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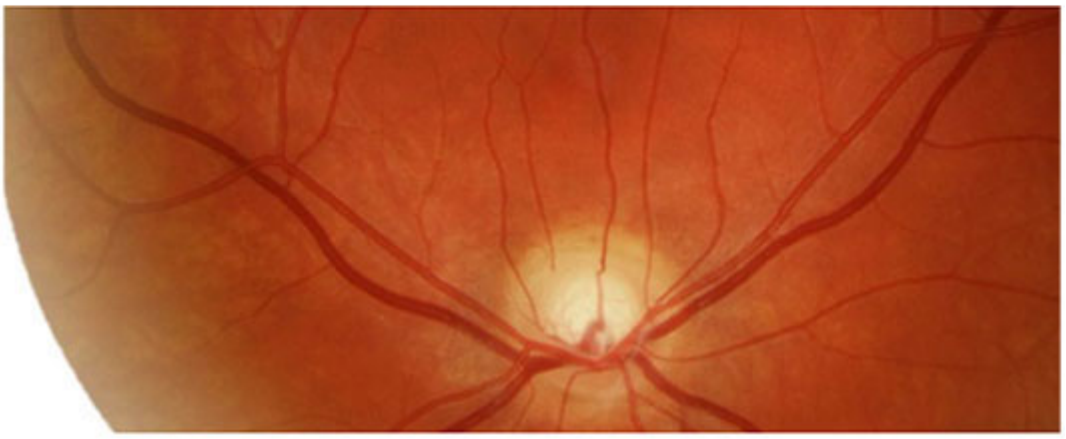

Long-term Follow-up of Suspected Vaccine-Induced Papillitis: A Teaching Case Report

Hyperopia and Presbyopia: A Teaching Case Report

A Pilot Study of Optometry Student Perceptions, Acceptance and Use of Podcasting

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ALSO INSIDE

Optometric Education: Volume 41 Number 2 (Winter-Spring 2016)

Table of Contents

Articles

A Pilot Study of Optometry Student Perceptions, Acceptance and Use of Podcasting

Kirsten Hamilton-Maxwell, PhD, B.Optom(Hons), FHEA | Optometric Education: Volume 41 Number 2 (Winter-Spring 2016)

Abstract

Background: *Students undertaking a clinical module in optometry were provided with lecture podcasts as a supplement to conventional teaching. This research sought to evaluate student perceptions of podcasting.* ***Methods:*** *Students (n=83) who had received podcasts in the previous academic year completed a survey based on the Technology Acceptance Model. The survey evaluated usage patterns, perceived usefulness, ease of use, attitudes to podcasts and barriers to engagement.* ***Results:*** *The acceptance and uptake of podcasts were encouraging. Perceived benefits included improved understanding, learning efficiency and performance in assessments. Barriers to use included a preference for other learning methods, unfamiliarity with podcasts and lack of time.* ***Conclusion:*** *Podcasts were a popular supplement to traditional clinical teaching methods in optometry.*

Key Words: *podcast, higher education, optometry, undergraduate*

Background

“Lecture capture” is a process in which digital recordings of live lectures are shared with students. Its purpose is to increase engagement with lecture material and to increase student satisfaction.[1] “Full” lecture capture includes video and audio,[2,3] but it can be challenging to introduce because it requires suitable infrastructure such as cameras and microphones in lecture theaters and upgrades to computer hardware. Working with video files can be time-consuming for staff and requires technical expertise. Finally, video files are large, so students without a good quality internet connection may find them difficult to access.[2,4]

A more accessible alternative to full lecture capture is “podcasting.” The term “podcast” is defined as “a digital audio file of speech, music, broadcast material, etc., made available on the Internet for downloading to a computer or portable media player; a series of such files, new installments of which can be received by subscribers automatically.”[5] The average smartphone, tablet or computer can record and edit high-quality audio, which common e-learning platforms can then distribute as a podcast. The flexibility of audio allows podcasts to be updated as needed,[6] maintaining the relevance to students.[3,7,8]

Podcasts are used to support learning in a wide range of healthcare disciplines, including medicine,[3,9-11] nursing[2,4,7,12-15] and dentistry.[16] The most common use has been to support students with basic science and pre-clinical modules.[2,7,9,10,12,16] Use of podcasts for undergraduate clinical education is rare,[15] and there are no documented cases in optometry.

