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Articles

A Test of a Blended Method for Teaching Medical Coding

Meredith Whiteside, OD, FAAO, Shaokui Ge, PhD, Dennis Fong, OD, FAAO, Robert DiMartino, OD, MS, FAAO | *Optometric Education: Volume 41 Number 1 (Fall 2015)*

Abstract

Background: Evaluation and Management (E/M) codes are used by all healthcare providers to bill third-party payers for their services. The purpose of this study is to determine whether providing education about E/M coding to third-year optometry students in a blended teaching format leads to improved coding accuracy.

Methods: Optometry student participants ($N = 53$) had the traditional classroom and clinical education in E/M coding throughout the first 2 years of the curriculum. Students were randomly divided into two groups. One group (the Experimental Group) received education regarding E/M coding in an online format as well as two interactive practice cases. The other group did not. All students were then asked to determine the E/M code on 5 standardized cases. Approximately 8 weeks later, a second set of 4 standardized cases was given to all participants to determine whether knowledge acquired was long-lasting.

Results: By generalized linear mixed models, it was found that students in the Experimental Group were much more likely to indicate the correct E/M code than the students in the Control Group, with an odds ratio of 9.55 (95% confidence level 2.05-72.52; $P = 0.01$). After 7-9 weeks, the treatment effect was still significant, but it was reduced, and the odds ratio was 3.23 (95% confidence interval 1.05-10.68, $P = 0.01$).

Conclusions: A blended format of teaching E/M coding is at least initially effective in improving coding ability. However, without further intervention, the effect decreases over time. Because of this, additional reinforcement of coding is needed, likely in both the didactic curriculum and the clinic.

Key Words: CPT codes, evaluation and management codes, blended teaching

Introduction/Background

According to the American Optometric Association, in 2013 more than half of the gross income in private optometric practices was derived from third-party insurance plans.¹ This revenue could be further subdivided into almost an even split between payments from public plans, such as Medicare and Medicaid, and those from private insurance programs, including managed care and preferred provider networks. As the patient population ages, and with the full implementation of the Affordable Care Act (i.e., "ObamaCare"), the percentage of optometric revenue attributed to third-party plans seems certain to rise. Thus, an important aspect of preparing optometry students to transition successfully from the teaching clinic to private practice is ensuring they are trained to code and bill third-party payers efficiently and accurately.

While we are unaware of any published reports for optometry, studies from other health professions show that documentation and appropriate coding and billing are important skills in clinical practice.²⁻⁵ The Accreditation Council for Graduate Medical Education now lists awareness of and responsiveness to the larger system of health care as 1 of 6 general competencies required for resident development.⁶ In other words, medical residents, like other healthcare providers must be knowledgeable about coding and reimbursement.^{2,7,8,10}

Current Procedural Terminology, or CPT, codes are an elaborate system of individual Evaluation and Management (E/M) codes used by all healthcare providers to bill third-party payers for their services. Determining the correct E/M code to be applied to a specific clinical case from the array of CPT codes requires the clinician to understand complex Medicare rules and to know what must be recorded in a patient's records to justify billing under a particular code. Despite the importance of learning accurate documentation and coding, there currently are no evidence-based accepted standards for teaching these skills in either optometric or medical education programs. Although there is no literature indicating how optometry students are taught coding, informal discussions with optometric educator colleagues indicate that, as in medical residency programs, coding and billing education typically involves a limited number of formal lectures (<4 hours) followed by the informal provision of additional information during patient care encounters.

While it would seem logical to teach E/M coding as part of everyday clinical teaching, previous studies suggest that this can be difficult. Teaching coding requires that time be allocated for this task. This inevitably erodes the time allotted for patient care, which has the potential to reduce the number of patient encounters. This is supported by previous studies showing that teaching E/M coding during patient care has a negative impact on student evaluations of clinical teaching and on the delivery of patient care.^{9,12-14} Finally, while it might be suggested that acquiring the skill of coding and billing accurately can be put off until patient care has been mastered, evidence shows substantial error rates in billing are found even in highly experienced clinicians, including clinical faculty members and community doctors.^{10,11,15,16}

As the cost for health care rises, third-party payers are experiencing increasing political and financial scrutiny to control their costs by insisting that caregivers bill accurately and have the appropriate supporting documentation. When billing errors — either over- or under-billing — are discovered, they can have significant financial repercussions. Each type of mistake is considered Medicare fraud and can result in costly audits and legal consequences.¹⁷ Coding's importance to financial success in private practice, the heightened concerns of third-party payers about eyecare costs and coding errors, and the financial losses that can result from these errors, all provide a strong rationale for strengthening the teaching of coding in professional optometry programs. However, given the curricular time demands of professional training, it is important to identify the most effective methods for teaching coding.

The hypothesis is that utilization of a blended format of teaching (where at least part of the delivery of content and instruction is via computer-mediated activities in addition to the traditional teaching) will significantly improve the accuracy with which optometry students code patient cases. The purpose of this study was to determine whether providing education about coding to third-year optometry student interns in a blended teaching format leads to improved coding accuracy for a set of standardized cases when compared to the traditional method. (The traditional method has typically involved roughly 2-3 hours of formal lecture combined with informal discussion at the conclusion of patient care.) Longevity of acquired knowledge was assessed approximately 8 weeks after the initial blended instruction, by asking subjects in this project to code a second set of standardized cases.

Methods

This study was conducted with approval from the Institutional Review Board Committee of the University

of California – Berkeley (protocol 2013-07-5502). The design of the study began with the creation of 10 “standardized” patient cases that were subsequently used to assess the ability of students to assign E/M procedure codes properly. After the authors drafted these cases, they were reviewed by clinical faculty members to assess their completeness and their authenticity in representing actual patients. The draft cases were revised after this initial review and then pilot-tested on a second group of faculty members. After a final set of revisions, all 10 cases were sent to 3 expert external reviewers, who were asked to determine their E/M procedure codes independently. These reviewers, who donated their time and effort to the study, were nationally recognized optometric CPT coders, each of whom has more than 15 years of experience in medical coding. All have lectured and published extensively on medical coding for optometrists. In evaluating these 10 cases, the experts disagreed on the correct E/M procedure codes that should be assigned to 4 of them. In 3 of these, 2 out of the 3 experts provided the same code, which was subsequently used as the correct code for the purposes of the study. The fourth case (with a diagnosis of trichiasis) resulted in a three-way split among the experts and, as a result, it was eliminated from the study.

