinical*

a. An elective clinic—either an additional quarter (semester or 8 week period) seeing contact lens patients or any other possible means of allowing interested students to see more patients. At Indiana, a "trouble" contact lens module is available where students desiring this elective will see those patients in need of special lenses (i.e. keratoconics, torics, aphakics, etc.) and patients who have not been satisfactorily fit in one of the other modules.

b. Contact lens related external clinics where students can spend from 6 to 12 weeks at a contact lens lab or in association with a large contact lens practice.

c. A specified amount of time in a contact lens clinical research environment. Schools possessing such a facility can have students assist in performing clinical studies for many of the new investigational lenses being tested on the market today.

d. Clinic conferences and case reports related to contact lenses.

*Didactic*

a. Senior research paper—many schools require senior research papers, suitable for publication, many of which are related to contact lenses.

b. Elective weekly seminar course for fourth year students—this is present in several schools, and is either taught by outside visiting lecturers, by a team of faculty members, or even students presenting seminars on recent developments in the contact lens industry. Pennsylvania College of Optometry has what appears to be a very beneficial option by having Grand Round lectures in their Eye Institute.

c. Laboratory representatives presenting information on their products at special meetings arranged by the lab.

5. *Are students given the opportunity to observe contact lens examinations being performed by other students?* The majority of optometry schools do have some type of system enabling students with no or very limited contact lens experience the opportunity to observe other students perform contact lens examinations. Usually second year students and possibly first semester third year students are either required or given the option of observing and/or teaming up with a fourth year student. One school has the option available for second year students to observe whenever they want. Two schools have first year students observe via a requirement for an orientation course.

At the Illinois College of Optometry, all beginning students are required to observe fourth year interns performing fitting, dispensing, and progress reports. They sign up or arrange the observation with the intern. An attendance card is signed by the attending staff and these are collected quarterly.

6. *Where is the contact lens clinical experience received?* In response to this question, in most schools students receive their contact lens experience in a separate area of the clinic (i.e., a contact lens clinic or module). A few schools incorporate contact lens care with the interdisciplinary health care system.

7. *Requirement for outside reading.* In approximately half of the schools, students are required to review a certain number of contact lens journal articles in addition to the required text(s). The number of articles varied and the requirement was usually a supplement to the initial contact lens course, although a few schools required them for the advanced course, as well as specialty clinics. Most schools, if not requiring the review of certain journal articles, recommended them as optional readings.

8. *Recent changes in the contact lens curriculum.* In the past twelve months,

*Edward S. Bennett, O.D., M.S.Ed., is assistant professor of optometry at the University of Missouri-St. Louis School of Optometry. P. Sarita Soni, O.D., M.S., is assistant professor and chief of the Research Clinic at Indiana University School of Optometry, Bloomington.*

most schools have made some major revisions in their contact lens curriculum. These included:

a. Revising and updating lecture notes—including current information on soft toric, extended wear, and bifocal soft lenses as well as gas permeable hard lenses.

b. A more significant emphasis is placed on tear and corneal physiology as related to contact lens wear.

c. Moving one or both of the contact lens courses so as to be taught a semester (quarter) earlier than previously. Usually this was initiated because the increasing number of external clinics utilized by many optometry schools makes it important for students to obtain sufficient contact lens experience prior to the possibility of not seeing any contact lens patients for a portion of the fourth year.

## The Model Contact Lens Curriculum

The varying philosophies, clinic and class sizes, facilities, and locations, make it impossible to standardize contact lens curriculums across the country. However, in striving to achieve a better balanced, more thorough, and advanced contact lens program for optometry students, the following ideas which have been used as the core of at least one and many times several optometry schools should be beneficial:

1. *Optional coursework for interested students.* This can include many of the suggestions given previously; i.e., optional seminar course (which may or may not be devoted totally to contact lens-related topics) for fourth year students which can be taught by professors and/or graduate students with an interest and background in contact lenses and corneal physiology. These seminars can serve the purpose of keeping students current in an industry which changes daily. Recent advancements in keratoconus, aphakia, soft and hard bifocal and toric lenses, extended wear, and orthokeratology can be taught at this time.

In addition to a case conference course, if existent, students can give case examples periodically, either during the seminar course, or in clinic as part of a requirement by their contact lens instructor. In addition, the clinical instructor can lecture at designated times on various contact lens topics.

Finally, both the mandatory requirement of senior research papers, even if many students choose non-contact lens related topics, as well as seminars and informal presentations by lab representatives can be of some added benefit.

2. *Optional clinic experience.* For students desiring an active contact lens practice in the future, there are many possible options which can be made available for them: Among them are:

a. An elective clinic—as described earlier, this can be excellent experience for an inexperienced clinician. In an 8 week period, for example, a student can possibly see over 300 patients. Whether it can be a "trouble" module or specialty clinic, an additional period of time in general clinic, or scheduling a few more patients for motivated clinicians, all would be helpful in giving students experience and confidence in future contact lens endeavors.

b. A clinical research environment also should be of great assistance. With the industry changing so frequently, a student working with and researching investigational lenses would be more knowledgeable and assured of fitting the most advanced lenses on the market.

c. One major advancement which a few schools have recently resorted to and which appears to be an excellent educational tool is contact lens related external clinics. Either in cooperation with contact lens manufacturers or private practitioners, this could be an outstanding source of on-the-job contact lens experience. All schools incorporating outside clinics into their curriculum should consider this type of arrangement.

3. *Frequent and thorough consultations.* Most schools require that consultants see students at every patient visit. The advantages of this policy are to increase the student's knowledge and evaluate his/her progress, decrease risk of poor examinations, reduce costs by decreasing the number of lenses purchased per patient, and limit or even eliminate patients from being abandoned. If it isn't required for a consultant to check every visit, then there must be a system present to make sure students are performing complete examinations and patients are not being abandoned. In addition, staff or faculty members periodically must check all contact lens folders, and/or the clinical instructor may consider having periodic conferences with every student in order to review contact lens patients (i.e., discussions, weekly case conferences, etc.).

4. *Contact lenses in interdisciplinary practice.* If the majority of contact lens patients are seen under the auspices of the interdisciplinary health care system (e.g., not separated from the general clinic), then it is important for the clinical instructors to be competent both in experience and knowledge of contact lenses.

5. *Acquiring clinical experience.* There must be a system whereby no student is deprived of acquiring sufficient contact lens experience. What is defined as sufficient? The results of the survey show that optometry schools average approximately a minimum of 15 to 20 new fittings prior to graduation. This should give the student adequate experience with both fitting techniques (i.e., fluorescein patterns, centration, movement, etc.) and consequent problems (i.e., staining, edema, lid inflammatory activity, etc.).

Perhaps of more importance would be to insure that students obtain a good clinical background in fitting and evaluating hard contact lenses. With the soft contact lens boom, it is easy to ignore the time-consuming tasks of achieving proper lens centration and patient adaptation. Fitting and evaluation of hard contact lenses is an art which only can be obtained with experience. Since more and more optometrists are fitting gas permeable lenses which *are* hard lenses, there is no excuse for not discouraging students from fitting soft lenses on almost every patient, especially if acuity may be sacrificed or patient handling is poor leading to frequent lens damage.

6. *Continuous care.* Because it is a good learning experience for a student to determine whether his/her fittings are successful or not, it is important for patients to be given continuous care. Patients appreciate seeing the same clinician, and inconveniences in describing problems to a new student as well as the possibility of lack of motivation on the student's part for not performing the original fitting are possible problems if this policy is not present. Naturally, because the structure of the clinic may be such that students may be transferred periodically to other clinics, incomplete care by the same clinician may be necessary in some cases.

7. *Student observation.* A system used by several optometry schools whereby second year students or first semester third year students are able to observe and/or team with more experienced clinicians would be very beneficial in easing students into their contact lens experience as well as gaining knowledge and confience in handling contact lens patients. This either could be done on a voluntary basis, as part of a class requirement, or students could pair up with a clinician.

8. *Courses taught during second year.* To insure that students receive enough clinical experience after a proper didactic background, it may be necessary, especially for schools utilizing external clinics, for both contact lens courses to be taught during the second year, or perhaps split between the second and third years. Therefore, at minimum, a student could begin fitting contact lenses early in their third year of school.

9. *Journal articles.* As it is almost impossible to stay current with the contact lens industry, requiring students to research and perhaps write abstracts on current contact lens journal articles would be a good insurance plan for them to keep up.

10. *Frequent lecture revision.* Lecture notes for both contact lens courses should be thoroughly revised on a yearly basis. Sufficient time must be spent with such new developments as gas-permeable, extended wear, silicone, toric, and bifocal lenses. In addition, a significant amount of time during the first contact lens course should be spent on teaching corneal and tear physiology as preparation for understanding and applying the more advanced lenses if this material is not already covered in another course. No information as to the amount of contact lens-related didactic material taught in other courses (pathology, low vision, etc.) was given in the survey.

In conclusion, it must be kept in mind that it probably would be impossible for any optometry school to incorporate all of these suggestions into their didactic and clinical curriculums. Also, it is not to be implied that schools have to change their existent format. It is a necessity, however it is accomplished, for schools to frequently revise their contact lens curriculums in order to keep pace with a rapidly changing industry. □

## APPENDIX

1. What contact lens clinic requirements must be met by students? For example:
   a. Is there a requirement that students should see a certain number of patients per quarter (semester)? ____________
   Per year?______________. If so, what is this requirement.
   b. Are the students required to spend a certain number of hours per quarter (semester) seeing contact lens patients? ____
   Per year?______________. If so, please indicate the number of hours as well as the number of quarters (semesters) involved.

   If you don't use either of the above criteria, what are the contact lens clinic requirements for your students?

   Is continuous patient care given by the same student clinician prior to dismissal?

2. When is it necessary for a clinical instructor to consult with a student who is examining a contact lens patient?
   a. Prior to fitting □
   b. Fitting □
   c. Dispensing □
   d. Every progress examination
      1. Consultant examines corneal health □
      2. Consultant checks lens fit □
      3. Consultant checks both corneal health and lens fit □
      4. Not necessary for consultant to see patient but is mandatory to discuss each case with the clinician □
   e. Dismissal visit (but not necessary to check previous follow-up visits) □

3. What additional didactic and clinical experience is available to interested students?
   a. Didactic (i.e., seminars, optional courses, research)
   b. Clinical (i.e., optional contact lens clinics and other means of increasing the number of patients seen by interested clinicians)

4. Is there a system in your school whereby students with no or very limited contact lens experience are given the opportunity to observe contact lens examinations being performed by other students? If so, please explain.