Podcasting is popular with students and can increase student satisfaction and engagement.[6,11,13,17,18] This popularity stems from perceived benefits including mobility[4,6,7,12,14,15,19-21] and flexibility.[2,4,7,13,19-22] Students value the ability to re-visit lectures and revise lecture notes,[2-4,6,7,9,12,14,17,18,21,23,24] which may also help to reduce anxiety.[6,10,15,16] Finally, auditory learners may appreciate learning resources in an audio format.[3,11-15,19,21]

Even though students believe that podcasts can improve academic performance,[2,4,7,10,13,16,17,21] evidence of an objective improvement is lacking.[4,13,17,25] This may be because lecture podcasts may duplicate,[25] or replace,[17] traditional teaching resources. The flexibility of "on demand" resources can also pose risks. For example, the mobility of podcasts can interfere with concentration by encouraging listening in distracting environments.[13,17,26] The ability to choose when to study may allow students to pace their learning inappropriately.[4] Concerns have also been raised about the effect of podcasts on lecture attendance[4,21,23] because non-attendance may increase the likelihood of poor academic performance, disengagement and discontinuation.[17,21,27] Non-attendance in clinical modules may be riskier due to the visual nature of procedural instruction.[2] Despite these concerns, podcasting in other courses has caused little to no decrease in the number of attendees in most cases.[4,6,7,10,15,16,21,24]

There are many ways to measure academic progress in higher education. Final outcome measures such as grades are important, but it is also essential to understand and optimize the individual factors that contribute to the overall academic success of a student; these include student engagement and satisfaction.[28] The purpose of this study was to assess participant perceptions of a podcasting pilot program in optometry.

Methods

Participants and ethics

In the first week of the new academic year, a printed survey was distributed to all Year 2 students (n=83). Seventy-one of the respondents (85.5%) indicated that they had completed the OP1201 Basic Clinical Techniques module, undergraduate optometry program, Cardiff University, in the previous academic year. OP1201 is a compulsory 22-week module that equips Year 1 students with the clinical skills and knowledge required to conduct a basic optometric eye examination; it assumes no prior experience. The module is taught using one-hour lectures and two-hour practical (clinical) classes. The theory and technique for each clinical procedure are described in one or more lectures, and the procedure is later performed by students in a practical class under the guidance of qualified optometrists. All PowerPoint presentations delivered in the lectures, as well as additional written information and revision exercises, were published online (Blackboard™) before face-to-face sessions. Students who had completed the OP1201 module in the previous year but who had not progressed to Year 2 (n=7), or who were attempting Year 2 for the second time (n=2), were not captured by this study.

The Research Audit Ethics Committee at the School of Optometry and Vision Sciences, Cardiff University, granted ethical approval for this study, and the research was conducted in accordance with the tenants of the Declaration of Helsinki. Potential participants were informed of the nature of the study verbally and in writing, and consent was implied by submission of a completed survey. As a condition of ethical approval, the participants were informed that their opinions would be considered when determining the future of the podcasting pilot program. To limit the possibility of systematic bias as a result of being aware of the study's purpose, students were presented with the full range of potential outcomes verbally and through the survey questions.

Survey design

The survey design was based on the Technology Acceptance Model (TAM),[29,30] a method used

previously to assess the student perceptions of podcasting in higher education.[12,17,22] The TAM considers a broad range of issues, including current usage patterns, barriers to use and untapped potential. This survey also contained questions directed towards students who had not used the podcasts.[3] The final survey consisted of a mixture of four-point Likert scale questions and questions in an open-ended format and was conducted anonymously. Local nomenclature required that the word “practical” be used on the surveys rather than the word “clinical,” although these terms are interchangeable for the purposes of this study.

