INDEX
Vols. 1-9
Association of Schools and Colleges of Optometry

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**A. R. Stein, M.D.**
# Table of Contents

**Spring, 1984**  
**Volume 9, Number 4**

*Official Publication of the Association of Schools and Colleges of Optometry*

## Teaching Clinical Teachers
**D. Leonard Werner, O.D.**

The problems of identification, preparation and evaluation of clinical teachers in optometry are dealt with.

## Minimum Separation: Not Always Occurring at the Symmetry Points
**Michael P. Keating, Ph.D.**

Optical systems are described in which symmetry points give a local maximum in the separation.

## Skills in Clinical Teaching: A Faculty Development Program for Resident Optometrists
**Larry Bauer, M.S.W., and Arthur H. Alexander, O.D., F.A.A.O.**

A workshop program to impart teaching skills to optometry residents is described.

## SPECIAL FEATURE

Index to *JOURNAL OF OPTOMETRIC EDUCATION*, Volume 1 through Volume 9. Author and subject index to the first nine volumes of JOE are provided.

## DEPARTMENTS

**Editorial: “Making Sense Out of Certification”**  
**Richard H. Kendall, O.D.**

**Newsampler**

**“Keeping Up with People”**

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Making Sense Out of Certification

Certification has been a topic of discussion among members of the optometric community for more than sixteen years. Many differing attitudes have developed during the years. Some of the concerns are personal—how will it affect me? Others may say that certification will fragment optometry, while others believe it will be beneficial for the profession to come. Because the optometric profession has been slow to react to the growth of the profession, other organizations have developed programs of certification. Some organizations do not accept the fact they are in the business of certification, while other organizations—national in scope—advertise the fact they are the only organizations conducting a program of certification. Whenever a group develops a list of individuals who appear to have some expertise that others do not, or have not demonstrated, the process of certification has developed.

At the present time there is no national organization charged with the responsibility of coordinating certification programs or providing guidelines which would govern certifying agencies. Uniformity in certification programs would indeed make some sense out of certification. If consumers of vision care are not ultimately benefitted, then certification is truly a program of ego building. It seems proper that the largest optometric professional association would be given the charge to carry out the mission of developing the coordination mechanism for certification. By the American Optometric Association accepting the challenge of such a program there is always a control through the House of Delegates where individuals or states may be heard. This means there will always remain the potential for membership input.

The 1968 AOA Study Committee concluded that optometry is a specialty program in itself, dealing with vision and eyes. The profession recognizes and accepts state licensure as sufficient evidence for any optometrist to perform any service within the scope of optometry. This is all well and good, but over the past decade and a half the profession has matured. The body of knowledge has increased. One person cannot do it all. This is why there are various sections in AOA, a national association interested in contact lenses and another national organization concerned with vision therapy. The AOA Project Team of Certification does not advocate specialization in optometry. It does, however, desire to make sense out of the many certification programs now being conducted. It also believes programs of certification in special interest areas should be the same from one state to another.

The plan being presented to the 1984 AOA House of Delegates is one that is workable. It will create a quality certification program, and will establish direction to the now non-incentive continuing education programs now in existence.

The recommendation of a commission by the project team is sound. The commission will establish guidelines, policies, and procedures to implement the commission’s responsibilities and activities. The commission would recognize specialties in optometry, only if and when such specialties meet the criteria for recognition and approve the qualification for certification in each recognized field of specialization in optometry to grant certification and recertification to qualified individuals. Finally the commission would serve as the coordinating agency and clearing house for information among organizations and groups representing the various recognized fields of specialization in optometry.

There are seven recommended criteria for specialties in optometry:

1) The area of specialization in the practice of optometry rests on a specialized knowledge of optometric sciences, which have their basis in the biological, and behavioral sciences, and not on a basis of managerial, procedural, or technical services, nor solely on the basis of the environment in which optometry is practiced.

2) The area of specialization shall be one for which specially trained practitioners are needed to better fulfill the responsibilities of the profession of optometry in improving the health and welfare of the public.

3) The area of specialization shall represent an identifiable and distinct field of practice that calls for special knowledge and skills acquired by education and training and/or experience beyond the basic optometric education and training.

4) The area of specialization shall be one in which schools of optometry and/or other organizations offer recognized education and training programs to those seeking advanced knowledge and skills in the area of specialty practice so that they may perform more competently.

5) The area of specialization shall be one in which there is an adequate educational and scientific base to warrant transmission of knowledge through teaching clinics and scientific base to warrant transmission of knowledge through teaching clinics and scientific and technical publications immediately related to the specialty.

6) The area of specialization shall be one in which there exists a significant and clear health care demand to provide the necessary public reasons for certification.

7) The area of specialization shall be comprised of a reasonable number of individuals who devote much of their time and practice to the specialty area or maintain special interest in the area of practice.

To conduct certification in any clinical area of practice there must be an organization capable to developing standards that define the specialty, create requirements for individual certification and recertification programs, develop and administer examinations. In brief, the organization must have the ability to carry out all of the mechanisms of a certification program under the guidelines developed by the commission.

One cannot deny the fact that certification is here today. For the benefit of the profession, the optometrist, and the public, a well organized certification program should be adopted that will make sense out of certification.

Dr. Richard H. Kendall, O.D., Executive Director of the California Optometric Association, Chairman of the AOA Project Team on Certification.
Sabbaticals Established for Full-Time Faculty Members at ICO

The Illinois College of Optometry Board of Trustees' commitment to fostering clinical research and innovative teaching methods has resulted in a sabbatical leave policy for full-time faculty. The sabbaticals were established for research, study, writing or other creative endeavors contributing to a faculty member's professional development and effectiveness as a scholar and teacher, said President Boyd B. Banwell, O.D. "We are delighted three of our faculty are enriching themselves and, in turn, advancing ICO through this program of faculty development."

Darrell Schlange, O.D., associate professor in the Division of Optometric Sciences, completed his five-month sabbatical in the summer of 1982. He visited major infant vision research laboratories that study preferential looking techniques.

At the University of Houston College of Optometry, Dr. Schlange studied the newly-developed, computer-based PL technique for infant visual acuity testing developed by Ruth Manny, O.D., Ph.D., and Stan Klein, Ph.D. Dr. Manny and her associates use a Commodore VIC-20 computer with "Baby Bert" software that incorporates operant conditioning of the baby's responses.

Dr. Schlange also worked with Indira Mohindra, O.D., a noted researcher in PL techniques at Massachusetts Eye and Ear Hospital and at the Massachusetts Institute of Technology laboratory of Richard Held, Ph.D.

Yuzo Chino, Ph.D., associate professor in the Division of Basic Sciences and ICO's director of research, recently returned from his sabbatical in Japan where he was an invited professor at Tokyo's Women's Medical College and a visiting scientist at St. Marianna University in Kawasaki.

Peter Nelson, O.D., associate professor in the Division of Optometric Sciences and director of continuing education, currently is in the United Kingdom for a six-month sabbatical at the Optometry Department at City University in London where he will teach in the general and contact lens clinics in addition to a weekly assignment in the London Refracting Hospital's General Clinic and Moorfields Eye Hospital's Contact Lens Clinic.

American Interprofessional Foundation Members Meet

The 2nd National Meeting of the American Interprofessional Foundation was held at the Westgate Plaza Hotel in San Diego on February 12, 13, and 14, 1984.

Living Treasure Awards™ were presented to: Dr. Paul LaShorne of Seymour, IN; Dr. Robert Morrison of Harrisburg, PA; and Dr. George Iacono of Tucson, AZ. The Living Treasure Award is given to eye care practitioners who have made a significant contribution to the advancement of eye care.

Dr. Iacono and Dr. Morrison were honored for their work in the field of myopia containment and enhancement. Dr. LaShorne was cited for his contributions in the detection of health problems (such as high blood pressure, diabetes and arterial stenosis, etc.) in his optometric examination routine.

Dr. LaShorne, Morrison and Iacono also spoke and conducted workshops at the meeting, sharing their findings and expertise with their colleagues.

The problem of hyperphoria was addressed at the meeting by Dr. Akira Tajiri of Reedly, CA. Dr. Tajiri is a pioneer in the research and treatment of this condition.

Dr. Tajiri uses techniques of correcting hyperphoria, which cannot usually be detected by observation of the patient, but requires specialized testing by a competent practitioner. Some types of learning disorders in children can be attributed to hyperphoria according to Dr. Tajiri. If the children cannot see images properly, reading may become a difficult task. Parents may detect a problem when their children have trouble reading or doing other near tasks, but have no problem in comprehension of things told to them or read to them. The brain interprets material presented through the ears or other senses, but there is confusion in input from the eyes. Often these children have problems in sports since the eyes provide confused information to the brain and motor coordination becomes more difficult. In adults, small amounts of this vertical imbalance can result in headaches, seasickness symptoms, irritability, difficulty in sustained reading and a variety of other symptoms.

Other highlights included a presentation on Good Nutrition in Eye Care by Mrs. Janet Mansfield of San Diego, CA and the role of Vision in Sports Performance and Training by Dr. Wayne Martin of Seattle, WA.

The meeting also presented a consumer panel to its attendees. The panel, composed of persons not involved in the eye care field, presented patient concerns, confusions and needs to the meeting. The panel expressed the public confusion over the different roles of optician, optometrist and ophthalmologist. They were also interested and concerned with the effectiveness and/
This new body will become the center of a major fund raising drive to enable vision research projects to proceed and to provide grants and scholarships.

Every Australian capital city has at least one Vision Research Group involved in either basic or applied research work; in some cases more than three groups in one center are involved in research.

Professor Austin Hughes, Director of The National Vision Research Institute of Australia, says, “For a country of 14 million people, Australia has an extraordinarily large population of basic and clinical vision scientists of world standing. However, government funding is limited and there is no representative group for the professions involved in ophthalmic science. In addition, the increasingly multidisciplinary nature of vision research requires closer cooperation between ophthalmology, optometry and basic visual science.”

The National Vision Research Foundation has been established with the aim of consolidating fund raising and management for vision research throughout Australia. It will work towards provision of block grants for groups, project grants, fellowships and scholarships for vision research regardless of profession or affiliation.

One initial goal will be upgrading of the facilities of the National Vision Research Institute of Australia.

SCCO Student Research Symposium Held

The Southern California College of Optometry (SCCO) held its Fifth Annual Research Symposium February 21 in Fullerton, CA. Thirty-one research papers were reviewed by SCCO faculty, from which 10 papers were selected for presentation at the Symposium. Optometric research is undertaken by fourth-year students at SCCO in partial fulfillment of graduation requirements.

“The Student Research Symposium provides a forum for SCCO students to report on new information based on results of their scientific endeavors,” said SCCO Dean of Academic Affairs Douglas H. Poorman, Ph.D. “The variety and caliber of papers presented at the Symposium reflects the diversity of the field of optometry and the enthusiasm our students demonstrate in their quest for knowledge.”

Monetary awards were given to the three papers judged as best at the event: First Place, $500; Second Place, $300; and Third Place, $200. First Place honors were awarded to Loryn B. Chapin for her paper entitled “Nerve Regeneration in the Corneas of Rabbits.” Faculty Advisors for the project were Roger Beuerman, Ph.D., and Bernard Schimmelpfennig, M.D., Stanford University; and SCCO Faculty Advisor Richard P. Hemenger, Ph.D., O.D.