The study utilized third-year students at the University of California – Berkeley School of Optometry who had been exposed to the traditional curriculum. They had received previous instruction on coding delivered in the traditional format: approximately 3 hours of classroom lecture in a second-year pre-clinic course, and informal case-based instruction during a minority of approximately 50 primary care patient care encounters they experienced as clinical interns during summer semester following the second year and the initial part of the fall semester of the third year. In addition, at the beginning of the fall semester of the third year, all students received a one-page E/M coding flow-sheet, which was designed to help them determine the level of E/M code based on the standard Medicare rules. The sheet explained how to assign a code by first determining the level of the 3 major coding components (history, physical examination and medical decision-making), and then provided a guide to choosing the level of procedure code that should be used to bill a particular case.

To begin the study, all students completed a survey that utilized a Likert scale to indicate:

1. whether the students understood what an E/M code is
2. the level of confidence they had in determining the E/M code correctly
3. whether they believed knowledge of coding was important to their careers
4. the total extent of their prior education on E/M coding (within and outside of the optometry curriculum)
5. whether they believed their previous education was adequate to prepare them for a future job
6. the mode of practice to which they aspired after graduation.

After all students had answered the questions, they were randomly assigned to either the Control (N = 30) or Experimental Group (N = 29). Those in the Experimental Group were introduced to evaluation and management (medical) coding via a 1-hour online program that incorporated streaming video and a concurrent PowerPoint presentation. During this program, students were introduced to the different components of the E/M coding flow-sheet and then presented with 2 different teaching cases (diabetic retinopathy and dry eye). In both cases, the flow-sheet was used to guide students through the thought process involved in determining the E/M code. To gain more hands-on experience in E/M coding, the Experimental Group was then assigned to participate in a 15-minute, interactive, computer training program, where they were presented with sample written cases. One of these was a follow-up evaluation of a dry eye case that had been introduced earlier, during the 1-hour online program. The second was the evaluation and management of a patient with glaucoma. In this interactive exercise, the students were presented with a patient history, findings and assessment, and plan for each case. The students

were then tasked with determining the E/M code. Because the final procedure code is based on the level of the patient history, physical examination and medical decision-making, students completed multiple-choice questions for each of these 3 components, selecting the answer they believed gave the appropriate coding level for each component. Upon choosing a level for a component, students were given immediate feedback. For example, if a question regarding a component level was answered incorrectly, they were presented with a message that indicated why the answer chosen was incorrect and referred to the E/M flow-sheet for additional guidance. Students were allowed to re-answer the question until the correct answer was selected. Once the question was answered correctly, they were able to proceed to the next component. The final multiple-choice question required students to select the correct overall E/M procedure code for the case. Time spent viewing the instructional video and performance on the multiple-choice questions during the interactive program were tracked to ensure students completed this component of the study before progressing to the next.

After the Experimental Group watched the video and practiced the interactive cases, the students in both the Experiment and Control groups were to assign a procedure code to each of the first 5 standardized cases. These cases were chosen to simulate typical patients encountered in an optometric setting that utilizes medical coding: glaucoma suspect, allergic conjunctivitis, cataracts, new onset of floaters (posterior vitreal detachment) and blepharitis. Students in both groups were allowed to use any resources they wished (other than consulting each other or faculty), including books, guides, the internet or the flow-sheet given to them at the beginning of the study, to help them determine the correct coding. This initial exercise was designed to establish whether exposure to the interactive training regimen described above resulted in members of the Experimental Group coding cases more correctly than members of the Control Group.

The second phase of the study was designed to assess the extent to which the knowledge the Experimental Group gained from the interactive online training was long-lasting. For this phase, 7-9 weeks after coding the first set of 5 standardized cases, students in both the Experimental and Control groups reviewed and provided E/M procedure codes for the remaining 4 standardized cases. These cases included follow-up for glaucoma, flap retinal tear, diabetic eye evaluation and dry age-related macular degeneration. All 4 cases were labeled as new or established, and the 5 possible CPT codes were provided as choices for selection. For example, codes 99201-99205 would be the possible choices in the case of new patients. Once again, students were allowed to consult the resources listed above to assist them in coding.

The difference in determining the correct E/M code between the Control and Experimental groups was tested by a Fisher exact test. A generalized linear model was then employed to quantitatively assess whether the blended learning treatment had a significant effect on students in the Experimental Group. The analysis utilized an "odds ratio" to allow comparison of the performance of students in the Experimental Group to those in the Control Group.¹⁸ An odds ratio is a measure of association between a treatment (in this case exposure to blending learning) and an outcome (accuracy of E/M coding). The odds ratio represents the odds that an outcome will occur given a particular treatment (Experimental Group) compared to the odds of the outcome occurring in the absence of that treatment (Control Group).

Results

Sixty-two third-year optometry students enrolled in a fall semester course on advanced clinical procedures were invited to participate in the study. Of those 62 students, 59 volunteered and 3 declined. During the testing, 6 students did not indicate an answer for either all 5 cases in the first survey or all 4 cases in the second survey. Because of this, their results were removed from the data analysis, which left 53 participants.

TABLE 1
Initial Response to Professional Survey on Knowledge, Confidence, Education and Employer Expectance (n=53)

Response	Control	First Survey Experimental	P value	Control	Second Survey Experimental	P value
Question: I understand what an E/M code is.						
Agree	13	12	0.41	17	26	0.04
Uncertain	8	13		4	0	
Disagree	8	4		8	3	
Question: I feel confident in my ability to determine the appropriate E/M code for care.						
Agree	4	7	0.29	7	13	0.11
Uncertain	8	12		12	12	
Disagree	14	14		7	2	
Question: Knowledge of coding will be important in my career.						
Agree	26	27	0.49	26	26	1.00
Uncertain	8	8		0	1	
Disagree	1	8		0	0	
Question: I received education regarding E/M coding based upon medical documentation.						
Agree	7	8	0.83	11	25	0.004
Uncertain	11	8		9	3	
Disagree	8	8		6	1	
Question: The education I received in E/M coding is adequate to prepare me for a future job.						
Agree	1	7	0.06	7	12	0.03
Uncertain	8	8		5	11	
Disagree	18	18		13	4	
Total number of hours of education						
0-2 (including 0)	8	8	0.83	2	3	0.76
3-8 (including 3)	21	18		22	20	
>8	5	8		2	4	
Question: Within 5 years, my goal is to be working in (pick your first choice)						
EMC, hospital and outpatient practice	3	3	1.00	4	5	0.88
Self or group CEO private practice	21	22		20	21	
EMD private practice	1	1		0	2	
Other	1	1		0	1	

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Because some students may have had additional experience either in clinic or from prior work experience that would put them at an advantage for E/M coding, a survey checking knowledge and attitudes regarding E/M coding was done to characterize students' background. The survey questioned students on the number of hours of education received in coding, knowledge, confidence and whether they felt E/M coding was important to their careers.

