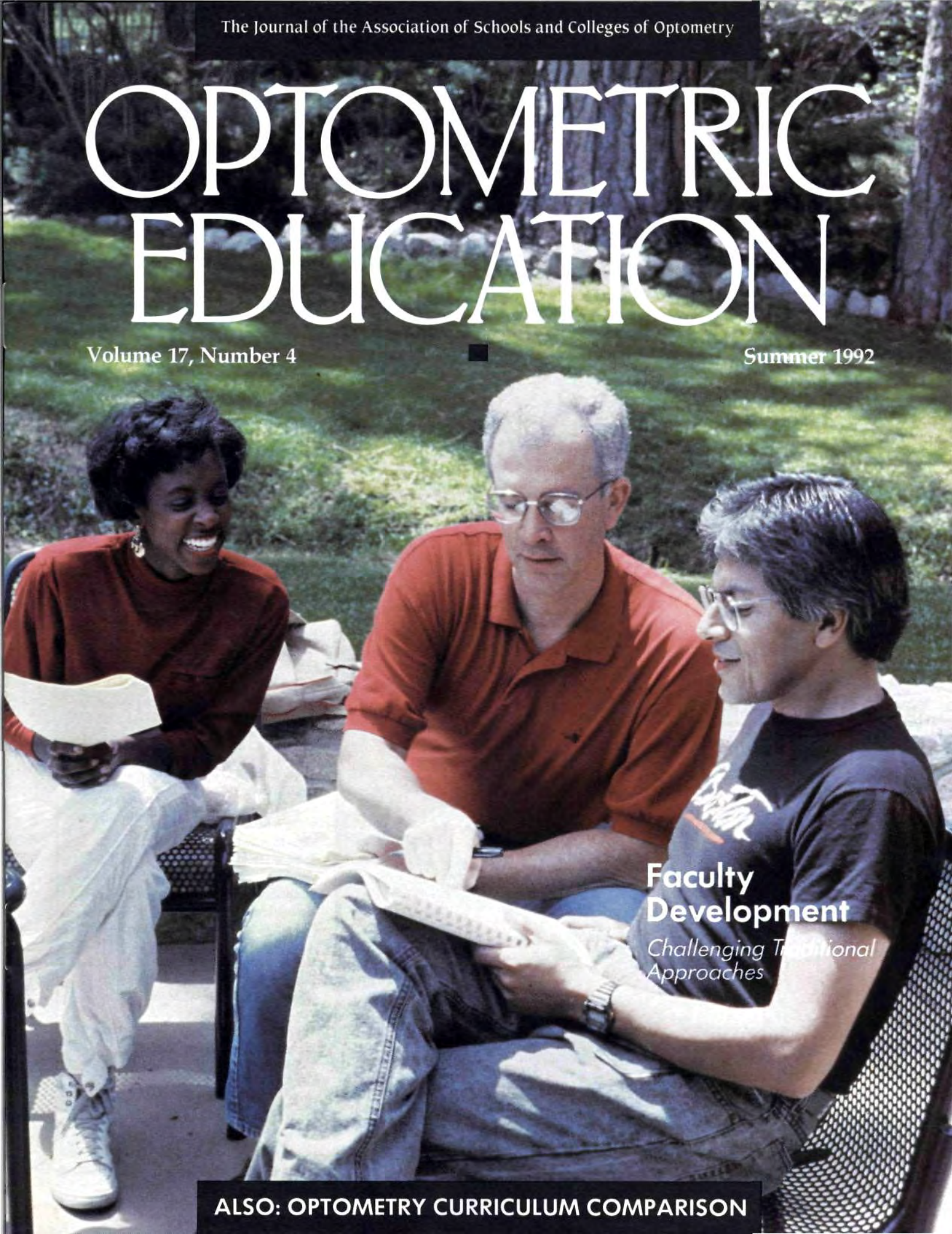
The Journal of the Association of Schools and Colleges of Optometry

OPTOMETRIC EDUCATION

Volume 17, Number 4 Summer 1992



Faculty Development

Challenging Traditional Approaches

ALSO: OPTOMETRY CURRICULUM COMPARISON

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, Canada and a number of foreign countries. ASCO is a non-profit, tax-exempt professional educational association with national headquarters in Rockville, MD.

OFFICERS AND MEMBERS

President
Dr. William E. Cochran, President
Southern College of Optometry
Memphis, Tennessee 38104

President-Elect
Dr. Bradford W. Wild, Dean
University of Alabama
School of Optometry
Birmingham, Alabama 35294

Vice-President
Dr. Arthur J. Afanador, Dean
Inter American University
of Puerto Rico
School of Optometry
San Juan, Puerto Rico 00919

Secretary-Treasurer
Dr. Lesley L. Walls, Dean
Northeastern State University
College of Optometry
Tahlequah, Oklahoma 74464

Immediate Past President
Dr. Jerry Christensen, Dean
University of Missouri-St. Louis
School of Optometry
St. Louis, Missouri 63121

Executive Director
Martin A. Wall

Dr. Jack W. Bennett, Dean
Indiana University
School of Optometry
Bloomington, Indiana 47401

Dr. Jerald Strickland, Dean
University of Houston
College of Optometry
Houston, Texas 77004

Dr. Jay M. Enoch, Dean
University of California
School of Optometry
Berkeley, California 94720

Dr. Alden N. Haffner, President
State University of New York
State College of Optometry
New York, New York 10010

Dr. Alan L. Lewis, Dean
Ferris State University
College of Optometry
Big Rapids, Michigan 49307

Dr. Richard L. Hopping, President
Southern California College
of Optometry
Fullerton, California 92631

Dr. Boyd B. Banwell, President
Illinois College of Optometry
Chicago, Illinois 60616

Dr. Richard Reinke, Acting Dean
Pacific University
College of Optometry
Forest Grove, Oregon 97116

Dr. Richard M. Hill, Dean
The Ohio State University
College of Optometry
Columbus, Ohio 43210

Dr. Thomas L. Lewis, President
Pennsylvania College of Optometry
Philadelphia, Pennsylvania 19141

Dr. Larry Clausen, President
The New England College
of Optometry
Boston, Massachusetts 02115

Provisional Member
Dr. Stewart Abel, Dean
Southeastern University
College of Optometry
North Miami Beach, Florida 33162

Affiliate Members
Dr. Anthony Cullen, Director
University of Waterloo—Optometry
Waterloo, Ontario, Canada N2L 3G1

Dr. John V. Lovasik
University of Montreal—Optometry
Montreal, Quebec, Canada H3T 1P1

Dr. Oswaldo Vargas, Dean
Escuela de Optometria
Universidad Social
Catolica de LaSalle
Bogota, Colombia

Dr. Giovanni DeStefani, Dean
School of Optometry
50059 Vinci, Firenze
Verona, Italy

Professor H. Barry Collin, Head
University of New South Wales—
Optometry
Kensington, Australia N.S.W. 2033

Mr. Ndlela Sipho Moses
University of the North
Sovenga, South Africa

Sustaining Members

***Alcon Laboratories, Inc.**
Allergan Optical
Bausch & Lomb, Inc.
***Ciba Vision Care**
Coburn Optical Industries, Inc.
Corning Glass, Optical Products Division
Fused Kontacts, Inc./G.T. Laboratories, Inc.
Humphrey Instruments, Inc.
Luxottica Group
Marchon/Marcolin Eyewear, Inc.
Polymer Technology Corporation
Reichert Ophthalmic Instruments
Sola Optical U.S.A., Inc.
Spectrum Pharmaceuticals
Sunsoft Corporation
Tura, L.A.
***Varilux Corporation**
***Vistakon, Inc.**
Wesley-Jessen

*Advertisement in this issue of the *Journal*

OPTOMETRIC EDUCATION

ISSN 0098-6917

VOL. 17
NO. 4

CONTENTS

SUMMER
1992

The Journal of the Association of Schools and Colleges of Optometry

SYMPOSIUM

Faculty Development

Joe is pleased to publish the following papers based on presentations delivered by participants at the meeting of the Education Section of the American Academy of Optometry in December 1990.

ARTICLES

SPECIAL FEATURE

DEPARTMENTS

About the cover:

An afternoon workshop at Southern California College of Optometry's annual retreat brought together administrators and faculty. Pictured left to right are Pauline Berryman, admissions officer; James E. Bailey, O.D., Ph.D., professor and chairperson, Department of Basic and Visual Science; and Donaldo R. Figueroa, O.D. assistant professor and director of the Optometry Center of Los Angeles.

The JOURNAL OF OPTOMETRIC EDUCATION is published by the Association of Schools and Colleges of Optometry (ASCO). Managing Editor: Patricia Coe O'Rourke. Art Director: Dan Hildt. Graphics in General. Business and editorial offices are located at 6110 Executive Boulevard, Suite 690, Rockville, MD 20852 (301) 231-5944. Subscriptions: JOE is published quarterly and distributed at no charge to dues-paying members of ASCO. Individual subscriptions are available at $15.00 per year, $20.00 per year to foreign subscribers. Postage paid for a non-profit tax-exempt organization at Rockville, MD.

ASCO

EDITORIAL

Support for Faculty Development

Optometric Education deals in this issue with the topic of faculty development. It is a matter of vital importance to the quality and continued vitality of our system of optometric education. Proper development of our faculty is especially significant because, when combined with other physical and human resources available within a curriculum, faculty are the critical element that makes or breaks a program. Faculty are the most important ingredient of education because it is only by faculty organization, leadership and action that their program will succeed and will evolve for the future. Even a "resource poor" program can achieve excellence by virtue of its faculty; no amount of investment in non-faculty areas alone can produce quality education if faculty are inadequately trained, outmoded, demoralized or uninvolved.

To an increasing extent, in this era of tight budgets, restricted resources and crowded curriculum, the question of faculty development is how we can afford to encourage the best in our faculties. There is no simplistic answer to this question, but is an issue that involves faculty attitudes and the support of our administrative leadership. As Dr. Morris Berman notes in his article, *Challenges for Optometric Educators*, "A common thread among successful (faculty development) programs is the collaboration that occurs between faculty and administrators."

The following example further illustrates the issue of support for faculty development. We currently face that explosive growth of "information age" and other new techologies. It is easy to remain complacent about the use of these technologies, especially in light of their often high cost and seemingly limited application in traditional education. However, is it not better to embrace new technologies as creative tools for helping us more effectively deliver our curriculum?

Any business faces this problem of technological change where costly investment is necessary. However, in our case it is not enough to invest in technologies alone. We must "invest" in our faculty encouraging them to redevelop their instructional methodologies. Faculty should be considered a capital resource that requires constant re-investment. This attitude is the real essence of the concept of faculty development which both administration and faculty need to accept and cooperatively to foster as a high priority.

The "info-technology" illustration is but one example of an external source of change that must be managed through faculty development. There are many others, both internal and external. What is important, however, is that we manage such change from within. To be effective, any approach to faculty development must be internally generated and gain the broad endorsement of faculty and administration.

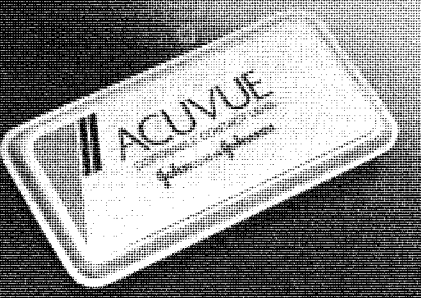
The faculty, as the creative component of the program, should be actively involved in the planning and process of the development initiative. Administrators should provide needed support and guidance so that there is an air of excitement about the future and a sense of solid commitment to follow through with the initiatives that are undertaken.

We are fortunate to have some of the finest faculty in our institutions of higher learning. Mainitaining their skills and enhancing their potential must be among our highest priorities. We hope the ideas put forward in the following articles will challenge us and encourage us to support faculty development programs.

Felix M. Barker II, O.D., M.S.
Editor

What Makes ACUVUE® Disposable Contact Lenses The Prescription For Success?

ACUVUE Is Number One In Patient And Practitioner Satisfaction.[1]



Considering the outstanding comfort, visual acuity and convenience of ACUVUE® Disposable Contact Lenses, it's really no surprise that ACUVUE is number one in patient satisfaction. And satisfied patients result in fewer problems for you.

But there's more. ACUVUE patients recommend their lenses to four times as many people as ordinary contact lens patients.[2] And ordinary contact lens wearers are more than twice as likely to drop out of their lenses.[3] So satisfied ACUVUE patients mean increased referrals and retention — for a stronger, more profitable practice that keeps growing.

In other words, ACUVUE satisfies your patients. And ACUVUE can help build your practice. Both of which satisfy you. Find out what makes ACUVUE® the prescription for success. Convert your practice today.

VISTAKON
Johnson & Johnson

[1] Data on file, 1991
[2] Data on file, 1991

OPHTHALMIC

INDUSTRY NEWS

Companies appearing on these pages are members of ASCO's Sustaining Member Program. Sustaining Members are listed on the inside front cover of each issue. Membership is open to manufacturers and distributors of opthalmic equipment and supplies and pharmaceutical companies.

Vistakon, Alcon Fund Education Summit

The recent Georgetown Conference — Summit on Optometric Education, which brought together 85 leaders from the political and educational arms of the optometry profession, was funded by two of ASCO's sustaining members: Vistakon, a division of Johnson & Johnson Vision Products, Inc, and Alcon Laboratories, Inc. Vistakon President Bernard W. Walsh & C. Jack Weightman, vice president and general manager, Vision Care Group, Alcon Laboratories, spoke to attendees at luncheons held during the Summit.

Vistakon Announces Revised Customer Policy

Vistakon, a division of Johnson & Johnson Vision Products, Inc., announced revisions in its customer policy designed to further the company's objective of promoting the eye health of patients wearing its contact lenses.

With the revisions, the company or its authorized distributor network will sell ACUVUE® disposable and SUREVUE® dailywear, two-week replacement contact lenses — as well as Vistakon's lathed lenses — only to customers who have a licensed practitioner who personally fits contact lenses on the premises. Previously, the policy did not distinguish between licensed practitioners who merely dispensed and those who fit lenses.