Second Place winners were Warren H.K. Chue and Debra L. McLaurin for their presentation, “Mydriatic and Cycloplegic Response to 1.0% Hydroxyamphetamine Combined with 0.05%, 0.1%, 0.25% and 0.5% Tropicamide: A Dose Response Study.” Faculty Advisor for this project was K. Michael Larkin, O.D.

“Comparative Ophthalmic Preservatives Cytotoxicity Measured by Depression of Corneal Respiration,” won Third

or safety of the various vision treatments and surgery available today.

International Club Begun at ICO

The arts, sciences and heritage of five of the seven continents have met on Chicago’s South Side in an Illinois College of Optometry International Club formed by more than 20 foreign students.

“We hope to educate and serve as a reference to ICO students and faculty about optometric education and practice in other countries and to integrate incoming and current international students academically and socially,” said International Club President Lance Alpert, a student from South Africa.

Oscar Lillo, a second-year student from Spain, serves as club vice president and Alex Kouklakis, a first-year student from Greece, acts as treasurer.

Hyman Wodis, O.D., ICO assistant dean, professor and foreign student advisor, proposed forming the club and now serves as its faculty advisor. He and the club officers hope to plan activities involving all students to better acquaint American and foreign students with differing optometric procedures and different cultures.

Foundation for Funding Vision Research in Australia Established

Following discussions between The National Vision Research Institute of Australia, The Optometric Vision Research Foundation of New South Wales and The Vision Research Foundation of Australia there has been set up The National Vision Research Foundation of Australia.

Pictured (l-r) are the SCCO Student Research Symposium finalists: First Place, Loryn B. Chapin; Third Place Catherine E. Harrison and Karen K. Toki; and Second Place winners Warren H.K. Chue and Debra L. McLaurin.
Keep up with People...

An Ohio State University optometrist is creating quite a spectacle outside his office with a starry-eyed display.

His celebrity eyewear collection exhibits both the eyeglasses and a photograph of the famous person wearing the glasses.

Arol Augsburger, clinical associate professor of optometry, started collecting eyeglasses from celebrities last spring. He displays them in a showcase at the Optometry Building, 338 W. 10th Ave.

He's hopeful the collection will help the average person feel more comfortable about wearing glasses when he or she sees that someone famous and admired has worn them, too.

"The purpose [of the collection] is to call attention to good vision for successful people," Augsburger said.

Part of being successful is being able to perform at optimum levels, Augsburger said. Without good vision, people have difficulty performing well.

In addition, people who feel uncomfortable about how glasses may alter the way they look can find comfort in seeing that celebrities have learned to cope with the change in appearance, he said.

Augsburger admits that the glasses in his collection are not unique or unusual, but that they are of interest because of their former owners.

Augsburger also is the curator of the Optometry Museum located in the basement of the Optometry Building. The museum is the home for antique eyewear and instrumentation dating back to the 1600s.

It's difficult to gauge at this early stage just how much Augsburger's display is comforting prospective eyeglass wearers. He said, however, that while sitting in his office, he often hears people laughing as they stop to peek at and enjoy his unusual spectacles.

Barry J. Barresi, O.D., director of Outreach Clinical Programs, has been elected to the Governing Council of the American Public Health Association (APHA). Dr. Barresi is one of three optometrists on the Council. Over 50,000 memberships in the APHA make it the largest organization of health care professionals in the nation.

Dr. Barresi has also been appointed to the Curriculum/Development Committee of the AOA's Geriatric Optometry program. The Committee will be responsible for developing a textbook on the subject.

Speaking of books... Dr. Barresi's new text "Ocular Assessment" has recently been released. Dr. Barresi edited the publication in which five SCCO Faculty are listed as contributing authors. They are: Morris Applebaum, O.D.; Larry M. DeDonato, O.D.; Neal N. Nyman, O.D.; John W. Potter, O.D.; and Michael W. Rouse, O.D.

Michael R. Spinell, O.D., of Huntington Valley, has received the prestigious Diplomate Certificate in Corneal and Contact Lenses from the American Academy of Optometry. This award is presented to select eye care professionals who successfully complete a series of exams that test their knowledge of all facets of corneal and contact lens care. Dr. Spinell is now recognized as one of approximately 150 professionals throughout the world who have been presented this symbol of outstanding academic achievement.

An Associate Professor of Optometry at the Pennsylvania College of Optometry (PCO) Dr. Spinell completed the exams after three years of intensive study. Individuals are normally allotted five years in which to finish the test. The test consisted of clinical, oral and written exams, identification of pathological slides and the presentation of case reports on some of Dr. Spinell's patients.

Dr. Spinell, a 1970 PCO graduate, is the sixth PCO staff member to have been honored with this certificate. He joins Associate Professors of Optometry Elwood H. Kolb, O.D.; Herbert L. Moss, O.D.; and Joel A. Silbert, O.D. and Assistant Professors of Optometry Mitchell J. Fink, O.D. and Harry Kaplan, O.D. in this select category.

Joel S. Waldstreicher, O.D., has been appointed Director of Continuing Education for the State University of New York's State College of Optometry. An Assistant Clinical Professor at the College and specialist in vision training, Dr. Waldstreicher will be working closely with various optometric groups, private practitioners and College faculty to offer programs to meet the needs of the expanding profession.

During the next few months, Dr. Waldstreicher will be planning courses to meet the State relicensure requirements of the new diagnostic pharmaceutical agents (DPA) law.

A graduate of Columbia University, School of Optometry and the Massachusetts College of Optometry. Dr. Waldstreicher also holds a Master of (continued on page 31)
Teaching Clinical Teachers

D. Leonard Werner, O.D.
Clinical teaching has long been a problem within the health professions. While most educators in these disciplines agree that their clinical faculty are the key persons in their programs, the ones directly responsible for the most vital aspects of the health education process, there is little specific agreement relating to such essential concerns as:

1. How do we identify people with potential as clinical educators?
2. Once identified, how do we prepare them to function in this role?
3. Once functioning, how do we evaluate their effectiveness?
4. How do we use this information to aid in their continued growth and development?

The universality of these problems is of such dimension that one can review the literature of all of the health professions and observe the commonality of this situation. Nobody has found the answers to the puzzle, although there is reason to believe that we are closer to solving some parts of it.

Tikoff likens the clinical teacher to an endangered species because of the high attrition rate. He suggests that they are similar to the shock troops of the Ottoman Empire Era in that they are perceived to be of lower class in the educational system performing hazardous duties with the greatest risks and fewest rewards. The clinical faculty must perform two difficult tasks simultaneously, patient care and teaching, and with each encounter (s)he places professional reputation and license "on the line." The recompenses of this activity are limited since the clinical faculty is often at the back of the line when the rewards of the teaching profession, tenure and promotion, are dispensed. One of the reasons given for this apparent inequity is that we do not have the traditional criteria to judge clinical as we do with the didactic teaching. This may be further compromised by the observation that "in no other field does the nature of the material demand of the teacher this degree of preparedness without preparation." Finally, we have the dilemma of the clinical educator who is either untrained and/or inappropriately scheduled to perform significant research, which is often considered to be required for advancement in academia, and whose clinical teaching skills may go unrecognized.

Clinical teaching began in an apprenticeship system and to some extent hasn't varied greatly with time. The success of the apprenticeship system required a special relationship between the student and mentor. This chemistry is also the hallmark of good clinical teaching. Along with this relationship, which often has too little time to develop, is the need for the teacher to have the breadth of styles to teach the entire group assigned to him/her. When one views the large amount of research and writings relating to teaching in general it becomes apparent that relatively little research (and training) has gone into clinical teaching. Those studies published have identified the attributes of the clinical faculty person and rated those that aid and those that distracted from effective clinical teaching. Stritter, Hain and Grimes and others reported that the most effective teacher has enthusiasm, dynamism and energy. (S)he sets objectives for students and teaches problem solving as opposed to factual recall, encourages student questions and provides feedback. Students should be active participants in the environment created by the effective teacher. (S)he is accessible and provides time for discussion, is friendly and students perceive (s)he enjoys dealing with them. The competent faculty person is also interested in both the students and patients and is sensitive to their needs and encourages students to share their feelings, values and experiences. Mattern and others indicated the additional need on the part of the clinical faculty to establish their clinical credibility. The interns and residents must respect the faculty person's knowledge and skills. While much writing has gone into the identification of the positive attributes of the excellent clinical faculty, there is also some agreement concerning what that person should not be. The poorest clinical teachers were arrogant, disliked teaching (or gave that impression), lacked self-confidence, were inaccessible, unorganized, dogmatic and boring. Evans and Massler added other negative traits of clinical faculty. They found that negative and caustic individuals were considered poor teachers. They concluded that effective teaching was not synonymous with popularity; liking the teacher and learning from the teacher are separate and distinct. One of the most significant results of their study was to recognize that students related differently to specific approaches, with the top 10-15% of the class being more positively oriented to the more theoretically based faculty while the weaker students preferred more demonstrations of clinical techniques by their faculty. They concluded that a well balanced program has the people and ability to meet all of the needs of all of their students. The institution must also create a teaching atmosphere and a time schedule which allows this to flourish.

"The most effective teacher has enthusiasm, dynamism and energy... sets objectives for students and teaches problem solving...."
some help, they have varying relationship with the task to be accomplished, which is the teaching of an intern or resident within the patient care setting. The interview might give one some appreciation of the personality and communication skills of the prospective candidate and the direct observation of this person (if accomplished without disturbing the doctor-patient relationship) will possibly indicate how he relates with and treats patients. However, these identified skills are but a part of clinical teaching. We cannot always learn from an interview or observation how this candidate will teach and render patient care simultaneously in the pressure of the teaching setting. Observing guest lectures or reviewing the candidate’s publications are even less rewarding for this specific task.16

Once we hire our faculty we then must attempt to evaluate their effectiveness. Student involvement in this process is essential since the students are the ultimate consumers of the product. Student evaluations using properly designed forms and carried out in an atmosphere that is consistent with the importance of the task has been shown to be quite valid and reliable, more so than peer review.6,11,17 One important aspect of the clinical teaching program that is extremely difficult to identify, even with student input, is missed teaching opportunities. One study of observed ward rounds reported that in 75% of the situations the clinical teacher missed opportunities to make significant patient observations with the student.18 The more recent innovation of video taping holds the promise of observing clinical teaching in an unobtrusive fashion and also to provide the feedback mechanism to the faculty and students involved.19,20

In spite of the conventional wisdom that suggests that clinical teachers are born, there is increasing evidence that

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**Clinical Teaching Evaluation (Student Evaluation of Instructor)**

| Teacher: ____________________________ |
| Class Year of Evaluator: ______________ |
| Date: ________________________________ |

**Circle Appropriate Clinical Specialty Area:**
- PCO
- CL
- VT
- Low Vision
- Special Test
- Other: ____________________________

**Rating Scale:**
- 1 = Poor
- 2 = Fair
- 3 = Adequate
- 4 = Good
- 5 = Excellent
- 6 = N/A

**RATING**

- a) Preparation for clinical teaching encounter (e.g., equipment availability, previous patient record reviewed, knowledge of room and student assignments).
- b) Clinical teaching began punctually.
- c) Devotes full time to teaching/patient care activity during session.
- d) Sets clinical teaching objectives for encounter (e.g., appropriate methods identified for children, elderly, handicapped).
- e) Makes maximal use of the patient as a teaching vehicle (e.g., uses all appropriate available clinical methods while patient is present, such as alternate testing procedures and/or therapy approaches.
- f) Clinical teaching oriented toward patient’s primary problem.
- g) Applies and teaches problem solving method to patient care (e.g., explains the “how” and “why” he arrived at clinical decision to student.)
- h) Is enthusiastic about clinical teaching.
- i) Teaches doctor patient communication skills to student.
- j) Provides timely and appropriate feedback to student on his/her performance.