Podcast production

The podcasts were recorded during lectures for the OP1201 module using the native Voice Recorder app (version 0.1) and built-in microphone of a Samsung Galaxy SIII smartphone placed on the lectern. The recordings were transferred to a computer for conversion from the proprietary 3gp format to generic mp3 using Format Factory for Windows (version 2.96, available for free at https://www.pcfreetime.com). The mp3 was edited using Audacity for Windows (version 2.0.2, available for free at https://audacity.sourceforge.net/) to remove unnecessary material at the start and end of the lecture. Each podcast was uploaded to the online learning platform Blackboard™(version 9) using the plug-in “Campus Pack Podcasts” within two weeks of the lecture, where it could be downloaded manually or via a podcast subscription service. Students were advised that podcasts were intended to accompany the PowerPoint presentation delivered in the lecture.

Data analysis

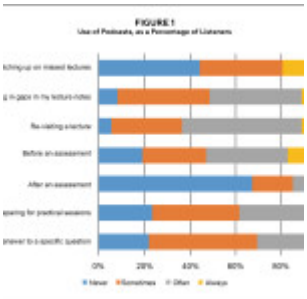
The responses to all survey questions were summarized and presented using Microsoft Excel 2013 for Windows. For each question, the proportion of responses for each category on the Likert scale was calculated as a percentage of the number of total valid responses. Responses to open questions are presented as quotations in this paper, as there were too few to conduct a thematic analysis.

Results

Use of podcasts

52.1% (37/71) of the participants stated they had downloaded and listened to at least one podcast; they are referred to as “Listeners.” The remaining 47.9% (34/71) did not listen to any podcasts; they are referred to as “Non-listeners.”

Listeners



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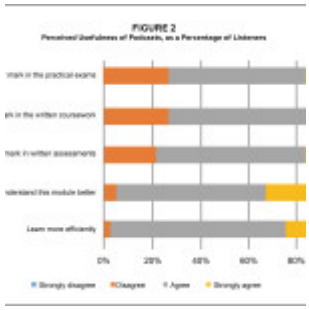

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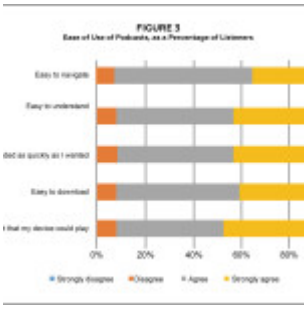

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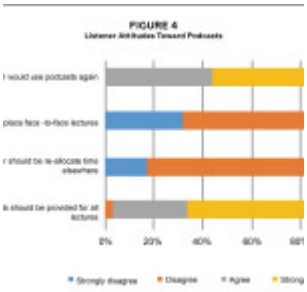

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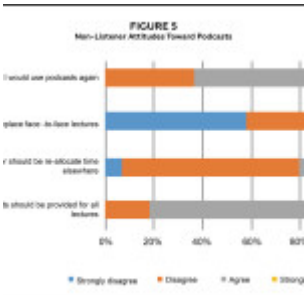

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Of the Listeners (n=37), 100% had used a computer to access the podcasts. Mobile devices, such as dedicated portable audio players (8.1%), smartphones (8.1%) and tablet computers (2.7%), were used sparingly. **Figure 1** shows that the primary use of podcasts by Listeners (defined as “often” or “always”) was for filling in gaps (51.3%) and re-visiting (63.9%) lectures. Podcasts were used frequently before assessment tasks (52.8%) but less commonly afterward (14.7%). Some Listeners routinely used podcasts to prepare for practical sessions (38.3%). Among the Listeners, 36.1% reported using podcasts to catch up on missed lectures “sometimes,” while 19.4% reported that they “always” did so.