"Our policy has always been to ensure that proper patient health is being promoted with our lenses," explained Vistakon President Bernard W. Walsh. "Periodically, we review and revise our customer policy to make sure that this goal is being met. We feel these latest revisions will better ensure that patients are dispensed lenses based on current, valid prescriptions and under the supervision of a fitter's professional care," he added.

Varilux Sponsors Optometry Super Bowl

Varilux Corporation hosted the first annual Optometry Super Bowl (OSB) at the Palmer House Hotel in Chicago, Illinois, during the annual meeting of the American Optometric Student Association. Optometry students from 16 optometry colleges and universities competed against each other answering questions taken from all areas of the optometric curriculum. The Varilux Super Optometry Bowl followed the format of a quiz show. **Ron Sayers,** a fourth year student from The Ohio State University College of Optometry, was the winner.

Rod Tahran, O.D., director of professional services at Varilux Corporation, welcomed the 600 attendees, reading the rules and introducing the panel of judges, which included **L. Edward Elliot, O.D.,** president of the A.O.A., **James Leadingham, O.D.,** president-elect of the A.O.A., **Dan Houghton, O.D.,** vice-president of the A.O.A., **Earle Hunter O.D.,** executive director of the A.O.A. and **David Greenberg, O.D.,** dean at the host school, Illinois College of Optometry. **John W. Potter, O.D.,** editor of the *Journal of the American Optometric Association,* served as moderator.

"The optometric students who participated were very impressive; their knowledge and their enthusiasm really made the event a success. Varilux is looking forward to continuing sponsorship of the Optometry Super Bowl," said **Michael Daley,** president of Varilux Corporation, who was on hand to present the awards.

B & L Refuses to Settle In Mail Order CL Care

Baush & Lomb has refused to settle in a legal case concerning a mail order contact lens firm. California-based Dial-A-Contact Lens sued five contact lens manufacturers as well as the American Optometric Association and the California Optometric Association in October 1990. Dial-A-Contact claimed the defendants conspired to drive them out of business. Most of the defendants have settled out of court with Dial-A-Contact, but Harold O. Johnson, Bausch & Lomb Contact Lens Division president, said Bausch & Lomb has refused to settle.

He said, "Our decision not to sell products to Dial-A-Contact was based on our sales policy and the business interest of the Company, and does not violate the antitrust laws. We will not be coerced by baseless litigation into changing that decision. There is principle involved here. Although a settlement at this time would avoid protracted and expensive litigation, we think it would be the wrong thing to do," Johnson added.

Sola Expands Marketing Communications

Stacy Weir has joined Sola Optical as a marketing communications specialist. The new position will utilize Weir's diverse marketing background to promote and support Sola's line of plastic, glass and polycarbonate products. Previously, she was an associate product manager for Franklin Resources, Inc.

"Stacy brings a unique combi-

nation of marketing knowledge and communications experience to this position," says Janice de Ryss, manager of marketing communications. "This, along with her creativity and enthusiasm, will be a tremendous asset to Sola."

Ciba Announces Comfort Guarantee

CIBA Vision Corporation announced the "Comfort Guarantee" at the Southern Educational Congress of Optometry (SECO). Beginning in the Spring of 1992, practitioners fitting patients with NewVues® (vifilcon A) Soft Contact Lenses or FOCUS® (vifilcon A) Soft Contact Lenses will be able to offer a comfort satisfaction guarantee. If patients are not completely satisfied with the lenses after three months due to comfort, they will receive a free pair of soft contact lenses from CIBA Vision's conventional lens product lines.

"CIBA Vision is so confident of the quality and comfort of NewVues® and FOCUS® Soft Contact Lenses that we are willing to guarantee satisfaction or supply eye care practitioners with another comparable conventional lens for free," said Stuart Heap, senior vice president of sales and marketing at CIBA Vision Corporation.

In addition to the NewVues® Soft Contact Lenses, the guarantee includes all members of the FOCUS® family of products, including FOCUS® SOFTCOLORS® and FOCUS® TORIC Soft Contact Lenses.

Allergan Receives Approval For Two Tint Colors

Allergan announced that it has received approval for the emerald and smoky quartz versions of SofTints™ Enhancement Tinted Contact Lenses. All four colors — sapphire, aqua, emerald and smoky quartz — will be widely available on Allergan's two most popular soft contact lens lines, Zero 4® and Zero 6®, and are expected to generate a positive reaction from eye care practitioners throughout the country.

Additional information is available from Todd Halver, product manager, Allergan, Inc. at (714) 752-4500.

Wesley-Jessen Announces Grant To AOA CLS Residency Program

Wesley-Jessen will provide another $15,000 grant to the contact lens residency program sponsored by American Optometric Association's Contact Lens Section (AOA CLS). The residency program, which partially funded three residents in the 1991-1992 academic year, was begun last year with initial funding from W-J.

"W-J is proud to have been at the forefront of the AOA CLS's residency program last year and just as proud to continue this year. Indeed, W-J looks forward to continuing its long-established

practice of supporting professional education," said Dwight H. Akerman, O.D., F.A.A.O., W-J's Director, Professional Services.

As was the case in 1991, the grant is being made available through profits from W-J's Prosthetic Lens Program. This unique program is designed to provide state-of-the-art prosthetic opaque soft contact lenses which improve vision and/or the cosmetic appearance of patients with diseased or damaged eyes. All profits from the program are donated by W-J to professional vision care education. DuraSoft Colors prosthetic lenses are available in a wide variety of colors and patterns. All lenses are custom-made and require six to 10 weeks for delivery.

Corning Announces Consumer Advertising Campaign

In the May and June issues of six key consumer magazines, Corning will introduce a dramatic new four-color, full-page advertising campaign in support of PhotoGray Extra® Prescription Lenses That Change. The new advertising campaign will be concentrated in May - October, which is the high-potential selling period for photochromic lenses, because indoor/outdoor activities are at a peak in those months.

The advertisement will feature four consecutive closeup photographs of the face of a smiling man who is wearing PhotoGray Extra® lenses. The change in the color of the lenses from light to dark dramatically illustrates how they react to sunlight. This feature is explained in the headline: "Eyeglasses to Sunglasses in less than 60 seconds." The benefit is summarized in the copy's catchy promise, "one of the best things you can do for your eyes."

For further information, contact: Corning Incorporated, Optical Products Department, Attn: Marketing, MP-21-2-1, Corning, NY 14831.

Sunsoft Introduces Low Cost Spherical Lens, Revolution

Sunsoft Corporation has announced the introduction of the new Revolution lens. Revolution is a high quality spherical lens that is attractively priced. The lens owes its success to a new, patented centrifugal molding process that produces a perfectly spherical base curve for superior optics and excellent centration. The new process results in a fit comparable to that of lathe-cut lenses. It also provides easily reproducible lens parameters, assuring consistency in lens replacement.

The Revolution lens is initially available in power of plano to -6.00 with a 14.0 diameter as well as an 8.5 and 8.7 base curve to fit a wide range of corneas. the centrifugally molded lens is constructed of methafilcon A and is 55 percent water.

The Revolution lens is available through distributors and buying groups worldwide. For further information about the Revolution lens call Sunsoft at (800) 526-2020 or call your area Sunsoft distributor.

CIBA Vision®

THE COMPLETE APPROACH TO

HEALTHY EYES

One kind of lens and wearing schedule won't fit every contact lens wearer.

That's why CIBA Vision Corporation is dedicated to innovation and superior quality in offering a full range of options in disposables, programmed replacement, color enhancement, new specialty lenses, classic daily wear, and lens care to meet each person's unique needs.

See for yourself. Visit your eye care professional and discover how CIBA Vision can provide you with the complete approach to Healthy Eyes.

CIBA Vision®

Keeping Healthy Eyes Healthy℠

JOE is pleased to publish the following articles on faculty development. The papers were originally presented at the December 1990 meeting of the American Academy of Optometry.

Challenges for Optometric Educators

Morris S. Berman, O.D., M.S.

A career in academia offers choices and opportunities to faculty members for which they may or may not be fully prepared. Some will single-mindedly pursue a career path which is oriented towards a specific goal with success often depending on completion of the prerequisite academic training, pursuit of appropriate professional opportunities, dedication and commitment to an academic career, and the intangible factors of timing and good fortune. For others, an academic career that starts out with promise may lead to disappointment and unfulfilled expectation.

Educational institutions in optometry must attract and retain the best faculty. In support of these efforts, this symposium will present viewpoints on faculty development programs which have been successfully offered to optometric educators. A common thread among successful programs is the collaboration that occurs between faculty and the administration.

The literature in higher education has recently described many faculty as being demoralized and in need of help.[1,2] Although these statements were generally made of faculty nationwide, optometric educators must prepare to deal with similar realities facing their own institutions. These issues are not new and in the interests of building strong teaching and research programs, optometric education must place a high priority on faculty development programs suited to the needs of individuals as well as the institutions. The Association of Schools and Colleges of Optometry (ASCO) has taken the initiative with the adoption in May 1987 of the "Strategic Plan for Optometric Education — Year 2000."[3] The plan specifically addresses development of faculty with respect to research, curricular content, teaching methodology, and other opportunities. This document has been endorsed by all participating ASCO members and has been widely distributed to optometric faculty. Each school or college is challenged to proactively engage in planning and implementing faculty development programs that address their common needs.

Changing Needs of Faculty

Optometric education has changed dramatically during the past decade as faculty have sought to provide students with the prerequisite skills and abilities to practice a profession which is constantly being redefined by legislative action, technological advances, and changes in health delivery and reimbursement systems. As a result, faculty need to be well informed of external conditions influencing the profession while maintaining their ability to effectively contribute to the academic program as teachers, researchers, and participants in institutional governance. Notwithstanding these demands and many attractive career alternatives in clinical practice and research and development, most optometric faculty are committed and dedicated to careers in academia, and deserve the opportunities for growth which development programs can provide.

It is evident that individuals who choose academic careers have different motivations and interests from those in practice, in industry, or in the public sector. Their professional interests demand attention to their need for self-improvement and development, and these programs can energize the faculty and optimize their contribution to the institutions they serve. Faculty development is a long-term investment in the key resources of an institution — resources which serve not only to retain faculty, but also to influence success in recruitment.

The literature suggests that faculty development programs need to be tailored to the specific and varied needs of faculty, and that the process works most effectively when administrators and faculty work cooperatively to develop such programs.[4] Lipetz et al[5] describe faculty development as needing to be a dynamic process which should incorporate faculty and institutional assessments to determine the priorities of faculty. Assuming faculty have chosen their career paths wisely and wish to remain in the role, a key to their retention is a well-planned program of faculty development. For this program to be successful, initiative on the part of the faculty and the administration is critical. Administrative action and support must be perceived as positive by the faculty, but a shared responsibility rests on individual faculty to discover new resources to use existing interests more effectively, and to develop new skills. Many faculty members start their careers with a rich array of specific skills, and the refinement and enhancement of these skills is a continuing process which is at the heart of faculty development.

How can institutional leaders support faculty development? They need to take initiative and articulate the institution's commitment to such programs. They must recognize the importance

Dr. Berman is dean of academic affairs at the Southern California College of Optometry.

of faculty development to individuals and the institution. Careful planning in collaboration with the faculty must occur so that goals can be defined, priorities established, and resources allocated to include budgetary support. The successful implementation of such programs will occur if these steps are taken, and provided internal and external opportunities for development are created.

Challenging Traditional Approaches

Faculty development efforts have traditionally been characterized as either instructional, organizational, or personal[6] with efforts generally focused on voluntary individual improvement of instructional skills.[5,7] These traditional approaches are, however, being challenged and the needs of faculty must be differentiated and understood by those involved in designing and implementing these programs. There is no longer a consensus that the primary focus of faculty development programs should be "teaching improvement"; In fact, a 1980 survey of medical schools showed that the faculty ranked "teaching improvement" as the fifteenth priority. The most sought-after programs included research, supplementary support for sabbaticals, group projects, professional travel, training in a discipline and interdisciplinary development.

A second assumption being questioned relates to grouping of faculty generically without accounting for development priorities at different career stages. Lipetz[5] et al describe how good "teaching improvement" programs primarily aimed at junior faculty may in fact jeopardize their future promotion and tenure opportunities, for which training programs in research and writing skills may be more directly applicable. Conversely, there are some senior faculty members facing fatigue and burnout who may be more receptive to continuing education programs aimed at acquisition of new knowledge or skills.

The third assumption under review is whether such programs can be expected to benefit a group of beneficiaries to include the faculty member, the department, the institution, students and even the public at large. This rarely, if ever, occurs as the benefits tend to be more circumscribed, with the faculty member, the department, and perhaps, the curriculum generally receiving the greatest value for these efforts. Thus, if faculty development programs do not address these areas, they may be too narrow in scope and will either fail or have insufficient impact to have warranted the expenditure of effort, time, and resources.

Faculty development programs must be sensitive to the interplay between faculty and their institutions. Individuals are needed who have backgrounds in organizational development to compliment those with backgrounds in curriculum, instruction, or evaluation. Faculty development is a dynamic process which requires periodic needs assessment of faculty and institutional goal setting.

. . . most optometric faculty are committed and dedicated to careers in academia, and deserve the opportunities for growth which development programs can provide.