**k) Comments:** (Use other side if necessary) (e.g., What advice would you give future students regarding this teacher? What comments would you make to this instructor regarding his/her clinical teaching?)
Clinical teaching skills can be taught. Although such behaviors as enthusiasm, role modeling, general knowledge and clinical experience are important, they do not represent the entirety of clinical teaching. In nationwide surveys of a clinical instruction in medicine, Meleca and Jewett reported that the skills needed for clinical teaching can be improved when it is recognized that they may differ from those needed in the classroom and may also have to vary in specific clinical teaching environments. They and others reported that the vital element in an improvement program is the cooperation and endorsement of both the students and the clinical faculty.

The identification of the weaknesses of clinical faculty and their remediation are separate yet inter-related elements. As mentioned earlier, a potentially good vehicle for this is the use of videotaping. This should be accomplished with the knowledge and agreement of all of the people being taped: the student, faculty and patient. Gerbert reported that none of the patients in her video study objected to this process and only 6% felt it changed the visit; however, 30% of the physicians felt it altered the visit in some way, and 25% of the physicians reported feeling personally uncomfortable. (It was not revealed whether it was those physicians who were uncomfortable who also felt the video camera altered the encounter.) The advantage of videotaping is that it allows for replay of the patient visit as often as necessary, which can be extremely useful for remediation. It also allows the observer to see aspects of the encounter that are essential in the evaluative and corrective process.

A program for clinical teaching development is now possible with videotaping as the key vehicle in the process. Programs of this nature have been

### Clinical Teaching Evaluation (Clinical Chief's Evaluation of Faculty)

**Teacher:** ____________________________  **Evaluator:** ____________________________  **Date:** ____________________________

**Rating Scale:**

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Poor</td>
</tr>
<tr>
<td>2</td>
<td>Fair</td>
</tr>
<tr>
<td>3</td>
<td>Adequate</td>
</tr>
<tr>
<td>4</td>
<td>Good</td>
</tr>
<tr>
<td>5</td>
<td>Excellent</td>
</tr>
<tr>
<td>6</td>
<td>N/A</td>
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**RATING**

<table>
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<tr>
<th>Rating</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Prep. for clinical teaching encounter (e.g., equipment availability, previous patient record reviewed, knowledge of room and student assignments).</td>
</tr>
<tr>
<td>2</td>
<td>Clinical teaching began punctually.</td>
</tr>
<tr>
<td>3</td>
<td>Devotes full time to teaching/patient care activity during session.</td>
</tr>
<tr>
<td>4</td>
<td>Sets clinical teaching objectives for encounter (e.g., appropriate methods identified for children, elderly, handicapped).</td>
</tr>
<tr>
<td>5</td>
<td>Makes maximal use of the patient as a teaching vehicle (e.g., uses all appropriate available clinical methods while patient is present, such as alternate testing procedures and/or therapy approaches.</td>
</tr>
<tr>
<td>6</td>
<td>Clinical teaching oriented toward patient's primary problem.</td>
</tr>
<tr>
<td>7</td>
<td>Applies and teaches problem solving method to patient care (e.g., explains the &quot;how&quot; and &quot;why&quot; he arrived at clinical decision to student.)</td>
</tr>
<tr>
<td>8</td>
<td>Is enthusiastic about clinical teaching.</td>
</tr>
<tr>
<td>9</td>
<td>Teaches doctor patient communication skills to student.</td>
</tr>
<tr>
<td>10</td>
<td>Provides timely and appropriate feedback to student on his/her performance.</td>
</tr>
</tbody>
</table>

**k) Comments:** (Use other side if necessary)
Proposed Faculty Development Program

Any program of this nature must have the interest and support of the faculty, for without that it is literally doomed. Therefore, the first attempt should be with volunteer faculty with the agreement and acknowledgement of all that it is not for evaluative purposes and the results will not influence their standing. In order to assure this, it is suggested that it be a program administered by a committee of clinical faculty.

Stage I—A clinical faculty evaluation form was developed by a committee of faculty, clinic administration and students. Specific behaviors were identified as appropriate for faculty evaluation. This form allows for self, peers and student input. Initially we have instituted these for student evaluation of clinical faculty as well as clinical chief evaluation of the same faculty. These forms were presented to the entire clinical faculty to acquaint them with the criteria with which they are measured. Clearly this itself helps to evaluate the teaching process because it makes it quite clear to all the expectations of the institution. The fact that all instructors had representation in its formation helped in its acceptance. One item on the form that is revealing is the request to interns, “What advice would you give future students regarding this teacher?”

Stage II—A process will be created to evaluate this program utilizing the same forms. Since these forms are distributed and completed quarterly, we can compare evaluation score changes with time, using those who do not participate in the videotaping portion as a control group with those who do.

Stage III—Utilizing staged encounters we can improve the standardization of the evaluative document and its criteria.

Stage IV—Once satisfied with the tool, real-life encounters should be taped. The teacher(s) involved should observe the initial screening of these videotapes to allow for self-evaluation.

Stage V—The entire group will observe the videotape and a discussion is led by the doctor taped evaluating the encounter based upon criteria established. At this time alternative teaching and patient care strategies can also be discussed.

Conclusion

It should be apparent to the reader that this development program has not been completed at the time of the submission of this manuscript. It is hoped that this paper will act as a stimulant to dialogue within and among the colleges of optometry. It is anticipated that another article will follow to report on the results of this program. In the interim the author would appreciate all comments and suggestions.

It also should be obvious that I did not shed any light on the first problem identified, “How do we identify people with potential as clinical teachers?” Perhaps as the process identified in this article is refined we can tape Residents and Fellows in teaching and patient care activities to identify those who appear to have the potential to become excellent clinical teachers. This, too, may be material for a future article for J.O.E.
Minimum Separation:
Not Always Occurring at the Symmetry Points
Michael P. Keating, O.D.

For a thin lens in air, the minimum separation between a real object and its conjugate real image occurs at the symmetry points. Since the symmetry points are part of the set of cardinal points for any optical system, there tends to be a belief that minimum separation always occurs at the symmetry points. However, for many systems the minimum separation doesn't occur at the symmetry points, and there are some systems in which the symmetry points actually give a local maximum in the separation.

Introduction

It's well known that for a converging thin lens in air the minimum separation between a real object and its conjugate real image occurs when the object and image are at the symmetry points of the lens. Since the symmetry points of the lens are each twice the focal length away from the lens on opposite sides, the minimum separation between the real object and its conjugate real image is four times the focal length.

The symmetry points are part of the set of cardinal points for any optical system. Therefore, it might seem reasonable to assume that the minimum separation between a real object and its conjugate real image also occurs at the symmetry points for optical systems other than thin lenses. But surprise! The reasonable assumption is wrong! Even for a system as simple as a single spherical refracting surface, minimum separation between a real object and its conjugate real image doesn't occur at the symmetry points!

The minimum separation properties are usually not explicitly discussed in optics texts. From my experience on the Optics Test Construction Committee of the Optometry National Board and from conversations with faculty at several different optometry schools, it appears that the fact that minimum separation doesn't always occur at the symmetry points is not well known. Therefore, I feel that a short discussion would be worthwhile.

In Section 2, I discuss in some detail the symmetry points and minimum separation for a single spherical refracting surface. In Section 3, I briefly comment on the relationship between the symmetry points and minimum separation for a coaxial system of multiple spherical refracting surfaces.

Single Spherical Refracting Surface

Consider a single spherical refracting surface with an object space index \( n_o \), an image space index \( n_i \), and a dioptric power \( P \). The general imaging equation for such a surface is

\[
\frac{n_i}{v} = P + \frac{n_o}{u},
\]

where \( u \) is the object distance and \( v \) is the image distance. (The standard Cartesian coordinate system is assumed, and light is traveling to the right.) The general lateral magnification equation is

\[
m = \frac{n_i v}{n_o u}.
\]

Paraxially, when an extended real object is at optical infinity, the conjugate real image is inverted, much smaller than the object, and in the secondary focal plane of the surface. As the real object is moved closer to the surface, the conjugate real image moves away from the surface and gets larger (see Fig. 1).

Since the image starts out smaller than the object and ends up larger than the object, there must be an intermediate object position that results in a conjugate image with a size equal to that of the object. The equal sizes occur when the object and image are at the symmetry planes (respectively marked \( 2F_1 \) and \( 2F_2 \) in Fig. 1). Since the conjugate real image is still inverted relative to the object, the lateral magnification is -1 for the symmetry planes. The object distance \( u \) for the axial symmetry point is given by

\[
u = -2 \frac{n_o}{P},
\]

and the conjugate image distance is

\[
v = +2 \frac{n_i}{P}.
\]
The separation or distance \( w \) from an object to its conjugate image is given by

\[
w = v - u.
\]
From Eqs. 3, 5 the symmetry point separation is
\[ w = 2 \left( n_o + n_i \right) / P. \]  (6)

The minimum separation between a real object and its conjugate real image is an extreme of the separation function \( w \). The extremes of a function occur either at the end points of the function or at the critical points of the function. The critical points are those points for which the derivative of the function either is equal to zero or doesn’t exist. 7

For an SSRS, the minimum separation between a real object and its conjugate real image occurs at a critical point given by a zero derivative. The equations for the minimum separation are found as follows. First Eq. (1) is solved for the image distance \( v \), and the result substituted into Eq. (5) for the separation \( w \). Then the derivative of the separation \( w \) with respect to the object distance \( u \) is found and set equal to zero. The result is a quadratic equation for two critical point object distances \( u \).

Only one of the two solutions to the quadratic equation applies to the real object—real image case. From this solution, the object distance for minimum separation is
\[ u = - \left( n_o + \sqrt{n_o n_i} \right) / P. \]  (7)

Then from Eq. (1) the conjugate image distance can be found and is
\[ v = + \left( n_o + \sqrt{n_o n_i} \right) / P. \]  (8)

"The minimum separation between a real object and its conjugate real image is an extreme of the separation function."

From Eqs. (2), (7), and (8), the lateral magnification equation for the minimum separation situation is
\[ m = - \sqrt{n_o / n_i}. \]  (9)

The minimum separation can be obtained from Eqs. (5), (7) and (8), and in simplified form is
\[ w_{\text{min}} = \left( \sqrt{n_o} + \sqrt{n_i} \right)^2 / P. \]  (10)

Note that Eqs. (7), (8), and (10) are different from Eqs. (3), (4), and (6) for the symmetry points, and that the lateral magnification at minimum separation, Eq. (10), is not equal to -1. Clearly, for a single spherical refracting surface, the minimum separation between a real object and its conjugate real image doesn’t occur at the symmetry points.