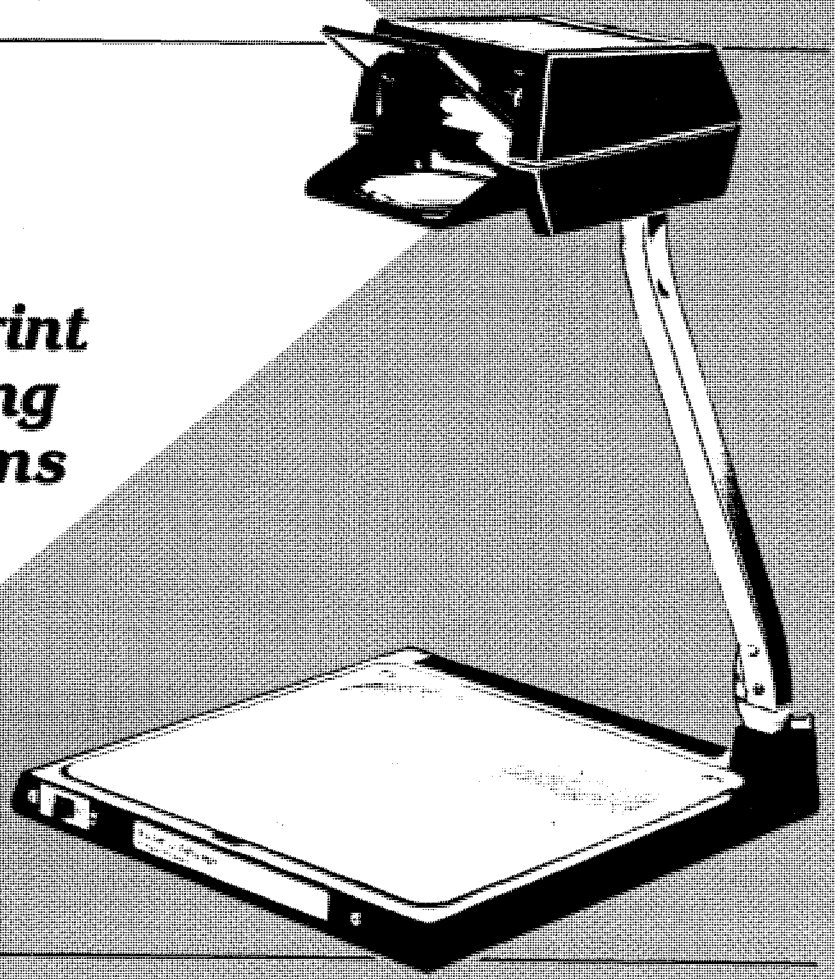
5. Do the students receive their contact lens clinical experience in a specific area of your clinic (i.e., a separate contact lens clinic or module) or is it obtained within the interdisciplinary health care system?

6. In addition to the required text(s), are students required to review journal articles pertaining to contact lenses? _______
   If so, please list the courses these are required for as well as the quarter (semester), year in school, and the number of journal readings required.

   | *Course#* | *Year (2nd, 3rd, or 4th)* | *Quarter (Semester)* | *Number of Journal Readings* |
   |---|---|---|---|

   By what other means are students kept current in their contact lens education?

   What major changes have been made in the curriculum for your contact lens courses in the past 12 months?



# The Use of Non-Print Media in Continuing Education Programs

Dan F. Johnson, M.A.

*Over the past several years there has been an accelerated expansion of continuing optometric education programs offered by schools, colleges, associations, and industry. At the same time, non-print instructional technology has reached new heights of sophistication. The purpose of this paper is to reveal the amount of use, the kinds of use, and some indication as to the reasons for use of non-print instructional media in continuing education programs of American academic institutions of optometry.*

Over the past several years there has been an apparent accelerated expansion of continuing optometric education programs offered by schools, colleges, associations, and industry. This has been due in part to mandatory continuing optometric education requirements for relicensure by the various forty-eight states that offer continuing education. Also, the exponential growth of knowledge in optometric science accounts for a greater emphasis on continuing education. At the same time, non-print instructional media technology has reached new heights of sophistication.

Because little information seems to exist as to the use of non-print instructional media (NPIM) in continuing optometric education programs of American schools and colleges, a survey was administered to the fifteen optometric academic institutions in the United States to determine a utilization profile. This profile was intended to indicate trends across the nation. Since this study is descriptive in nature, it therefore leaves much room for further research that might explain in greater detail the dynamics of the topic.

The survey instrument was mailed to the directors of continuing education or the senior academic administrators of the institutions in May of 1981. By July of 1981, replies had been received from all fifteen institutions. The results revealed amounts, kinds of use, and some reasons for use of non-print media in continuing optometric education programs. Also the profile touched upon such related areas as licensure requirements, testing procedures in continuing optometric education, and methods of instruction. The following composite profile presented in this paper was developed to provide a general indication of utilization of non-print media in continuing optometric education programs of the fifteen academic institutions.

As was assumed at the outset of the study, non-print instructional media are in use in the continuing education programs of the American academic institutions of optometry. Beyond that assumption, utilization was found in most subject areas. A wide variety of both simple tradi-

*Dan F. Johnson, M.A., is instructional aides assistant for the Instructional Media Center at The Ohio State University College of Optometry, Columbus.*

tional as well as highly sophisticated contemporary media is used.

One medium is very conspicuous in its total absence of use, and that is the computer. No particular reason was revealed in the survey for this finding. One can only assume that the resources of hardware, or software, or expertise in using computers are either limited or untapped. Perhaps the computer is an instructional medium that may soon find its place in continuing optometric education.

All of the respondents that offered continuing education produced some non-print media in-house, which indicates a commitment to utilization of the media. This is also a strong reason for continued use.

The three most used and popular media were photographic slides, chalkboards and overhead transparencies. The traditional lecture is the most common method of instruction and photographic slides are the top foremost used medium for the lecture in continuing optometric education. The use of self study instructional packages in continuing optometric education has not yet been generally pursued by the optometric institutions. An update of question number eight in the profile indicates that twenty states currently accept self study media packages for continuing education re-licensure credits. This trend could continue to have impact on continuing education.

In general, a commitment to continuing optometric education and the use of non-print media exists. With this commitment, continuing education could go a long way toward providing current information on techniques and technologies of the profession. An expanded and coordinated utilization of non-print media could provide a vehicle to distribute continuing optometric education to a greater number of hard-to-reach practitioners. Inspiration and innovation in continuing education presents a continuing challenge, but one that undoubtedly will be met and thus produce favorable results for all of optometry. □

## COMPOSITE PROFILE OF UTILIZATION OF NPIM IN CONTINUING EDUCATION PROGRAMS IN AMERICAN SCHOOLS AND COLLEGES OF OPTOMETRY

1. Does your state board of optometry require continuing optometric education for relicensure of optometrists?

| | | |
|---|---|---|
| Yes: | 80% | 80% of host state boards of optometry require continuing optometric education for relicensure. |
| No: | 20% | |
| | 100% | |
| | (15) | |

Clock hours required per year.

| | | |
|---|---|---|
| 6-10: | 25% | A range of 6 to 25 clock hours are required per year. |
| 11-15: | 67% | |
| 16-25: | 8% | |
| | 100% | |
| | (12) | |

2. Does your school or college offer continuing optometric education courses?

| | | |
|---|---|---|
| Yes: | 86% | 86% of the schools and colleges of optometry offered continuing optometric education. Three institutions offered continuing optometric education in states that do not require it. Two institutions did not offer continuing optometric education even though their state required continuing optometric education for relicensure. |
| No: | 14% | |
| | 100% | |
| | (15) | |

Number of clock hours of continuing optometric education offered in the last 12 months.

| | | |
|---|---|---|
| 6-10: | 8% | A range of 6 to greater than 25 clock hours was offered. Eighty percent of the schools and colleges offered continuing optometric education clock hours equal to or greater than that required by their host state. |
| 11-15: | 23% | |
| 16-25: | 8% | |
| > 25: | 61% | |
| | 100% | |
| | (13) | |

3. Have non-print instructional media been used in your institution's program for continuing optometric education?

| | | |
|---|---|---|
| Yes: | 100% | All of the schools and colleges of optometry that offered continuing optometric education in the last 12 months used NPIM. |
| No: | — | |
| | 100% | |
| | (13) | |

4. What non-print media have been used in your continuing optometric education program?

Closed-circuit video, video tapes, audio tapes, motion picture films, photographic slides, paper photos, overhead transparencies, models, and chalk or marker boards have been used by the thirteen schools and colleges offering continuing optometric education. Photographic slides and overhead transparencies were the most popular media used.

5. What is the order of most to least used non-print media in your continuing optometric education program?

| | |
|---|---|
| Most | Photographic slide |
| 2 | Chalk or marker board |
| 3 | Overhead transparency |
| 4 | Video tape |
| 5 | Motion picture film |
| 6 | Closed-circuit video |
| 7 | Audio tape |
| 8 | Paper photo |
| Least | Model |

6. What subject areas in your continuing optometric education program have used non-print media?

| *Subject areas* | *Number of respondents that use NPIM* |
|---|---|
| Aniseikonia | 1 |
| Anatomy | 5 |
| Contact lenses | 12 |
| Exam techinques | 6 |
| Low vision | 9 |
| Optics | 2 |
| Orthoptics | 6 |
| Pathology | 11 |
| Perceptual motor skills | 8 |
| Pharmacology | 10 |
| Practice management | 2 |
| Strabismus | 8 |
| Vision in school/industry | 3 |

7. Who determines the use of non-print media in your continuing optometric education program?

| | |
|---|---|
| College or school continuing optometric education administrator | 8% |
| Individual instructor | 92% |
| Professional optometric association | — — |
| State board of optometry | — — |
| Faculty curriculum committee | — — |
| Other | — — |
| | 100% |

Two institutions indicated that the continuing optometric education administrator and the individual instructor made a joint decision.

8. Does your state board of optometry recognize the use of self-study instructional materials for continuing optometric education credit toward relicensure?

| | |
|---|---|
| Yes: | 15% |
| No: | 85% |
| | 100% (13) |

One state was in the process of adopting a law that would recognize self-study instructional materials with continuing optometric education credit toward relicensure.

Only audio tapes have been used by one institution in self-study instructional packages in continuing optometric education programs.

9. What types of non-print media continuing optometric education materials have been produced at your institution?

| | |
|---|---|
| Audio tapes | Filmstrips |
| Video tapes | Overhead transparencies |
| Photographic slides | Models |
| Paper photographs | Other (Non-photographic slides) |

All thirteen responding institutions have produced some non-print media continuing optometric materials. The three most popularly produced media are overhead transparencies (12), photographic slides (11), and video tapes (8).