Figure 2 shows that most Listeners agreed or strongly agreed that podcasts increased understanding (94.6%) and learning efficiency (97.3%). Many Listeners felt that their academic performance in practical (73%) and written coursework or assessments (73% and 78.4%) was enhanced by the podcasts, as indicated by the level of agreement with survey questions relating to obtaining a “better mark.”

Figure 3 shows that Listeners agreed or strongly agreed that the podcasts were easy to navigate (91.9%), understand (91.8%), download (91.9%), were uploaded quickly (91.5%) and were in a useful

format (91.5%). A small number of Listeners (<9%) reported minor difficulties with accessing or using the podcasts.

Non-listeners

The main reasons that Non-listeners did not use podcasts were a lack of familiarity with accessing material in this way (34.3%), a lack of time (31.4%) and dislike of accessing or using them (28.6%). Minor reasons included technical difficulties (2.9%) and a lack of awareness of podcasts (2.9%).

Figures 4 and 5 show that the majority of participants (97.3% of Listeners and 80.7% of Non-listeners) agreed or strongly agreed that podcasts should be provided for all lectures and expressed a desire to use them in the future (100% of Listeners and 63.4% of Non-listeners). Both groups agreed that the preparation of podcasts was a good use of lecturer time (82.8% of Listeners and 80% of Non-listeners). In response to the question of whether podcasts would be a suitable replacement for face-to-face lectures, 85.7% of Listeners and 83.9% of Non-listeners disagreed.

Discussion

Although podcasting has been used in healthcare education for some time, its main function has been to support the teaching of basic science and pre-clinical modules.[2,7,9,10,12,16] Little is known about the use of podcasts for clinical education,[15] and nothing on the topic and optometry had been published. This study explored the introduction of podcasts in optometric education from a student perspective and found podcasts to be a popular supplement to traditional clinical teaching.

Use of podcasts

Approximately half of the survey respondents (52.1%) reported listening to at least one podcast, with a significant proportion using podcasts frequently ("often" or "always," **Figure 1**). The uptake of podcasts in this study is similar to the prevalence of Listeners reported within other Year 1 UK-based healthcare education courses, including 64.6% and 51.5% for two basic science modules in a medical degree program at the University of Leeds,[9] and 71% reported at the University of Nottingham for Nursing students studying a biology module.[12] The number of students accessing podcasts in this study was considerably lower than figures reported by institutions in the United States, such as the 89.4% reported in a basic science course at the Vanderbilt University School of Medicine,[10] and the 95% reported at the School of Nursing at Adelphi University.[7] These figures suggest podcasts were well-accepted by optometry students but there may be potential for increasing adoption.

Smartphones and tablets have not changed listening habits

One of the original benefits of podcasting was the flexibility it offered, allowing students to study anywhere and at any time.[13,17,26] Research has since shown that most students prioritize the ability to concentrate over the ability to be mobile,[4,6,7,9,11-13,16,17,21-24,26] and this study confirmed that the primary device for accessing podcasts remains the computer (100%). Students used mobile devices sparingly and always as a supplement to a computer. The preference for computer-based listening could have been anticipated for this study, as the podcasts were designed to be paired with the PowerPoint presentations published on Blackboard™[7,9,21,23]

"I liked that I could listen and read the PPP (PowerPoint Presentation) at the same time."

Podcasts are relevant to practical and clinical performance

The Listeners reported that podcasts improved understanding (94.6%), learning efficiency (97.3%) and grades in written coursework and assessments (73% and 78.4%, **Figure 2**). Such a finding is common.[2,6,7,10,16,17] Students also reported a belief that podcasts improved practical and clinical performance. A noteworthy proportion of Listeners (38.3%, **Figure 1**) used podcasts frequently to prepare for practical sessions, while many more reported that podcasts improved their results in practical assessments (73%, **Figure 2**). As this was a pilot program, technical limitations sometimes delayed the publication of the podcasts by up to two weeks. It would be useful to investigate whether a more rapid distribution of podcasts would increase the proportion of students who used them to prepare for practical sessions.