Multiple Spherical Refracting Surface Systems

The box in Fig. 2 represents a coaxial system of spherical refracting surfaces with a central thickness \( q \), and respective object and image space indices \( n_o \) and \( n_i \). The distance from the front surface of the system to the object is \( u \), and the distance from the back surface of the system to the image is \( v \). The separation \( w \) between a real object and its conjugate real image is
\[ w = v - u + q. \]  (11)

The minimum separation can occur at the endpoints or at the critical points of \( w \). As for the single spherical refracting surface, the critical points are found by setting the first derivative of \( w \) with respect to \( u \) equal to zero. The result is again a quadratic equation for the critical points. It follows that the critical points occur for object distances \( u \) and image distances \( v \) that give a total lateral magnification of
\[ m = \pm \sqrt{n_o / n_i}. \]  (12)

The symmetry points still occur at a lateral magnification of -1. For unequal object and image space indices, Eq.
(12) clearly shows that the symmetry points are not critical points, and thus the minimum separation between a real object and its conjugate real image doesn’t occur at the symmetry points.

However, when the object and image space indices are equal, Eq. (12) simplifies to ±1. In the latter case, the symmetry points \( m = -1 \), and the principal points \( m = +1 \) are critical points for the separation function \( w \).

The sign of the second derivative of \( w \) specifies whether \( w \) is a local maximum or a local minimum at the critical points. It can be shown that the sign of the second derivative of \( w \) at the critical points is determined solely by the sign of the equivalent dioptric power of the system.

It turns out that for a multiple refracting surface system with equal object and image space indices and a positive equivalent dioptric power, the symmetry points do give a local minimum in the separation. A converging thin lens in air is the simplest example of such a system.

On the other hand, for an equi-index system with a negative equivalent dioptric power, the symmetry points give a local maximum in the separation. An example is a system consisting of a +8.00 D thin lens in air located 50 cm in front of a +5.00 D thin lens in air. The two lens system has an equivalent dioptric power of -7.00 D.

**Conclusion**

For coaxial systems of spherical refracting surfaces in which the object and image space indices are not equal, minimum separation between a real object and a real image doesn’t occur at the symmetry points. The simplest example is a single spherical refracting surface.

For coaxial systems of spherical refracting surfaces in which the object and image space indices are equal, the minimum separation between a real object and a real image can occur at the symmetry points when the equivalent dioptric power is positive. However, when the equivalent dioptric power of an equi-index system is negative, the symmetry points give a local maximum in the separation between a real object and its conjugate real image.

According to Southall, the symmetry points were introduced by Toepler in 1871 under the name negative principal points, and later renamed the symmetry points by S.P. Thompson. Apparently the name “symmetry points” together with the fact that the minimum separation for a thin lens in air occurs at the symmetry points has led some people to the misconception that minimum separation always occurs at the symmetry points. Perhaps the same “negative nodal points” would not have been as seductive.

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**References**

Skills in Clinical Teaching:
A Faculty Development Program for Resident Optometrists
Laurence C. Bauer, M.S.W., and Arthur Alexander, O.D., FAAO

Introduction
Residents at the Pennsylvania College of Optometry are required to participate in patient care activities, and to teach optometry students who rotate through the College's Eye Institute. Since these teaching responsibilities confront the residents with a challenge which few had been prepared to handle, a clinical teacher preparation program is included as part of the total residency program. The program is designed to increase the clinical teaching skills of resident optometrists.

Overview of the Program
Each year between 1980 and 1982, a workshop was offered by the Office of Faculty Development of the Department of Family & Community Medicine of The Milton S. Hershey Medical Center, Pennsylvania State University. The workshop focused on a set of communication skills and a model of instruction which had proven helpful to clinical instructors in other primary care settings. It also provided a means to evaluate the effects of the workshop. The evaluation measured changes in the residents' skill level, and evaluated participant opinion regarding the helpfulness of the training immediately following and again, six months after the program. The workshop was offered to a total of 25 participants: 8 residents and 1 faculty person in 1980, 7 residents in 1981; 9 residents in 1982. In 1980 and 1981, the workshops involved three days of training, and were offered at a site away from the college. The 1982 workshop was of-
the handling of every patient's problem

Description

The overall purpose of this workshop was to improve the resident's clinical teaching ability. The particular objectives of the training were:

- To review basic educational concepts pertinent to clinical teaching.
- To introduce participants to a set of communication skills useful in clinical teaching.
- To introduce participants to an action-oriented model of clinical teaching.
- To provide practice opportunities so that participants could develop expertise with the communication skills and the model of clinical teaching.
- To stimulate participants to review their attitude toward clinical teaching.

To accomplish these objectives, a skills-based model of clinical teaching was presented. The model of clinical teaching and the process used to instruct the residents were developed by The Carkhuff Institute of Human Technology, Amherst, Massachusetts, through a Health Resources Administration grant.

Content

The teaching model used in the workshop is based on Robert Carkhuff's formulation of the human problem solving process (Figure 1).  

As learners, we explore where we are. What knowledge and skills do we have to help us solve a problem with which we are confronted? If we cannot readily solve the problem, we need to identify our deficits. What do I need to learn to resolve this problem? Can I apply my existing knowledge and skills in a new way or do I need to use a resource to learn new information or a new skill? Finally, now that I've understood what I need to do, how will I proceed until I've resolved the problem?

A facilitative clinical teacher allows and expects a student to reveal what (s)he knows about a given patient's problem. Once the student has shared his/her assessment of the problem and thoughts about diagnosis and treatment the teacher is able to focus his/her instructional activity. While an effective clinical teacher should act as a role model in the area of clinical problem solving, it is not appropriate to take over the handling of every patient's problem and place the student in the role of passive observer. The clinical teacher's job is to direct the student through the problem solving process. Figure 2 shows some of the implications of the model for clinical learning.

There is an explicit assumption which underlies this model. Learning begins from the learner's frame of reference. This means that the effective clinical teacher begins with an assessment of what the learner knows and doesn't know. Once the instructor has assessed the learner, (s)he can focus his/her instructional activity. Teaching is more than sharing a set of facts and procedures. As Mager points out, "If teaching were the same as telling, we'd all be so smart we could hardly stand it."

An effective teacher assesses the learner's knowledge about a problem area and how the learner organizes his/her problem solving activity. The model overviewed above provides a cognitive structure for the clinical teaching process. Yet like most interactions between people, how a teacher interacts with a student is often more critical than what the teacher has to say.

The best clinical advice when given in an interpersonally distasteful manner may not be heard by the student whose psychological defenses have been triggered. This is not to say that being "nice" is the answer. It does mean that useful clinical advice needs to be presented in a manner that facilitates the student's willingness to listen.

A large portion of the workshop is focused on a set of interpersonal skills which will improve a clinical teacher's ability to engage a student in the problem solving process. These interpersonal skills fall into two areas. A clinical teacher needs to get the student's perspective and give his/her perspective about the situation, cause and the direction.

The teacher's ability to get the student's perspective and to give his/her perspective will determine how accurately the problem is explored and the accuracy with which the cause of the problem will be identified. The skills will also influence the student's willingness to talk about his/her deficiencies. The get/give process is the basis of effective clinical teaching.

During the workshop, a number of skills that will improve the clinical teach-
er’s ability to involve a student in the get/give process are discussed and practiced. The following breakdown overviews the relevant skills.

I) Getting the student’s perspective involves:
   a. Communicating interest in the student
      The teacher’s ability to communicate an openness to a student as well as a readiness and enthusiasm to teach.
   b. Gathering information about the student’s performance
      The teacher’s ability to collect accurate information about the student.
   c. Asking facilitative questions
      The teacher’s ability to ask questions that encourage the student’s presentation of information.
   d. Demonstrating understanding of what the student says
      The teacher’s ability to show that (s)he has understood the student’s perspective.

II) A teacher can give his/her perspective through a series of techniques
   a. Use of genuineness
      The teacher gives his/her perspective by sharing his/her feelings about the student and/or the student’s work.
   b. Self Disclosure
      The teacher can give his/her perspective by sharing experiences which may support or alter the student’s perspective.
   c. Description
      The teacher’s ability to objectively state what (s)he has seen or heard.
   d. Confrontation
      The teacher’s ability to present incongruities or discrepancies in the student’s problem solving.

Teaching Methods
A variety of instructional methods are used to help the participants acquire the skills. This begins with the workshop leader (first author) who models use of the communication skills throughout the training experience. This type of role modeling allows the participants to experience the effects of the skills.

A micro-teaching strategy is used for each of the skills introduced. This involves a Tell-Show-Do method. Each skill is introduced and the steps involved in the performance of each skill are reviewed. After the content of the skill has been reviewed a series of practice exercises are used to help the participants acquire the skill by putting it into action.

The following provides an illustration of this process for the skill of demonstrating understanding of what the student says. The behavioral steps involved in performing this skill include:

1) Pay attention to the student
2) Observe the student’s non-verbal behavior
3) Listen to the student’s verbal behavior
4) Review the important content expressed by the student
5) Identify any strong feelings expressed by the student
6) Give a response which summarizes the feeling(s) and key point(s) expressed by the student.

A series of practice exercises encourage the participants to use this skill. Participants are shown a series of videotaped student expressions to which they are asked to write a response demonstrating their understanding of what they heard. Each participant’s response is discussed and constructive feedback concerning how to be more accurate and/or succinct is provided. During a second role play exercise, participants are asked to use the skill in a simulated teacher-student interaction. Discussion and constructive feedback follow. Each exercise is designed to provide the participants with an opportunity to test their learning in an atmosphere that is supportive.

Evaluation Methods and Results
In order to evaluate the impact of the training, two methods of evaluation were used, a performance test and participant evaluation.

Performance Testing
In the performance test the participants were asked to construct their most helpful response to a student presenting a clinical problem. They were tested immediately before and after the workshop occurred.

The 1980 and 1981 groups were tested with a pencil and paper form of the performance test in which they read a statement from a student and wrote their response. In the last workshop, a set of 3 videotaped stimuli, developed by the Carkhuff Institute of Human Technology, were used before and after training. These stimuli involved optometric students who were videotaped as they presented a clinical problem to a preceptor who remained unseen on the tape. The participants were put in the

<table>
<thead>
<tr>
<th>TABLE 1 Performance Test Scores</th>
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<td>Pre-Workshop Scores</td>
</tr>
<tr>
<td>Mean (S.D.)</td>
</tr>
<tr>
<td>1980</td>
</tr>
<tr>
<td>1981</td>
</tr>
<tr>
<td>1982</td>
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"Faculty development activities can be successful if the skills clinical teachers need to learn can be defined in clear and concrete terms."
TABLE 2  The Average Responses of the Twenty-Five Participants Immediately After the Workshop

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>

"Most of what was covered in this program will not be very helpful when I get home"  1.8
"The staff at this workshop seemed very competent."  4.8
"I feel good about this workshop experience."  4.4
"I feel better about being a teacher because of this workshop."  4.1
"I would recommend this workshop to a colleague."  4.4
"Too much time was spent on non-productive activities."  2.1
"The presenters were poorly prepared."  1.1
"The workshop leader(s) seemed to be using the skills they were urging me to use."  4.7
"I was satisfied with how much I actively participated in the workshops."  4.0
"There were enough practice opportunities available for each new skill presented."  4.0
"The teaching skills were presented in a clear and understandable way."  4.4
"The other people who participated in this course with me facilitated my learning."  4.3
"My expectations for these workshops were met."  3.8
"I felt comfortable asking questions during the workshop."  4.3
"I was given constructive, helpful feedback on my use of the skills taught in this workshop."  4.6

position of responding as if the student had directed the problem to them. In either case, participants were allowed three minutes to construct their responses to each item.