10. What is the most often used format of instruction in your continuing optometric education program?

| | | |
|---|---|---|
| Seminar | — — | The traditional lecture is still the most popular method of instruction. |
| Workshops | 8% | |
| Lectures | 92% | |
| Clinic/simulation | — — | |
| Other | — — | |
| | 100% | |
| | (13) | |

11. Is learning measured by means of tests administered in the individual courses in your continuing optometric education program?

| | | |
|---|---|---|
| Yes in all cases: | 8% | Testing in continuing optometric education is not required by any of the state boards of optometry. |
| Sometimes: | 69% | |
| No: | 23% | |
| | 100% | |
| | (13) | |

12. An optometrist should be required to pass a test administered by the individual continuing optometric education instructor before being awarded credit toward relicensure.

| | | |
|---|---|---|
| Strongly agree | 8% | While more respondents agree than disagree, there is a significant number still undecided on the question. |
| Agree | 45% | |
| Undecided | 30% | |
| Disagree | 8% | |
| Strongly disagree | 8% | |
| | 100% | |
| | (13) | |

13. Why are or are not non-print media used in your continuing optometric education program?

The three most frequent answers for use were:

1. To expand the range of experiences.
2. To motivate learner interest.
3. To present information in a form that is easily perceived.

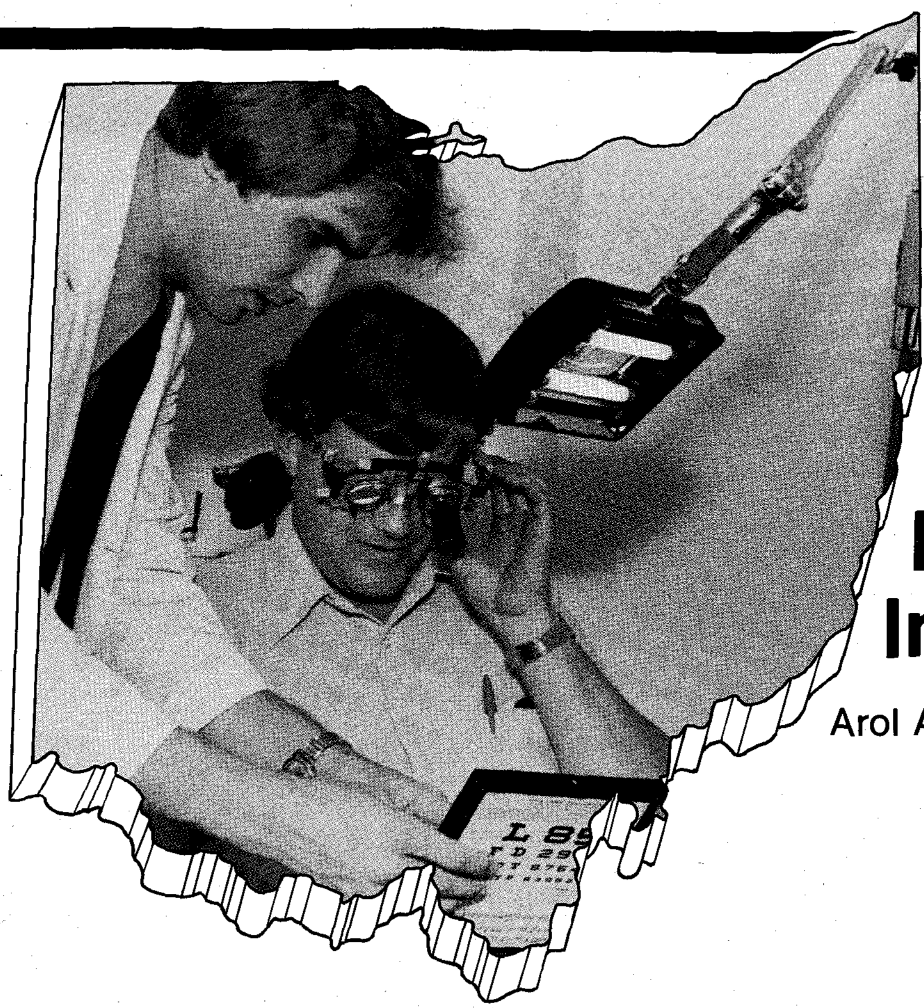
Only one respondent indicated a reason for non-use which was: no monetary incentive to use NPIM.

14. *What is the anticipated usage of non-print media in your continuing optometric education program for the next five years?*

| | | |
|---|---|---|
| More: | 54% | This reflects a healthy figure for the utilization of NPIM in continuing optometric education. |
| Same: | 45% | |
| Less: | — — | |
| | 100% | |
| | (15) | |

15. All American colleges and schools of optometry should offer continuing optometric education courses.

| | | |
|---|---|---|
| Strongly agree | 40% | Most respondents agreed that it is the responsibility of all schools and colleges of optometry to offer continuing optometric education. |
| Agree | 40% | |
| Undecided | — — | |
| Disagree | 20% | |
| Strongly disagree | — — | |
| | 100% | |
| | (15) | |




# Analysis of Optometric Practices In Ohio

Arol Augsburger, O.D., M.S.

*The following report is based on a survey of 110 Ohio optometric practices and was a portion of a student visitation program, whose purpose it was to familiarize the fourth year optometry student with the business operations of the non-institutional optometric practice. Results indicate that regional variations between many facets of Ohio optometric practice and those of rural Alabama reported in previous studies are minimal.*

## Introduction

Several facets of optometric practice have been surveyed previously in Alabama[1] to establish a profile of the composite urban and rural optometrist and to compare several special facets of differences between these two modes of practices. Included in these profiles were information about the amount of office space, instrumentation, patient scheduling and services, and the personnel utilization within the optometric office. Each of these facets is important to the business planning of any optometric office and therefore was included in the specific surveys done in Ohio by optometry students as part of their required visitation experiences. The first-hand observation by fourth year optometry students of these aspects of practice can provide valuable insights into the actual functioning of non-institutional health care business offices. Comparison of the Ohio and Alabama information allows an investigation of possible regional differences between the two states in the several patterns of optometric practice surveyed.

Recent national surveys by Gregg[2] have indicated that less than 30% of all optometrists practice in communities having populations greater than 100,000. Further, according to his surveys 22% of all U.S. optometrists were practicing in strictly rural communities. This stands in contrast to opinion surveys taken as part of the National Study of Optometric Education[3] in 1973 in which only 15% of optometry students expressed a preference to practice in smaller population centers. Wild and Maisiak suggested that the optometry graduates tend to establish practices that are based on the type of training provided in the academic setting.[1] Since surveys presented as part of Wild's report indicated differences in both the delivery of emergency eye care and attitude between rural Alabama optometrists and their urban counterparts, a modified type of educational preparation may be suggested. The following survey addresses many of these same issues regarding optometric practices in Ohio and may provide further information with regard to the urban and rural models previously identified in Alabama.

## Methods

One hundred and ten Ohio optometrists who agreed to participate in the Ohio Study Visitation program were surveyed during the summer of 1981.

*Arol Augsburger, O.D., M.S., is clinical associate professor at The Ohio State University College of Optometry, Columbus.*

All geographical regions of the state were included in this survey, although the central portion of the state had a higher participation of optometrists than any other single quadrant.

Each practice was visited by a fourth year optometry student. The dual purpose of these visits was (a) to allow current optometry students to assess first-hand the current modes of optometric practice outside the academic institution; and (b) to assess the opinions of practicing optometrists. A questionnaire was used to gather this information and was administered by the visiting student. No differentiation was made as to the type of practice surveyed (i.e., group vs. solo, urban vs. suburban, incorporated vs. unincorporated) other than the study was limited to Ohio optometrists in non-institutional practice settings.

**TABLE 1**
**Office Space Utilization in Ohio Optometric Offices**

| | |
|---|---|
| Reception Area | 228 sq. ft. |
| Business Office | 168 sq. ft. |
| Examination Room(s) | 224 sq. ft. |
| Frame Selection/ Dispensary | 233 sq. ft. |
| Lab | 146 sq. ft. |
| Contact Lens Room(s) | 150 sq. ft. |
| Visual Therapy Room(s) | 171 sq. ft. |
| Storage | 255 sq. ft. |
| Auxillary Room | 129 sq. ft. |
| Private Office | 127 sq. ft. |
| Total Composite Office Space | 1,831 sq. ft. |

## Results

*Office Space.* The data from the 110 optometric offices were compiled into tabular form for easy comparison. Table 1 lists the average amounts of square feet in the offices of the surveyed optometrists. The average overall size of the total office space was 1,831 square feet. All offices had at least one reception room, business office, and examination room. With ten exceptions, all offices had space devoted to frame selection and/or dispensing. Nearly 40% of the offices had multiple examination rooms. One-third of the offices had space devoted to a separate contact lens area, and approximately the same percentage (but not necessarily the same offices) had space devoted to a visual training and therapy area.

**TABLE 2**
**Average Number of Instruments per Optometric Practice**

| | |
|---|---|
| Phoropter | 1.4 |
| Keratometer | 1.3 |
| Direct Ophthalmoscope | 1.7 |
| Indirect Ophthalmoscope | 0.7 |
| Biomicroscope | 1.3 |
| Tonometer | 1.2 |
| Tangent Screen | 0.9 |
| Perimeter | 0.4 |
| Sphygmomanometer | 0.7 |
| Diagnostic Contact Lens Sets | 0.9 |
| Low Vision Aids | 0.6 |
| Visual Training Aids | 0.7 |
| Gonioscope | 0.1 |

*Instrumentation.* The summary results are shown in Table 2. All offices surveyed had at least one phoropter, keratometer, direct ophthalmoscope, and tonometer. All but two offices had a biomicroscope. Most offices had either a central or peripheral visual fields device. Two-thirds of the offices had sphygmomanometers, but only 10% of the offices had gonioscopes. Only one-third of the offices had diagnostic contact lens sets. Most of the 36 practitioners who did have these diagnostic contact lens sets had multiple sets. Similar experiences were observed with regard to visual training aids and low vision aids in that just over half of the optometrists maintained these in their offices, but those that did often had multiple items.

*Services Available.* The distribution of the type of services available in Ohio practices is presented in Table 3. Results are broken down into actual services offered in each office and the percentage of patients who actually received these services. While general optometric examination services were offered in all the offices surveyed, only three-fourths of the patients seen in these offices actually received this service. Other categories showed a much more dramatic difference between "offered" and "delivered" services. For example, generally half of the offices indicated that visual training or low vision services were respectively offered, yet less than 5% of their patients were actually receiving these services. The percentages of Ohio practices offering both low vision and visual training services are very similar to the rural Alabama practi-

**TABLE 3**
**Percentage of Optometry Practices with Various Services Available**

| | Percentage of Offices which Offer Service | Average Percentage of Patients Receiving these Services |
|---|---|---|
| General Optometric Examination | 100 | 75 |
| Contact Lenses | 96 | 29 |
| Visual Training/Therapy | 59 | 4 |
| Low Vision | 48 | 3 |
| Occupational Vision | 58 | 9 |
| Aniseikonia | 20 | 3 |
| Developmental Vision | 30 | 11 |
| Orthokeratology | 7 | 5 |
| Dispensing | 90 | 69 |

tioners' survey by Wild and Maisiak[1] and are higher than a national survey report in 1976 in Kegel-Flom's study.[4]

Thirty-eight percent of the time the optometrist was the only person (other than possibly a receptionist) who delivered care to the patient. Sixty-two percent of the time either an assistant or technician helped to provide the service to the patient.