Podcasts are a useful companion to lectures

Previous studies have indicated a major use of podcasts is to re-visit lectures and update lecture notes,[2-4,6,7,9,12,14-18,21,23,24] and more than 90% of Listeners in this study did so **(Figure 1)**. In particular, podcasts allowed students to identify and correct missed information in lecture notes.

"I could list(en) to my lectures again and get any points I may have missed the first time around."

Another interesting point raised was that the podcasts allowed students to pay greater attention during lectures, as they did not need to be concerned about missing vital material.[6,7,14,16,21,23] This is likely to be particularly important for students for whom English is not their first language or for students with learning difficulties.[7,15,21]

"That you can go back and edit notes – meaning in the lecture you can concentrate and try to understand rather than trying to write everything down."

As has been reported previously,[7,15,21] a significant number of Listeners (52.8%, **Figure 1**) regularly used podcasts for revision purposes before assessments. This is unsurprising given that the Listeners also reported a belief that podcasts improved their assessment performance **(Figure 2)**. However, only 14.7% of Listeners indicated that they would routinely use a podcast after an assessment **(Figure 1)**, which could be viewed as a missed opportunity for students to reflect on their practical performance within the context of the theoretical aspects of the module. It would be beneficial to educate the students regarding this untapped benefit of podcasting.

Podcasts as a substitute for lectures

In the Listener group and the Non-listener group, 85.7% and 83.9%, respectively, expressed an opinion that podcasts were not a suitable replacement for lectures **(Figure 5)**, with 44.4% of Listeners reporting they have never used podcasts for this purpose. In contrast, 36.1% reported they had done so "sometimes" **(Figure 1)**. This suggests that most students prefer to attend live lectures but will use a podcast as an alternative when an absence is unavoidable.[4,6,7,12,14,21,23]

However, a subset of Listeners routinely used podcasts as a substitute for attending lectures; 19.4% reported they "always" used podcasts to catch up on lectures **(Figure 1)**, and 14.3% **(Figure 5)** accepted podcasts as a replacement for lectures. This figure is at odds with previous studies that have reported that podcasts do not cause a decline in lecture attendance.[6,7,10,16,21,24] Although using podcasts as a substitute for attending lectures can provide students with the freedom to study anywhere,[4,6,7,12,14,15,19-21]

and at any time,[2,4,7,13,19-22] it can be a risky strategy. First-year students are particularly vulnerable to the disengagement and isolation that self-directed study can bring.[21,27] Listening to a podcast instead of attending a lecture, even when viewed with the accompanying PowerPoint presentation, may pose additional problems for modules of a visual nature.[2] Finally, the lack of face-to-face contact between the lecturer and the students can prevent important real-time communication between the two.[2,20]

Why don't some students listen to podcasts?

Although the Listeners reported that the podcasts were easy to navigate (91.9%), understand (91.8%), download (91.9%), were available quickly (91.5%) and in a useful format (91.5%, Figure 3), there were three primary reasons that 47.9% of students (Non-listeners) did not use them.

First, approximately one-third of the Non-listeners (34.3%) reported a lack of familiarity with using podcasts. It is sometimes incorrectly assumed that the current generation of university students is extremely familiar with technology, but this can be a barrier to engagement.[2] Training for students may improve the uptake of podcasts.[4,12]