The responses were rated using an index of facilitative communication developed and validated by Robert Carkhuff, Ph.D. (Carkhuff, 1969). The index is a criterion-referenced, 10-point scale with a high of 5 and a low of 1. Ratings of 1.5, 2.5, etc. are possible. One rater rated and later re-rated each response. Agreement in 90% of the ratings was achieved. The results are presented in Table 1.

The goal of the workshop was to bring the participants to a minimally acceptable level of skill performance, which is a 3.0 on this scale. The 1980 and 1982 groups both achieved slightly above the goal level. The 1981 group average was slightly below the 3.0 level. Examination of the scores for the three groups revealed that 20 of the 25 participants had achieved a minimally acceptable or better score after the training. While these results are based on only three responses after training for each participant, we believe this method does provide an efficient way of monitoring the impact of the training.

Participant Response

A second evaluation instrument was used to elicit participant opinion regarding the helpfulness of the training. Participants were asked to complete a fifteen item questionnaire. The average response to each question for all 25 participants is shown in Table 2. The response indicated that the participants felt the material covered in the program was relevant to their work, the training was conducted in an organized and effective manner, and they did learn as a result of the training.

Six months after the training an eleven item questionnaire was sent to each participant. Results from the three groups showed that the participants believed the material covered in the course was relevant to their teaching situations, the workshops had helped them become better teachers, and they would recommend the program to other residents and faculty. They also suggested that the program could be improved by adding a follow-up session held two to three months after the initial training.

Conclusions

Based on our experience we have reached the following conclusions:

1) Faculty development activities can be successful if the skills clinical teachers need to learn can be defined in clear and concrete terms, and if sufficient opportunities for practice and constructive feedback are incorporated into the training.

2) Instruction in interpersonal and clinical skills can improve an instructor's performance.

3) Residents find the opportunity to participate in this type of faculty development to be rewarding and productive.

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Volume 9, Number 4 / Spring 1984
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see Bauer, L.
American Academy of Optometry: Clinical competence measurement in optometry, symposium—Vol. 7, No. 2, p8
AMOS, J.F.: A look at the year ahead—Vol. 5, No. 1, p9
An area of vital interest—Vol. 4, No. 2, p3
On solid footing—Vol. 9, No. 1, p5
The year in review: a look at JOE’s progress—Vol. 6, No. 1, p4
ASCO activities and board briefs: Vol. 2, No. 3, p3;
Vol. 3, No. 1, p4;
Vol. 3, No. 2, p2;
Vol. 4, No. 1, p4;
Vol. 4, No. 3, p6;
Vol. 5, No. 1, p4;
Vol. 5, No. 3, p8
faculty workshop on clinical instruction—Vol. 5, No. 3, p16
plan for an educational program in rehabilitative optometry—Vol. 7, No. 4, p12
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AUGSasbourg, D.: Analysis of optometric practices in Ohio—Vol. 8, No. 3, p16
AVERILL, R.: ASCO, education and the profession—Vol. 3, No. 1, p20
Comment: a primary health care model—Vol. 7, No. 1, p19
Evaluating optometric education—Vol. 6, No. 3, p5
National goals for optometric education—Vol. 1, No. 1, p2
Tomorrow’s challenge: developing trends in optometric education and how they will affect the future of optometric practice—Vol. 1, No. 2, p74
see Abplanalp, P.
BALL, G.V.: Educational progress and problems in optometry; view from Great Britain—Vol. 1, No. 4, p132
BARKER, F.M.: Producing competent clinicians: the role of behavioral objectives—Vol. 8, No. 2, p4
BARRY, S.H. and Shansky, M.S.: Enriching the optometric curriculum through student research—Vol. 3, No. 3, p36
BAUER, L. and Alexander, A.H.: Skills in clinical teaching: a faculty development program for resident optometrists—Vol. 9, No. 4, p16
BENNETT, E.S.: A mini-course on patient communication for optometry students—Vol. 8, No. 2, p10
and Soni, P.S.: Developing the model contact lens curriculum—Vol. 8, No. 3, p8
BLEYTHING, W.B.: The optometric residency: its bloom—Vol. 5, No. 1, p16
BOLTZ, R.L.—See Manny, R.E.
BORISH, I.M.: Clinical training via external or adjunct assignments—Vol. 7, No. 3, p4

HARRISON, B.J.: Student's right-to-know basis of new law; Buckley Amendment—Vol. 1, No. 1, p30

HEATH, D.A., Hines, C., and Kamens, H.R.: Meeting optometric student needs: a proposed tutorial model—Vol. 8, No. 4, p9

HEBBARD, F.W.: Ohio State tradition: innovation and professional excellence—Vol. 1, No. 2, p70

HEGEMAN, S.: Comparison of pharmacology, courses for optometry and medical students, Indiana University, Bloomington—Vol. 9, No. 1, p22


HINES, C.—see Heath, D.A.


HOFSTETTER, H.W.: An educator's trilogy—Vol. 1, No. 4, p138

From Saint Louis to Milan—Vol. 4, No. 4, p5

Journal preferences among our beginning students—Vol. 4, No. 4, p28

Profile: The School of Optometry at Inter American University of Puerto Rico—Vol. 7, No. 1, p20

Recent optometric education developments in the Republic of South Africa—Vol. 6, No. 1, p8

HOUSTON, University of, profile—Vol. 3, No. 1, p28

HOWARD, C.F.: Biochemistry in optometry curriculum—Vol. 3, No. 3, p4

ILLINOIS, College of Optometry, profile—Vol. 3, No. 3, p40

I


Optometric education: its need to create an effective learning environment—Vol. 1, No. 4, p135

The need for training optometric educators—Vol. 1, No. 1, p14

University school or free standing: the dilemma of optometric education—Vol. 2, No. 1, p31

JOHNSON, D.F.: The use of non-print media in continuing education programs—Vol. 8, No. 3, p12

JOHNSON, H.D.: How to give up lecturing for fun and profit—Vol. 1, No. 3, p100

JONES, J.—see Matthews, H.


JUE, N.—see Hanlon, S.D.

K

KAMENS, H.R.—see Heath, D.A.


KATZELL, M.E.: Characteristics of OCAT applicants—Vol. 2, No. 1, p12


Minimum separation doesn't always occur at the symmetry points—Vol. 9, No. 4, p13

KEES, M.—see Schor, C.

KENDALL, R.: Making sense out of certification—Vol. 9, No. 4, p4

KLOPFER, J.—see Alexander, A.H.

KORS, K.: The lensometer as a teaching aid—Vol. 1, No. 3, p110

On the fine art of adjusting spectacles: the teaching and learning of it—Vol. 2, No. 2, p14

KOUES, R.T.—see Hanen, M.E.


State advertising prohibitions for optometrists—Vol. 3, No. 2, p15

L

LARSON, W.L.: Applying high technology in teaching laboratories—Vol. 9, No. 3, p17


LEWIS, T.L.—see Rapp, J.


Copiging with the admissions avalanche: role of ASCO's OCAT committee—Vol. 1, No. 1, p34


LONG, H.E.—see Amos, J.F.

LYLE, W.M.—see Woo, G.

M

MANNY, R.E., and Boltz, R.L.: The University of Houston infant vision clinic—Vol. 6, No. 2, p12

MAISIAK, R.—see Wild, B.W.


MATTHEWS, H., and Jones, J.: A programmed course in geometric optics—Vol. 8, No. 4, p12

McCULRE, L.H.—see Emling, R.C.

McINTOSH, J.: Some answers to questions about mandatory continuing education—Vol. 7, No. 4, p20

McKEE, G.W.: Optometry and elementary education—Vol. 2, No. 1, p6

McKIRICK, J.—see Christensen, J.L.

MILLER, G.E.: Teaching and Learning in Medical School—Vol. 1, No. 2, p63


MORTON, S.—see Woo, G.

MOSHOS, F.: A profile of Indiana University's School of Optometry—Vol. 2, No. 3, p22

MOU, T.W.: Teaching health care under one roof; optometric education in an integrated setting—Vol. 1, No. 2, p80
Health policy, optometric education and interprofessional relations—Vol. 5, No. 2, p29

Optometric education in an academic health center—Vol. 4, No. 1, p17


Elements of excellence: The Journal as a forum—Vol. 2, No. 1, p5

Hello JOE! A salute to the new journal—Vol. 1, No. 1, p46

Journal preferences among beginning optometry students—an inter-institution comparison—Vol. 5, No. 4, p22

Needs for optometric educators—Vol. 3, No. 4, p7

Veterans Administration—Vol. 3, No. 1, p3

PICAREIL, J.J.—see Rapp, J.

PORTER, V.F.: Faculty workloads in a recessionary economy—Vol. 8, No. 1, p4

PROPERT, P.: No shrinking violet; profile of Pennsylvania College of Optometry—Vol. 1, No. 1, p24

QUINN, T.G.: A contact lens record review system for quality assurance—Vol. 9, No. 3, p20


ROSENSTRAUM, A.A.: A constructed cost study of optometric education—Vol. 1, No. 1, p8

Relationship of the self-study process to institutional effectiveness and accreditation—Vol. 7, No. 1, p13


S

SACK, R.—see Rapp, J.


SCHMITT, E.P.: Student disciplinary due process: a schoolman's occupational hazard—Vol. 1, No. 4, p150

SCHOENER, B.: Women and perceived barriers relative to optometry as a profession—Vol. 4, No. 3, p8

SCHOR, C., and Kees, M.: Graphical and normative analysis of binocular vision by mini computer: a teaching aid and clinical tool—Vol. 6, No. 4, p12

SELDEN, W.K.: A closer look at accreditation—Vol. 7, No. 1, p5

The role and responsibility of a trustee—Vol. 8, No. 4, p4

SEPTON, R.D.: A computer assisted method for analyzing curriculum content—Vol. 8, No. 3, p24

SHANSKY, M.S.—see Barry, S.H.

SIEGEL, S.L.: Counseling women in professional schools—Vol. 4, No. 3, p21


SMITH, L.W.: Cost of education—whose responsibility?—Vol. 7, No. 4, p4

The federal role in health professions education—Vol. 5, No. 4, p3

SONI, P.S.—see Bennett, E.W.

SOROKA, M.—see Heiberger, M.H.