*Optometrists Opinion Survey.* The summary responses of Ohio O.D.'s to two questions relating to perceived future needs of new optometrists are displayed in Table 4. The skills related to practice and business management were cited as those thought to be most in need of improvement by over 42% of the responding optometrists. Improvements in skills related to mechanical optics and dispensing ability were rated by one-ninth of the optometrists as the most important area for improvement. Further expansion of the student's abilities in orthoptics or developmental visual therapy were perceived as areas of improvement by one-seventh of the practicing O.D.'s. Responses made by less than 2% of the optometrists are not included in these summaries.

In the opinion of 48% of the surveyed optometrists, the practice of optometry in rural areas where there is a lack of availability of other health care necessitated that the optometry student planning to practice in a rural area be most knowledgeable in management of ocular emergencies/disease. Following this area of concern were cited skills in patient communications and local customs (one-fifth of O.D.'s), overall skills in general optometry (one-fifth of O.D.'s), and concerns for abilities in mechanical optics and dispensing (one-eleventh of the optometrists surveyed). Additional knowledge in the utilization of pharmaceuticals by optometrists was judged by one out of twenty optometrists to be the most important area of knowledge for thé new rural optometric practitioner.

The responses to these questions correlate well with independent surveys by Wild and Maisiak[1] and Kegel-Flom[4] with respect to the high priority that practicing optometrists have assigned to the *need for the optometrist to be well* versed in the management of ocular emergencies or disease as well as in sound business and practice management concepts.

**TABLE 4**
**Distribution of Responses of Ohio Optometrists to Two Questions Concerning Future Optometrists**

*In what areas of the practice of optometry do you feel today's optometry graduates are most in need of improvement?*

| | |
|---|---|
| Practice and Business Management | 42% |
| Mechanical Optics/Dispensing Ability | 11% |
| Visual Training/Developmental Vision Therapy | 15% |
| General Patient Experience | 12% |
| Contact Lenses | 6% |
| Disease Evaluation | 4% |
| Pediatric Vision Care | 2% |

*In what areas of the practice of optometry would you recommend an optometry student planning a rural practice be most knowledgeable?*

| | |
|---|---|
| Management of Ocular Emergencies/Disease | 48% |
| Patient Communications/Local Customs | 20% |
| General Optometry | 19% |
| Mechanical Optics/Dispensing Ability | 9% |
| Pharmacology | 4% |

## Conclusions

The findings of this study indicate the following conclusions:

1. The comparative total office space for optometric offices in Ohio (1,831 square feet) is 70 square feet less than the similar totals reported in previous similar studies in Alabama and would suggest minimal differences between the office space utilized to practice optometry in either region of the country.

2. The variety of instrumentations available in Ohio optometric offices was on the whole more similar to the instruments reported in rural Alabama practices than in urban practices in that state. Since all Ohio optometrists surveyed were lumped together in a single category, these results may be merely an indication of the more widespread distribution of optometrists in rural areas than in metropolitan centers of Ohio.

3. The composite Ohio optometrist offers a variety of services more similar to the services offered in rural Alabama offices than to services offered in urban offices of that state. The reason for this may relate to the widespread distribution of Ohio optometrists in smaller communities as described in number 2 above.

4. The percentage of patients receiving low vision services or visual training services in the average Ohio optometric office is less than 5%. This stands in contrast to the survey result that these services are offered in half of Ohio optometric offices. Again, the rural Alabama optometrist profile is more similar than the urban Alabama profile when compared to the composite Ohio counterpart.

5. The leading suggestions from Ohio optometrists for new graduates who soon will be practicing in the state were that they obtain additional training in practice management, ocular emergencies, and disease diagnosis and management. □

## References


1. Wild BW, Maisiak R. Analysis of optometric practices in rural Alabama. J Optom Educ 1981; 6(3):9.
2. Gregg JR. Your practice profile: group practice. Optometric Management Dec 1981; p 33.
3. Havighurst RJ. Optometry: education for the profession. Report of the national study of optometric education. Washington DC, National Commission on Accrediting, 1973.
4. Kegel-Flom P. The rural optometrist: who and why? J Am Optom Assoc 1976; 47(12): 1549.

# Good Teaching—
# A Rewardable Feat

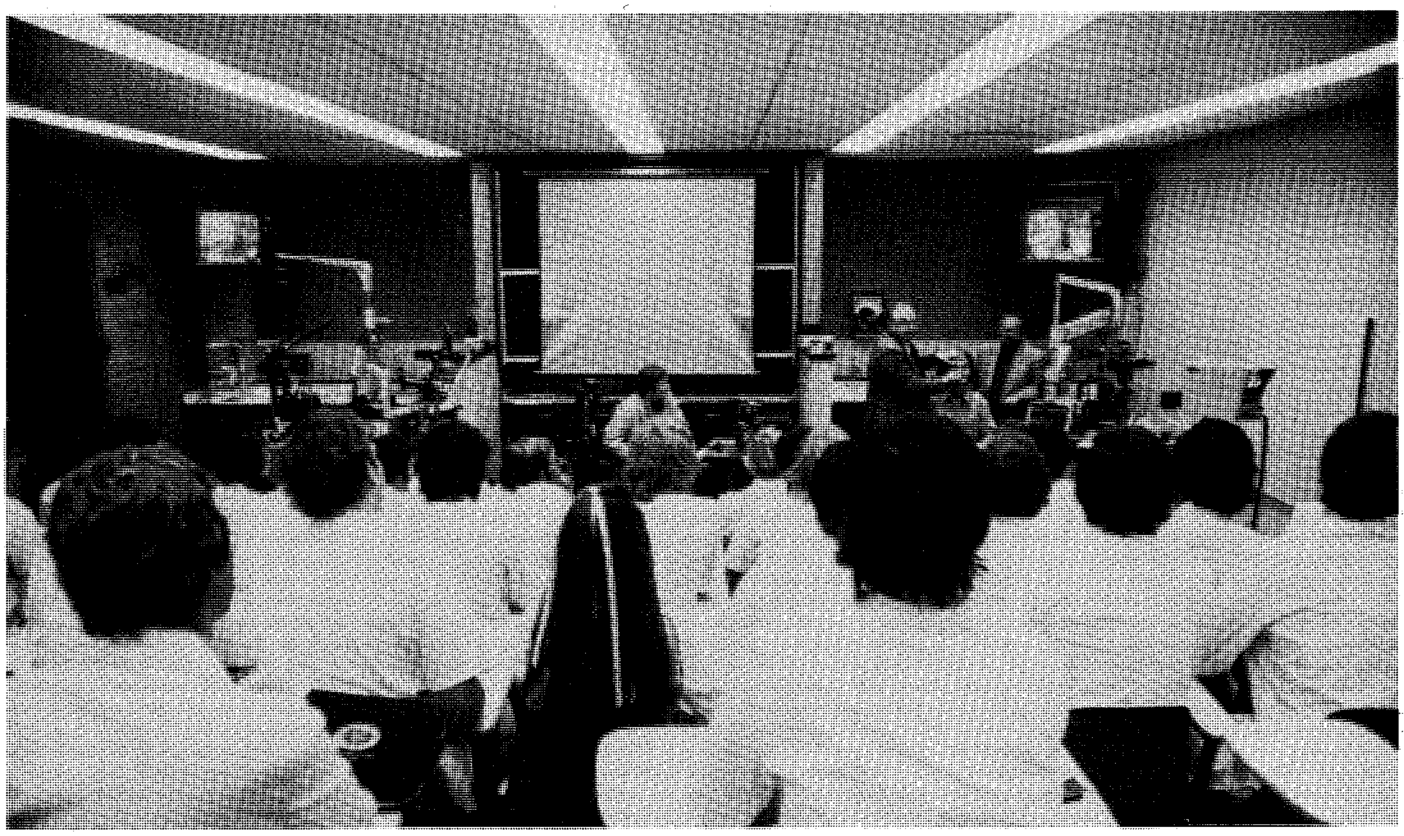
*Paul H. Abplanalp, O.D., Ph.D., and William R. Baldwin, O.D., Ph.D.*

*While teaching represents the most basic function of optometry faculties, evaluation of faculty performance often is poorly conducted, and this is in contradistinction to the evaluation of research productivity. Techniques for evaluation of teaching performance, as well as means by which faculty members can be encouraged to create innovative teaching methods and aids, are presented in this paper.*

The obvious and fundamental purpose of a college of optometry is to educate and train students to become successful optometrists. The delivery of quality health care and the expansion of the frontiers of the profession are critical but ancillary functions; the *sine qua non* of our existence is education. We live in an age when accountability has become one of the hallmarks of our society and pervades all of its aspects including, increasingly, our academic institutions. Therefore, it would be prudent for us to continuously examine the means by which educators are held accountable for the quality of their work and to expand and improve these means whenever possible.

*Paul H. Abplanalp, O.D., Ph.D., is coordinator of health sciences for the University of Houston College of Optometry, Houston. William R. Baldwin, O.D., Ph.D., is dean of the College of Optometry, University of Houston.*

In an era of astronomically rising costs for college education, the rights and obligations of students as consumers inevitably have gained emphasis. Student evaluations also are easier and less expensive to acquire and are probably less intimidating to faculty than peer or administrative evaluations. It is hardly surprising, then, that the only methods of assessment of the quality of teaching that have become nearly universal are student evaluations. In a 1971 study of



student ratings of college teaching, Costin, Greenough, and Menges[1] concluded that student ratings are a valid and necessary part of any thorough evaluation of teaching performance but cannot in themselves be considered as a complete assessment. Seldin,[2] who recently has reviewed that study and other literature, reports that student ratings do indeed supply reliable and valuable information which can lead to improvement of classroom performance but alone are not a sufficient basis for appraisal of teaching performance.

The authors agree with Seldin that teaching is far too important to be evaluated from only one perspective. There are other measures available, such as classroom visitation, peer evaluation of teaching materials, and self-appraisal. These and other methods need to be developed and subjected to rigorous reliability and validity checks. If the evaluation of teaching can be improved by expanding the use of these and other measures, the quality of teaching also may improve.

It may be painful for professional educators to admit, but the quality of instruction in many college classrooms, as well as its evaluation, leaves a great deal of room for such improvement. Students often attribute this situation to the apathy (real or imagined) of their instructors, while the instructors themselves may be more absorbed in meeting demands for research and publication. Many college administrators would be quick to deny this perceived underemphasis on quality instruction, but research can so overwhelm teaching in a professional school that the curriculum becomes irrelevant to professional practice.

Andrew Hacker[3] concludes that this has become all too typical of U.S. medical schools. He asserts, "American medical schools have made science and research their principal priorities. . . . In fact, few medical schools have teaching faculties in the usual sense . . . they (professors) devote classroom appearances to esoteric findings from their corner of research, without bothering to show what connection, if any, it has with medical practice."