Second, although the majority of Listeners (97%) felt that the podcasts enabled them to learn more efficiently **(Figure 2)**, 31.4% of the Non-listeners reported that lack of time was a barrier.[4,14] The compatibility of podcasting with preferred learning styles might explain some of this discrepancy. Learning styles may be classified as visual, auditory, read & write or kinesthetic (VARK) based on whether a student prefers to learn via images, sound, note taking or touch.[31] Auditory learners may have seen efficiency gains because non-optimal traditional resources were replaced with a learning resource in their preferred format.[19] Conversely, students with non-auditory learning styles may have viewed podcasts as an additional and inferior learning resource.[13] Academic ability may offer an alternative explanation for differences in uptake. Studies have shown that students with higher levels of academic ability can process material more quickly, allowing time to engage with additional resources.[1] It is thought, however, that lower achieving students would be likely to derive more benefit.[1] The anonymous survey design meant that it was not possible to explore differences in characteristics between Listeners and Non-listeners. Further work is recommended to evaluate the relationship between learning style, academic ability and the uptake of podcasts.

Finally, 28.6% of students reported a dislike of accessing or using materials provided as a podcast. This may reflect a lack of acceptance of the technology itself or the mismatch between podcasts and personal learning preferences.

"I personally don't use them because I prefer reading and making notes from books/doing questions."

Future of the podcasting program

Listeners (97.3%, **Figure 4**) and Non-listeners (80.7%, **Figure 5**) agreed that the podcast program should be expanded. All (100%) Listeners and 63.4% of Non-listeners indicated they would use podcasts in the future. The support of Non-listeners for podcasts was surprising and the reason is altruistic:

"I like that podcasts are available for people who would use them to refresh their memory or make additional notes that they may have missed."

There is some doubt relating to whether students felt that the preparation of podcasts was a good use of

lecturer time. 82.8% of the Listeners and 69% of the Non-Listeners agreed with this statement. Additional work would be useful to determine which activities students would rather see from a lecturer.

Limitations and further work

As a condition of ethical approval, students were informed that their survey responses would be considered when evaluating the future of the podcasting pilot program. To avoid systematic bias, all possible outcomes (continuation, expansion or discontinuation) were included when the podcasting pilot program was explained to the students. Also, leading questions within the survey were avoided. Nevertheless, the reader is encouraged to consider the possibility of bias when interpreting the results.

Podcasts are becoming increasingly easy to record, distribute and access, and are popular with optometry students. However, further work is recommended prior to generalizing the results of this study. It would be useful to evaluate whether podcasts have a measurable impact upon clinical performance or assessment results. Other areas to be considered include the consequences of non-attendance in visual modules,[2] or whether full lecture capture may be more appropriate.

Conclusions

Podcasts are a popular supplement to conventional clinical teaching in optometric education.

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Features

Editorial

Do Our Students Really Possess Information Literacy?

Aurora Denial, OD, FAAO | *Optometric Education: Volume 41 Number 2 (Winter-Spring 2016)*

Aurora Denial, OD, FAAO

In 2011, the Board of Directors of the Association of Schools and Colleges of Optometry (ASCO) approved an updated “Attributes of Students Graduating from Schools and Colleges of Optometry” report. The report represents contemporary thinking about the requisite competencies for new graduates of optometry degree programs. It states that graduates are “responsible for ongoing self-learning and for remaining current and competent in their knowledge and skills.”[1] Additionally, it states that “The school or college of optometry shall ensure that before graduation each student will have demonstrated the ability to access evidence-based knowledge (including through the use of information technology) and manage information, and to apply that information in making decisions about patient care and health care delivery.” As clinicians and educators we all have experienced the explosion in the availability of information on the Internet. This information is a valuable resource for all health care professionals and students. However, there may be a gap in students’ ability to use these tools.