During this symposium, we will hear perspectives on faculty development from optometric clinicians, researchers, and administrators, as well as from an individual outside of optometric education whose work relates closely to professional education and credentialing. We will learn about innovative and exciting faculty development opportunities including graduate education, sabbaticals, and workshops offered at various optometry schools. For these programs to work, the elements of commitment, initiative, support, trust, and accountability are crucial. All of us present today have the capacity and responsibility to take these ideas, messages, and methods back to our individual campuses and to tailor them to the needs of the institution and individual faculty members. The ideas presented today should challenge administrators and faculty alike to take a proactive role in developing and implementing these programs in order to maintain vitality on campus and to ensure that the best individuals are recruited and retained by the schools and colleges of optometry. □

References

1. Brookes MCT, German KL. Meeting the challenges: developing faculty careers, Washington, D.C., Associations for the Study of Higher Education 1983.
2. Edgerton R. The need to rethink faculty careers. In: Roger Baldwin and Associates (eds.), Expanding faculty options, Washington, D.C.: American Association for Higher Education 1984: 1-4.
3. ASCO's Strategic Plan for Optometric Education - Year 2000, J Optom Educ 1987 Fall; 13(2): 93.
4. Schwartz LL. Nurturing an endangered species. A constructive approach to faculty development. In: Improving College and University Teaching. 1983 Spring; 31, (2): 65-68.
5. Lipetz M, Bussigel M, Foley R. Rethinking faculty development. Medical Teacher 1986; 8(2): 137-144.
6. Berquist WH, Phillips SR. Components of an effective faculty development program. J of Higher Educ 1975; 46: 177-211.
7. Clark SM, Corcoran M, Lewis DR. The case for institutional perspective on faculty development. J of Higher Educ 1986; 57(2): 176-195.

Advanced Education

Larry R. Clausen, O.D., M.P.H.

Although the term "faculty development" lacks precise definition, we generally consider it to include all activities or programs that assist faculty in developing as more effective members of the academic community. Within this broader context, faculty development includes sabbaticals, travel, research support, and faculty workshops.[1,2] On some campuses instructional resource centers now exist to provide direct assistance to faculty in developing course materials, in adopting new instructional technology and in implementing new modes of teaching. In addition to these activities, some campuses have adopted policies that facilitate faculty participation in advanced education, i.e., education that occurs after a faculty member's initial appointment[1] and in conjunction with holding a faculty appointment.

This paper outlines four purposes of advanced education as a mode of faculty development, and summarizes some practical examples available to optometric faculty. Advanced education is recommended as one alternative of faculty development; but while it can be an effective tool for redirecting faculty, it is expensive to implement and it benefits only small numbers of faculty.

Dr. Clausen is president of the New England College of Optometry.

Purposes of Advanced Education

Supporting advanced education would seem to be an important faculty development activity, but this, as well as other programs that focus on the development of individual faculty have received limited attention, at least in the literature. This may be due to the fact that personal development is by its nature individualized and often regarded as the province of the individual.

The purposes associated with advanced education programs overlap with other faculty development activities. For example, a faculty member may specifically pursue an advanced degree to improve his or her teaching effectiveness. However, the purposes of advanced education also include retraining for new faculty assignments, supporting career advancement in higher education, or entering careers outside of academe altogether. Obviously, these purposes may not be consistent with the goals of other faculty development programs which focus on helping professors teach more effectively. This is an important difference from more traditional development programs, but it should not deter institutions from looking at advanced education as one way to improve their collective faculty ranks over time.

A discussion of the purposes of advanced education must be within the broader context of career development because the outcomes of advanced education are often long-term. In fact, the intended outcomes may not relate to a faculty member's current academic assignment. Table I summarizes four primary purposes of advanced education programs.

The table is an attempt to categorize the many purposes of advanced education into four groups. In truth, the purposes are as varied as individuals pursuing advanced education. The commitment to complete an extended course of study arises out of a complex interplay between personal needs, individual ability, and internal ambitions on the one hand, and institutional needs and opportunities on the other. This complexity can not be summarized in simple statements of purpose.

The focus of most faculty development programming is the improvement of teaching competencies. It has been accepted without strong challenge that the appropriate degree or other requisite credentials prepares one to accept a teaching position in higher education. But effective teaching requires skills and knowledge that are not formally taught, at least in depth, in graduate or professional schools or residencies. A basic premise of most development programs is that effective teaching skills can be taught; i.e. that faculty can be assisted in their effort to improve their work.[3]

While improving teaching is central to the concept of faculty development, it is infrequently addressed through extended programs of advanced education. The methods of choice include seminars, workshops, consultations, conferences, and faculty exchange programs. However, two examples of advanced education which relate directly to the purpose of improving teaching are part-time residencies and formal coursework in applied teaching. Neither has gained wide acceptance in optometric education.

A second purpose of advanced education is to support the assignment of new teaching responsibility. As an example, a long-standing faculty member may be required to complete coursework and clinical training in the management of ocular disease in order to be assigned broader clinical teaching responsibilities. In the past some optometry colleges supported faculty,

both in terms of release time and tuition assistance, to obtain advanced degrees in order to take on new, predetermined curriculum assignments. In the early 1970s, this occurred with respect to teaching expanding coursework in pharmacology. Similarly, a number of basic science faculty have been assisted in obtaining the Doctor of Optometry degree in order to participate in the clinical sciences.

While these two purposes are important to advancing teaching proficiency and to accepting new academic assignments, the primary purposes of advanced education relate to advancing one's career. This may focus on advancement within optometric education, e.g. a faculty member pursuing a master's degree in health services administration to support his/her quest for an administrative position, or for a career change outside of education. Both purposes should be considered in programs supporting advanced education, even the latter! Facilitating smoother mid-career transitions for existing faculty will create opportunities for the hiring of new faculty with a better fit for academic life. The importance of this latter point should not be underestimated. Educators know all too well the problem of "dead wood" within the faculty ranks.

Table I.

Purposes of Advanced Education as a Component of Faculty Development

PURPOSE	FOCUS	USUAL FORMAT
Improve teaching	promote faculty growth in subject areas related to current academic assignments, and improvement in general pedagogical skills	seminars, workshops, short courses
Retrain for new teaching assignments	promote faculty growth in subject areas different from current academic assignments; focus on acquiring new skills and knowledge	formal courses for credit
Broaden career opportunities	promote faculty growth in areas associated with probable future career opportunities, focus on acquiring new skills and knowledge in non-teaching areas	degree programs
Facilitate exiting academe	promote acquisition of skills and knowledge requisite to a new career	degree programs

Examples of Advanced Education Programs

The above paragraphs described four purposes of advanced education as a faculty development tool. Programs to achieve these purposes can be categorized into two groups, non-degree programs of advanced study and degree programs.

A. Non-Degree Programs

Non-degree study can include almost any development or enrichment activity including attendance at seminars, independent study with senior faculty, or enrollment for credit in courses of professional interest. More extended opportunities exist such as summer institutes, modified residency training programs, and post-doctoral fellowships.

1. *Summer Institutes*

Many colleges and universities offer non-degree programs specifically designed to develop further the skills of faculty and academic administrators. For example, the Harvard Graduate School of Education annually conducts an intense four-week summer program, The Institute for Educational Management. This program is designed for college administrators or faculty moving into administrative assignments. Its curriculum provides comprehensive exposure to management problems and seeks to enhance leadership and management skills. Several optometric administrators have participated in the Institute. The Harvard Graduate School of Education also offers a variety of one- and two-week summer programs and conferences for faculty in higher education on topics such as educational assessment, the use of computers in the classroom, and learning disorders. Programs such as these are valuable adjuncts to a faculty member's overall development strategy.

2. *Modified Residency Programs*

The clinical residency programs in optometry came into existence in the 1970s. Their numbers have remained relatively small, and until recently were not required for careers in clinical education. Consequently, many clinical faculty have not completed residency programs. Some institutions have seized the opportunity to place current faculty for abbreviated periods of time within their network. For example, the New England College of Optometry has developed a program which places one faculty member at the Brockton VA Medical Center. The faculty member spends one day per week at the VA Medical Center for an entire academic quarter. An individual may extend the activity for a second quarter. In this arrangement, one additional faculty member is assigned to the VA Center on the day that the developing faculty member is present. This frees up the

optometry director at the hospital so that he/she can work on a one-to-one basis with the individual completing the part-time residency.

3. *Postdoctoral Fellowships*

A long-standing form of continuing faculty development is the postdoctoral fellowship. Although fellowships provide opportunity to pursue interests in teaching, they have traditionally been more responsive to enhancing research capabilities. Several colleges of optometry offer fellowship opportunities for post-doctoral research training. Although they usually attract individuals new to the world of research, they can be a valuable resource for developing existing research individuals, especially for faculty from institutions without graduate programs or fellow researchers in one's area of interest. Fellowships are usually one year in length and provide a small stipend of about fifteen to twenty thousand dollars. If a college is willing to provide release time and partial subsidy for a faculty member to complete a fellowship elsewhere, the post-doctoral fellowship is a highly feasible alternative for stimulating research development. Postdoctoral fellowships are not limited to Ph.D.'s, but are available for clinical faculty as well.

B. Degree Programs

Enrollment in courses of study leading to an advanced degree usually comes to mind when we think of advanced education. While opportunities for non-degree graduate study should not be disregarded, obtaining a graduate degree or second professional degree results in additional credentials which offer greater support for career advancement.

The need for optometrists with graduate/residency training in the biomedical sciences has never been greater. Dr. Thomas Freddo[4] refers to such a person as a clinician scientist, an individual comfortable in both the research laboratory and the clinic. He stresses the need for optometry to actively develop a cadre of excellent teaching faculty in the biosciences during the 1990s. One method of achieving this goal is through the development of joint- degree programs in bioscience leading to the O.D. and Ph.D. degrees. These opportunities now exist at Boston University through arrangements with several optometry colleges.

In addition to joint-degree programs, or sequential patterns of graduate education, colleges with graduate programs are using traditional research assistant/teaching assistant mechanisms to facilitate post-O.D. study. Other institutions are finding new, creative ways to provide tuition support for individuals pursuing degrees at neighboring institutions. Tuition support may be required for three or more years. If part-time study is pursued, the period could be longer. As a profession, we need to be more aggressive. In fact, the topic of where we will find tomorrow's faculty deserves a symposium by itself.

Faculty holding the O.D. degree have and will continue to enroll in M.S. and Ph.D. programs. Often the pursuit of these graduate degrees occurs early in one's career and serves as a prerequisite for joining the faculty ranks. However, the focus of this paper is the receipt of degrees at some mid-career point. I would like to expand upon three professional degrees at the master's level that are important mid-career options for advancing optometric faculty.

1. *Master of Education (M.Ed.)*

A variety of Master of Education programs are available. Most graduate schools of education provide flexibility in fulfilling degree requirements, thus allowing individualized programs of study to be developed for faculty with clear professional goals. In the larger graduate schools of education, programs can be constructed to provide knowledge and understanding in instructional methods, teaching theory and practice, human development and learning, higher education administration, as well as educational research methodology. The key to the M.Ed. degree is flexibility. For this reason it is suggested as a viable means of supporting faculty development. One variation of an M.Ed. degree is the Masters in Applied Teaching (M.A.R.). Although this is often a degree for primary or secondary teachers, its content is important for didactic faculty at any level. Some schools of education respond specifically to higher education faculty. Coursework in M.A.T. programs concentrates on areas directly applicable to teaching and learning. Examples include courses for expanding teaching practices, providing an understanding of teaching theories and strategies, developing skills in integrating new technologies into the classroom, and for improving the practice of testing and student evaluation. Optometry, as with most professions, overlooks the value of providing such training to its faculty. For the faculty member such instruction could have life-long value.

2. *Master of Public Health (M.P.H.)*

Similar to the graduate schools of education, schools of public health offer a variety of program concentrations within the master's degree. Generally, a core program of study is required which covers the basic elements of public health, e.g., epidemiology, disease prevention, public health administration, and research. Beyond this the student can choose a concentration in one of several areas. Optometrists who have received M.P.H. degrees have generally earned them in some aspect of health services administration, although some have focused on biostatistics, epidemiology and other areas important to our discipline. The M.P.H. degree is a critical credential for faculty teaching public health courses, but it has also proven to be important in clinical instruction and academic administration.

3. *Masters of Business Administration (M.B.A.)*

The M.B.A. is emerging as a popular second professional degree. Like the other master degrees, considerable program variation exists depending on the area of concentration selected. Obviously, comprehensive study in general management and organizational theory and behavior is possible. Also, business schools have developed specialized concentration in health services administration. Such programs offer strong exposure to management problems and issues important to clinical administration. The additional emphasis on financial management, marketing and organizational theory probably makes this the degree of choice for faculty moving into clinical administration.

The above examples address professional degrees at the master's level. Pro-

fessional degrees at the doctoral level, e.g., Ed.D., Dr.P.H., and J.D. are other opportunities for faculty development. These examples obviously do not identify all options, but do illustrate the point that advanced degrees are a viable alternative for building faculty competencies. Advanced education serves as a vehicle for supporting growth of faculty in academic and administrative assignments as well as for retraining for placement in or out of optometric education.

Formal retraining programs exist at a number of universities. Although advanced education is only one component of such program, it is a central feature of most. Other services include career assessment, counseling, and outplacement. These programs enable universities to better utilize existing faculty resources, and to facilitate career changes for faculty desiring to leave academe. Because of the size of their faculty cohort, the likelihood of optometry colleges developing formal programs for career change is remote; but college administrators should be alert to programs on their university campuses or at neighboring institutions that can provide assistance. On the other hand, informal discussions and simple policies providing tuition and salary support have proven to be effective. The key is to identify appropriate faculty, to provide opportunities for self-assessment and career exploration, and to support appropriate transition activities.

Conclusion

The utility of supporting advanced education is optimized through careful assessment of individual and institutional needs. Advanced education can address individual needs relating to career advancement, career satisfaction and professional competency. As noted previously, advanced education can also promote institutional goals for the advancement of teaching effectiveness, the implementation of new curricula, and the development of competent faculty administrators. However, advanced education tends to focus on long-term career changes rather than short-term instructional improvement. As such, it is more faculty-centered than institution-centered, i.e., the investment benefit tends to remain more with the faculty member than with the institution. It remains, though, a highly effective alternative for accomplishing sweeping changes in a few faculty over time.