Poor teaching performance exists all too often and can, in part, be attributed to differences in the way research and teaching performances are valued and assessed. The surest way to improve teaching is to develop good and thorough methods of evaluation and reward.

It may be instructive to examine the differences between the manner in which teaching is evaluated and that in which research is evaluated. Some of the differences are dramatic—students virtually are never involved in the evaluation of research, for example. A more subtle difference may be the most important one: research production of good quality or great volume brings national and even international recognition to both the researcher and the institution, but quality teaching rarely engenders little beyond intramural recognition.

From beginning to end, research work is subjected to rigorous scrutiny by reviewers who serve on study groups for major funding agencies, such as the National Science Foundation and the National Institutes of Health, or editorial consultants for refereed journals. Occasionally, an intramural group, such as an institutional review board, may be involved in evaluating a faculty member's research; but, at the same time, it is not uncommon for a researcher to be better known to his peers in the country than to his peers in his own college.

*"The traditional triad by which a faculty member's worth is often evaluated is most commonly expressed as research or scholarly activity, teaching, and service."*

No external forum is employed to evaluate teaching. It is true that some professors succeed in transforming their class notes into a published textbook, but the fact remains that only a limited number of textbooks are needed, and those selected for publication must meet constraints imposed by the marketplace which are often more crucial than the professional ones. It is also true that there are journals devoted exclusively to educational topics within various professions, such as the journals of optometric, medical, or dental education; but research journals outnumber these by a margin of several dozen to one.

Perhaps even more important than the numbers of research journals is the very wide range of types of reports that they are geared to handle. There are specific journals which deal primarily with literature reviews and theoretical arguments, although most are devoted to research reports (ranging in length from a single page to a monograph) or even apparatus notes or computer programs. An important corollary of this broad range of *types* of journals is the availability of rapid rewards (in the form of publications) for even very small increments in research productivity, and multiple rewards for extended projects. Outside the education profession itself, opportunity in this form is significantly less for the teaching component of a college professor's life. Is it any wonder, then, that the breadth of imagination and innovation in teaching accomplishment is so much less than in research?

The traditional triad by which a faculty member's worth is often evaluated is most commonly expressed as research or scholarly activity, teaching, and service. This carries the implication that scholarship is somehow characteristic of research but not of teaching. Scholarship may be defined as the acquisition of knowledge, research as the creation of knowledge, and teaching as the dissemination of knowledge. It is just as essential to good teaching that a faculty member remain abreast of current developments in his field as it is necessary to good research.

In the remainder of this discussion, several aspects of teaching activity which contribute significantly to the quality and effectiveness of instruction, and which can generate materials that are tailored to the special requirements of optometric education but do not lend themselves well to dissemination in the common format of journal articles or books will be identified. A forum also will be suggested by which these techniques may be exchanged, reviewed, and generally subjected to the same form of peer evaluation that is visited upon research output.

Innovations in audio-visual technology are among the most pervasive in our society with many applications to teaching methodology which barely have begun to be utilized. There probably is no substitute for the classroom presence of an articulate, inspirational, infectiously enthusiastic, perceptive, and compassionate teacher; however, there also are all too few such teachers. The appropriate utilization of technology can enable us to deploy those we have more effectively.

Any element of instruction which is repeated in essentially the same form time after time can be presented on TV cassettes, motion picture film strips, microfiche cards, or the sound and 35mm slide format. The potential applicability of these methods is varied, but some examples may illustrate their importance and suitability.

Preliminary instruction in the use of most optometric instruments, such as the phoropter, keratometer, slit-lamp, and retinoscope, requires that small groups of students be clustered around an instructor who is manipulating the instruments. If such sessions are put on TV cassettes (or some similar format), they can be repeated as often as necessary and, by the use of TV monitors, to an audience of any size. The presentation, as well as the preservation, of rare or especially instructive clinical experience on actual patients obviously can be achieved with these techniques. Use of these methods facilitates self-paced programs and thereby places much more of the burden for achieving the objectives of a course upon the students who are, after all, the ones most seriously affected by the quality of the teaching.

Segments of a course or instructional unit which are especially difficult, summaries of course work, or even remedial units for students who fail the first time around, lend themselves well to microfiche cards or 35mm slides coupled with audio cassettes. Mastery of techniques, such as ophthalmoscopy, which are very difficult to demonstrate directly even with a one-to-one student/instructor ratio, benefit enormously from well-prepared color slides or microfiche cards which show the student the endpoint he ought to be able to achieve.

Traditionally, very heavy emphasis has been placed upon the importance of laboratory demonstrations in topics such as anatomy and optics; but demonstrations are enormously expensive to set up and seldom are used to illustrate more than a few of the important features of a subject. They are very time-consuming for teachers as well as students, and unless they play an integral role in the acquisition of a necessary skill, they may be replaced better with audio-visual presentations of *successful* demonstrations. There also are many instances in which an audio-visual presentation may be superior to a laboratory exercise, even when the relative expenses and time consumed are ignored. For example, a skillfully animated film showing the action of the extraocular muscles or the projection of the optic radiations is probably understood more readily than painstaking dissection of preserved specimens of the eyeball or optic radiations *in situ.**

A second aspect of modern technology which scarcely has begun to be utilized in optometric education (and practice) is the computer. A notable exception to this generalization often is found in our own libraries where instantaneous access to a large segment of the world's medical literature is provided by a Med-Lars/Med-Line terminal. The enormous versatility and continuous de-escalation of the cost of technology of this sort boggle the mind. For a few hundred dollars anyone can install in his home greater computer capability than was afforded the entire "Manhattan" project which issued in the atomic age. Servan-Schreiber[4] in his latest book, *The World Challenge,* points out that as a result of the development of microprocessors, "the computer actually creates conditions for people to learn, read, and write with greater ease and at lower cost than ever dreamed of before." Papert in his book, *Mindstorms,*[5] states that the computer makes the acquisition of knowledge so easy that it will lead to a learning renaissance. In this context, the authors suggest that the traditional heavy emphasis upon understanding geometrical and physical optics may be facilitated with instructions in programming a hand-held computer to solve the same problems, and, indeed, vastly more complex ones, with greater accuracy in a fraction of the time. The additional time this may create in the curriculum could better be used to improve students' preparation in subject areas that do not lend themselves so well to technological applications.

*"Innovations in audio-visual technology are among the most pervasive in our society with many applications to teaching methodology which barely have begun to be utilized."*

Units of programmed instruction that may serve to emphasize difficult segments of a course, or develop great facility with a limited set of facts, may be presented in the traditional paper-and-pencil format, as well as by computer. The first step in either case is to develop the materials which incorporate optometric knowledge bases. Virtually any instructor could utilize such materials profitably in some aspects of his course, but these materials are very troublesome to write *properly.* Once again, a forum is needed for the exchange of ideas and materials, especially when they are of less than book length and, therefore, not easily accessible to external review.

There is little doubt that the most important single aspect of an optometrist's training is his clinical experience. The number of patient encounters which can provide learning experiences can be expanded by simulations. One way to do this is to improve pre-clinical training by the development and use of veridical clinical situations that resemble real patient contact more than they do student-to-student laboratory exercises, and/or to provide immediate and accurate feedback about the efficacy of the skills that the student is acquiring. For example, the training provided optometry students in cardio-pulmonary resuscitation, when it is done to American Heart Association standards, involves the use of life-size manikins which are equipped to provide immediate and accurate information about the location, strength, and frequency of the strokes involved; this is an experience which can be provided in no other way besides the real thing where the stakes are, literally, life and death. Less dramatic but apparently effective clinical simulations may be provided using latent image methods similar to those employed in some cases by the National Board of Medical Examiners. This technique involves the presentation of certain minimal information about a

*For example, Teaching Films, Inc., of Houston, Texas, has produced a series of TV cassettes of this type for most of the elementary aspects of ocular anatomy.

clinical case. The student can then select from among many categories of information, such as additional case history, particular laboratory tests, etc., any additional information that he feels is necessary to diagnose and treat the simulated case. The student actually obtains this additional information by developing hidden phrases and data with a special pen; an astute student will progress to a correct diagnosis and treatment plan with a minimum of wasted effort, laboratory tests that turn out to be normal, and case history that is irrelevant, while less competent students perform less efficiently. The analogy between performance on clinical simulations of this sort and the way that students deal with real patients is striking.

The development of useful clinical simulations applicable to aspects of optometric practice and education should be encouraged and rewarded with the same aplomb that is rewarded research output.

An aspect of optometric education which haunts us all, especially students, is the perception that performance standards for various optometric procedures differ from one school to the next. They apparently are held to be inadequate by licensing agencies because they continue to endure the expense and trouble of conducting practical examinations for licensure. This only can be overcome by developing, adopting, and holding to a uniform set of performance standards, expressed as behavioral objectives, which would be acceptable to all. This is a formidable task because it would have to be done extremely well if a consensus is expected among all the schools of optometry in the country— but it can be done. Two interrelated steps are involved. First, the objectives must be established. This is much more difficult than merely substituting transitive for intransitive verbs in a typical list of goals for a laboratory or clinic exercise. Second, these objectives must be tested extensively on many students at different levels of their education to assure that they are reasonable, appropriate, and actually attainable only by *competent* students. Such activity requires significant levels of skill and time on the part of several optometric educators working cooperatively. The rewards offered for such a volume of work must become commensurate with the effort expended on it.

It is a peculiar feature of higher education in the United States that few of its professional members are trained as teachers. The most common credentials required are an advanced degree in a particular field of research or clinical practice. A few hold advanced degrees in education, and many have served as teaching assistants during graduate training, but these experiences often are not supervised or well-planned, and they are almost never a requirement for an advanced degree. Thus, most faculty positions are filled by people whose teaching skills have been acquired almost randomly. Continuing education is required in most states to maintain optometric licensure, but no similar requirement is imposed to maintain teaching credentials. One way to improve this state of affairs is to develop workshops and seminars in teaching techniques, methods of evaluating students and the construction of tests, as well as a variety of other topics designed to engender both interest and skill in college teaching. Participation in such seminars could become an important ingredient in the peer evaluation of college teaching when they are given intramurally, and an important means of gaining national recognition as a teacher when they are conducted on a regional or national basis.

There are at least three categories of incentives that may be cultivated which would encourage optometric faculty members to develop materials of the sort described above. First, a fertile environment within the institutions must be provided for this kind of activity. It is not enough to extol the importance of teaching—that is already done. Support must be provided where it counts, namely, in tenure and promotion decisions. At the University of Houston an attempt has been made to do an extensive revision of the tenure policy which centers around the following two critical points: (1) each faculty member may negotiate a work plan in which, among other things, is specified the degree of emphasis devoted to teaching, research, and patient care during each semester; and (2) the output upon which this judgment is based is explicitly defined as "any work product susceptible of evaluation." This obviously would include research publications, but it also clearly would include products which improve teaching, such as those described above.