Through a Chi Square test or Fisher exact test, it was found that at the onset of the study (before the Experimental Group received extra training), there was no difference between the Control and Experimental groups in terms of understanding what an E/M code is, confidence in coding, feeling that coding would be important in their future career, or the amount of education received prior to the study (P values = 0.29-0.41). **(Table 1)** Seven to nine weeks after the first E/M cases were completed, and immediately before the second set of E/M cases was given, the initial knowledge and attitudes survey was given again. In this instance, the Experimental Group had been shown the online lecture material and there were significant differences between the two groups in terms of understanding what an E/M code is (P value = 0.04), having received training (P value = 0.004) and feeling that the education received was adequate (P value = 0.03). In terms of the other factors (confidence in coding and recognizing the importance of coding), there were no differences between the Experimental and Control groups.

TABLE 2
Odds Ratio of Treatment Effect on the Outcomes of at Least 50% of Responses Being Correct During the First Survey

Variables	Effect Estimation	95% Confidence interval	P values
Intercept	0.42	0.00-1.12*10 ⁵	0.91
Treatment	9.55	2.05-72.52	0.01
Gender	0.52	0.06-3.21	0.86
Age	1.05	0.64-2.04	0.46

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One to two weeks after the Experimental Group viewed the video, all participants reviewed and then indicated the E/M procedure code for the first set of 5 standardized cases. When the results for all 5 cases were tabulated, it was found that 92% (24 of 26 participants) of the Experimental Group coded the cases correctly \geq 50% of the time. In comparison, in the Control Group 58% (14 of 24 participants) coded the same cases correctly \geq 50% of the time. According to the generalized linear mixed model of this data, the Experimental Group (who watched the instructive video and completed the interactive program) had an odds ratio of 9.55 (95% confidence interval 2.05-72.52), indicating the training program had a

positive effect on coding accuracy. **(Table 2)**

TABLE 3
Odds Ratio of Treatment Effect on the Outcomes of at Least 50% of Responses Being Correct During the Second Survey

Variables	Effect Estimation	95% Confidence Interval	P values
Intercept	1.23	0.00-8.05*10 ³	0.91
Treatment	3.23	1.05-10.68	0.01
Gender	1.01	0.25-3.97	0.99
Age	0.96	0.68-1.35	0.81

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Seven to nine weeks after both groups evaluated the initial set of cases, a second set of E/M coding cases was administered to both groups. The second survey found that 59% (16 of 27 participants) of the Experimental Group answered the cases correctly $\geq 50\%$ and the time. In comparison, 31% (8 of 26 participants) of the Control Group answered the same cases correctly $\geq 50\%$ of the time. At this point in the study, the generalized linear mixed model of the data showed the Experimental Group (who watched the instructive video and the interactive program) had an odds ratio of 3.23 (95% confidence interval 1.05-10.68). **(Table 3)** This indicates that, while the training program initially had a positive effect on coding accuracy, after 7-9 weeks this effect was greatly reduced. Both in the initial and second set of coding cases, neither gender nor age was significant in the responses of students to the coding practice.

Discussion

Traditionally, optometric education has focused on teaching clinical care of patients, with very little time being allocated to educating students about the role of proper documentation and determining the correct E/M procedure code. As optometry students enter the workforce, one of the responsibilities they will face is E/M coding. Good E/M coding ability can be critical to success, and poor E/M coding can result in serious legal and financial consequences. The purpose of the study was to evaluate a new technique for teaching E/M coding and then determine whether this technique led to improved accuracy.

Determination of the correct code for standardized cases

The E/M coding system is complex, and coding can be challenging for novice and experienced clinicians alike. In this study we attempted to ensure the correct coding for each standardized case by utilizing 3 optometric coding experts to determine the code. The experts agreed on the E/M code for 6 of the 10 cases. Interestingly, in 4 of the 10 cases there was disagreement, although the chosen E/M codes were typically very close (e.g., one expert chose 99212 while another chose 99213). It seems likely that disagreement over E/M codes arose because there was a certain amount of interpretation about the complexity of the case and/or the prognosis for the condition — both of which can affect the final level of E/M code. In the cases where there was disagreement, the final code was determined by choosing the code that the majority of experts agreed upon. Unfortunately, in one of the cases, there was complete disagreement between the experts and this clinical case was eliminated from the results pool. The lack of consensus between the CPT coding experts in the study was initially troubling; however, other studies have shown that this type of disparity is common. One group¹¹ found agreement among CPT experts to range from 50% to 71%. This lack of consensus among experts is a complicating factor in teaching students to code correctly and a challenge of coding for practitioners who want to be confident about the accuracy of their billing.

Techniques for teaching coding

What is the best way to teach E/M coding? We are aware of 3 previous studies that examined teaching techniques that led to improvements in coding ability. In one, an instrument consisting of a flow-sheet with a concise set of notes for quick reference was used to determine a final code based on the standard

Medicare rules for billing levels.¹⁹ The investigators concluded that the flow-sheet was a reliable tool for correctly assessing coding. In a second study,⁷ clinical cases that had been managed by residents were reviewed in a problem-based teaching format and used to learn coding basics, review previous coding assessments and reinforce proper coding by pointing out errors made by the residents. The authors reported that residents demonstrated an increase in accuracy of coding and a decline in under-coding. In a third study,²⁰ subjects were provided with a single, 90-minute session taught by a coding specialist. The session was presented to residents who had been coding, and the results showed that even a single informational session improved coding ability for inexperienced coders. Unfortunately, this study did not show significant improved coding ability in the more senior residents who were also experienced coders. While all of the above studies show an improvement in coding accuracy in novice clinicians, each was limited by a relatively small number of participants (11 to 20), and none provided follow-up to determine whether learned E/M coding concepts were retained over time.

The technique employed to teach coding in this study used 2 approaches: video and a brief interactive program that walked students through an E/M flow-sheet. Results from the study provide evidence that a blended format of teaching does lead to improved coding ability, with the treatment effect being 9.55 (95% confidence level 2.05-72.52; $P = 0.01$) within 2 weeks of watching the video. This initial improvement in coding ability did however decrease to 3.23 (95% confidence interval 1.05-10.68; P value = 0.01) 7-9 weeks after the training session.