Although advanced education can be a valuable tool for developing faculty and assuring that faculty vitality is maintained, significant limitations to its wider application exist. The cost associated with effective programs is high; it has been less effective for improving pedagogical practice than traditional programs, and advanced education programs and policies benefit only a small number of faculty. Therefore, it can not be the only program of faculty development implemented, nor allowed to consume the majority of resources. Rather it needs to be part of an overall plan of professional development that provides a variety of mechanism for developing faculty competencies. Although somewhat dated, the monograph *Professional Development: A Guide to Resources*[5] provides insight to other components and a rich list of potential faculty development resources.

The key is to identify appropriate faculty, to provide opportunities for self-assessment and career exploration, and to support appropriate transition activities.

Baldwin and Blackburn[6] stress the importance of faculty in higher education and the need for effective use of this resource. In fact, they assert that it is essential to long-term institutional survival. Colleges and universities can enhance their program effectiveness by capitalizing on the potential for enhancing their faculty resources. To do so, it is important to recognize the values and reward structures that influence faculty. Among those factors cited by Baldwin and Blackburn are the opportunity for scholarly growth and the participation in a stimulating environment. These are key points when we look at the issue of advanced education. The opportunity to pursue additional education addresses directly the opportunity for growth, and it provides an opportunity to immerse oneself in stimulating scholarly environment, perhaps apart from one's own institution.

Some research has focussed on the characteristics of faculty development programs[7,8] but the studies are primarily descriptive in nature. Little information is available with respect to the outcomes of faculty development programs in higher education[3]. From the information that is available, no definite conclusion can be drawn. Certainly there is no conclusive evidence that instructional development programs are able to introduce long-lasting changes in faculty behavior[9]. This lack of evidence implies that a great deal more research is needed to gain an understanding of what works in faculty development. □

References

1. Berquist W. Phillips S. Components of an effective faculty development program. Journal of Higher Education 1975 April-March; 46: 177-211.
2. Smith AB. *Faculty Development and Higher Education.* Washington, D.C.: American Association of Higher Education, 1976.
3. Gaff JG. The United States of American - toward the improvement of teaching. In: Teather DCB, ed. *Staff Development in Higher Education: An International Review and Bibliography.* New York: Nichols Publishing Co., 1979.
4. Freddo T. Academic restructure: options and strategies. Paper presented to the American Academy of Optometry; Nashville, Tennessee, 1990.
5. Gaff S, Festa C, Gaff JG. *Professional Development: A Guide to Resources.* New Rochelle, N.Y.: Change Magazine Press, 1978.
6. Baldwin R, Blackburn R.(eds) *College Faculty: Versatile Human Resources in a Period of Constraint.* San Francisco: Jossey-Bass, Inc., 1983.
7. Gaff JG. *Toward Faculty Renewal.* San Francisco:Jossey-Bass, Inc., 1975.
8. Crow ML, Milton O, Moomaw W. *Faculty Development in Southern Universities.* Atlanta: Southern Regional Education Board, 1976.
9. Lipetz M, Bussigel M, Foley R. Rethinking faculty development. Medical Teacher 1986; 8(2): 137-144.

Sabbaticals

Michael P. Keating, Ph.D.

In this article, I discuss the utility of sabbaticals as a faculty development mechanism, some sabbatical experiences, and practical sabbatical planning advice.

The stimulus for this paper came from the Association of Schools and Colleges of Optometry (ASCO) Committee on Academic Affairs. One of the charges from ASCO to the committee is to conduct activities that will enhance optometry faculty development. I was a member of this committee at its first meeting in St. Louis in February 1990. The committee felt that one of optometric education's needs was an increased awareness of the recognition of sabbatical leaves as an effective mechanism for faculty development. The people that participated in that meeting included Morris Berman, O.D., M.S. (committee chair) from the Southern California College of Optometry, Pierrette Dayhaw-Barker, Ph.D. from the Pennsylvania College of Optometry, Jerry Christensen, O.D., Ph.D. from the University of Missouri, Saint Louis College of Optometry, and myself. The sabbatical goal was included in the committee's report to the ASCO board at their March 1990 meeting.

The ideas expressed in this paper result from my own sabbatical experience, from the ASCO committee discussions, and from discussions with other optometry faculty who have taken sabbatical leaves. I took a sabbatical from Ferris State University (FSU) during the 1981-82 academic year, and spent the year as a visiting professor at the University of Houston College of Optometry (UHCO). Since then I have occasionally discussed the sabbatical leave experience informally with other faculty who have taken sabbaticals. However, in preparation for this paper, I was somewhat more direct. In particular, I interviewed by telephone four other optometry faculty who have taken sabbatical leaves. Two of these faculty are from private optometry colleges and two are from public optometry colleges. These were Jim Comerford, O.D., Ph.D., from the New England College of Optometry, John Griffen, O.D., from the Southern California College of Optometry, Mel Shipp, O.D., M.P.H., from the University of Alabama College of Optometry, and Len Werner, O.D., from the State University of New York State College of Optometry.

A sabbatical is a leave for a faculty member to pursue an approved faculty development activity. The approved activities might include special studies, investigations, research, or clinical development activities that will contribute to the professional development of the faculty member. Typically on a semester system, a faculty member can take a half academic-year leave at full pay, or a full academic-year at half pay. (A quarter system variation of this is one quarter at full pay, two quarters at 3/4 pay, and three quarters at half pay.) Typically, a faculty member must serve six years before he/she is eligible to take a sabbatical.

The sabbatical leave is a faculty development activity that benefits both the individual and his/her college. The sabbatical is granted with the expectation that the recipient has an ethical obligation to return to the granting institution for an extended period of time. (At Ferris, the faculty member must return for at least one year, or he/she must reimburse FSU for all sums paid by FSU while on leave.)

Value of a Sabbatical

In a 1986 *Chronicle of Higher Education* article, James Freedman, president of the University of Iowa, wrote "A professor's life is a continuous struggle to learn afresh what remains fundamental about an evolving discipline and to bring that knowledge to life in the minds of students."[1]

Freedman's article was not about sabbaticals. However, I believe that his statement captures the essence of the value of a sabbatical. In particular, that essence is "to learn afresh." The concrete result is the enhancement of that person's ability to bring that knowledge to life in the minds of students.

"Afresh" implies freshness, excitement, and enthusiasm as a result of the sabbatical. Do sabbaticals really produce such an effect?

The faculty that I telephoned about sabbaticals had no advance warning that I would be calling. Therefore, their responses were completely extemporaneous. Excerpts from their responses regarding the effect of the sabbatical are:

- Personally and professionally - a fantastic experience.
- An extremely positive experience, both for self and for profession.
- An excellent experience - it really recharged my batteries.
- A very energizing experience - I was totally rejuvenated.

These comments certainly indicate the effectiveness of a sabbatical in building freshness and enthusiasm. Perhaps we should judge these responses in light of a list which states the number one characteristic (out of 30) that determines teaching excellence (as

Dr. Keating is a professor at Ferris State University, College of Optometry.

opposed to mediocrity) is "Excellent professors are enthusiastic about their work."[2] Sabbaticals build and/or rebuild enthusiasm.

Much of the "freshness" value of a sabbatical transcends the specific goal of the sabbatical. A sabbatical is a leave to go away to learn afresh. In particular "to go away" results in effects that transcend the specific goal of the sabbatical. The results of going away are: to break out of one's everyday routine, to meet and collaborate on a daily basis with new people, to discuss new ideas or new viewpoints of the same ideas, and to experience a different working environment.

All of the faculty that I interviewed left their institutions. One described some faculty who had not gone away, but simply used a sabbatical leave to free up time to work on a project. He believed, and I concur, that not going away thwarts much of the value of a sabbatical. "To go away" breaks the chains, and the result is the generation of freshness and enthusiasm.

One of the effects of a sabbatical is to learn — "to learn afresh." The specific learning goals of sabbaticals are varied: some go to learn in greater depth about their areas of responsibility; some go to learn more advanced knowledge about their area of responsibility (this includes doing research); some go to learn about technological or other developments that can impact on their work; and some go to learn something radically different.

Faculty who have gone away to learn something radically different usually come back to totally different assignments, thereby fulfilling a need of their institution. However, the majority of faculty come back "fresh" to the same assignments which they had before the sabbatical, and that freshness also fulfills institutional needs. Here the value is not that some grandiose project was completed, but rather that the sabbatical provides an enhancement of the fundamental functioning of that faculty member.

Between these two extremes are faculty that return to a slightly modified assignment. For example, one of those interviewed noted that over the years, he had become bored with teaching pre-clinic labs, and by virtue of seniority had moved out of that assignment. As part of his sabbatical activities, he became involved in teaching pre-clinic labs at an optometry school in a different country. Those experiences, and his observations of the differences, rejuvenated his enthusiasm and upon returning he volunteered to go back into teaching pre-clinic labs. The effect of the sabbatical in this case was recapturing the youthful enthusiasm which that faculty person had once possessed!

Planning for a Sabbatical

The planning for a sabbatical needs to start at least a year in advance of the application due date. This is almost two years prior to the sabbatical. At Ferris State University, a faculty member must submit his/her sabbatical application to the department head by October 15 of the year preceding the sabbatical leave. The dean must submit a ranked list of approved college of optometry applications to the vice president for academic affairs by December 1. The vice president works in conjunction with an all university faculty committee to determine the university rankings by January 15. In that sense, there is a competition with Ferris faculty from other colleges on campus (Pharmacy, Allied Health & Nursing, Arts & Science, Business, Education, Technology). However so far, all of the College of Optometry faculty who have applied for a sabbatical have been approved.

. . . the majority of faculty come back "fresh" to the same assignments which they had before the sabbatical, and that freshness also fulfills institutional needs.

At Ferris, the University has budgeted funds for replacement faculty to cover sabbatical absences. In my case, a temporary person was hired full time for the year that I was gone. My assignments were actually covered by other regular Ferris faculty and the replacement was used to provide the release time that the regular faculty needed to teach my courses.

Some sabbatical applicants have specific goals "up front" when they start the planning. Other applicants have various possibilities, and then they work on these possibilities until one falls into place.

The planning is influenced by a half-year versus a full-year sabbatical, since typically the half-year sabbatical is funded at full salary while a full-(academic) year sabbatical is funded at half salary. Most, but not all, of the faculty going for a full year make additional planning efforts to find funding for the missing half salary. Funding sources may include a half-time visiting faculty appointment, a fellowship, or a grant.

My goal was to take a full academic-year sabbatical. Therefore, I sought funding for the missing half salary. I developed alternative plans for sabbatical activities, and had more than casual conversations with at least four other institutions. Two of these were optometry colleges, and two were university physics departments (my Ph.D. is in physics). Eventually, I settled on the University of Houston College of Optometry where I was offered a visiting half-time faculty appointment.

For me, the planning period was a fairly intense period which involved considerable time, including many evenings. The goal of a full-year sabbatical was set first. Then the other planning activities followed.

During this planning stage, there needs to be faculty-administration interaction, since ultimately the project will be submitted for approval. This is particularly true if the person has several different proposed activities. In my case, what I would have done in a physics department was very different from my activities at an optometry college, so it was important to know if the appropriate administrators felt that both proposals were acceptable sabbatical activities that would benefit both me and Ferris.

Once the details have been worked out, and the proposal is written, submitted and approved, then housing plans need to be finalized. One's family status affects this. Does the faculty person have a spouse and, if so, is the

spouse going? Are children involved?

Typically, the host institution provides advice and encouragement regarding housing, but the sabbatical person does the legwork. (Some of the large universities, such as Indiana University, which host a significant number of faculty on sabbaticals each year, have a formal housing program where incoming sabbatical people are offered the opportunity to rent the houses of IU faculty who are leaving on sabbatical.) Some people make a preliminary trip to the sabbatical site to investigate housing; others do not.

In my case, my wife and three children accompanied me on the sabbatical. The University of Houston did not have a formal housing program; however, the people at UHCO were very helpful with advice and encouragement. Since our children were school age, the possible housing locations were interconnected to the children's school possibilities. My wife made one advance trip to Houston to become familiar with the different possibilities. However, we did not finalize arrangements until we arrived in Houston. Ultimately, both the housing and the school situation worked well, but it took the first four to five days in Houston to finalize the arrangements.

The housing circumstances differed somewhat for the four people whom I interviewed. In one case, the family did not go and the faculty member commuted home on weekends to be with them. In the other cases, an interesting common experience emerged. These people reported that they had anticipated housing would be a trouble point, but that they were really "lucky" and the housing worked out great. However, when I heard that each person had been lucky, I began to think that this was not just good luck, but rather that it falls into the category represented by the saying "Where there is a will, there is a way." These people were all committed to the sabbatical, and therefore committed to making it work.

We rented our house in Big Rapids, complete with dog, on a break-even basis to three reliable students (two from optometry and one from pharmacy). The students had nicer housing than typical student apartments at essentially the same cost. We had reliable people taking care of our house and dog, and the rental income covered our mortgage and property tax payments for the year.

There were variations among the people whom I interviewed on how spouses felt about going on the sabbatical. Some spouses wanted to go from the very beginning, while other spouses were very hesitant to go because of their own career/employment situations. Those spouses who went, including those who worked out their career/employment situation so that they could go, report experiencing sabbatical benefits themselves. Some even engaged in formal sabbatical-type activities of their own. The most common reaction by the spouses, even the originally hesitant ones, is that they would now like to go again!

■

Flexibility is an important attitude to have during the sabbatical. Everything may not work out exactly as planned, but the end result is well worth the effort.

While our children seemed to enjoy the sabbatical year, they were exceedingly overjoyed to return home to Big Rapids. I thought that with that reaction, they would never even entertain the possibility of going on another sabbatical. However, Big Rapids is a university town, and as time went on our children noted that some of their classmates were also leaving on sabbaticals with their parents. Before long, our children were wondering where we would go "next time."

There are certainly better years than others to take children on a sabbatical. For example, during 1990-91, one of our daughters was a senior in high school. This would not have been a good year for a sabbatical leave.