The second means by which faculty members can be encouraged to develop these materials and to create innovative teaching methods is to provide time for this form of productivity in work-plans and workloads in the same manner and with the same enthusiasm as is done for research.

A third category of incentive, which cannot be provided by a single institution in isolation but only by the profession at large, is the development of a broad forum by which these materials and innovative teaching methods can be widely disseminated and subjected to peer review. The national meetings of optometry's professional organizations, such as the American Academy of Optometry and the American Optometric Association, could provide this forum in the following ways. The scholarly portions of such meetings already have been expanded beyond the traditional lecture format by the addition of workshops and poster sessions. It seems reasonable to continue this expansion by providing additional apparatus, such as TV cassette players, microfiche readers, etc., and expand the acceptable types of materials to include teaching aids and other materials described above. By this means, scholarly production directed towards teaching that is normally viewed only intramurally and, very often, only by students, may be subjected to broad peer review. Indeed, peer review could be formalized by subjecting all such materials submitted at a particular session to evaluation by a select team, and by seeking input from people who adopt these materials or attend workshops.

In addition to providing a vehicle for judging aspects of optometric education which presently escape close scrutiny, this approach has a number of other advantages. For example, it would encourage the development of materials designed to meet the unique requirements of optometry. Second, it would increase the efficiency of various operations by reducing unnecessary duplication. Third, it ought to improve the quality of materials available through competitive pressure. Finally, a widespread exchange of materials and ideas will help lead to the development of first-rate performance standards and to their acceptance by all schools and—it is hoped—by state boards, as well. □

## References


1. Costin FA, Greenough WT, Menges RV. Student ratings of college teaching. Rev Educational Res 1971; 41: 511-535.
2. Seldin P. *Successful Faculty Evaluation Programs.* Crugers, NY, Coventry Press 1980.
3. Hacker A. The shame of professional schools. Harper's Oct 1981; 22-28.
4. Servan-Schreiber JJ. *The World Challenge.* New York, Simon and Schuster.
5. Papert S. *Mindstorms: Children, Computers, and Powerful Ideas.* New York, Basic Books, 1979.

# ABSTRACTS

**Robert Rosenberg, O.D.**
**State University of New York**

**Modern Aging Research: Vol. 2, Aging and Human Visual Function.** Sekuler, R., et al, eds. Alan R. Liss, Inc. Publishers, 1982.

This book consists of the compiled and edited papers delivered at the Symposium on Aging and Human Visual Function March 31-April 1, 1980, sponsored by the National Research Council. It consists of twenty papers by 40 authors divided into six sections, each with its own introduction (by the editors, one assumes).

The information in this work is by no means all new to the optometrist. However, one does find work from disciplines not present in every college of optometry that should be of interest to the clinician or teacher; the section of information processing and perception, for example, contains much that should be useful in educating students of geriatric vision care to become more effective diagnosticians and prescribers without their suffering the frustrations that many younger clinicians must bear until they accumulate years of clinical experience (and years of clinical mistakes).

The book itself suffers from a malady common to compilations of many authors' work—there is some redundancy or overlap. The editors have done an uncommonly good job of keeping this to a minimum and keeping the organization tight; however, it is possible to skip entire papers (chapters) if the reader is familiar with the material and proceed to other chapters or sections to pursue one's interests. References vary from a few to a few dozen and are given at the ends of chapters. What is of real significance is the opportunity to read papers from disciplines rarely brought together under an optometric or even a single vision-related title but that would normally require reading of a dozen or more journals.

**Academic Information in the Academic Health Sciences Center: Roles of the Library in Information Management.** J. Med. Ed. 57(10), (Part 2), Oct. 1982.

This is a ninety-three page report to the Association of American Medical Colleges (AAMC) by its Health Sciences Library Study Advisory Committee and Staff that is the result of a two-year study (1980-1982). This is not the first such study undertaken by the AAMC. The explosion in health sciences education that started in the 1960s and the plentiful money-supply at that time motivated the first study while the last one addresses the electronic-audio-visual revolution in the management (selection, filtration, organization, storage, access, and retrieval) of information for the health sciences.

As the title indicates, the study deals with information primarily; the library is only one agency, although an important one, concerned with this information. Teachers, colleges, schools, and students also deal with information and, usually, libraries. If there are changes upon us in dealing with information and information resources then there surely must be significant potential impact on the teaching-learning process, on course structure, and on the very goals of our academic institutions from the skills and knowledge of qualified applicants to the qualifications for graduation and the possibilities for continuing education programs, both content and format.

This report addresses the entire chain of a profession—education, research, clinical practice, student, teacher, practitioner, school, government agencies, and professional society. The implications for optometry are, perhaps, different in scale only. Because we are indeed smaller, it probably behooves us to be aware of potential changes in allied fields before they happen in order to maximize our returns and avoid duplication or, worse, conflicting efforts that result in incompatibility of systems.

**Teaching Residents How to Teach: A One-Year Study.** Jewett, L.S. et al. J. Med. Ed. 57(5), May 1982.

The title of this study is almost self descriptive except for the results of this experiment. Apparently, the people at George Washington University School of Medicine and Health Sciences felt, as some of us in optometric education do, that teaching skills can be learned and that clinical teachers can be made better if given instruction and resources. The evaluation done at the Children's Hospital National Medical Center seemed to confirm these suspicions.

The article discusses procedures of training and evaluation, time allotted, resources required, and instruments used. When one considers that optometric education depends heavily on clinical teaching and the steady increase in residencies, one of whose goals is the training of faculty, the relevance of the matters discussed in this article become obvious.

**Should the Cost of Insurance Reflect the Cost of Use in Local Hospital Markets?** Wennberg, J.E. N. Eng. J. Med. 307(22), Nov. 1982.

**Economic versus Professional Incentives for Cost Control.** Peckoff, G.T. N. Eng. J. Med. 307(22), Nov. 1982.

The first title explores the relationships between insurance costs and hospital costs, while the second is an editorial comment on the proposals put forth in the first. Although it is medical, not health (if one considers health to include optometry) care that is discussed, the parallels are obvious and the concerns with insurance, cost of care, price of care, and roles of the various parties (first, second, and third) apply to optometry as well.

The proposal is that insurance benefits be used to bring down the cost of care by paying the patient a fixed sum for which he can buy care if he shops around or, if he insists on costly care or refuses to "shop around" that he be charged a higher premium for the privilege. The author's premise is that, as things now stand, geographic areas of low cost subsidize geographic areas of high cost. In effect, it seems to be giving the patient/insured the responsibility for controlling costs.

The editorial takes another interesting position—that physicians keep the cost of hospital care high for professional reasons and that it should be professional, not purely economic considerations and pressures, that bring the costs down while protecting the patient's health. It makes good reading and certainly is appropriate for study and discussion of the economics of vision care in all of its aspects.

# A Computer Assisted Method for Analyzing Curriculum Content

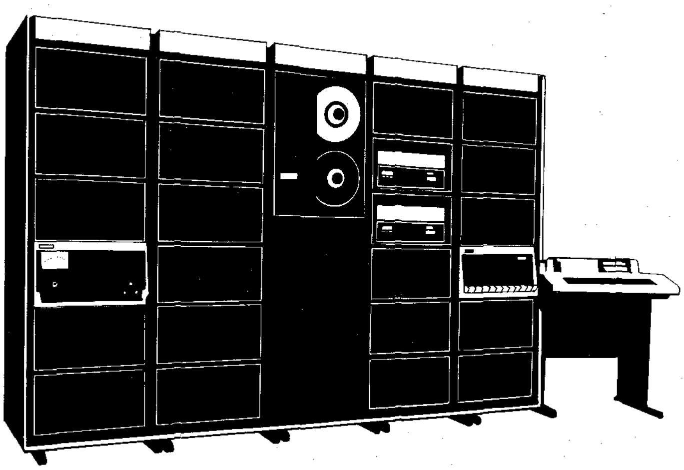
Richard D. Septon, O.D., M.S.

## Introduction

A curriculum tends to change over time, whether by intended revision, by augmentation and deletion, by shifts in emphasis within courses, or by changes in the instructional personnel. Continuing evaluations of the content, depth, and breadth of coverage of a curriculum become necessary in order to assure that the intended educational objectives of an institution are being met with completeness and efficiency. Redundancies and omissions must be identified and rectified. Individual instructors need to know what is being taught in courses other than their own.

During academic year 1979-80 the Curriculum Committee at the Pacific University College of Optometry initiated a comprehensive study of the content of its curriculum. The first problem that was faced was the selection of a standard against which to judge the curriculum. Since the Association of Schools and Colleges of Optometry recently had published a detailed curriculum model,[1] it was decided to use this as the base for comparison. A survey instrument therefore was devised with which each core instructor was asked to evaluate each course that he taught. Three general goals were kept in mind in doing this study. First, the extent to which the college's curriculum addressed the categorical areas described in the ASCO curriculum model would be identified, assessing the depth and breadth of coverage offered each topic in each course. Secondly, individual faculty members who checked items in common and classified them similarly would be identified so that they might discuss these topics with respect to comprehensiveness, repetition, progression, and relation of that coverage to other courses. Finally, areas, elements, or topics which were being taught but which were not included in the ASCO model would be identified.

*Richard D. Septon, O.D., M.S., is professor of optometry at Pacific University College of Optometry, Forest Grove, Oregon.*



## Method

The ASCO model sorts the optometric curriculum into nine rather broad academic divisions, called *curricular areas*, namely:

A. Basic Health Sciences
B. Optics
C. Vision Science
D. Behavioral Science
E. Disease
F. Clinical Patient Care
G. Community Health
H. Professional Services, Non-Clinical
I. Clinical Patient Care Experience

### FIGURE 1
### The Unmodified ASCO Curriculum Model

**A. Curricular Elements in the Basic Health Sciences**

1. Gross human anatomy of the cardiovascular, musculoskeletal, integumentary, special and general sensory, respiratory, digestive, endocrine, and reproductive systems.
2. Gross human anatomy of the head and neck. Emphasizing the musculoskeletal system, integumentary system, peripheral circulation, peripheral nervous elements, as well as the sensory organs of the head and neck.
3. A study of the microscopic anatomy of human cells, tissues, and organs, but excluding the nervous system of the eye. The composition, structure, and form of the idealized cell, its components and their relationship to one another. The biochemical properties, metabolism, and division of cells.
4. Specialized cells and their morphology, attributes, and classification. The characteristics and classification of tissues. Cellular types and characteristic cellular configurations of major body organs.
5. A study of the microscopic anatomy of various portions of the central and peripheral nervous systems. The composition, structure, form, biochemical, and bioelectrical properties of the idealized neuron. The specialized neurons and their characteristics and locations within the nervous system.
6. The glial cells, their morphology, relationship to neurons, classification, and their typical location within the nervous system. The typical microscopic anatomy of neural tissue at a variety of locations within the central nervous system.
7. The gross anatomy of the central and peripheral nervous systems including the major subdivisions of the central nervous system and the cranial nerves with their intracranial and extracranial roots and connections.
8. The autonomic nervous system including the parasympathetic and the sympathetic components. Organs mediating general and special sensation and their neural connection.
9. The vascular supply to the eye including the arterial components, the venous drainage system, and their relationship to selected neurological elements. The meninges and the meningeal blood supply. The relationship between neural elements and the bony features of the cranial cavity and other potential sources of pressure or tension upon the brain.