Student perceptions regarding prior education and importance of coding

Although this is the first study involving optometry student clinicians, results of the survey are in agreement with previously published reports of other healthcare profession trainees' attitudes towards the importance of coding. Surveys of residents in surgery and emergency and internal medicine show that most believe the amount of training for E/M coding is inadequate, yet the overwhelming majority (~90% or more) feel that coding ability is important.²⁻⁵ The present survey of optometry students shows a similar result: 98% (52 of 53) agreed that coding will be important to their future careers and 71% (37 of 53) agreed that the education they had received regarding coding was not adequate. Studying a 1-hour video and 2 practice cases was enough to make students feel more knowledgeable about what an E/M code was (P value = 0.04) and that they had received adequate education in coding to prepare them for a future job (P value = 0.03). Compared to the Control Group, their confidence in E/M coding also had improved, but this result was not statistically significant (P value = 0.11).

Limitations of the current study

A limitation of this study is that only 7-9 weeks elapsed between when the students were exposed to the training video and cases and when they assessed the second set of cases, which were designed to examine the permanence of their new knowledge. However, even with this short interval, the data reveal a decrease in performance, suggesting that without additional training at regular intervals the significant gains acquired during the initial training may disappear. Future studies should test knowledge at longer intervals (e.g., 6, 12 and 18 months after the initial videos and exercise) to examine the rate at which the skills gained in E/M coding decline to pre-training levels. It seems likely that, while the use of interactive video and hands-on practice may be a good first step for teaching the basics of E/M coding, this new knowledge has to be reinforced in the clinical setting for it to become permanent.

Conclusion

Optometry students believe that learning coding is very important and that the current level of their education in this area is inadequate. A blended format of instruction in coding techniques is effective in improving these important skills in third-year optometry students. An advantage of the blended format is that it can be utilized throughout the optometry curriculum, even when fourth-year optometry students

are away from their home institutions on external rotations. Some of the initial beneficial effects of this training early in the third professional year decreased over time. However, in addition to providing initial instruction, online interactive training could be an effective and practical method for reinforcing and consolidating this new knowledge if it was offered at regular intervals during the remainder of the professional curriculum.

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Features

Invitation to Participate

Deadline Extended for Upcoming International Optometric Education Theme Edition

Desiree Ifft | Optometric Education: Volume 41 Number 1 (Fall 2015)

International Optometric Education: Global Expansion and Transformation

(New deadline to submit papers: June 1, 2016)

Over the past 20 years, the profession of optometry has undergone dramatic global changes: expanding scope of practice, increasing quality assurance expectations, significant diversification of students, and the accelerating impact of information technology. Underpinning these changes has been the critical role of international optometric education in supporting and catalyzing this transformation. The same global forces that are driving the transformation of the profession are also creating challenges and opportunities for optometric educational institutions. Student, faculty, patient and institutional expectations are converging and greater accountability is expected. This includes such areas as clinical competency, professional ethics, interprofessional collaboration and curricular innovation.

Authors are invited to submit scholarly articles that address this theme and underscore innovation and the impact educational institutions are having on their students, the profession and the communities they serve. We encourage scholarly articles that are translational and promote global dissemination.

We are pleased to have [Anthony F. Di Stefano, OD, MEd, MPH](#), Salus University, serve as the Guest Editor of this issue. For more information, please e-mail journal Editor [Aurora Denial, OD, FAAO](#).

Industry News

Announcement

Dr. Hoppe Delivers Keynote Address at Summer Institute for Faculty Development

Desiree Ifft | Optometric Education: Volume 41 Number 1 (Fall 2015)



Elizabeth Hoppe, OD, MPH,
DrPH

Dr. Elizabeth Hoppe was honored as the keynote speaker during ASCO's 2015 Summer Institute for Faculty Development (SIFD), which took place July 12-15 in St. Louis. Dr. Hoppe, ASCO Secretary-Treasurer and the Founding Dean of Western University of Health Sciences College of Optometry, has been involved with the SIFD since its inception in 2006, providing exceptional leadership and serving as a mentor and speaker.

The 2015 program was ASCO's sixth SIFD. Thirty-eight faculty members from 20 schools and colleges of optometry attended. The goal of the SIFD is to provide participants with an opportunity to gain the necessary knowledge and skills to enhance their success in an optometric academic environment as lifelong productive faculty, thus contributing to increased retention of faculty in the schools and colleges of optometry. The program promotes active learning in a nurturing environment and is comprised of formal presentations, workshops and shared activities in the areas of teaching and learning, scholarship and academic culture. Each attendee develops a long-term career plan with specific goals, objectives and action strategies.

For more information on the SIFD, e-mail ASCO's Director of Meetings and Special Interest Groups [LaShawn Sidbury](#), or call her at (301) 231-5944 ext. 3012.

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ASCO expresses its appreciation to the following companies and organizations for generously supporting the Summer Institute for Faculty Development: Alcon, Vistakon, Essilor, Luxottica, Allergan and the National Board of Examiners in Optometry.

Industry News

Educator's Podium

Using Writing Assignments to Improve Student Engagement and Learning

David A. Goss, OD, PhD | Optometric Education: Volume 41 Number 1 (Fall 2015)

Active engagement of students can be helpful in enhancing learning and improving critical-thinking skills.¹ Writing is one method of active engagement that has been used in optometric education²⁻⁴ and other applied science disciplines, such as engineering.⁵ Kidder and Todd⁶ observed that “Writing remains the best route we know toward clarity of thought”

I have assigned writing projects in a number of basic science and clinical courses in my 35 years of teaching at Northeastern State University (NSU) and Indiana University (IU). Here, I briefly describe five different writing assignments I have required, some of which are likely unique.

Critical Abstracts

The ability to read and critically evaluate the optometric literature is a valuable skill for our students to possess. In ocular motility and visual optics courses at NSU, I required students to summarize and critically evaluate one or two published papers. This project was similar to one required by Hofstetter.² I asked students to write an abstract of the article, no longer than one single-spaced page. They were asked to briefly summarize the hypothesis, methods, results and conclusions of the study. Then they were to give their evaluation of the methods and conclusions of the paper, note their thoughts on whether there might be any alternative explanations for the results, and give their suggestions for clinical implications of the paper. In some years I gave them a list of articles to pick from; in other years they chose their own articles after doing their own search for articles pertinent to course topics. Topics of ocular motility articles used for the assignment included relation of accommodative facility to symptoms, effect of proximity cues on accommodation, variables affecting fixation disparity curves, dissociated phoria distribution curves, convergence accommodation, effect of training on vergence parameters, innervation to accommodation, vestibulo-ocular reflex, and latent nystagmus.