There are some very significant allowable tax deductions for people who go away on a sabbatical! I found the best source of information on this to be the book *Tax Guide for College Teachers and Other College Personnel.* It is updated yearly, and is available from Academic Information Service, Box 929, College Park, MD 20740-9965. The 1991 price is about $28.00 including postage and handling charges.

Flexibility is an important attitude to have during the sabbatical. Everything may not work out exactly as planned, but the end result is well worth the effort.

Conclusion

My interviews and my experience indicate that sabbaticals indeed are extremely effective faculty development mechanisms. The effects seem to be long-lasting, and the faculty person returns rejuvenated, re-invigorated, and/or changed. Several of those who had gone on sabbaticals expressed the idea that sabbaticals are so beneficial that perhaps they should be required. If they are not required, then senior faculty who have never been on a sabbatical should be asked to justify why not.

Concrete results that can emerge include: re-entry into teaching preclinic labs, teaching a completely different course, updated skills in an evolving area or in evolving technology, new research in the same area or research in new areas, an awareness of the differences in the day-to-day functioning of a different optometry college, renewed enthusiasm, and new goals. In my case, a new and unexpected goal that was born during the sabbatical was to write a textbook. The text, *Geometric, Physical, and Visual Optics* has now been written and published by Butterworths.[3]

Optometric schools and colleges need viable sabbatical leave policies. Optometric educators and administrators need to encourage more faculty to take sabbaticals. This applies to clinical faculty and teachers as well as to researchers — since there is a perception that faculty primarily involved in research take more advantage of sabbaticals that faculty primarily involved in clinical instructional supervision.

Optometric faculty need to aim for sabbaticals that occur not only outside optometry colleges, but also for sabbat-

icals that occur at other optometric colleges. One person said that we need to spend more time visiting each other's campuses. That way we begin to learn what is really going on at other optometry colleges, and we begin to understand it.

"To learn afresh what remains fundamental about an evolving discipline and to bring that knowledge to life in the minds of students." Sabbaticals work fantastically! In that sense, they are a long-term investment in faculty development.

"To learn afresh" is the reward. Many faculty appear to be hesitant about applying for a sabbatical because they feel their project is not grandiose enough. The rejuvenation of the sabbatical can be achieved with sound projects even if they are not grandiose.

Acknowledgments

I wish to thank the people whom I interviewed in preparation for this paper: Drs. Jim Comerford, John Griffen, Mel Shipp, and Len Werner. I also want to thank the people who participated in the St. Louis ASCO committee meeting: Drs. Morris Berman, Pierrette Dayhaw- Barker, and Jerry Christensen. My thanks also goes to people at the University of Houston College of Optometry, which was the host institution for my sabbatical, and particularly to Jerry Strickland, UHCO acting dean, who was the administrator whom I worked with in planning the sabbatical. Thanks also to Drs. Vince King and Al Uniacke, Ferris faculty, who taught my courses while I was gone, and to Dr. Jack Bennett, former Ferris College of Optometry dean, for his support.

References

1. Freedman JO. The Costs of a professor's life. Chronicle of Higher Education, Feb. 19, 1986.
2. Anonymous. Miami-Dade community college core of fundamental characteristics. Chronicle of Higher Education, 1988.
3. Keating MP. Geometric, Physical, and Visual Optics. Boston: Butterworths, 1988.

Workshops

Leon J. Gross, Ph.D.

During my ten years with the National Board, I have conducted faculty workshops at a majority of the schools and colleges of optometry, as well as several faculty workshops for ASCO. As many of you know, and others would surmise, there are two kinds of faculty who attend National Board workshops on test development and scoring: those who want to, and those who have to. From my perspective as an instructor, both groups have enhanced my own continuing education (CE) with regard to effective instructional strategies. These experiences frame the issues that I will cover.

Distinguished medical educator, Dr. James Pellegrino, once stated, "Live as if you will die tomorrow, learn as if you will live forever." This is a useful philosophy of continuing education that is applicable to all educational modes. Let's consider for a moment, the second portion of Dr. Pellegrino's statement of learning as if one will live forever. What would we, as faculty, need to learn for an "extended" professional life? The answer to this question is the key to continuing and ongoing faculty development. Our approach to this issue should be similar to the manner in which certain test development issues are resolved as well.

The most important component in test development or in faculty development is conducting a systematic needs assessment. Laxdall[1] provided some guidance for assessing learning needs. He defined a learning need as the "gap between current and optimal competence or performance." Developing a test using a "seat of the pants" approach is not likely to produce a valid test. The test may consist of hundreds of items which may be intellectually challenging, but may bear little relevance to professional practice. Similarly, mandated CE may result in faculty taking numerous workshops or courses in which a great deal of information is imparted. However, if specific faculty needs are not considered in the workshops that are mandated or available, the information may be "nice to know," but may be of little value or use to the attending faculty. The result will be a negligible contribution to faculty development.

When conducting a needs assessment, specific issues should be addressed. For example, are the CE needs episodic or ongoing? In other words, does the needed change relate to a single issue or isolated event, or does it relate to a more underlying, broad trend? In addition, as a CE issue unique to faculty, should the workshops be focused on instructional expertise, subject matter expertise, or both?

This issue is similar to the dilemma faced by regulatory boards and psychometricians grappling with recertification. If a recertification program is in effect for a particular profession, should the examination be nothing more than a re-administration of the entry-level examination, or should it relate to changes in the profession within a specific amount of time (i.e., new material)? Relatedly, as Lipetz, Bussigel, Foley[2] noted, faculty have different needs at different stages in their careers. An array of workshops must be available to meet the variety of faculty needs. Let's examine some of the unique advantages of workshops as a faculty development tool, as well as the type of environment in which workshops are likely to be either effective or ineffective.

Advantages

I enjoy giving workshops, as well as attending them. Workshops are highly focused, intense, fast, and efficient. A specific issue can be targeted, and an appropriate curriculum quickly built to fill the CE need. These advantages make workshops difficult to match in their responsiveness.

Do not be mislead by the relatively short-term nature of workshops. They may be as short as an hour or as long as a week. Workshops can be credit-free, accredited for CE, and may even accrue toward an accredited master's degree. However, they are not "lightweights" intellectually.

I had an opportunity to teach a five-day workshop some time ago which accrued three credit hours of master's level course work. To label this workshop as "intensive" is an understatement. "Marathon" is probably a better term. I don't know who was challenged more by this format, the instructor or the attendees. I can tell you that the attendees enjoyed and even preferred this format. As several stated, they were away from their office and home responsibilities and had no distractions; this enabled them to learn more efficiently. In this context, one could describe the five-day workshop as a highly structured five-day sabbatical!

As I stated earlier, I enjoy workshops

Dr. Gross is the director of psychometrics and research at the National Board of Examiners in Optometry in Chevy Chase, Maryland.

as both an instructor and attendee. However, I also recognize that workshops cannot be all things to all people, and workshops do have disadvantages. Perhaps the biggest disadvantage is the brevity. Few would argue that short-term instruction provides less opportunity for the reinforcement that fosters lasting behavioral change than does long-term instruction.

Maximizing Workshop Effectiveness

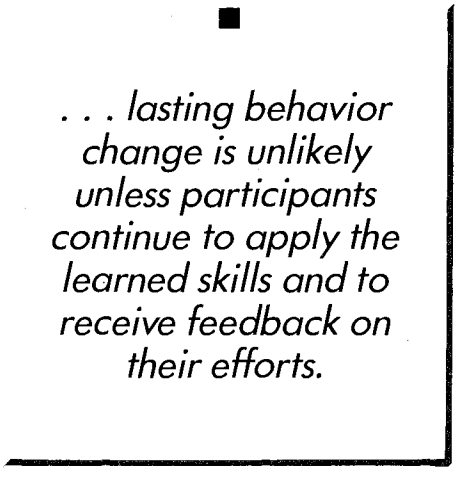
The notion of lasting change is what I would use as a criterion for judging workshop effectiveness. This criterion leads to a consideration of the ingredients for success. How can we maximize the effectiveness of faculty development workshops? What are the ingredients for failure?

The key issue in maximizing workshop effectiveness is the learning and operating environment in which the workshops are given. As mentioned earlier, the needs of faculty should be systemically identified as a basis for determining workshop offerings. Ineffectiveness will certainly be promoted by mandating that faculty take a particular workshop, when little or no justification for that workshop is given.

One of the distinguishing characteristics between adult learners and younger learners is that adults are more likely to enter a course or workshop with their own objectives already defined. They are more likely to know what they need to learn and why. This insight helps structure the learning process. The result is a high level of efficiency. When workshops are simply mandated, with no attention to need, the learners are less likely to identify their own objectives, and learning is less likely to be effective.

A second consideration is to lead by example to demonstrate the importance of what will transpire in the workshop. The best example for how **not** to impress faculty is provided by an instructor in my own profession, psychometrics. The protagonist in this true story is an academic psychometrician. This professor taught a course on test development and analysis for master's level teachers. Naturally, the focal point of the course was multiple-choice tests. Lecture after lecture was devoted to the virtues of multiple-choice testing for student assessment. However, when the professor administered his own final exam to his students, the test consisted of essays. Do you think that the virtues of multiple-choice testing were reinforced by his own examination? Clearly, one should practice what one preaches.

Levinson-Rose and Menges[3] cited several factors that promote post-workshop behavior change. These included evaluating learning, and monitoring related behavior change. Providing attendees with opportunities to critique the instructor and to evaluate the instructor's strengths or weaknesses, as well as indicating desirable workshop changes, were also said to promote behavior change. The authors further noted that lasting behavior change is unlikely unless participants continue to apply the learned skills and to receive feedback on their efforts. In other words, follow-up is needed.



Stein[4] cited eight studies documenting the effectiveness of continuing medical education. Although these studies were focused on clinical rather instructional expertise, the common findings are applicable to the academic setting. Stein observed four essential elements of any effective CE program.

- Identified learning need, specified audience
- Clear goals and objectives
- Relevant learning methods, emphasis on participation, clinical setting
- Systematic effort to evaluate

These four commonalities apply to any type of faculty development. However, the third commonality is particularly well suited to workshop instruction. Stein observed that participatory methods, which included "hands-on experience, small-group discussion, and self-study materials," were heavily used in the eight studies that documented successful CE. In addition, the participants in each study recognized their need for improved performance and were heavily involved in needs identification, CE syllabus planning, and outcome evaluation.

In conclusion, let me quickly reiterate the ultimate criterion of workshop effectiveness. Simply put, successful workshops produce lasting behavior change, which relates to the type of material covered. As B.J. Awbrey stated, ". . . information that cannot be applied is useless and without use will soon be forgotten." Our goal should be to develop workshops that impart useful, applicable information that meets specific faculty needs.

References

1. Laxdall OE. Needs assessment in continuing medical education: a practical guide. Journal of Medical Education 1982 57: 827-834.
2. Lipetz M, Bussigel M, & Foley R. Rethinking faculty development. Medical Teacher 1986 8: 137-144.
3. Levinson-Rose J, Menger RJ. Improving college teaching: a critical review of research. Review of Educational Research 1981 51:403-434.
4. Stein LS. The effectiveness of continuing medical education: eight research reports. Journal of Medical Education 1981 56: 103-110.

The Role of the Institution

Dennis W. Siemsen, O.D.

In considering what, if any, role the institution has in faculty development, it is necessary to first define what "development" is. Dr. Berman and my colleagues on the panel have done that.

I consider these **active** approaches by an institution toward faculty development. They are offered as choices for faculty members to enhance their skills and credentials as educators.

I have been an optometric educator for eleven years and a department chair for six years. It has been a rare occurrence when a member of my department has asked for a sabbatical leave, presented a plan for an advanced degree program, or requested an extended absence for a workshop. I personally have been granted a paid leave of absence to undertake residency training, and I am now pursuing a graduate degree. Each has been a tremendous experience. This type of development does not, however, replace the need for ongoing support by the institution for other types of long-term faculty development.

But what are some of the **passive** actions toward faculty development that an institution may engage in? Individually, these passive actions may not seem significant. In combination, they may hold the key to an individual's development as an optometric educator.

The Career Choice of Optometry

First, let us consider career choices. It would be interesting to find out why optometric educators chose optometry. In most respects, I'm sure that their answers would not be very different from those of doctors of optometry in full-time practice. The profession offers an attractive life-style, a certain professional stature, and the ability to interact with and help people. Other optometrists may have been influenced by family, or by their own optometrist in making a career choice.

Does academic life allow educators, whatever their reasons for choosing the profession, to be optometrists? For some, the pressures of teaching, publishing, and administration may be so great that it is easier to drop clinical assignments. The institution may also look more favorably upon these non-clinical areas, so that faculty may believe that promotion will be difficult if not impossible if they remain active as clinicians.

Because of this, the first passive action the institution needs to take is to demonstrate that clinical skills are valued. This can be accomplished by providing support for clinical skills development and maintenance; by showing equal regard for clinical teaching and classroom teaching; and by providing grand rounds programs, conferences, and seminars, scheduled regularly, and in accessible time slots.

The Career Choice of Academics

After making the decision to enter optometry, why would a person decide to remain in academic life? An interesting study was done at the Indiana University School of Dentistry.[1] The faculty were interviewed and asked why they chose dental education. Their responses included:

- The desire to keep current or stay on the "cutting edge."
- A desire to do research.
- They wanted to develop their own skills more fully.
- They enjoyed spending time with students.
- It allowed them to work in a particular specialty area.
- Some said economics was a factor (they taught while setting up their own practice).
- Prestige.
- Teaching assignments, even if grand rounds or seminars, seemed to be an attraction.
- Some said they wanted to do something for the profession.

Other reasons could be quoted, but most optometric educators will be able to identify with at least one of these responses.