Each area is followed by a listing of twenty or thirty *curricular elements* resembling somewhat the catalog descriptions of courses. Since it was the intention of the study to ask each instructor to compare the content of his course(s) to these listings, it became apparent that some decompression of the model would be necessary before a survey could be attempted. The committee, therefore, simplified each curricular element as much as possible, reducing it to a single word, phrase, or sentence. In some instances an element was split to form two or more separate elements. In some *areas,* the ASCO model did not seem to reflect completely the content of the college's curriculum, and so new elements were developed and added to the listing.

Figures 1 and 2 show the unmodified and condensed versions, respectively, of a portion of the ASCO curriculum model.

In order to assess depth and breadth, a classification system was devised which the instructor was asked to apply to each element he identified as part of his coverage. His first judgment was whether his coverage was *Basic* or *Advanced. Basic* coverage was defined as that in which fundamental ideas and broad foundations were emphasized. *Advanced* coverage assumed that the basics had been handled somewhere else, and so was coverage which amplified, developed special cases, went into greater detail, or updated.

> **"The extent to which the college's curriculum addressed the categorical areas described in the ASCO curriculum model would be identified, assessing the depth and breadth of coverage offered each topic in each course."**

A secondary classification required a designation of *Theoretical* versus *Applied. Theoretical* coverge stressed concepts, while *Applied* assumed that concepts had already been mastered. Applied coverage could be clinical, nonclinical, or both.

A tertiary classification asked for a designation of *Extensive* versus *Limited. Extensive* coverage was that in which all or most aspects of an element were covered completely. *Limited* was defined as that which was not extensive.

Figure 3 shows the classification system which was applied to each curricular element (item) of each curricular area for each course. Eight combinations were possible.

Each instructor was supplied with one evaluation sheet for each course and a condensed ASCO model. Each then was asked to evaluate the content of every course for which full or partial responsibility was borne. The unmodified ASCO model also was available for reference in the event clarification was needed of the intended content of an element. A separate evaluation sheet was completed for each course, classifying each cited element of each curricular area according to the system described above. Figure 4 shows a portion of the evaluation sheet.

If, for example, in Curricular Area A, Basic Health Science, the instructor encountered item (element) #18, ophthalmic pharmaceuticals, and covered that item in the course under consideration, he or she would then make judgments as to the nature of the coverage. If it was judged to be (1) Advanced, (2) Applied and (3) Extensive, AAE would be marked on the evaluation sheet at item #18, as shown in Figure 5. In the event an item was covered in more than one fashion in a given course, the option was given of classifying it two ways, but not more. Item 2, for example, is classified BTE and AAL. Finally, if the instructor felt an element was being covered that did not appear anywhere among the listed items, he was asked to add it to the course evaluation sheet and classify it as above.

**FIGURE 2**
**A Condensed ASCO Curriculum Model**

**A. Curricular Elements in the Basic Health Sciences**

1. Gross human anatomy.
2. Gross human anatomy—head and neck.
3. Microscopic human anatomy.
4. Specialized cells and their properties.
5. Microscopic anatomy and biochemistry of the CNS and PNS.
6. Histology of the CNS.
7. Gross anatomy of the CNS and PNS.
8. ANS.
   General and special sense organs.
9. Ocular Vascular supply.
   Meningeal vascular supply.

## Results

Meeting the aims or objectives stated earlier in this report are not ends in themselves, but rather are the necessary steps in realizing the ultimate goal, which is the formulation of a curriculum that fulfills the educational mission of the institution. It was expected that by working through the process of meeting these aims, that either certain concrete proposals for changes would emerge, or the faculty/administration would conclude that the curriculum, as taught, was fulfilling that mission.

Evaluation sheets were received for all courses, core and elective, now taught within the college. Data from each sheet were transferred to cards which could be read and processed by the computer. Each card was coded in such a way that the printout showed each curricular element under each of the nine major curricular areas, each course in which it was covered, the instructor, the classification of the coverage, and whether the course was core or elective. Figure 6 shows a portion of the printout for Curricular Area F, Clinical Patient Care, detailing responses for item 10, objective measurement of refractive status. Course number is followed by the instructor's code number. Entries which are starred are elective courses.

At the upper right appears the notation 1:8.0. This is the index score for the element, gotten by assigning a weight of 1.0 for each *Extensive* and .5 for each *Limited* classification, and summing them.

The next step was to present the data to the faculty for discussion and evaluation. First, separate discussion groups for each curricular area were formed. A scan of the printout quickly identified all instructors who had cited coverage in an area. It was decided to assign an instructor to the discussion group in each area in which he or she had used *Extensive* as the primary classification of an item.

The questions of overcoverage and omission were attacked at the first session. The group was informed at the outset that it should limit itself to these broad questions, with the understanding that detailed exchanges between instructors on individual items would be encouraged at subsequent sessions.

The group leader opened the discussion by presenting a condensation of the area, item by item, along with the index

**FIGURE 3**
**Classification System**

| Column 1 | | Column 2 | | Column 3 | |
|---|---|---|---|---|---|
| Basic | (B) | Theoretical | (T) | Extensive | (E) |
| | | | | Limited | (L) |
| | | Applied | (A) | Extensive | (E) |
| | | | | Limited | (L) |
| Advanced | (A) | Theoretical | (T) | Extensive | (E) |
| | | | | Limited | (L) |
| | | Applied | (A) | Extensive | (E) |
| | | | | Limited | (L) |

score for each. It was then suggested that the group comment on the general distribution of scores and proceed to an item by item discussion of the extreme highs (possible duplication of coverage) and lows (possible undercoverage). As the session progressed the full printout was consulted on individual items and course citations. Finally, a consensus was reached about the accuracy of the identification of items requiring further study.

Prior to the second session, all instructors submitted course outlines to the committee which were distributed to all group members. At this session, instructors were urged to exchange information with each other relative to what they were doing in their courses. Specific attention was focused on the high and low items identified previously. Recommendations for referral back to the Curriculum Committee were then formulated. These ranged from proposed elimination of items (is this item necessary?), intensified or de-emphasized coverage (is the coverage adequate, overadequate, inadequate?), transfer of items from one course to another, resequencing of courses, development of new courses, and elimination of courses. Finally, recommendations for changes were brought by the Curriculum Committee to the faculty for consideration and approval.

## Applications

The application described above might be called an internal one, in that it is used by an institution to stimulate and guide an evaluation of its own curriculum. However, external applications are also possible. The Association of Schools and Colleges of Optometry currently is assisting all of its member schools to evaluate their curricula using this system. When the data are completely assembled, several kinds of comparisons will be possible. The contents, area by area, of one school can be compared to that of another school; a "norm" curriculum, defined perhaps as a mean, plus or minus a standard deviation, of the content of all schools, can serve as a standard against which to compare an individual school's content.

Figure 7 shows how the latter comparison might look. One school's index scores for Area E, Disease, are plotted alongside the means and standard deviations of data from all of the schools which have reported so far. Index scores, of course, represent a fairly high degree of compressing of information; therefore, only the broadest of trends will show. Nevertheless, for very general purposes this kind of comparison will be useful.

**FIGURE 4**
**Course Evaluation Sheet**

Course________________

Name________________

**CONTENT ANALYSIS—OPTOMETRY CURRICULUM**

| | A | | | B | | | C | | | D | | | E | | | F | | | G | | | H | | | I | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Basic Health Science | | | Optics | | | Visual Science | | | Behav. Science | | | Disease | | | Clinical Patient Care | | | Community Health | | | Professional Services Non-Clinical | | | Patient Care Experience | | |
| Item | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## Conclusion

Curriculum study and curriculum development is a continuing process. It is complex and difficult, laborious and time consuming. But it is necessary. It must involve all who teach in the curriculum, and they all must know what is being taught, qualitatively, by their colleagues. Furthermore, each instructor must be able to see how his teaching fits into the overall curriculum. Finally, the institution must know how its curriculum fits the generally accepted framework of an optometric curriculum.

A method has been presented which translates an optometric curriculum into the language of the ASCO model and brings the individual instructors together to discuss it. The questions of omission and duplication and adequacy are addressed. A process for exchanging information, for stimulating dialogue, and ultimately, for recommending modifications of that curriculum, is described.


## Acknowledgements

I would like to acknowledge the many hours of dedicated labor contributed by members of the Curriculum Committee, 1978-1982, to the development and implementation of this curriculum study. A special debt is owed Mr. Sam Ashenberner, Director of Computer Center of the College of Optometry, Pacific University, who designed the programs and processed the data. ☐


## Reference


1. Eskridge JB. chairman. A report of the curriculum committee of the ASCO Council on Academic Affairs: optometry curriculum model. J Optom Ed Summer, 1978; 4:1.

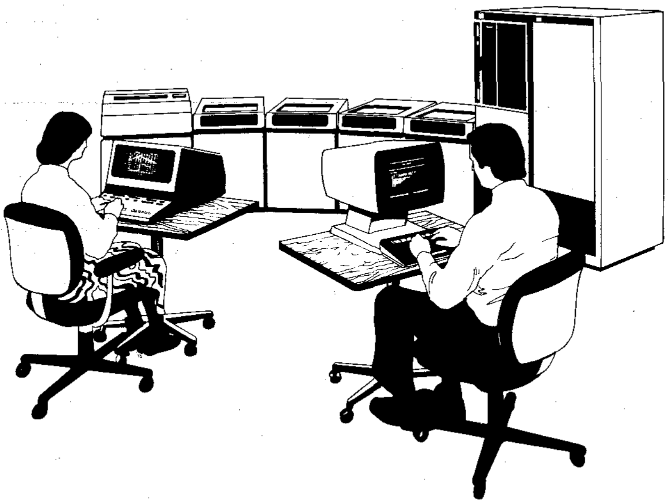



**FIGURE 5**
**A Portion of a Completed Evaluation Sheet**

| | A | | | B | | |
|---|---|---|---|---|---|---|
| | **BSC** | **HLTH** | **SCI** | **OPTICS** | | |
| **ITEM** | 1 | 2 | 3 | 1 | 2 | 3 |
| 1 | | | | | | |
| | | | | | | |
| 2 | B | T | E | | | |
| | A | A | L | | | |
| | | | | | | |
| | | | | | | |
| 18 | A | A | E | | | |
| | | | | | | |