Letter to a Visual Optics Pioneer

In a few of the years I taught visual optics, a first-year course, I asked the students to imagine they could write a letter to a person from the early 20th century or before who had made important discoveries or did classic studies in the optics of the eye and its application to vision care. They could choose from Airy, Badal, Donders, Fincham, Gullstrand, Helmholtz, Javal, Kepler, Placido, Purkinje, Scheiner, Tscherning, Ware or Young. Once they made their choice, I gave them a packet of information about that individual and his work. The students were asked to write about how that person's theories had been proven, disproven, expanded or modified since they were proposed and how the discoveries had been applied in clinical techniques, instrumentation or methods of diagnosis. The length of the papers was to be between one and a half and four double-spaced pages. Some of these papers were entertaining and inventive and showed the beginnings of an appreciation for how basic science can translate to improvements in clinical care. For example, among the matters discussed in one letter to Thomas Young were his double slit experiment and the fact that laser interferometry has since been used to predict visual acuity after cataract surgery; his experiments on accommodation and that he was correct about many aspects of accommodation; and that the cornea was a greater contributor to astigmatism than Young had thought.⁷

Binocular Vision Case Reports

I have taught courses on analysis of accommodation and vergence disorders at both NSU and IU. Each time, I required some type of written case report. The course as currently structured at IU includes the learning of testing procedures as well as the diagnosis and management of non-strabismic accommodative and vergence disorders. For the case report project, the students were required to work in pairs and perform the tests they learned in the course on each other. In the case report, they submitted their test results and indicated which test findings were within normal ranges and which were not. They were asked to write a brief narrative about their accommodation and vergence diagnosis, especially the steps in their thinking that led them to the diagnosis. Their report also was to include their treatment plan and the rationale behind it. Students were advised that normal was an acceptable diagnosis and that for grading purposes a reasonable rationale was more important than their particular diagnosis.

Refractive History Paper

For several years at IU, I taught a course that included the nature and development of refractive error as a major topic. In that course, I required students to write a paper, two to four double-spaced pages, about their own refractive care as a patient and relate that to the trends, studies and theories discussed in class. They were instructed to explain how they first became aware they had a refractive problem, their symptoms before wearing spectacles, their first experiences with spectacles, how what they were able to see and do changed with spectacles, etc. They were encouraged to ask their optometrist for records of their own refractive errors. Students with myopia could then compare their own rates of progression to the rates from various studies covered in the course. They could also discuss their family history of refractive error and other hypothesized risk factors. Students who were emmetropic and had little previous optometric care had to be a little more inventive, but could, for example, write about the refractive history of a family member. This course was given before students had entered clinic, and I believe this project made some of the information covered somewhat less abstract, as they related course material to their own experiences.

Report on “Fixing My Gaze”

For three of the years in which I was one of the instructors in the vision therapy course at IU, I required the students to read the book “Fixing My Gaze” by Susan Barry,⁸ a neurobiologist who first experienced stereopsis after undergoing vision therapy in her 40s. In the book, Barry writes about the impact of improved binocular function on visual experience, challenges dogma on critical periods, and discusses the importance of detecting and treating binocular disorders for school performance. I asked students to write answers to specific questions about the book in about one single-spaced page. I changed the questions from year to year. Questions included what about the book they found surprising, what lessons for patient care they learned, why they would or would not recommend the book to others (almost all did recommend it), what they learned from the book that would affect how they would practice optometry in the future, and some ways in which vision therapy improved quality of life and visual performance that were discussed in the book. This was a popular assignment with many students as they found the book enjoyable to read and inspiring. For example, one student wrote that because of reading the book, he had a “new appreciation of our impact as optometrists.”⁹ Several students commented that it was interesting to read about the patient’s perspective.

Comments

Even though optometry students are busy with heavy course loads, I believe their reactions to these writing assignments were in balance positive. Also, the level of thought that was apparent in many papers suggested that students gained more insight than they would have if they had been only studying for tests. I attempted an objective evaluation of one of the assignments in December 2014. In a brief survey, more than 80% of the 64 responding students agreed or strongly agreed that the case report

project helped them to correlate different concepts presented in the course and that they learned enough from it to recommend it should be done by students taking the course the next year.

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Industry News

Editorial

Should We Require Class Attendance?

Aurora Denial, OD, FAAO | Optometric Education: Volume 41 Number 1 (Fall 2015)



Aurora Denial, OD, FAAO

A few weeks ago, I walked by a large lecture hall and observed approximately 15-20 students in the room. I thought it must have been an elective course that just happened to be scheduled in a lecture hall, but it was actually a core course for second-year students. (Total enrollment in the second-year class is 125 students.) The lecture format represents an efficient way to deliver information, knowledge, concepts and ideas and remains one of the most frequently used methods of delivering optometric education. But discussions with colleagues revealed that absenteeism from lecture is a major concern for educators and administrators. A review of the literature demonstrates that this concern traverses educators in many different healthcare professions. Our concerns may be based on the assumption that poor class attendance will negatively impact academic achievement. However, the evidence linking attendance to academic achievement is inconclusive. McCarey et al. demonstrated that attendance was a significant predictor of performance in nursing students, with absenteeism being associated with poorer grades.¹ However, several studies indicate no relationship between attendance and academic performance.²⁻⁴

Do Formats Other than Live Lecture Leave Something to be Desired?

Alternative teaching methods, such as video-recorded lectures, webcasts, blogs, etc., have provided students with different ways to obtain lecture content. But, is watching a video recording of a lecture the same learning experience as being present and engaged in class? Are students missing an important component of learning by not attending lectures? When students attend a lecture in person, they have the opportunity to ask questions and clarify concepts to help them apply information to relevant clinical scenarios. There is the potential for an exchange of information between classmates, exposure to new perspectives and learning from each another. This of course is based on the assumption that the classroom time is spent on more than just dispensing facts and information. A good lecture should foster an atmosphere that is conducive to student participation and engagement.

Faculty, too, can benefit from the live lecture format because immediate feedback from students can allow them to assess the effectiveness and understandability of their lectures. Several colleagues have indicated that looking at a student's confused expression gives them the opportunity to immediately clarify a concept, give an example or change teaching strategies. Consider also that a classroom of

students, who are all together in one room learning their chosen profession, may be a very different learning experience than sitting alone at home watching a video. Does a sense of belonging to a profession and collegiality occur when students attend and participate in class? Are we changing the learning environment? Studies have associated student absenteeism with a negative impact in the classroom community by creating a sluggish environment.⁵⁻⁷

I hypothesize that most students would not favor a policy that requires attendance at all classes. They may argue that adult learners should be responsible for deciding how and when to acquire the needed information, that not all classes have equally important content, or that a specific class isn't given at a time that is conducive to their schedule. Additionally, students may argue that if a class is perceived as valuable, they will attend. This of course is based on the assumption that students are in a position to accurately assess the worth of a course in relationship to their future profession. If my hypothesis is correct, could an attendance requirement negatively impact the admissions process, student retention or participation in future alumni activities?