SPIELBERGER, D.: Profile: Southern College of Optometry—Vol. 4, No. 3, p16

Vision Educational Foundation—a source of strength for optometry—Vol. 6, No. 4, p25


SUCHOFF, I.B.: Curriculum planning in vision training: a proposed model—Vol. 1, No. 1, p20

Visual-spatial development in the child: an optometric theoretical and clinical approach—Vol. 1, No. 4, p145
Abstracts


WHIKEHART, D.R.: Stop, look and listen—Vol. 1, No. 2, p52

WERNER, D.L.: On assuming the presidency of ASCO—Vol. 1, No. 3, p95

WALLIS, N.E.: Why a journal?—Vol. 1, No. 1, p5


Teaching clinical teachers—Vol. 9, No. 4, p8

WHIKEHART, D.R.: The visiting scholar program at the School of Optometry, University of Alabama in Birmingham—Vol. 8, No. 4, p24

WHITENER, J.C.: A survey of hypertension curriculum in schools and colleges of optometry—Vol. 6, No. 4, p8

A survey of research projects in schools and colleges of optometry—Vol. 6, No. 3, p22

YOUNG, F.A.: Can early diagnosis aid in treatment—Vol. 1, No. 2, p54

WILD, B.W.: Eyes on the accreditors—Vol. 7, No. 1, p11

and Maisak, R.: An analysis of optometric practices in rural Alabama—Vol. 6, No. 3, p8


Parent guidance—an integral part of vision therapy—Vol. 1, No. 2, p84


and Morton, S.: Publications by faculty of the School of Optometry, University of Waterloo, 1976 to 1978—Vol. 5, No. 3, p24

WOODRUFF, M.E.: The pros and cons of optometry in an academic health center—Vol. 1, No. 4, p154

see Samek, M.J.

Profile: The School of Optometry, University of Waterloo—Vol. 5, No. 1, p22

WORTHINGTON, S.P.: Building for the future; a profile of the State University of New York—Vol. 3, No. 2, p25

Impact of holistic medicine, medical groups and health concepts, Vol. 5, No. 3, p30

Introduction to patient care; a basic science course for medical students, Vol. 4, No. 3, p15

Medical student research: a program of self education, Vol. 7, No. 3, p21

Modern aging research: aging and human visual function, Vol. 8, No. 3, p23

New concepts in the teaching of behavioral science in the preclinical curriculum, Vol. 5, No. 3, p30

Optics guide, Vol. 6, No. 3, p21

Physicians and health policy, Vol. 6, No. 1, p30

Premed stereotype, Vol. 6, No. 1, p30

Problem-based criterion-referenced examination of clinical competence, Vol. 4, No. 3, p15

Retrolental fibroplasia: efficacy of vitamin E in a double blind clinical study of preterm infants, Vol. 7, No. 3, p21

Should the cost of insurance reflect the cost of use in local hospital markets, Vol. 8, No. 3, p23

Sounding board—can the education of the physician be made more rational?, Vol. 7, No. 3, p21

Sounding boards, Vol. 6, No. 3, p21

Suggested curriculum for distance vision training with optical aids, Vol. 6, No. 1, p30

Teaching medical interviewing: a critique of educational research and practice, Vol. 6, No. 1, p30

Teaching residents how to teach: a one-year study, Vol. 8, No. 3, p23

Toward independent learning: curricular design for assisting students to learn how to learn, Vol. 7, No. 3, p21

Women physicians in a non-metropolitan area, Vol. 6, No. 3, p21

Academic freedom and tenure, Schmitt, E.P., Vol. 4, No. 1, p27

health centre, Woodruff, M.E., Vol. 1, No. 4, p154

health center, education, Peters, H.B., Vol. 1, No. 1, p17

Accelerated O.D., Pease, P.L., Vol. 8, No. 4, p15

program, MCO's, Butterfield, P., Vol. 2, No. 1, p17

Accreditation organizations, Wild, B.W., Vol. 7, No. 1, p11


Adjusting spectacles, Kors, K., Vol. 2, No. 2, p14

Journal of Optometric Education

Subject Index

A

Abstracts

Academic information in the academic health sciences center: roles of the library in information management, Vol. 8, No. 3, p23

Academic and personal predictors of clinical success in medical school, Vol. 4, No. 3, p15

An admission interview to measure good dentist attributes, Vol. 4, No. 4, p23

Are the case records obsolete?, Vol. 5, No. 3, p30

Beyond biology: a curriculum in methods of analysis for clinicians, Vol. 6, No. 3, p21

Competition in the delivery of medical care, Vol. 6, No. 1, p30

Current concepts in psychiatry: conversion symptoms, Vol. 7, No. 3, p21

Diseases of the curriculum, Vol. 4, No. 3, p15

Economic versus professional incentives for cost control, Vol. 8, No. 3, p23

External examinations for the evaluation of medical education achievement and for licensure, Vol. 7, No. 3, p21

God and the doctor, Vol. 6, No. 1, p30

Iatrogenic night blindness and keratoconjunctival xerosis, Vol. 5, No. 3, p30

Journal of Optometric Education

Impact of holistic medicine, medical groups and health concepts, Vol. 5, No. 3, p30

Introduction to patient care; a basic science course for medical students, Vol. 4, No. 3, p15

Medical student research: a program of self education, Vol. 7, No. 3, p21

Modern aging research: aging and human visual function, Vol. 8, No. 3, p23

New concepts in the teaching of behavioral science in the preclinical curriculum, Vol. 5, No. 3, p30

Optics guide, Vol. 6, No. 3, p21

Physicians and health policy, Vol. 6, No. 1, p30

Premed stereotype, Vol. 6, No. 1, p30

Problem-based criterion-referenced examination of clinical competence, Vol. 4, No. 3, p15

Retrolental fibroplasia: efficacy of vitamin E in a double blind clinical study of preterm infants, Vol. 7, No. 3, p21

Should the cost of insurance reflect the cost of use in local hospital markets, Vol. 8, No. 3, p23

Sounding board—can the education of the physician be made more rational?, Vol. 7, No. 3, p21

Sounding boards, Vol. 6, No. 3, p21

Suggested curriculum for distance vision training with optical aids, Vol. 6, No. 1, p30

Teaching medical interviewing: a critique of educational research and practice, Vol. 6, No. 1, p30

Teaching residents how to teach: a one-year study, Vol. 8, No. 3, p23

Toward independent learning: curricular design for assisting students to learn how to learn, Vol. 7, No. 3, p21

Women physicians in a non-metropolitan area, Vol. 6, No. 3, p21

Academic freedom and tenure, Schmitt, E.P., Vol. 4, No. 1, p27

health centre, Woodruff, M.E., Vol. 1, No. 4, p154

health center, education, Peters, H.B., Vol. 1, No. 1, p17

Accelerated O.D., Pease, P.L., Vol. 8, No. 4, p15

program, MCO's, Butterfield, P., Vol. 2, No. 1, p17

Accreditation organizations, Wild, B.W., Vol. 7, No. 1, p11


Adjusting spectacles, Kors, K., Vol. 2, No. 2, p14

Journal of Optometric Education
Admissions, ASCO’s OCAT, Levine, N.R., Vol. 1, No. 1, p34
Advertising restrictions, Kraft, B., Vol. 3, No. 2, p15
Affirmative action, Doctors, S., Vol. 1, No. 2, p64

Alabama
optometric practices, Wild, B.W., and Maisaki, R., Vol. 6, No. 3, p8
SOSH goes to Guatemala, Classe, J.G., Vol. 4, No. 3, p24

Arizona
University of, Naff, D., Vol. 1, No. 1, p142
visiting scholars, Whikehart, D.R., Vol. 8, No. 4, p24

ASCO, Harris, P., Vol. 4, No. 2, p18

AOSA
education and the profession, Averill, R., Vol. 3, No. 1, p20
policy, Vol. 2, No. 2, p25
priorities and purposes, Vol. 4, No. 3, p28
sustaining member section, Vol. 8, No. 3, p31

ASCO Annual Report
1979-80, Vol. 6, No. 1, p12
1980-81, Vol. 7, No. 1, p22
1981-82, Vol. 8, No. 1, p23
1982-83, Vol. 9, No. 1, p12

Applicants
OCAT, Katzell, M.E., Vol. 2, No. 1, p12
characteristics, Levine, N.R., Vol. 4, No. 2, p8

Arizona
Assessment, PMP, Gross, L.J., Vol. 9, No. 1, p8
Attitudes of instructors, Janoff, L.E., Vol. 3, No. 1, p22

Australia
optometric education, Woo, G., Vol. 3, No. 3, p32

B


Berkeley
University of California, Godshe, S. and Carter, J., Vol. 4, No. 2, p4

Binocular vision, analysis by mini-computer, Schor, C., and Kees, M., Vol. 6, No. 4, p12


Biological sciences, Rapp J., Vol. 5, No. 3, p9

Book Reviews
Aging and Mental Health, Vol. 4, No. 4, p23
Color Atlas of Contact Lenses, Vol. 8, No. 3, p30
Computer Assisted Test Construction, Vol. 1, No. 2, p63
Construction and Use of Written Simulations, Vol. 3, No. 1, p25
Developing Programs for Faculty Evaluation, Vol. 1, No. 1, p33
Selection and Evaluation of Teachers, Vol. 1, No. 1, p33
Teaching and Learning in Medical School, Vol. 1, No. 2, p63
Visual-Spatial Development in the Child: An Optometric Theoretic and Clinic Approach, Vol. 1, No. 4, p145

Buckley Amendment, Harrelson, B.J., Vol. 1, No. 1, p30

C

Challenge
education trends, Baldwin, W.R., Vol. 1, No. 2, p74
programmed instruction, Gibson, M.R., Vol. 1, No. 4, p146

Characteristics of professions, Christensen, J.L., Vol. 3, No. 3, p8

Clinical
binocular vision analysis, Schor, C., and Kees, M., Vol. 6, No. 4, p12
instruction, faculty workshop, ASCO, Vol. 5, No. 3, p16
outreach programs, Jolley, J.L., Vol. 4, No. 2, p20
performance standards, Abplanalp, P., Vol. 8, No. 2, p6
practice training, Greenspon, T.S., Vol. 1, No. 1, p28
program, Ferris State College, Paramore, J.E., Vol. 7, No. 3, p12
practicum examination model, Eskridge, J.B., Vol. 5, No. 1, p27

psychometric advances, Gross, L.J., Vol. 7, No. 1, p15
skills in . . . teaching, Bauer, L., Alexander, A.H., Vol. 9, No. 4, p16
undergraduate . . . teachers, Werner, D.L., Vol. 9, No. 4, p8
student orientation, Brookman, K.E., Vol. 8, No. 2, p20

Clinical competence
American Academy of Optometry, Vol. 7, No. 2, p8
assessment, Eskridge, J.B., Vol. 7, No. 2, p12


Communication
parents, Williams, J.F., Vol. 2, No. 1, p8
patient, Bennett, E.S., Vol. 8, No. 2, p10

Community health
curricula, Clausen, L.R., Vol. 3, No. 2, p5

Computer
analyzing curriculum, Septon, R.D., Vol. 8, No. 3, p24
assisted National Board reviews, Giambalvo, V., Dippner, R.S., and Domnitch, D., Vol. 3, No. 3, p28
binocular vision analysis, Schor, C., and Kees, M., Vol. 6, No. 4, p12
simulation, Nussenblatt, H., Vol. 9, No. 1, p24

Contact lens
curriculum, Bennett, E.S., and Soni, P.S., Vol. 8, No. 3, p8
record review, Quinn, T.G., Vol. 9, No. 3, p17

Continuing competency
Liddle, E.M., and Dixon, N., Vol. 5, No. 4, p8

Continuing education
curriculum, Vol. 2, No. 3, p1
financing, Elliott, R.B., Vol. 7, No. 2, p26
mandatory, McIntosh, J., Vol. 7, No. 4, p20
non-print media, Johnson, D.F., Vol. 8, No. 3, p12
role of optometrist, Vol. 3, No. 3, p16
United States, Elliott, R.B., Vol. 6, No. 1, p25