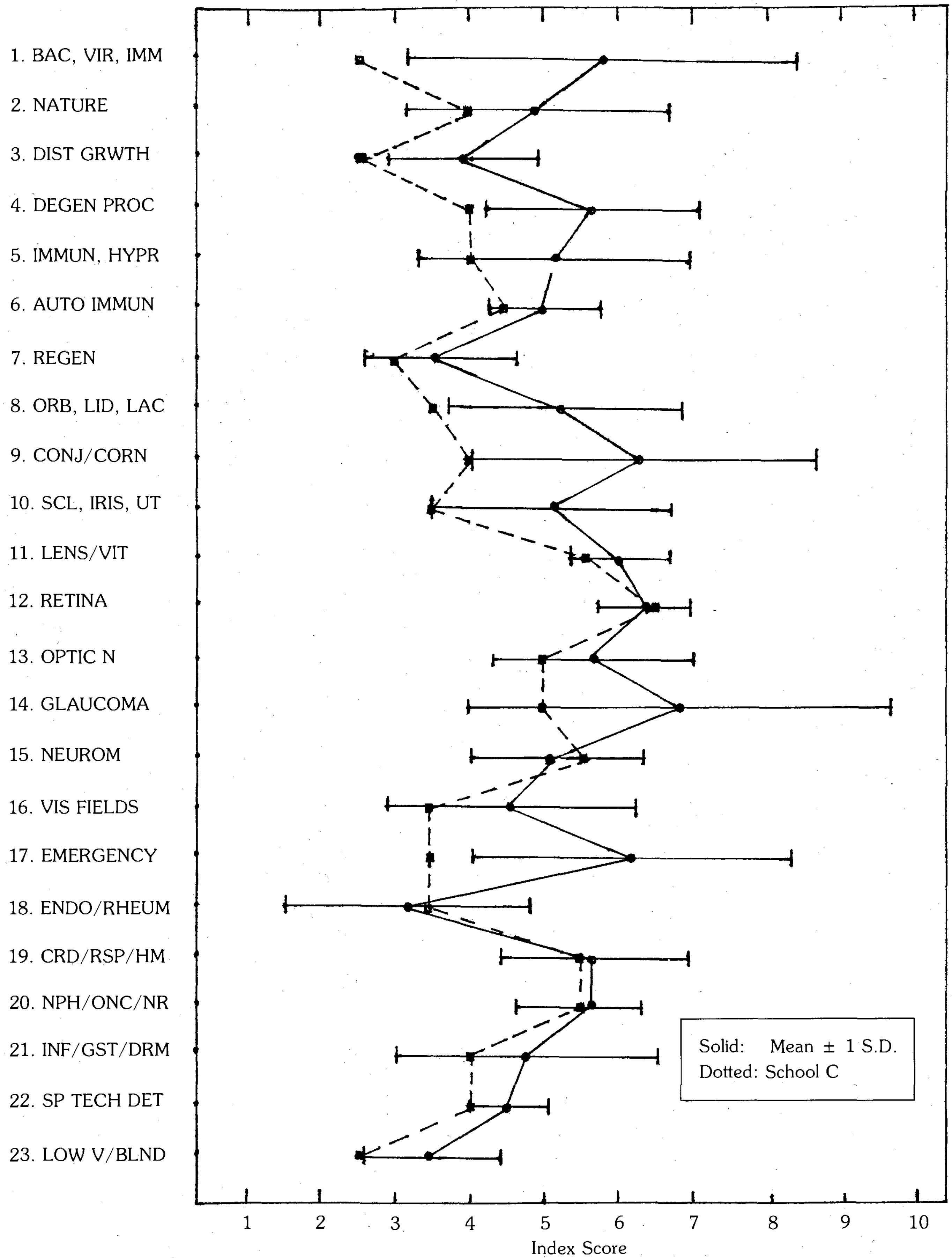
**FIGURE 6**
**A Portion of a Printout**

F. Clinical Patient Care

10. Objective measurement of refractive status — I: 8.0

| BTE | BTL | BAE | BAL | ATE | ATL | AAE | AAL |
|---|---|---|---|---|---|---|---|
| OPT441-23 | OPT346-21 | | | | OPT444-27 | OPT400-30 | OPT450-6 |
| | | | | | | OPT402-30 | OPT452-6 |
| | | | | | | OPT541-15 | OPT418-29 |
| | | | | | | OPT533-7 | OPT547-25 |
| | | | | | | OPT655-17* | OPT657-25* |
| | | | | | | OPT653-15* | OPT659-7* |

**FIGURE 7**
**Curricular Elements in Disease**



# BOOK REVIEW

**COLOR ATLAS OF CONTACT LENSES** by Montague Ruben. E. Norwalk, CT: Appleton-Century-Crofts, 1982. $62.50.

This 151 page, hard bound atlas contains 605 figures most of which are in color. The quality of the photographs and print are excellent. The atlas is divided into six sections: The Materials and Lens, Fitting Procedures, Clinical Cases, Adverse Reactions to Contact Lens Wear, Contact Lens Spoilation and Prosthetics.

The first section presents a limited number of photos on a wide variety of topics including material chemistry, physical properties, lens measurement (soft and rigid), scleral lens moulding and manufacture, rigid and hydrogel manufacture.

The second section on fitting has photos of various types of lens fittings including spherical, toric and bifocal rigid and soft lenses, silicone lenses and scleral lenses. Photos of fitting aphakic, keratoconic and keratoplasty patients are presented. Photos of some unusual lens fittings such as rigid lenses of 11 to 13 mm overall diameter are given.

One of the more interesting and informative sections is the one of clinical case photos. This section could be of particular use in the educational setting as good illustrations of pathological situations and their fitting are presented. Such cases as acne rosacea keratitis, corneal dystrophies, progressive myopathy, exposure keratitis, bullous keratopathy, anterior chamber formation, viral keratitis and other more common situations as aniridia, albinism, etc. are shown.

The sections on adverse reactions to contact lens wear and contact lens spoilation have some excellent photos of conditions encountered with the wear of various types of lenses. Such problems as epithelial and endothelial defects, neovascularization, infective keratitis, lid and conjunctival changes are illustrated.

The section on prosthetics gives illustrations of using rigid and soft lenses, shells and prosthetic eyes to fit a variety of ocular cosmetic conditions.

The strong point of this book is the excellent photos of various conditions fitted and caused by contact lenses. It could be used as a reference text in teaching contact lens courses as it illustrates these conditions well. It also could be used by the practitioner to illustrate certain problems to patients as part of a patient education program.

The only written text portion of the book is the captions to the figures which give only a minimal amount of information, usually not enough to allow the reader to discern how the fitting or procedure is actually accomplished. Therefore, it would not be used as the textbook in an optometry college contact lens course.

*Gerald E. Lowther, O.D., Ph.D.*
*Professor, College of Optometry*
*Ferris State College*

# NEWSAMPLER

(continued from p. 7)

on Minnesota's White Earth Indian Reservation in October. Another trip to the reservation was made in November 1982.

**Howard I. Woolf, O.D.,** of Baltimore, Md., was re-elected president of the Illinois College of Optometry Alumni Council at its annual fall meeting. In addition, third-year ICO student **Alan Winkelstein,** of Parsippany, N.J., was appointed by the American Optometric Association president to serve as the student liaison representative to the National Board of Examiners in Optometry.

Thirteen fourth-year students from Southern College of Optometry, Memphis, Tenn., have been selected for inclusion in the 1982-83 edition of Who's Who Among Students in American Universities and Colleges. The students selected are: **Carolyn Ruth Carman, James Winston Devine, Terry Wood Durham, John Frederick Fanning, Stuart Alan Glass, Thomas Luther Gunter, Jr., Sandra Mae Hess, Gary Bryan Lukes, Patricia Annette Neal, Dawn Michele Rakich, Mary Edris Shackleford, David James Underhill,** and **Jody Lee Whisenant.**

The Southern California College of Optometry (SCCO) in Fullerton, California, held its first Service Recognition Banquet for all faculty, administration and support personnel in December, 1982, highlighted by the presentation of 114 service recognition awards. Honored for most years of service to SCCO was **James Gregg, O.D.,** who has been with the college for 35 years. Thirty-year service awards were presented to **Margaret Dowaliby, O.D., Charles Abel, O.D., Frank Brazelton, O.D.** and **William Brisbane, O.D.** Faculty, administration and support personnel also were recognized for 20, 15, 10, five and one year service to the college.

**Debra J. Christensen** has been appointed director of public information for the Southern California College of Optometry. Former public relations coordinator for Big Brothers/Big Sisters of Orange County, Christensen is a 1978 graduate of San Diego State University with a B.A. in Liberal Arts/Journalism.

The new England College of Optometry (NEWENCO), Boston, Mass., welcomed **Larry R. Clausen, O.D., M.P.H.,** as its new dean of academic affairs. Dr. Clausen replaced **Mary Scott,** O.D., who had been acting dean since July, 1980. Clausen had been former assistant dean at Pacific University College of Optometry for the past four years. Prior to that, he spent seven years involved with public health and health manpower planning at several agencies.

## ASCO Sustaining Member Section Underway

Recently established, the Sustaining Member Section of the Association of Schools and Colleges of Optometry (ASCO) was developed to provide exposure and facilitate communication between optometry related industry and the member institutions of ASCO. It is expected that there will be an enhancement of the dissemination of information about new technology to educators and that a potential exists to serve the sustaining members in areas of product development and research. Efforts also are underway to provide for contact to students in the schools and recent graduates.

Optometric education is expected to benefit from the sustaining member program through the support of various initiatives. While not fully developed, ASCO has selected educational interchange and faculty development, graduate placement assistance, and data base development as priorities for the future.

The section is open to manufacturers and distributors of ophthalmic equipment and supplies, pharmaceutical companies, textbook publishers, and others providing goods and services to the optometric profession.

Further information may be obtained from Lee W. Smith, Executive Director, Association of Schools and Colleges of Optometry, 600 Maryland Avenue, S.W., Suite 410, Washington, D.C. 20024, (202) 484-9406.

*Following limited publicity, the following companies have become sustaining members of the Association of Schools and Colleges of Optometry.*

| Company | Representative |
|---|---|
| ***AO Scientific Instruments Division*** Warner Lambert Technologies, Inc. Keene, New Hampshire | Mr. Robert S. Stevens, III |
| ***Barnes Hind/Revlon Vision Care International*** Sunnyvale, California | Mr. William Sorrens |
| ***Bausch & Lomb, Soflens Professional Products Division*** Rochester, New York | Mr. Robert Helgerson |
| ***CooperVision Optics*** San Jose, California | Mr. Dean Clements |
| ***Corning Glass, Optical Products Division*** Corning, New York | Mr. Paul R. O'Conner |
| ***Multi-Optics Corporation*** Foster City, California | Mr. Jacques Stoerr |




ASSOCIATION OF SCHOOLS
AND COLLEGES OF OPTOMETRY
600 Maryland Ave., S.W., Suite 410
Washington, D.C. 20024

**Non-Profit Org.**
**U.S. POSTAGE PAID**
**at Wash., D.C.**
**Permit No. 46070**