The Harvard Medical School Approach

It is obvious that being physically present in a classroom does not ever guarantee learning. Therefore, should our expectations for learning include not only being physically present but also cognitively engaged? Engagement refers to the "positive energy invested in one's own learning, evidenced by meaningful processing, attention to what is happening in the moment and involvement in learning activities."⁸ Harvard Medical School requires attendance and active engagement in all components of the curriculum, as stated in the student handbook:⁹

"Students pursuing the MD degree at Harvard Medical School (HMS) are physicians in training who must meet standards of professional conduct and responsibility to develop into effective physicians. As a professional school, HMS requires attendance and active participation in all components of the curriculum, as defined by course and clerkship directors. Active participation in the School's course and clerkship activities indicates the student's understanding and mastery of professional responsibilities. The granting of the MD degree attests to the fact that the student has demonstrated a commitment to his/her professional responsibilities through participation in all aspects of the curriculum as defined by the faculty. ... The Pathways MD curriculum is designed to promote active engagement of each student in all components of the curriculum with the following goals for students: to develop a sense of professionalism, to promote collegiality, to engage students in teaching one another, and to give students experience working in teams where different backgrounds and expertise are represented. Meeting these goals requires each student to be present and actively engaged; consequently, attendance is required at all sessions of each course. ... Attendance at and participation in learning activities in all four years of the curriculum, whether classroom or clinical, is considered critical for the professional development of the physician. ... The integrated curriculum of the Pathways MD program in the foundational preclerkship phase and in the integrated advanced science/clinical courses post-clerkships is designed to promote an engaging, collegial interchange of ideas among students and faculty in all sessions, including large group formats such as lectures. Students are required to attend all sessions and to participate."

What Message are We Sending Our Students?

With its approach, Harvard is setting a high expectation for its future doctors. It is conveying a message that when students arrive at HMS, they are considered doctors in training who are professionals. As such, they must act in a professional manner, which includes actively engaging in all classes including lecture classes. Additionally, students have a responsibility to their future colleagues and to the faculty to actively participate in all activities including discussions. This message transcends a more superficial learning of content and reflects a deeper understanding of the material along with the development of

other elements such as professionalism, collegiality, etc.

What message are we sending our students? I welcome optometric faculty and administrators to share their opinions on this important topic. Should attendance be required?

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Dr. Denial, Editor of *Optometric Education*, is a Professor and Chair of the Department of Primary Care at the New England College of Optometry and a Clinical Instructor at a community health center in Boston.

Industry News

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opted@redhead | Optometric Education: Volume 41 Number 1 (Fall 2015)

Industry News

Company Makes “Change the World” List



Fortune magazine has named Essilor to its first-ever [“Change the World”](#) list. In including the company on the list of 51 companies it sees as making “genuine efforts to change the world for the better,” Fortune notes the progress Essilor is making in addressing the issue of visual health as part of its core business strategy. It also cites Essilor’s business division, “2.5 New Vision Generation,” which pioneers profitable business models in emerging countries across Asia, Latin America and Africa in order to bring good vision to people in need.

Visit [Essilor’s website](#) for more information about the company and its products.

Fourth-Year Students Win Scholarship Competition



VSP Global and the American Optometric Foundation (AOF), an affiliate of the American Academy of Optometry (AAO), are distributing more than \$165,000 among top-performing fourth-year optometry students who were winners in the 2015 Practice Excellence Scholarship program.

The winners are: Eva Patel, Brianne Scanlon (Illinois College of Optometry); Michelle Brown, Christina Welling (Indiana University School of Optometry); Alyssa Ng, Nicholai Perez (Inter American University of Puerto, School of Optometry); Gloria L. Wu, Prathik M. Philip (MCPHS University School of Optometry); Elyse Kleifgen, Michael DeWit (Michigan College of Optometry at Ferris State University); Darren Phillips, Julie McCutcheon (Midwestern University Arizona College of Optometry); Danielle Goldberg, Kathryn A. Hannis (New England College of Optometry); Kevin Tomasu, Ashley Zinser (Northeastern State University Oklahoma College of Optometry); Shelly Lomax, Sophie Robinson (Nova Southeastern University College of Optometry); Janet Harawa, Whitney Territo (The Ohio State University College of Optometry); Kathryn Dailey, Brooke Harkness (Pacific University College of Optometry); Janelle Engel, Nicole Rist (Salus University Pennsylvania College of Optometry); Dmitriy S. Zike, Desirae Brinkley (University of the Incarnate Word Rosenberg School of Optometry); Patty Durongwong, Bitu Asghari (Southern California College of Optometry at Marshall B. Ketchum University); Feyisayo Aworunse, Dahlia Haddad (Southern College of Optometry); Samantha Rao, Tracy Borst (State University of New York College of Optometry); Kayla Egner, Heather Cain (University of Alabama at Birmingham School of Optometry); Catherine Huang, Alise Gentry (University of California – Berkeley, School of Optometry); Leanne Roach, Roberto Saenz (University of Houston College of Optometry); Shannon Niere, Jamie Weiser (University of Missouri at St. Louis College of Optometry); Audrey Daoust, Carolyn Perugino (University of Montreal School of Optometry); Morgan Welburn, Wylie Tan (University of Waterloo School of Optometry & Vision Science); and Clarissa Prieto-Ayala, Kaitlin Hash (Western University of Health Sciences College of Optometry).

The scholarships are funded through VSP Global's [Eyes of Hope Global Charitable Fund](#) in collaboration with [FYi Doctors](#) in Canada and are administered through the AOF. Criteria for selecting the scholarship recipients included the student's commitment to enter the independent practice of optometry and clinical and academic performance. In addition to the scholarship funds, this year's winners received travel grants that enabled them to attend the AAO annual meeting in New Orleans.

Student Scholarship Competition Returns



Project Foresight, the Walmart and Sam's Club Health & Wellness optometry scholarship competition, has returned for the 2015-2016 academic year. The national business plan competition highlights the vision of Walmart & Sam's Club Health and Wellness to provide quality, affordable, accessible health care for everyone. Students create their own two-member teams to compete for a \$1,500 team scholarship in their region and the chance to travel to the 2016 American Optometric Association meeting in Boston to compete for the grand prize (first place – \$15,000 team scholarship; second place – \$5,000 team scholarship).