If these are important reasons for choosing an academic career, it should be the responsibility of the institution to provide a structure to fulfill them. This can be accomplished by creating an atmosphere of life-long learning. Specifically, institutional policy is needed to:

- Help faculty stay current in other areas of the profession besides their own.
- Support research, including clinical and educational research.
- Provide teaching ratios small enough to encourage personal interaction with students.
- Work towards providing an adequate faculty income, either through realistic salary scales, or by allowing time for earning extra income through intramural or private practice.
- Encourage all faculty to participate in continuing education programs, seminars, and team teaching.
- Recognize the talents and value of junior faculty, so that they are not hopelessly stuck behind tenured senior faculty in regards to teaching assignments.
- Be certain that all specialty areas receive an appropriate level of fiscal and administrative support.

By neglecting these areas of support, and by failing to develop policies which encourage these activities, the institution is passively denying support to its faculty.

Developing Effective Teachers

How much importance do institutions place on teaching? Institutions tend to assume that everyone hired for education is well versed in teaching

Dr. Siemsen is the chair of clinical education at the Illinois College of Optometry.

skills. Many optometric educators come into the system as clinicians from residency programs. New researchers and basic scientists in all likelihood come from graduate programs and fellowships. It is doubtful that any significant number of these programs had a teaching methods course as part of their graduate training.

It is not enough merely to demand quality teaching. That level of quality must be defined and communicated to the faculty, and the tools for improvement must be provided.

What tools should the institution offer to its faculty?

- Effective feedback.
- Training in teaching methods.
- Interaction with other optometric educators.

It should be noted that there were **no** courses on the 1990 Ellerbrock Program on the topic of optometric education, no teaching methods, no test construction, no clinical skills assessment, and no seminars in grant writing, or any other type of writing. Perhaps the tenor of the institutional attitude towards teaching has affected the professional association level as well.

It is possible that these courses are not offered because teaching isn't considered worthy enough by itself for promotion. Of course, it is important to have well-rounded faculty, and teaching is only part of the evaluation process. If quality teaching were given its just due and if poor teaching were identified and efforts made to correct it, it would not have been difficult to find optometric references for this paper. *Optometric Education* would not have any difficulty having its articles listed in *Index Medicus*, and there would be a demand for courses on teaching methods at Ellerbrock.

Conclusion

Optometric faculty are a resource which must be cultivated, conserved, and developed. Optometry needs more research on optometric faculty. The profession needs to know more about the attitudes, desires, and goals of its faculty. Administrators of the schools and colleges of optometry need to encourage the profession of optometric education, not just basic or clinical science. Institutions need to be able to admit that what the institution **thinks** the faculty wants is not always what the faculty really **do** want. ASCO should take a more active role in providing the advanced training necessary in classroom and clinical teaching.

If optometric education is to continue to grow and produce the optometrists of the next century, we need to begin to develop our faculty now. □

References

1. Sorcinelli MD. Faculty Attitudes at Indiana University School of Dentistry. Bloomington: Indiana University School of Dentistry, June 1978.

U.S. Optometry Schools: A Curriculum Comparison

Paul G. Rousseau, M.S., O.D.
Lisa N. Shiroma, B.S., O.D.

Abstract

With the expanding scope of optometric practice, increasing pressures are mounting on the optometric educational institutions to expand their didactic and clinical curriculum to meet the educational needs associated with both the expanding scope of care and the increasing knowledge gained from ongoing research. A curriculum assessment was performed for the 17 optometry schools in the United States and the Commonwealth of Puerto Rico in order to provide a comprehensive summary of current curriculum programs. The assessment was completed by analyzing the published curricula for the 17 optometry schools for the 1991-92 academic year. The curricula were evaluated by comparing the number and proportion of clock hours that each school dedicated to twelve specific curricular tracks. Hours were computed for courses assigned to the general curriculum tracks of Basic Biomedical Science, Optical Science, Visual Science and Primary Care Optometry, as well as Clinical Education. Hours were also computed for the specialty curricular tracks of Practice Management, Vision Therapy, Contact Lenses, Ocular Disease, Pharmacology, and Low Vision and Gerontology.

Variability was found among optometry schools in the number and proportion of clock hours assigned to each of the curricular tracks. This variability ranged from a minimum of just less than two-fold for the Contact Lens track to a maximum of over six-fold for the Practice Management track. While large variability in didactic curricula were found, most of the schools assigned a similar proportion of their total clock hours to clinical experience.

Key Words: Optometric Education, Optometry, Curriculum

Introduction

As the scope of optometric services continues to expand and as research continues to add new knowledge, the optometric educational institutions are faced with the increasingly difficult challenge of adequately preparing new graduates for their roles in the profession. Increasing pressures are mounting on the optometric educational institutions to expand their didactic and clinical curriculum to meet the educational needs of the expanding scope of care. The most widely recognized areas of expanding scope in optometry involve ocular disease detection and treatment as well as the detection and proper management of systemic conditions which have ocular manifestations.

Drs. Rousseau and Shiroma are 1992 graduates of the Southern California College of Optometry.

Less publicized but perhaps even more important are the challenges that the optometric educational institutions have in preparing students in the areas of gerontology, low vision, and binocular vision. The elderly represent the fastest growing segment of the population in the U.S.[1] This population will increasingly require additional vision care services. As our society continues to become more technologically advanced, increasing visual demands are being created by the higher educational standards and the visually demanding nature of most jobs. In light of these increased visual demands, the role of optometry in diagnosing and treating binocular vision disorders is becoming increasingly important.

As the healthcare market of today changes in response to the need to control increasing costs, optometry faces the challenges of continuing to operate in an increasingly competitive environment. Superior practice management skills are becoming increasingly important in preparing new graduates to successfully compete in today's healthcare market.

All of these challenges combine to pressure optometric educational institutions to expand the current curriculum. Model curricula have been designed for some of the areas (i.e. practice management, pharmacology, gerontology, and binocular vision)[2,3,4,5,6]. However, the current academic course schedules allow little room to implement these curriculum changes within the present four-year educational framework. As a result, decisions must be made by the optometric educational institutions on how to best respond to the increased need for additional training.

As curricula are restructured, the optometric educational institutions must maintain their focus on structuring the curriculum such that strong training is given in the areas which comprise the largest part of the daily practice of optometry. Concern arises that our schools are doing students a grave disservice by misrepresenting the daily practice of optometry. Some new graduates are having lower job satis-

faction because their expectations are vastly different from typical practice[7].

A principal change in the scope of optometry is the increasing utilization of therapeutic pharmaceutical agents. Expanded coursework in pharmacology and ocular disease are needed to adequately prepare students for optometric practice[3]. The need for increased optometric education in medically related areas has resulted in the expansion of the NBEO basic science examination content. The NBEO has decided to increase the number of basic science test items from 300 to 440. The major increase will occur in the basic biomedical sciences (Human Biology) where the number of test items will increase from 70 to 200 items[8]. As a result, the optometric educational institutions are under pressure to respond to the changes in the NBEO basic science examination by expanding the basic biomedical science curriculum.

While some are advocating reductions in areas of education such as binocular vision in favor of expanding the ocular disease and pharmacology curriculum, many feel that students currently are barely receiving training adequate for minimal competence in the diagnosis and detection of binocular vision disorders[3,9]. Since an estimated 21% of people who visit optometric practices suffer from binocular vision problems[10], a major concern is the decline in emphasis of vision therapy in optometric curricula. Rouse and Applebaum state "We must be constantly on guard to prevent the further decay of vision therapy related curricula[9]."

Concerns also arise about current levels of training in contact lenses, gerontology, and practice management. Schwartz states "Most schools are cutting back on teaching skills needed for fitting contact lenses to the point that recent graduates possess only rudimentary knowledge in this specialty[7]." With the growing numbers of elderly in the U.S., concern over the level of geriatric training is also mounting. Educators in optometry and experts in the field of aging are recommending increases in the geriatric and low vision curricula[4,5]. As the healthcare market of today continues to change, the survival of independent private practice depends upon adequate practice management skills. Recent graduates continue to express their feelings that their education did not adequately prepare them in practice management[11].

With the rising pressure on optometric educational institutions to restructure the current didactic and clinical curricula, decisions must be made concerning how to incorporate, in the most appropriate way, the additional education within the current four-year framework. Since current levels of instruction allow little room for additions, some material must be eliminated or de-emphasized in order to accommodate the expanding curriculum. Concerns arise as to what portions of the current curriculum will be reduced, and to what degree the reductions will affect the training of optometric students.

This study assessed the present status of the optometric curricula at optometry schools in the U.S. and Puerto Rico. This study investigated the number of clock hours and the proportion of the curriculum that each school presently dedicates to the general areas of Basic Biomedical Science, Optical Science, Visual Science, Primary Care (pre-clinic), and Clinical Education. These same investigations were made for the specialty areas of Practice Management, Vision Therapy, Contact Lenses, Ocular Disease, Pharmacology, and Low Vision and Gerontology. This description of current optometry school curricula provides a means for comparison of curricular emphasis among the individual programs.

Methods

The curricula of the 17 optometry schools located in the United States and the Commonwealth of Puerto Rico were compared by assigning each course to a topic track and then comparing the clock hours and the proportion of total clock hours that each school assigns to each track.

Collecting the Data

The sources of data were the 1991-92 college catalogs and course track summary sheets. A letter requesting 1991-92 college catalogs was mailed to all 17 optometry schools in the U.S. and Puerto Rico. If the college catalogs did not contain a course breakdown into lecture and laboratory credit hours, a request for this information was also included in the original request letter. We also included in the letter a request that the schools contact us with the approximate availability date for the 1991-92 college catalog if their catalogs were not available at the time of our request. If after a month passed with no reply, we followed up with a telephone call.

Compiling the data

Each college curriculum was assessed by reviewing the college catalogs. Courses were assigned to predetermined tracks based on the name and course description listed in the catalogs. The track headings were designed to allow the comparisons proposed in our statement of purpose. Certain tracks were designated "specialty tracks." The specialty tracks were Practice Management, Pharmacology, Ocular Disease, Contact Lenses, Vision Therapy, and Low Vision and Gerontology.

The tracks were defined as follows:

1. Basic Biomedical Science: anatomy and physiology, ocular anatomy, neurophysiology, clinical medicine, and ocular physiology.
2. Optical Science: geometrical optics, ophthalmic optics, and environmental optics.
3. Visual Science: visual psychophysics, sensory vision, optics of the eye, ocular motility and function, binocular vision and space perception.
4. Pharmacology: general and ocular.
5. Primary Care (pre-clinic): preclinical skills, patient communications, and pediatric optometry.
6. Practice Management
7. Vision Therapy: visual efficiency, vision perception and learning, strabismus and amblyopia.
8. Contact Lenses
9. Ocular Disease
10. Low Vision and Gerontology
11. Clinical Education: all specialty departments combined, i.e., Family Practice, Contact Lenses, Vision Therapy, Pediatrics, Ocular Disease, and Low Vision.
12. Other: research design and methods, public health, epidemiology and any electives.

The number of clock hours spent in each course was determined. This was accomplished by taking the number of hours spent in lecture and laboratory per week and then multiplying it by the number of weeks per quarter or semester. For schools operating according to a semester schedule, the number of clock hours was determined by multiplying the number of hours per week by 15 weeks. For schools operating according to a quarter schedule, the number of clock hours was determined by multiplying the number of hours per week by 10 weeks. For courses offered during summer sessions, the number of clock hours was determined by multiplying the number

of hours per week by 6 weeks. Fourth year lecture hours were included in the lecture hour compilations if they were published in the college catalog. After the amount of hours spent in each course was calculated, the total amount of hours in each track was determined for each school. The sum total of all tracks gave us the total number of hours of didactic training that each school provided.

The total number of clock hours assigned to clinical education was assessed using the number of hours published in the catalogs. This study did not attempt to comprehensively assess the character of the clinical education offered by each school.

Analysis of the Data

The percentage of the hours spent in each track was calculated by taking the total number of clock hours in a track and dividing it by the total number of hours spent in all the tracks and multiplying this number by 100. Each college was ranked according to the total number of clock hours assigned to each track as well as the proportion of clock hours assigned to the track. No statistical analysis of the data was performed since the data represents the entire population of optometry schools in the U.S. and Puerto Rico. Statistical methods are only appropriate for describing samples from the population. To provide summary information for this population of optometry schools, the mean percentage and standard deviation of clock hours assigned to each track was calculated.

Results

An assessment of the curriculum at each of the 17 optometry schools located in the United States and the Commonwealth of Puerto Rico was completed using information published to describe their curriculum for the 1991-92 academic year. The curriculum assessment involved an evaluation of the number of clock hours and proportion of the curriculum that each school dedicates to the curricular tracks of Basic Biomedical Science, Optical Science, Visual Science, Primary Care Optometry (pre-clinic), and Clinical Education (Table I). This same evaluation was also completed for the specialty curriculum tracks of Practice Management, Vision Therapy, Contact Lenses, Ocular Disease, Pharmacology, and Low Vision and Gerontology (Table I). In order to facilitate comparisons between the curriculum of the schools, Tables II and III were constructed to present the ranking of each school with respect to the total number of clock hours and the proportion of clock hours dedicated to each curricular track.

The total number of clock hours dedicated to didactic curriculum by optometry schools in the U.S. and Puerto Rico ranges from 1,887 clock hours at PCO to 2,570 clock hours at SEUCO. The proportion of the curriculum dedicated to didactic curriculum ranges from 48.9% at FSU to 71.35% at IU.

The mean percentage of total clock hours dedicated to didactic curriculum among the schools is 56.5%. The remaining 43.5% of the clock hours are dedicated to clinical experience. The mean percentage of total clock hours dedicated to the didactic curriculum for the specialty tracks of Practice Management, Vision Therapy, Contact Lenses, Ocular Disease, Pharmacology, and Low Vision and Gerontology is listed in Table I.

A wide variability was found among optometry schools in the number and proportion of clock hours assigned to each of the curricular tracks. Most of the schools assigned a similar proportion of the total clock hours to clinical experience, although large variability was found in didactic curricula. The only basic science curriculum track which showed a large variability in clock hours among schools was the Basic Biomedical Science track. The specialty curriculum tracks which showed a wide variability in clock hours among schools were Practice Management, Vision Therapy, Ocular Disease, and Low Vision and Gerontology.