Cost, optometric education, Rosenbloom, A.A., Vol. 1, No. 1, p8
Council on Optometric Education
1978-79 Annual Survey of Optometric Educational Institutions—Vol. 5, No. 4, p27
1979-80 Annual Survey of Optometric Educational Institutions—Vol. 6, No. 2, p23
Counseling women, Siegel, S.L., Vol. 4, No. 3, p21

Course
geometric optics, Matthews, H., and Jones, J., Vol. 8, No. 4, p12
professional-level, Christensen, J.L., and McKitrick, J., Vol. 5, No. 4, p12

COVD, Kane, M., Vol. 8, No. 2, p22
Credentiaing
and education, Gross, L.J., Vol. 7, No. 1, p8
PMP assessment, Gross, L.J., Vol. 9, No. 1, p8

Curriculum
ASCO model, Vol. 1, No. 3, p96
biochemistry, Howard, C.F., Vol. 3, No. 3, p23
biological sciences, Rapp, J., Vol. 5, No. 3, p9
computer analyzing, Septon, R.D., Vol. 8, No. 3, p24
contact lens, Bennett, E.S., and Soni, P.S., Vol. 8, No. 3, p8
continuing education, Vol. 2, No. 3, p16
hypertension, Whitener, J.C., Vol. 6, No. 4, p8
model, ASCO Council on Academic Affairs, Vol. 4, No. 1, p11
pharmacology, ASCO Council on Academic Affairs, Vol. 4, No. 4, p18
professional development and administration, ASCO Council on Academic Affairs, Vol. 5, No. 2, p18
public and community health, Clausen, L.R., Vol. 3, No. 2, p5
student research, Barry, S.H. and Shansky, M.S., Vol. 3, No. 3, p36

vision training, Suchoff, I.B., Vol. 1, No. 1, p20

D
Dean, searching for a, Siegfried, J.B., and DiStefano, A.F., Vol. 2, No. 2, p18
Demographics, Puerto Rico, Marshall, E.C., Vol. 9, No. 2, p8
Dental, employment checklist, Casamassimo, P.S., Vol. 5, No. 4, p17
Diagnosis
treatment aid, Young, F.A., Vol. 1, No. 2, p54
Discrimination, Doctors, S., Vol. 1, No. 2, p64
Discipline, student, Schmitt, E.P., Vol. 1, No. 4, p150

E
Editorials
A closer look at accreditation, Vol. 7, No. 1, p5
A look at the year ahead, Vol. 5, No. 1, p9
ASC0: prince or pauper, Vol. 2, No. 2, p5
An area of vital interest, Vol. 4, No. 2, p3
Challenge of optometric clinical competence, Vol. 7, No. 2, p5
Clinical training via external or adjunct assignments, Vol. 7, No. 3, p4
Constraints on all sides—crisis and opportunity, Vol. 4, No. 3, p5
Cost of education—whose responsibility?, Vol. 7, No. 4, p4
Criterion-referenced scoring of the National Board examinations, Vol. 5, No. 2, p5
Elements of excellence: the Journal as a forum, Vol. 2, No. 1, p5
Evaluating optometric education, Vol. 6, No. 3, p5
Faculty workloads in a recessionary economy, Vol. 8, No. 1, p4
Federal role in health professions education, Vol. 5, No. 4, p5
Federal Trade Commission, advertising and consumer self protection, Vol. 4, No. 1, p6
From Saint Louis to Milan, Vol. 4, No. 4, p5
Havighurst report: an update, Vol. 1, No. 4, p129
Health care: a profession or a business?, Vol. 8, No. 3, p4
Importance of physical diagnosis in primary care optometry, Vol. 6, No. 4, p5
Making sense out of certification, Kendall, R., Vol. 9, No. 4, p4
Needs for optometric educators, Vol. 3, No. 3, p4
On assuming the presidency of ASCO, Vol. 1, No. 3, p9
On solid footing, Vol. 9, No. 1, p5
Optometry to the year 2000: the need for a public study, Vol. 6, No. 2, p5
Producing competent clinicians: the role of behavioral objectives, Vol. 8, No. 2, p4
Research in optometry: a crucial need, Vol. 9, No. 3, p5
The role and responsibility of a trustee, Vol. 8, No. 4, p4
Stop, look and listen, Vol. 1, No. 2, p52
Why a journal?, Vol. 1, No. 1, p5
Year in review: a look at JOE's progress, Vol. 6, No. 1, p4
Veterans Administration, Vol. 3, No. 1, p3

Education
academic health center, Peters, H.B., Vol. 1, No. 1, p17
achievement of excellence, Haffner, A.N., Vol. 2, No. 1, p22
ASC0 and the profession, Averill, R., Vol. 3, No. 1, p20
Australia, Woo, G., Vol. 3, No. 3, p4
characteristics, Christensen, J.L., Vol. 3, No. 3, p8
clinical instruction, ASCO, Vol. 5, No. 3, p16
computer simulation, Nussenblatt, H., Vol. 9, No. 1, p24
cost study, optometric education, Rosenbloom, A.A., Vol. 1, No. 1, p8
educator's trilogy, Hofstetter, H.W., Vol. 1, No. 4, p138
effective learning environment, Janoff, L.E., Vol. 1, No. 4, p135
elementary, McKee, G.W., Vol. 2, No. 1, p6
federal program support, 1980-81, Vol. 6, No. 2, p16
dilemma, Janoff, L.E., Vol. 2, No. 1, p31
international perspectives, Yarmovsky, R., Vol. 6, No. 3, p18
national goals, Baldwin, W.R., Vol. 1, No. 1, p2
1970’s, Gold, A.R., Vol. 1, No. 3, p120
outreach clinical programs, Jolley, J.L., Vol. 7, No. 1, p8
progress and problems, Great Britain, Ball, G.V., Vol. 1, No. 4, p132
rehabilitative optometry, ASCO, Vol. 7, No. 1, p20
South Africa, Hofstetter, H.W., Vol. 6, No. 1, p8
student’s view, Monacell, R.E., Vol. 3, No. 2, p19
Educators
Association of Optometric, Adler-Gringer, D., Vol. 5, No. 1, p14
optometric training, Janoff, L.E., Vol. 1, No. 1, p14
Employment, dental educators, Casamassimo, P.S., Vol. 5, No. 4, p17
Equal opportunity, Doctors, S., Vol. 1, No. 2, p64
Examination, clinical practice, Vol. 5, No. 1, p27
Exterships
evaluation, Ruskiewicz, J., Vol. 7, No. 3, p8
University of Houston, Nussenblatt, H., Vol. 7, No. 3, p15
Eye Institute
Mullen, C.F., Vol. 4, No. 1, p8
residencies, Alexander, A.H., and Klopfer, J., Vol. 8, No. 4, p20
Faculty
publications, University of Waterloo, Woo, G., and Morton, S., Vol. 5, No. 3, p24
skills in clinical teaching, Bauer, L. and Alexander, A.H., Vol. 9, No. 4, p16
workload, Bleything, W.B., Vol. 8, No. 1, p6
workshop, clinical instruction, Vol. 5, No. 3, p16
Faculty workload
defining, Bleything, W.B., Vol. 8, No. 1, p6
elements, Bleything, W.B., Vol. 8, No. 1, p11
formulas, Bleything, W.B., Vol. 8, No. 1, p18
Federal health, manpower recommendations, ASCO, Vol. 6, No. 1, p19
Federal program support of optometric education, 1980-81, Vol. 6, No. 2, p16
Ferris State College of Optometry
clinical program, Paramore, J.E., Vol. 7, No. 3, p12
profile, Murray, M.R., Vol. 4, No. 4, p24

g
Geometric optics, Matthews, H., and Jones, J., Vol. 8, No. 4, p12
Geriatric optometry, Verma, S.B., Vol. 7, No. 4, p8

H
Health
academic centre, Woodruff, M.E., Vol. 1, No. 4, p154
Health care
delivery center, Mullen, C.F., Vol. 4, No. 1, p8
teaching, Mou, T.W., Vol. 1, No. 2, p80
professions law, Lewis, D., Vol. 2, No. 3, p27
urban, Stephens, G.G., Vol. 3, No. 2, p1
High technology, Larson, W.L., Vol. 9, No. 3, p17
Houston, University of
infant vision clinic, Manny, R.E., and Boltz, R.L., Vol. 6, No. 2, p12
externship program, Nussenblatt, H., Vol. 7, No. 3, p15
journal preferences, Pheiffer, C.H., Vol. 5, No. 4, p22
profile, Vol. 3, No. 1, p28
Hypertension curriculum, Whitener, J.C., Vol. 6, No. 4, p8

i
Indiana University
pharmacology courses, Hegeman, S., Vol. 9, No. 1, p22
profile, Vol. 2, No. 3, p22
Infant vision clinic, Manny, R.E., and Boltz, R.L., Vol. 6, No. 2, p12
Instruction, programmed, Gibson, M.R., Vol. 1, No. 4, p146
M.R., Vol. 1, No. 4, p146
Instructors attitudes, Janoff, L.E., Vol. 3, No. 1, p22
Inter American University, Hofstetter, H.W., Vol. 7, No. 1, p20
International Perspectives, Yarmovsky, R., Vol. 6, No. 3
Interview, Russ Dorland, Vol. 6, No. 3, p15

j
Journal preferences
Indiana University, Hofstetter, H.W., Vol. 4, No. 4, p28
University of Houston and Indiana University, Pheiffer, C.H., Vol. 5, No. 4, p22
JOE, Pheiffer, C.H., Vol. 1, No. 1, p46

l
Laboratories, Larson, W.L., Vol. 9, No. 3, p17
Learning, Janoff, L.E., Vol. 1, No. 4, p135
Lecturing, Johnson, H.D., Vol. 1, No. 2, p100
Lensometer, Kors, K., Vol. 1, No. 2, p110
Libraries
visual science, AVSL, Vol. 2, No. 2, p21
Librarians report, Lewis, M., Vol. 4, No. 1, p25
Manpower
Manpower critical issues, Peters, H.B., Vol. 4, No. 4, p8
federal health recommendations, ASCO, Vol. 6, No. 1, p19

MCO's, accelerated program, Butterfield, P., Vol. 2, No. 1, p17
Model, vision training curriculum, Such-off, I.B., Vol. 1, No. 1, p20
Multiple-choice, tests, Gross, L.J., Vol. 7, No. 4, p22

N
National Board, computer assisted reviews, Giambalvo, V., Dippner, R.S., and Domnitch, D., Vol. 3, No. 3, p28
National goals, optometric education, Baldwin, W.R., Vol. 1, No. 1, p2
NEI Report
laser therapy, Vol. 8, No. 2, p19
small grants, Vol. 7, No. 4, p29
Vol. 9, No. 1, p11

Non-ambulatory, optometric services, Verma, S.B., Vol. 9, No. 3, p8
Non-print media, Johnson, D.F., Vol. 8, No. 3, p22

O
OCAT
admissions, Levine, N.R., Vol. 1, No. 1, p34
applicants, Katzell, M.E., Vol. 2, No. 1, p12
Ocular pathology
Ohio, optometric practices, Augsburger, A., Vol. 8, No. 3, p16
Ohio State, Hebbard, F.W., Vol. 1, No. 2, p70
Optometric education, health professions law, Lewis, D., Vol. 2, No. 3, p27
Optometric practices
Ohio, Augsburger, A., Vol. 8, No. 3, p16
rural Alabama, Wild, B.W., and Maisiak, R., Vol. 6, No. 3, p8