Teams are asked to design an optometric practice that impacts their community. The practice must demonstrate how it will promote the profession of optometry as well as respect for the individual, service to customers, excellence and integrity. Project Foresight is open to students at all Association of Schools and Colleges of Optometry (ASCO) member institutions who are enrolled in their first, second or third year of school during the 2015-2016 academic year. Detailed information about the competition is being sent to each ASCO member school and college of optometry.

Device Streamlines Slit Lamp Imaging



At this year's Vision Expo West meeting, Marco unveiled its Ion Imaging System, an all-in-one anterior segment imaging device that combines an intra-optics beam-splitter/camera adapter with the computing and imaging power of the latest Apple technology to create a highly sophisticated "mainstream" imaging system that emphasizes image quality, simplicity and efficiency. The Ion combines all of the components (digital camera, adapter, computer, monitor, multiple cables, keyboard, mouse, etc.) of the traditional photo slit lamp, into one streamlined device.

Marco says the Ion enables eye doctors to "capture, integrate and educate" with every diagnosis. It includes an app dedicated to anterior segment imaging that consists of patient demographics, pre-set photography modes for maximizing various lighting techniques for video or still images, and auto storage to the Cloud or to a local network for EMR or for PACS integration. [Find more information online.](#)

Gel Drops a New Option for Dry Eye Sufferers



[Refresh Optive Gel Drops](#), a new aqueous gel for patients who need or desire a more viscous artificial tear to relieve dry eye symptoms, are now available from Allergan. Gel Drops are designed to bind to the surface of the eye to provide long-lasting relief from dry eye discomfort, day or night. According to Allergan, in a multicenter, double-masked, randomized study, dry eye patients using Refresh Optive Gel Drops showed a statistically significant reduction in symptoms at day 30.

Also: Partnering with the U.S. First Responders Association to launch the Refresh America campaign, Allergan is helping the nation's first responders, who often work in conditions that expose them to heat,

smoke, wind and dust, to alleviate dry eye symptoms and perform at their best. Until July 31, 2016, every purchase of a specially-marked package in the company's Refresh Optive product line will lead to donations of Refresh eye drops to select first responder groups nationwide.

OCT Learning Portal Now Available



Optovue has launched Optovue Academy, an online learning portal offering clinical education, technician training and practice development tracks related to spectral domain optical coherence tomography (OCT). The portal includes video PowerPoint presentations, recordings of live presentations, a library of research documents, a forum where learners can comment and a calendar of live events supported or hosted by Optovue Academy.

"Optovue Academy was created to give eyecare professionals the clinical knowledge they need to offer a higher level of medical eye care with OCT," said Larry Alexander, OD, FAAO, Sr. Director of Clinical Education for Optovue. "In addition, this program supports the practice as a whole by providing training for technicians and resources for growing the practice with advanced imaging technology."

Optovue Academy will be updated continually with new video courses, articles and discussion threads. [Click here](#) to learn more or to register for the site.

Study Suggests Usefulness of Ultrawide-Field Angiography



The results of a [recently published study](#) conducted by researchers at Joslin Diabetes Center in Boston indicate that retinal nonperfusion as detected by ultrawide-field fluorescein angiography is associated with predominantly peripheral lesions and the severity of diabetic retinopathy. Investigators reported that eyes with diabetic lesions that were predominantly located in the peripheral retina had a 4.7-fold increased risk of progression to proliferative diabetic retinopathy and a 3.2-fold increased risk of a 2-step progression in diabetic retinopathy severity. They noted that the results were statistically significant

and independent of baseline retinopathy severity and prior hemoglobin A1C.

According to the senior author of the paper, Lloyd P. Aiello, MD, PhD, “These data re-affirm the importance of evaluating the entire retina when managing diabetic retinopathy and demonstrate the increased risk of retinopathy progression that could be missed if the peripheral retina is not carefully examined. If currently ongoing large multicenter trials confirm these results, then the status of the peripheral retina may need to be included in diabetic retinopathy grading scales to optimally define the risks of retinopathy progression in an individual.”

Dr. Hamada Appointed to Professional Affairs Position



[Johnson & Johnson Vision Care Inc.](#) (JJVCI) recently appointed Weslie M. Hamada, OD, FAAO, as the Associate Director of Professional Affairs North America. In this role, Dr. Hamada is responsible for strengthening and enhancing partnerships with state and national professional associations as well as helping to support key projects that elevate the profession.

Dr. Hamada, a graduate of Southern California College of Optometry at Marshall B. Ketchum University, joined the Global Astigmatism Platform at JJVCI in 2013, where she was the research clinician responsible for the clinical development of astigmatism products. She is an active member of Johnson & Johnson Women’s Leadership Initiative and has more than 11 years of extensive clinical experience. While in private practice, she worked on numerous clinical studies with JJVCI and other eyecare companies.

Dr. Hamada served as the president of the Hawaii Optometric Association from 2009-2011 and is currently a member of the American Optometric Association’s Public Affairs Committee. In 2004 and 2010, respectively, she was named Hawaii’s Young Optometrist of the Year and Hawaii’s Optometrist of the Year. This year, she was named one of Vision Monday’s Most Influential Women in Optical.

Professional Strategy Team Expands

BAUSCH + LOMB
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[Bausch + Lomb](#) appointed Brian Rosenblatt, OD, to the position of Director, Professional Strategy. Dr. Rosenblatt joins Jill Saxon, OD, and Todd Love, also Directors of Professional Strategy, in coordinating the company's Eye Care Professional (ECP) outreach efforts across Vision Care. The company says this addition to the Professional Strategy team will help strengthen Vision Care's support of the optometry community through a wide range of initiatives involving ECPs and students across the country.

Also: The FDA has accepted for review a New Drug Application from B+L and Nicox S.A. for latanoprostene bunod ophthalmic solution 0.024% (Vesneo), an intraocular pressure-lowering single-agent eye drop dosed once daily for patients with open angle glaucoma or ocular hypertension. If approved, Vesneo would be the first nitric oxide-donating prostaglandin receptor agonist available for this indication.

Dry Eye Diagnostics in One Report



The JENVIS Dry Eye Report is a new way for eyecare professionals to create a convenient one-page overview of the exam results generated by the Oculus Keratograph 5M, a corneal topographer with a built-in real keratometer and a color camera optimized for external imaging. In addition to the meibography, NIKBUT, tear meniscus height, lipid layer and bulbar redness information from the Keratograph 5M, data collected from other tests, such as tear osmolarity, blink rate and the OSDI Dry Eye Questionnaire can be entered into the report.