Discussion

Presently, there is a large degree of variability among individual optometry school curricula at the 17 optometry schools located in the United States and

Table 1
Total Clock Hours Per Curriculum Track

Hrs. column represents total number of clock hours dedicated to the curricular track. % column represents proportion of total clock hours dedicated to the curricular track. Explanations for School and Curricular track abbreviations are listed in the Appendices.

	BS		OS		VS		PC		PM		VT		CL		OD		P		LV		O		CE		DE		
	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	Hrs.	%	TOTAL
UAB	635	17.3	245	6.7	295	8.0	370	10.0	30	0.8	160	4.4	120	3.3	120	3.3	90	2.5	60	1.6	128	3.5	1427	38.8	2253	61.2	3680
UCB	329	7.3	285	6.3	313	6.9	285	6.3	75	1.7	120	2.6	150	3.3	330	7.3	60	1.3	90	2.0	75	1.7	2308	50.8	2233	49.2	4541
FSU	170	4.3	320	8.0	230	5.8	270	6.8	40	1.0	150	3.8	120	3.0	290	7.3	100	2.5	80	2.0	154	3.9	2040	51.1	1954	48.9	3994
UH	375	6.8	405	8.8	180	3.9	375	8.1	90	2.0	135	2.9	135	2.9	240	5.2	105	2.3	105	2.3	135	2.9	2268	49.1	2352	50.9	4620
IAUPR	600	16.6	300	8.3	285	7.9	180	5.0	0	0.0	90	2.5	105	2.9	180	5.0	90	2.5	60	1.7	195	5.4	1530	42.3	2085	57.7	3615
ICO	490	13.3	200	5.4	230	6.3	370	10.0	20	0.5	170	4.6	100	2.7	130	3.5	110	3.0	50	1.4	150	4.1	1660	45.1	2020	54.9	3680
IU	575	19.1	330	10.9	240	8.0	285	9.5	30	1.0	105	3.5	135	4.5	90	3.0	165	5.5	75	2.5	121	4.0	864	28.7	2151	71.4	3015
UMSL	435	11.7	240	6.5	285	7.7	345	9.3	45	1.2	105	2.8	105	2.8	150	4.0	90	2.4	90	2.4	195	5.2	1636	44.0	2085	56.0	3721
NEWENCO	592	16.1	150	4.1	247	6.7	280	7.6	40	1.1	80	2.2	90	2.4	226	6.1	60	1.6	40	1.1	150	4.1	1730	47.0	1955	53.1	3685
NSU	330	8.4	272	6.9	300	7.6	348	8.8	90	2.3	150	3.8	150	3.8	242	6.1	90	2.3	60	1.5	390	9.9	1525	38.6	2422	61.4	3947
OSU	390	11.7	440	13.2	290	8.7	350	10.5	30	0.9	50	1.5	100	3.0	220	6.6	90	2.7	50	1.5	40	1.2	1190	35.7	2140	64.3	3330
PUCO	210	6.3	240	7.1	270	8.0	450	13.4	60	1.8	270	8.0	135	4.0	255	7.6	60	1.8	60	1.8	150	4.5	1200	35.7	2160	64.3	3360
PCO	555	14.6	237	6.2	195	5.1	295	7.7	25	0.7	135	3.5	105	2.8	135	3.5	75	2.0	55	1.4	75	2.0	1924	50.5	1887	49.5	3811
SEUCO	840	18.8	345	7.7	165	3.7	315	7.0	50	1.1	150	3.4	120	2.7	165	3.7	105	2.3	120	2.7	195	4.4	1910	42.6	2570	57.4	4480
SCCO	390	9.9	270	6.8	310	7.8	340	8.6	120	3.0	190	4.8	140	3.5	160	4.1	90	2.3	50	1.3	76	1.9	1816	46.0	2136	54.1	3952
SCO	510	12.1	270	6.4	250	5.9	380	9.0	60	1.4	100	2.4	100	2.4	200	4.7	160	3.8	80	1.9	160	3.8	1940	45.9	2290	54.1	4230
SUNY	564	12.4	235	5.2	260	5.7	390	8.6	45	1.0	170	3.7	170	3.7	200	4.4	55	1.2	40	0.9	245	5.4	2160	47.6	2374	52.4	4534
MEAN	470	12.2	281	7.3	256	6.7	331	8.6	50	1.3	137	3.6	122	3.2	196	5.0	94	2.5	69	1.8	155	4.0	1713	43.5	2180	56.5	3894
S.D.	167	4.5	72	2.2	45	1.5	62	1.9	30	0.7	50	1.5	22	0.6	64	1.5	31	1.0	23	0.5	80	2.0	398	6.2	183	6.3	465

the Commonwealth of Puerto Rico. These differences in both didactic and clinical curricula are evident when making comparisons among the schools for the number of clock hours devoted to each of twelve defined curriculum tracks for the 1991-92 academic year.

The evidence presented in Table I demonstrates that the total number of clock hours and the proportion of the curriculum dedicated to each track varies among schools by between two-fold and six-fold for all twelve curricular tracks. These large differences exist for both the basic science curricular tracks and the specialty curricular tracks. This suggests that the level of education for each of these tracks is not equivalent among all of the schools.

Among the specialty tracks, the Contact Lens didactic curriculum represents one of the areas showing the least variability in the proportion of clock hours. However, there is still a difference of almost two-fold with a low at NEWENCO of 2.4% (90 clock hours) of the total clock hours being dedicated to the Contact Lens track and a high at SUNY of 3.7% (170 clock hours). Conversely, among the specialty tracks, the Vision Therapy didactic curricula represents one of the areas showing the most variability in the proportion of clock hours dedicated to the track among schools. There is a five-fold difference among the schools with a low at OSU of 1.5% (50 clock hours) of the total clock hours being dedicated to the Vision Therapy and a high at PUCO of 8.0% (270 clock hours). Additionally, the Practice Management track shows a large variability in the number of clock hours dedicated to it among schools. While SCCO offers 120 hours of practice

Table 2
Curriculum Tracks Ranked by Percentage of Clock Hours

U.S. Optometry Schools ranked in descending order (most to least) according to the proportion of total clock hours dedicated to each curricular track. Schools with tie rankings are connected by bars. Explanations of school and curricular track abbreviations are listed in the Appendices.

RANK	BS	OS	VS	PC	PM	VT	CL	OD	P	LV	O	CE	DE
1	IU	OSU	OSU	PUCO	SCCO	PUCO	IU	PUCO	IU	SEUCO	NSU	FSU	IU
2	SEUCO	IU	IU	OSU	NSU	SCCO	PUCO	UCB	SCO	IU	IAUPR	UCB	PUCO
3	UAB	UH	PUCO	UAB	UH	ICO	NSU	FSU	ICO	UMSL	SUNY	PCO	OSU
4	IAUPR	IAUPR	UAB	ICO	PUCO	UAB	SUNY	OSU	OSU	UH	UMSL	UH	NSU
5	NEWENCO	FSU	IAUPR	IU	UCB	NSU	SCCO	NSU	FSU	FSU	PUCO	SUNY	UAB
6	PCO	SEUCO	SCCO	UMSL	SCO	FSU	UAB	NEWENCO	IAUPR	UCB	SEUCO	NEWENCO	IAUPR
7	ICO	PUCO	UMSL	SCO	UMSL	SUNY	UCB	UH	UAB	SCO	ICO	SCCO	SEUCO
8	SUNY	NSU	NSU	NSU	NEWENCO	IU	FSU	IAUPR	UMSL	PUCO	NEWENCO	SCO	UMSL
9	SCO	SCCO	UCB	SCCO	SEUCO	PCO	OSU	SCO	NSU	IAUPR	IU	ICO	ICO
10	UMSL	UAB	NEWENCO	SUNY	IU	SEUCO	UH	SUNY	UH	UAB	FSU	UMSL	SCCO
11	OSU	UMSL	ICO	UH	SUNY	UH	IAUPR	SCCO	SCCO	OSU	SCO	SEUCO	SCO
12	SCCO	SCO	SCO	PCO	FSU	UMSL	PCO	UMSL	SEUCO	NSU	UAB	IAUPR	NEWENCO
13	NSU	UCB	FSU	NEWENCO	OSU	UCB	UMSL	SEUCO	PCO	ICO	UH	UAB	SUNY
14	UCB	PCO	SUNY	SEUCO	UAB	IAUPR	ICO	PCO	PUCO	PCO	PCO	NSU	UH
15	UH	ICO	PCO	FSU	PCO	SCO	SEUCO	ICO	NEWENCO	SCCO	SCCO	PUCO	PCO
16	PUCO	SUNY	UH	UCB	ICO	NEWENCO	SCO	UAB	UCB	NEWENCO	UCB	OSU	UCB
17	FSU	NEWENCO	SEUCO	IAUPR	IAUPR	OSU	NEWENCO	IU	SUNY	SUNY	OSU	IU	FSU

Table 3:
Curriculum Tracks Ranked by Clock Hours

U.S. Optometry Schools ranked in descending order (most to least) according to the total number of clock hours dedicated to each curricular track. Schools with tie ranking are connected by bars. Explanatios for school and curricular track abbreviations are listed in the Appendices.

RANK	BS	OS	VS	PC	PM	VT	CL	OD	P	LV	O	CE	DE	TOTAL
1	SEUCO	OSU	UCB	PUCO	SCCO	PUCO	SUNY	UCB	IU	SEUCO	NSU	UCB	SEUCO	UH
2	UAB	UH	SCCO	SUNY	UH	SCCO	NSU	FSU	SCO	UH	SUNY	UH	NSU	UCB
3	IAUPR	SEUCO	NSU	SCO	NSU	SUNY	UCB	PUCO	ICO	UMSL	SEUCO	SUNY	SUNY	SUNY
4	NEWENCO	IU	UAB	UH	UCB	ICO	SCCO	NSU	UH	UCB	UMSL	FSU	UH	SEUCO
5	IU	FSU	OSU	UAB	PUCO	UAB	PUCO	UH	SEUCO	SCO	IAUPR	SCO	SCO	SCO
6	SUNY	IAUPR	IAUPR	ICO	SCO	NSU	UH	NEWENCO	FSU	FSU	SCO	PCO	UAB	FSU
7	PCO	UCB	UMSL	OSU	SEUCO	SEUCO	IU	OSU	NSU	IU	FSU	SEUCO	UCB	SCCO
8	SCO	NSU	PUCO	NSU	SUNY	FSU	UAB	SUNY	OSU	NSU	PUCO	SCCO	PUCO	NSU
9	ICO	SCCO	SUNY	UMSL	UMSL	UH	SEUCO	SCO	IAUPR	IAUPR	ICO	NEWENCO	IU	PCO
10	UMSL	SCO	SCO	SCCO	NEWENCO	PCO	FSU	IAUPR	SCCO	UAB	NEWENCO	ICO	OSU	UMSL
11	OSU	UAB	NEWENCO	SEUCO	FSU	UCB	PCO	SEUCO	UMSL	PUCO	UH	UMSL	SCCO	NEWENCO
12	SCCO	PUCO	IU	PCO	UAB	UMSL	UMSL	SCCO	UAB	PCO	UAB	IAUPR	UMSL	UAB
13	UH	UMSL	FSU	UCB	OSU	IU	IAUPR	UMSL	PCO	ICO	IU	NSU	IAUPR	ICO
14	NSU	PCO	ICO	IU	IU	SCO	ICO	PCO	UCB	OSU	SCCO	UAB	ICO	IAUPR
15	UCB	SUNY	PCO	NEWENCO	PCO	IAUPR	SCO	ICO	PUCO	SCCO	UCB	PUCO	NEWENCO	PUCO
16	PUCO	ICO	UH	FSU	ICO	NEWENCO	OSU	UAB	NEWENCO	NEWENCO	PCO	OSU	FSU	OSU
17	FSU	NEWENCO	SEUCO	IAUPR	IAUPR	OSU	NEWENCO	IU	SUNY	SUNY	OSU	IU	PCO	IU

management instruction, IAUPR currently offers no instruction in practice management.

These types of differences also exist in the basic science curriculum tracks. There is almost a five-fold difference among schools in the proportion of clock hours dedicated to the Basic Biomedical Science track with a low of 4.3% at FSU (170 clock hours) and a high of 19.1% at IU (840 clock hours).

Since certain topics may be covered under one type of course in one school and under another type of course in another school, there are some inconsistencies introduced by assigning the individual courses of each school to particular curriculum tracks. This is well illustrated by a comparison of the Ocular Disease and Pharmacology tracks at UCB and PUCO. At both schools, the proportion of clock hours assigned to the Ocular Disease track is the highest of all the schools while the proportion of clock hours assigned to the Pharmacology track is among the lowest of all the schools. While this may be representative of the actual curriculum, it is possible to assume that many of the pharmacological implications of ocular disease are covered in the Ocular Disease track rather than the Pharmacology track. Despite the possibilities for these types of inconsistencies, the wide range of variability among schools with respect to the various tracks remains evident.

While there appears to be a wide variability among the proportion of clock hours assigned to various didactic curricular tracks, the proportion of clock hours dedicated to clinical experience seems to be more consistent from school to school with the exception of IU. Most schools dedicate an average of 43.5% of clock hours to clinical experience while IU dedicates only 28.7% of its clock hours to clinical experience.

One of the concerns that arises when considering the proportion of clock hours dedicated to specific curriculum tracks is that certain specialty tracks may become underaddressed when other specialty tracks are well addressed. In looking at the curriculum for SUNY, it is evident that the proportion of clock hours dedicated to the Vision Therapy and Contact Lens tracks is the highest among the schools. However, the proportion of clock hours dedicated to the Low Vision and Gerontology track at SUNY is the lowest among the schools.