Though not new, the concepts of “information literacy,” “fluency in technology” and “computer literacy” have recently received a lot of attention in higher education. The concept of information literacy involves more than the ability to look up a topic on the Internet. It includes critical thinking related to determining the purpose of gaining information, identifying assumptions, critically evaluating literature, determining biases, forming conclusions and evaluating implications. According to the Association of College and Research Libraries (ACRL), computer literacy focuses on the “rote learning of specific hardware and software applications, while ‘fluency with technology’ focuses on understanding the underlying concepts of technology and applying problem-solving and critical thinking to using technology.”[2] Although this definition introduces the concepts of critical thinking and problem-solving, they are applied directly to technology. In 2000, the ACRL defined information literacy as “a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.”[2] In 2015, the organization presented an expanded definition: “Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of

how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning."[3] Information literacy allows doctors more control over their learning and the ability to stay current.[2]

Information Literacy Must Be Taught, Even to Millennials

The ability to identify appropriate databases, efficiently use the databases, critically evaluate clinical studies and appropriately reference sources can be particularly daunting skills for students. Because most students in the millennial generation are savvy in the use of technology, it is easy to assume that navigating the Internet for information related to the acquisition and use of knowledge would come naturally. In my experience, many students are significantly lacking in information literacy skills. Therefore, these skills need to be taught in an organized and concrete manner and then practiced. Projects that require students to research ocular conditions, use evidence-based practice and evaluate information should be incorporated into every year of the curriculum. The utilization of information literacy skills should become a habit of mind, so it is automatic. The efficient utilization of information is particularly important in the clinical environment. In today's world, the emphasis in most clinical environments is productivity. If obtaining and using information is not a habit, it has potential to interfere with productivity and may not be utilized. Developing a culture of information literacy while also focusing on teaching, patient care and productivity can be challenging for clinical faculty, but students must be prepared to use these skills in the clinical environment, and faculty must act as role models.

How Does Your Institution Foster Information Literacy?

What is the best method for teaching information literacy skills to our students? Are we achieving the goals set forth by ASCO? Are we evaluating outcomes and disseminating information so that best practices can be achieved? A search of PubMed, VisionCite and Education Resources Information Center (ERIC) using the terms "information literacy," "computer literacy," and "optometry or optometric education" produced only a few articles in the profession of optometry. What is your institution doing to teach, utilize and reinforce information literacy skills?

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Industry News

Industry News

Industry News

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Industry News

Winners in New Innovation Awards Program Honored

During Transitions Academy 2016 this February in Orlando, Fla., Transitions Optical presented its new Innovation Awards. The awards recognize individuals and companies from the United States and Canada for their innovative efforts to support the Transitions brand over the past year.

The winners for 2015:

• Lunetterie New Look Eyewear, Canadian retailer with 75 locations in Québec and Ontario (Best in Marketing)

• Visionworks, optical retailer with 670 U.S. locations (Best in Training)

• VisionArts Eyecare Center, independent practice in Fulton, Mo. (Best in Patient Experience)

• Henry Ford OptimEyes, 19-office retailer in metro Detroit area (Best in Growth Achievement)

• Eric White, OD, owner, Complete Family Vision Care, San Diego, Calif. (2015 Transitions Brand Ambassador).

In previously announcing the finalists for the awards, Jose Alves, Transitions' General Manager, Americas, noted "Innovation exists within all business functions and teams; sometimes it's the company culture that supports and sustains this creativity and at times it's an individual that inspires a change or idea. All of our finalists have applied smart, innovative thinking to achieve their professional and personal goals. We are grateful to these individuals and businesses for their partnership and for all they do to promote the Transitions brand."

Nearly 500 industry professionals from North and South America came together for the two-day, invitation-only Transitions Academy 2016, themed "Enlighten," where they attended professional development and product technology workshops, learned about industry and marketing trends and participated in panel discussions.

New Specular Microscope Now Available

The FDA granted 510(k) clearance for the SP-1P Specular Microscope from Topcon Medical Systems. The fully automated microscope includes innovative features for the documentation and analysis of the condition of the corneal endothelium.

With one tap of the center of the patient's pupil displayed on the monitor, the SP-1P automatically centers, focuses and acquires the endothelial cell image. The instrument includes comprehensive analysis software. Panorama mode substantially increases the size of the analyzed area, and a histogram with color is displayed on-screen. The 10.4-inch rotatable touch panel monitor allows operation of the instrument from virtually any position.