The Dry Eye Report, which includes the practice logo, combines screening and consultancy. For the patient, it also provides the doctor's treatment recommendations and easy-to-understand explanations of abbreviations and technical terms. [Click here](#) to see an example of the report.

New Retina Camera is Fully Automated



Topcon has unveiled its new, fully automatic TRC-NW400 Non-Mydriatic Retinal Camera. Using the TRC-NW400, operators do not need to spend time aligning, centering, focusing or capturing color retinal images because the unit automatically performs these steps once the camera is positioned in front of the eye. It also automatically travels from one eye to the other when both eyes are being imaged. The

instrument can be operated from any angle because it incorporates a rotating touch panel monitor. This feature lets the photographer be in front, behind or at either side of the patient, optimizing space savings.

The TRC-NW400 can also take photographs of the anterior segment. Fully DICOM-compliant, it can be connected to a digital capture system or used as a stand-alone instrument. [Click for more information.](#)

Survey Highlights Need for Vision Awareness and Care among Hispanic Americans

Transitions

A survey recently commissioned by Transitions Optical Inc. showed that nearly eight out of 10 Hispanic Americans are experiencing vision problems, but only four out of 10 reported visiting an eye doctor within the past year. Top vision-related complaints among Hispanic Americans who responded to the survey included trouble seeing up-close or far away, trouble seeing at night and blurry vision. Eight out of 10 Hispanics also report experiencing visual disturbances as a result of bright light or glare, such as squinting, eyestrain or fatigue and headaches.

The survey, conducted by Wakefield Research among a representative sample of 1,000 American adults, also revealed that half of Hispanic Americans don't know that their ethnicity could put them at an increased risk for several sight-threatening eye conditions, and nearly half incorrectly believe that protecting the eyes from UV rays is only necessary in the spring and summer.

To help raise awareness about the importance of regular eye care for at-risk, diverse populations, Transitions offers a number of education resources through its Transitions Cultural Connections initiative. Several materials, including a "What to Expect: Hispanic Eyes" brochure are available – in English and Spanish – free-of-charge at MyMulticulturalToolkit.com.

Expo Programs for Schools, Students and Alumni



This September at the International Vision Expo & Conference in Las Vegas, attendees were able to

take advantage of a new onsite program, Job Link, which was designed to convey information about job searching, resume building, interviewing techniques, and more. Speed interviewing (like speed dating) sessions were held each day for optometry and opticianry students, optometrists and opticians. According to the Vision Council's Professional Relations Manager Kristen Reynolds, a fourth-year optometry student received a job offer onsite.

Another programming first for Vision Expo West in 2015 was the opportunity for optometry and opticianry students to learn side-by-side. The "Choose Your Own Adventure" program enabled them to attend a course that best aligned with their interests and encouraged them to use industry as an additional resource, fostering valuable connections for the future. In addition, nightly networking events allowed students to connect with peers and industry professionals, and five optometry schools took advantage of alumni receptions.

Vision Expo West plans to work closely with the schools and colleges of optometry to identify challenges that prevent students from attending the conference. For information related to school, student or alumni programs at International Vision Expo, [e-mail Reynolds](#).

Don't Miss It

Don't Miss It

Desiree Ifft | Optometric Education: Volume 41 Number 1 (Fall 2015)

Stay tuned to your Inbox for the announcement that the Winter 2015 issue of *Eye on Education* — the online newsletter from the Association of Schools and Colleges of Optometry (ASCO) — is available.

The issue will include a report on “Charting Your Career in Academic Optometry and Research: A Session for Optometry and Graduate Students,” a workshop co-created by ASCO’s Academic Affairs Committee and the American Academy of Optometry. The event brought together highly accomplished clinician/scientists from academia and industry to discuss their experiences and share suggestions for success.

For more information about the session, contact ASCO’s Manager of Professional Affairs [Carol Brubaker](#).

Also: Visit [ASCO’s website](#) to view “Career Opportunities for ODs in Academia: Teaching & Research Needs,” a PowerPoint module that explores the need for increasing the faculty ranks at optometric institutions.

Industry News

Invitation to Participate

Call for Papers for Upcoming Diversity and Cultural Competence Theme Edition

Desiree Ifft | Optometric Education: Volume 41 Number 1 (Fall 2015)

Optometric Education announces that a future edition of the journal will focus on the theme of Diversity and Cultural and Linguistic Competence. The edition will focus on the diversity of our students, faculty and profession and all aspects of cultural and linguistic competence, including professional, organizational and individual responsibility.

The deadline to submit articles for this theme edition is Dec. 31, 2016. For additional information, contact [Gary Chu, OD](#), or journal Editor [Aurora Denial, OD, FAAO](#).

Industry News

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Allergan Academic Partnership

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Allergan Academic Partnership

Allergan is dedicated to supporting optometrists throughout all phases of their careers, and the Allergan Academic Partnership is the foundation of that support. We strongly believe that a commitment to optometric teaching institutions is a commitment to the future of optometry. The Allergan Academic Partnership program offers a full spectrum of resources, including:

The Allergan Academic Partnership Support Team

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- Expert guest lecturers on Allergan products and common ocular diseases
- 3D patient counseling app to educate patients in clinics on 7 common eye conditions
- American Academy of Optometry (AAO), American Optometric Student Association (AOSA), and National Optometric Student Association (NOSA) support

Resident Support

- Travel fellowships to attend AAO
- Interview skills training program to help prepare for future career opportunities
- Resident-practitioner networking event to assist in identifying potential employment opportunities
- Advisory board held at the Allergan corporate office to help us find the best ways to support students and residents
- Sponsorship of important events such as orientation, Resident's Day, and graduation

Faculty Support

- Product education and samples for patients who need them
- Allergan product presentations featuring nationally recognized experts in the field of optometry
- Allergan advisory board composed of faculty and administrators who provide direction on how to best support optometric teaching institutions
- Faculty conferences, grand rounds, and faculty retreats

Institutional Support

- Unrestricted grants to support continuing education of optometrists
- Sponsorship of award banquets, White Coat Ceremonies, graduations, and alumni events
- ASCO Benefactor-Level Supporter
- Philanthropic support provided through The Allergan Foundation
- Inspirational programs featuring *InfantSEE* and Tom Sullivan

**For more information, contact: Mark Risher, Senior Manager,
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