P
Pacific University, Filer, C., Vol. 1, No. 3, p113
Parent
communicating with, Williams, J.F., Vol. 2, No. 1, p8
vision therapy, Williams, J.F., Vol. 1, No. 2, p84
Patient, communication, Bennett, E.S., Vol. 8, No. 2, p10
Pennsylvania College of Optometry
Eye Institute, Mullen, C.F., Vol. 4, No. 1, p8
profile, Propert, P., Vol. 1, No. 1, p24
residencies, Alexander, A.H., and Klofper, J., Vol. 8, No. 4, p20
Pharmaceutical sciences, Gibson, M.R., Vol. 1, No. 4, p146
Pharmacology
continuing education curriculum, Vol. 2, No. 3, p16
curriculum model, ASCO Council on Academic Affairs, Vol. 4, No. 4, p18
Indiana University, Hegeman, S., Vol. 9, No. 1, p22
Pharmacy and optometry, Stanfill, W., Traylor, R., and Smith, M., Vol. 6, No. 2, p8
Policy, ASCO, Vol. 2, No. 2, p25

Practice
management, Classe, J.G., Vol. 5, No. 2, p16
Practitioner, as teacher, Dunsky, I.L., Vol. 7, No. 3, p18
President's, national goals, Baldwin, W.R., Vol. 1, No. 1, p2
Primary health care, Baldwin, W.R., Vol. 7, No. 1, p19
Primary care, student's view, Monacell, R.E., Vol. 3, No. 2, p19
Professional development, ASCO Council on Academic Affairs, Vol. 5, No. 2, p18
Professionalism
in defense, Haffner, A.N., Vol. 5, No. 1, p10
obsolete?, Haffner, A.N., Vol. 6, No. 1, p5
Profile
Alabama, University of, Naff, D., Vol. 1, No. 4, p142
Berkeley, University of California, Godske, S., and Carter, Jr., Vol. 4, No. 2, p4
Ferris State College of Optometry, Murray, M.R., Vol. 4, No. 4, p24
Goldberg, Dr. Fred, Vol. 5, No. 2, p25
Houston, University of, Vol. 3, No. 1, p28
Illinois College of Optometry, Vol. 3, No. 3, p40
Indiana University, Vol. 2, No. 3, p22
Inter American University, Hofstetter, H.W., Vol. 7, No. 1, p20
Ohio State, Hebbard, F.W., Vol. 1, No. 2, p7
Pacific University, Filer, C., Vol. 1, No. 3, p113
Pennsylvania College of Optometry, Propert, P., Vol. 1, No. 1, p24
Southern College of Optometry, Spielberger, D., Vol. 4, No. 3, p16
Waterloo, University of, Woodruff, M.E., Vol. 5, No. 1, p22
Psychometric advances, Gross, L.J., Vol. 7, No. 1, p15
Public health curricula, Clausen, L.R., Vol. 3, No. 2, p5
Puerto Rico
characteristics, Marshall, E.C., Vol. 9, No. 2, p8
Diabetic retinopathy clinical evaluation and management, Vol. 7, No. 4, p24
Framework for student affairs at schools and colleges of optometry, Vol. 5, No. 2, p6
Handbook of health education, Vol. 5, No. 4, p6
Headache, Vol. 6, No. 4, p23
The lacrimal system, Vol. 9, No. 3, p23
Measuring medical education: the tests and experience of the National Board of Medical Examiners, Vol. 5, No. 4, p6
Microsurgery of the glaucomas, Vol. 5, No. 2, p6
Ocular anatomy embryology and teratology, Vol. 8, No. 4, p27
Ocular immunology, Vol. 7, No. 4, p24
Ocular pathology update, Vol. 6, No. 2, p30
Ocular therapeutics and pharmacology, Vol. 7, No. 4, p24
Optometry and health maintenance organizations, Vol. 6, No. 2, p30
Optometry handbook, Vol. 7, No. 2, p7
Optometry in third party programs, Vol. 2, No. 3,4, p15
Practical evaluation of eyes with opaque media, Vol. 9, No. 3, p23
Presurgical evaluation of eyes with opaque media, Vol. 9, No. 3, p23
Primary care, Vol. 3, No. 3,4, p15
Primary care optometry: a clinical manual, Vol. 8, No. 4, p27
Programmed text on optometric and medical terminology, Vol. 3, No. 3,4, p15
Public health optometry, Vol. 4, No. 1, p24
Public health and community optometry, Vol. 5, No. 4, p6
Rural optometry, Vol. 3, No. 3,4, p15
Safety with lasers and other optical sources, Vol. 6, No. 2, p30
The science of photo medicine, Vol. 8, No. 4, p27
Sight and sounds in ophthalmology, slide tape presentation, Vol. 6, No. 4, p23
Symposium on medical and surgical diseases of the cornea, Vol. 6, No. 2, p30
Vision: its impact on learning, Vol. 4, No. 1, p24
Retina, size calculations, Obstfeld, H., Vol. 6, No. 4, p24
Review clinic, Hanlon, S.D., and Jue, N., Vol. 9, No. 3, p12
Role, optometrist, Haffner, A.N., Vol. 4, No. 4, p6

S
Schools and colleges, research survey, Vol. 6, No. 3, p22
Searching for a dean, Siegfried, J.B., and DiStefano, A.F., Vol. 2, No. 2, p18
Self-scoring tests, Pease, P.L., Vol. 6, No. 1, p23
Shortage areas, Heberger, M.H., and Soroka, M., Vol. 4, No. 2, p15
Simulation, computer, Nussenblatt, H., Vol. 9, No. 1, p24
Southern College of Optometry, Spielberger, D., Vol. 4, No. 3, p16
Socioeconomic characteristics, Puerto Rico, Marshall, E.C., Vol. 9, No. 2, p8
Specialties
making sense out of certification, Kendall, R., Vol. 9, No. 4, p4
Spectacles, adjusting, Kors, K., Vol. 2, No. 2, p14
Student
AOSA, Harris, P., Vol. 4, No. 2, p18
Buckley Amendment, Harrleson, B.J., Vol. 1, No. 1, p30
discipline, Schmitt, E.P., Vol. 1, No. 4, p150
Journal preferences, Indiana University, Hofstetter, H.W., Vol. 4, No. 4, p28
Journal preferences, University of Houston and Indiana University, Pfeiffer, C.H., Vol. 5, No. 4, p22
orientation, clinical, Brookman, K.E., Vol. 8, No. 2, p20
patient communication, Bennett, E.S., Vol. 8, No. 2, p10
practice as teacher, Dunsky, I.L., Vol. 7, No. 3, p18
research, Barry, S.H. and Shamsky, M.S., Vol. 3, No. 3,4, p36
tutorial, Heath, D.A., Hines, C., and Kamens, H.R., Vol. 8, No. 4, p9
view of primary care education, Monacell, R.E., Vol. 3, No. 2, p19
vocational interests, Emling, R.C., Vol. 6, No. 4, p17
South Africa, Hofstetter, H.W., Vol. 6, No. 1, p8
SOSH, Alabama, Classe, J.G., Vol. 4, No. 3, p24
Survey
optometric educational institutions, 1977-78, Vol. 4, No. 2, p27
optometric educational institutions, 1978-79, Vol. 5, No. 4, p27
optometric educational institutions, 1979-80, Vol. 6, No. 2, p23
optometric educational institutions, 1980-81, Vol. 7, No. 3, p22
optometric educational institutions, 1981-82, Vol. 8, No. 2, p24
reader, Vol. 7, No. 4, p25
research projects, Whitener, J.C., Vol. 6, No. 3, p22
Symmetry points
minimum separation, Keating, M.P., Vol. 9, No. 4, p13
Symposium
biological sciences, Rapp, J., Vol. 5, No. 3, p9
clinical competence, American Academy of Optometry, Vol. 7, No. 2, p8
Teaching
adjusting spectacles, Kors, K., Vol. 2, No. 2, p14
clinical teachers, Werner, D.L., Vol. 9, No. 4, p8
good, Abplanalp, P.H., and Baldwin, W.R., Vol. 8, No. 3, p19
health care, Mou, T.W., Vol. 1, No. 2, p80
professional-level courses, Christensen, J.L., and McKitrick, J., Vol. 5, No. 4, p12
skills in clinical, Bauer, L. and Alexander, A.H., Vol. 9, No. 4, p16
Teaching aid
binocular vision, mini computer analysis, Schor, C., and Kees, M., Vol. 6, No. 4, p12
lensometer, Kors, K., Vol. 1, No. 2, p110
Teacher, as practitioner, Dunsky, I.L., Vol. 7, No. 3, p18
Tenure
historical perspective, Schmitt, E.P., Vol. 4, No. 1, p27
Tests
self-scoring, Pease, P.L., Vol. 6, No. 1, p23
Tuition, Eure, S.B., Vol. 4, No. 4, p13
Tutorial, Heath, D.A., Hines, C., and Kamens, H.R., Vol. 8, No. 4, p9
Two-dimensional PMP, Gross, L.J., Vol. 7, No. 1, p8
University
dilemma, Janoff, L.E., Vol. 2, No. 1, p31
University of Alabama
profile, Naff, D., Vol. 1, No. 4, p142
visiting scholars, Whikehart, D.R., Vol. 8, No. 4, p24
University of Houston
infant vision clinic, Manny, R.E., and Boltz, R.L., Vol. 6, No. 2, p12
externship program, Nussenblatt, H., Vol. 7, No. 3, p15
journal preferences, Pfeiffer, C.H., Vol. 5, No. 4, p22
profile, Vol. 3, No. 1, p28
University of Waterloo
profile, Woodruff, M.E., Vol. 5, No. 1, p22
Veterans Administration
interview with, Danielson, D., and Myers, K., Vol. 3, No. 1, p6
health professions, Myers, K.J., Vol. 1, No. 2, p58
Vision
development, communicating with parents, Williams, F.J., Vol. 2, No. 1, p8
therapy, parent guidance, Williams, J.F., Vol. 1, No. 2, p84
training curriculum model, Suchoff, I.B., Vol. 1, No. 1, p20
Visiting scholars, University of Alabama, Whikehart, D.R., Vol. 8, No. 4, p24
Visual optics, retinal image, Obstfeld, H., Vol. 6, No. 4, p24
Visual science
librarians report, Lewis, M., Vol. 4, No. 1, p25
libraries, AVSL, Vol. 2, No. 2, p21
Vocational, student interests, Emling, R.C., Vol. 6, No. 4, p17
VOSH, Vol. 6, No. 3, p15
Waterloo, University of
profile, Woodruff, M.E., Vol. 5, No. 1, p22
Women
counseling, Siegel, S.L., Vol. 4, No. 3, p21
perceived barriers, Schoener, B., Vol. 4, No. 3, p8
Workload
faculty, Bleything, W.B., Vol. 8, No. 1, p6
Workload, faculty
defining, Bleything, W.B., Vol. 8, No. 1, p6
elements, Bleything, W.B., Vol. 8, No. 1, p11
formulas, Bleything, W.B., Vol. 8, No. 1, p18
Workshop, clinical instruction, ASCO, Vol. 5, No. 3, p16

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