Another concern involves the balance of basic science and specialty curriculum tracks. While OSU dedicates the highest proportion of clock hours to Optical Science among the schools, their curriculum dedicates the lowest number of clock hours to the Vision Therapy and Contact Lens tracks. As the individual schools restructure their didactic curricula, care must be taken not to expand the basic science curricula at the expense of the specialty track curricula.

The recent change in the structure of the NBEO Basic Science examinations towards increased emphasis on the basic biomedical sciences has increased pressures on the schools to prepare students adequately for this examination. Since there is little room to expand the current optometric curriculum at most schools, concerns arise that curriculum changes made to bolster basic science curricula may be accomplished at the expense of the specialty track curricula.

While all of the schools currently strive to adequately prepare students for all aspects of optometric practice, it is apparent from the range of clock hours dedicated to each curriculum track that each school takes a different approach in designing its didactic curriculum. If the number of clock hours reflects the level of instruction in each of the curricular tracks, then it is likely that students at various schools have differing levels of preparedness in the different curricular tracks. For example, one might expect that students from PUCO (270 clock hours) would be better prepared in the area of vision therapy than students from the other schools (next highest number of clock hours is 190 at SCCO).

The authors hope that this study will serve as a tool with which individual optometry schools may assess their relative strengths and weaknesses in these curricular tracks. Furthermore, it is anticipated that the optometry schools will find avenues to address their weaknesses, especially in the optometric specialty tracks of Practice Management, Vision Therapy, and Low Vision and Gerontology. As optometric curricula are restructured, it is hoped that this study will serve as a useful tool to the individual schools in deciding which areas of instruction can afford to be de-emphasized and which areas need additional emphasis.

The ability of schools to adequately prepare students in all areas of optometric practice remains questionable if the current status of such large variability in optometric curricula among the schools remains. Pre-optometry students should be given access to the type of information contained in this study so that they may better select an optometry school which provides an emphasis that more closely matches their own personal goals within optometric practice.

More detailed investigations are needed to continue the investigation into the status of optometry school curricula. A more detailed analysis of clock hours dedicated to lecture versus laboratory instruction in each of the curricular tracks would lend further insight into the variability of the training at each of the schools. Further analysis of the topics covered within the individual courses would provide additional insight into the curriculum currently available at each of the schools.

It would also be of interest to determine whether the proportion of clock hours dedicated to basic science curriculum correlates with scores of students from various schools on the NBEO Basic Science examinations. This knowledge would influence how strongly NBEO examination content changes should affect individual school curriculum changes.

Further studies are needed to identify how the clinical experiences are structured at each school with respect to the character of patient populations, the diversity of vision anomalies, and the depth versus breadth of exposure to clinical specialty areas. An assessment of the amount of time devoted to each of the specialty areas within the clinical programs at the various schools would also be invaluable. The variability at this level has the potential to combine with the didactic curriculum variability to create even greater amounts of disparity among the curricula offered at the individual optometry schools.

Summary

A curriculum assessment was performed for the 17 optometry schools located in the United States and the Commonwealth of Puerto Rico by analyzing their published curricula for the 1991-92 academic year. The curricula were evaluated by comparing the number and proportion of clock hours that each school dedicated to the twelve specific curricular tracks of Basic Biomedical Science, Optical Science, Visual Science, Primary Care Optometry, Clinical Education, Practice Management, Vision Therapy, Contact Lenses, Ocular Disease, Pharmacology,

and Low Vision and Gerontology.

Variability was found among optometry schools in the number and proportion of clock hours assigned to each of the curricular tracks. This variability ranged from a minimum of just less than two-fold for the Contact Lens track to a maximum of over six-fold for the Practice Management track. There were large amounts of variability among the schools even with respect to the basic science curriculum. Most of the schools assigned a similar proportion of the total clock hours to clinical experience, although large variability was evident in the didactic curricula. The variability of clock hours that individual schools assign to the curricular tracks appears to indicate that all schools do not equally prepare students for all aspects of optometric practice.

Acknowledgements

The authors would like to wholeheartedly thank Dr. Lorraine Voorhees for her editorial guidance and direction in the completion of this project. We would also like to thank Rick Vollmer for his computer assistance in the compilation of the Tables used in this manuscript.

References

1. American Association of Retired Persons. A profile of older Americans. 1989.
2. Nussenblatt H, Troeger C. New directions in practice management: a model practice management curriculum for optometry colleges. Journal of Optometric Education 1988 Winter;13(3):79-83.
3. Bartlett JD. The didactic therapeutics curriculum. Journal of Optometric Education 1986 Fall;12(2):49-50.
4. Aston SJ, DeSylvia DA, Mancil GL. Optometric gerontology: state of the art in schools and colleges of optometry. Journal of Optometric Education 1988 Fall;14(1):8-12.
5. Aston SJ. Geriatric educational programs. Optometry and Vision Science 1990;67(5):329-331.
6. Association of Schools and Colleges of Optometry. Curriculum model for oculomotor, binocular, and visual perception dysfunctions. Journal of Optometric Education 1988 Winter;13(3):95-103.
7. Schwartz CA. Crisis in Education: Cutting out the basics. Contact Lens Forum 1987;12(9):26.
8. National Board of Examiners in Optometry. National Board plans expanded Basic Science test for 1992. TestPoints 1990 Fall;1.
9. Applebaum M, Rouse MW. The future of vision therapy in optometric education. Journal of Behavioral Optometry 1990;1(8):212-14.
10. Hokoda SC. General binocular dysfunctions in an urban optometry clinic. Journal of the American Optometric Association 1985; 56:560-563.
11. Marino D. Student survey:beyond graduation. Optometric Management 1989 March; 25(3):54-58.

APPENDIX 1.
List of School Name Abbreviations

List of Abbreviations Used in Text and Tables

UAB	University of Alabama at Birmingham
UCB	University of California at Berkeley
FSU	Ferris State University
UH	University of Houston
IAUPR	InterAmerican University of Puerto Rico
ICO	Illinois College of Optometry
IU	Indiana University
UMSL	University of Missouri at St. Louis
NEWENCO	New England College of Optometry
NSU	Northeastern State University
OSU	Ohio State University
PUCO	Pacific University College of Optometry
PCO	Pennsylvania College of Optometry
SEUCO	Southeastern University of Health Sciences College of Optometry
SCCO	Southern California College of Optometry
SCO	Southern College of Optometry
SUNY	State University of New York

Appendix 2
List of Curriculum Tracks Abbreviations

Key to Abbreviations Used in Tables to Describe Curriculum Tracks

BS	Basic Biomedical Sciences
OS	Optical Science
VS	Visual Science
PC	Primary Care (pre-clinic)
PM	Practice Management
VT	Vision Therapy
CL	Contact Lens
OD	Ocular Disease
P	Pharmacology
LV	Low Vision and Gerontology
CE	Clinical Education
DE	Didactic Education
O	Other

Annual Index — Volume 17

Author Index

Subject Index

IN REVIEW

Critical Thinking in Clinical Practice, Eileen Gambrill, Jossey-Bass Publishers, San Francisco, 1990, 432 pages, $27.24.

This book was written for social workers, psychologists, psychiatrists, and counselors. The very nature of the activities of these social science practitioners requires that they make their diagnosis based upon a different set of data than we do. Their data acquisition is largely attained through communication while our also has a testing mode. While the teaching of clinical thinking for these professionals is somewhat different from those of optometrists, there is much to gain from this book. The emphasis should be on the word "also." The strength of this book is in its emphasis on communication skills, something we may tend to minimize in our zeal to take more findings. The author also mentions that therapy strategies may be inaccurately influenced by subjectively interpreted outcomes. In optometry we have the advantage of quantifying some of our outcomes. Ms. Gambrill suggests that outcomes have to relate to the legitimate needs, goals and expectations of the patients and certainly this holds true in our profession.

While the early establishment of a tentative diagnosis may be useful, the author correctly cautions against the clinician allowing this to influence the data collection process. There is a risk that data that questions this initial hypothesis may be ignored or not acquired.

As optometric educators we need to remember that clinical reasoning skills can be enhanced by training. Thinking ability and intelligence are only partially related and either can be modified independent of the other.

Gambrill states that good problem solvers are more attentive to detail, aggressive, confident, tenacious, persistent, precise, efficient, sensitive, knowledgeable, and aware of other points of view. If we add that they are also skillful in clinical testing, we then have the characteristics of the good clinician in our field. In contrast poor problem solvers rely on unreasoned guesswork, self-justification, and are inattentive to detail.

Since her readers receive virtually all data from the interview, the author's recommended communication skills are particularly valid. The author indicates that those characteristics that resist acquiring data are: distracting mannerisms, poor attending skills, lack of eye contact, difficulty in following the patient's statements, use of closed-ended questions, interrupting the patient, and attending to the patient superficially rather than being sensitive to deeper messages.

While this book successfully reaches out to a targeted audience with somewhat different needs than optometric clinicians, I feel that optometric educators will find it useful. I would recommend that this book be acquired by optometric libraries to be used as a resource by optometric educators.

■ ■ ■

Clinical Tests of Vision, Lars Frisen, Raven Press, New York, 1990, 204pp., $62.00.

The title of this book does not give a true indication of its contents. The majority of the text relates to the examination of the visual field, both central and peripheral, and an alternative title which reflected its content more accurately would have been preferable. The first five chapters deal with the function of the central visual area, covering such topics as visual acuity, metamorphopsia and color vision, while the remaining seven chapters cover the examination of peripheral visual function. The final chapter presents a series of test cases for the reader to diagnose and evaluate.

Unfortunately the chapters dealing with central function are extremely brief and add little to the already existing literature. The sections on the measurement of vision and visual acuity are particularly disappointing. For example, in the quantification of vision, there is no mention of the Snell-Sterling visual efficiency scale. Additionally, the author tells us that visual acuity is always measured in good light and at high contrast(;.24) Users of projection charts or the Pelli-Robson chart would not agree. I strongly disagree with the proposal that visual acuity need not be measured at the beginning of the examination, but may be postponed to a later state (p28). Further, the author suggests that "uncorrected visual acuity is of no diagnostic interest whatsoever" (p28). Presumably he would also consider the relationship between uncorrected acuity and ametropia equally unimportant. This would be consistent with his dismissal of the refractive error determination in a brief footnote. Additionally, a much fuller section on clinical contrast sensitivity testing would have greatly enhanced this section.

The chapter on color vision fails to discuss either the CIE chromaticity diagram or confusion axes for color defectives. However, Frisen states the efficient use of color vision tests does not require a great deal of background knowl-

edge (p45). Indeed, he goes even further within a discussion of visual field examination, stating that in the future, knowledge of the testing procedure may not be required. It is difficult to understand how practitioners will be expected to evaluate test results if they do not understand how the test has been carried out.

The strength of this book lies in its discussion of the techniques, procedures and equipment required for visual field testing. While this would appear to run contrary to the author's early comments, it is nevertheless welcome. The section on field screening would have been enhanced with discussion of commercially available screeners, E.g., the Henson instrument. The cases cited will be of interest to both practitioners and students. It is unfortunate that the book contains a number of typographical and other errors, e.g., the caption on color Fig 1.10 states that the macula is in the center of the fundus photograph when clearly the disc is centrally located. Accordingly, it is difficult to recommend this book as anything more than a supplement to the already existing number of visual fields books.

Guest reviewer:
Mark Rosenfield, Ph.D.,
B.Sc(Optom), M.B.C.O.
SUNY State College of Optometry

■ ■ ■

Introduction to Photometry,

William F. Long, COMPress, Division of Queue, Inc., Fairfield, CT, 1989, seven computer discs and 47 pages, illus. user's manual. $195. (1-800-232-2224)

Introduction to Photometry is a programmed learning module comprised of seven computer discs and a user's manual. Each menu-driven disc contains a set of general instructions, a tutorial, a multiple choice quiz, and a set of problems requiring calculations. The photometric subjects presented in these discs are: illuminance, solid angles, luminous intensity, luminance, luminous emittance, luminous transmittance and reflectance, and photometry of images. The user's manual, which is meant to be used concurrently with the discs, provides the mathematical derivations of the equations presented in the tutorial as well as some relations that are not included in the discs.

The disc tutorials are clear and easy to follow. I found the tutorial on luminance (disc 4) to be especially good and the tutorial on photometry of images (disc 7) is an exceptional discussion of this subject. The optometry student may find *Introduction to Photometry* to be particularly valuable. Not only can this module supplement didactic coursework on photometry, it can also be useful while studying for national boards. Photometry is incorporated into the visual optics section which in total comprises 8% of the basic science portion of the NBEO. In addition, practicing visual science professionals will find this module to be a comprehensive review of photometry.

Some items could have received better explanations. For example, many problems require an answer to have four significant digits for the question to be considered correct although this is not mentioned anywhere in the text. In addition, a hand calculator is usually required and a current knowledge of geometry is assumed. For example, it is necessary to determine the area of shapes such as an ellipse and isosceles triangle.

One drawback is that the discs were written for the Apple IIe or compatible computer. Although the Apple IIe is not currently used at many institutions, the 1985 copyright on the first disc helps to explain why this format was chosen. Unfortunately, disc #2 in this sample did not run at all and I could not access the tutorial on disc #6. Queue Inc., however, promises to replace defective discs free of charge within 180 days of the invoice date. The usefulness of this module may be limited by its present format. However, if it is made IBM-compatible, *Introduction to Photometry* would be a valuable educational resource at every college of optometry.

Guest Reviewer:
Lewis Reich, O.D., M.S.
Pennsylvania College of Optometry

Response by William F. Long:

The programs were an instructional experiment I started in 1985 when the only computers readily available for instruction at the University of Missouri-St. Louis were Apple II+'s. Students seemed to enjoy working with the computers and the programs were developed over several years using their input. I'm hoping to revise and update the programs for the MacIntosh. In the meantime there are still lots of Apples around universities and colleges. I regret there was trouble with some of the discs. I have reported the problems to Queue and I am sure they will be remedied right away.