Company Acquires Lens Lab Group

HOYA Vision Care acquired Nexus Vision Group and its affiliated laboratory partners in five states. Nexus, headquartered in Grove City, Ohio, is a wholesale independent laboratory serving eyecare professionals across the United States and Canada. It utilizes state-of-the-art machinery to provide the latest digital lens designs.

In a press release announcing the acquisition, President of HOYA Vision Care, Americas, Barney Dougher said "This acquisition expands HOYA's U.S. footprint, establishes a greater local presence and allows us to better serve our customers. Nexus and its five affiliated labs have demonstrated a strong commitment over the years in supporting Independent Optometry and those values."

Availability of New Toric Lens Expands

CooperVision Inc. continues the rollout of its Biofinity XR toric, the newest addition to the company's Biofinity range of monthly silicone hydrogel contact lenses. The XR toric was introduced to a few hundred accounts during a limited rollout period prior to the broader rollout slated to begin in April.

CooperVision says the Biofinity XR brand is the only silicone hydrogel contact lens range from a major manufacturer designed for patients with prescriptions beyond the traditional stock range. "Biofinity XR toric contact lenses bring the proven comfort, clarity and stable fit of the Biofinity brand to people who may otherwise not have the opportunity to experience the benefits of a premium silicone hydrogel lens," said Jerry Warner, President, North America, CooperVision. Like all Biofinity lenses, the XR toric features Aquaform Technology, which is designed to allow more oxygen to reach the eyes for a healthier corneal physiology.

Contact Lens Study Data Reported

Data from three studies funded or sponsored by The Johnson & Johnson Vision Care Companies were presented at the 10th Global Specialty Lens Symposium in Las Vegas in January. The studies evaluated the clinical performance of 1-Day Acuvue Moist Brand Multifocal Contact Lenses and 1-Day Acuvue Moist Brand for Astigmatism Contact Lenses in different patient populations.

One of the studies, by Sulley et al., was an in-practice assessment of the multifocal lenses conducted in the United States and United Kingdom. Eyecare practitioners (ECPs) were asked to fit patients in the lenses during the course of their normal clinical practice. They were encouraged to use the fitting guide and had received guidance on the company's approach to patient selection. Mean age of the subjects fitted was 54 years. Two-thirds were myopes and more than half had a high add power. Study results included that 85% of ECPs agreed the lenses delivered a high success rate with the first pair, and 99% said they would recommend the lens to colleagues. In addition, 85% of patients agreed their overall vision was excellent/very good, and 93% agreed their overall comfort was excellent/very good.

Another study, by Guillon et al., evaluated whether etafilcon A (1-Day Acuvue Moist Brand Multifocal

Contact Lenses) material properties could minimize the underlying level of ocular tissue dryness frequently experienced by presbyopes. Results showed that upper lid margin staining with the lenses was significantly lower than with the patients' own contact lenses after six hours of wear. Also, lid margin staining with the lenses was not different from that measured after one day without contact lenses.

A third study, by Berntsen et al., compared the effect of the soft toric lens 1-Day Acuvue Moist Brand for Astigmatism Contact Lenses with its spherical counterpart, 1-Day Acuvue Moist, on the number of lenses required to initially fit astigmatic patients (-0.75 DC to -1.75 DC) and subjective and objective vision performance. While there was no difference in the number of contact lenses required to achieve a successful fit (1.2 lenses for each lens type), the soft toric lenses provided better subjective and objective vision. The authors concluded that the results support the use of the toric lenses for improved vision compared with a spherical lens, even in patients with low-to-moderate amounts of astigmatism.

Wide-Angle Retinal Images with Apple Devices

Volk Optical's new iNview harnesses the power of Apple devices to easily acquire wide-angle digital color fundus images. The indirect ophthalmoscopic lens attachment is compatible with iPhone and iPod and works in conjunction with the free Volk iNview app to take retinal images for general visualization, patient education, referrals and record-keeping.

According to Volk, the iNview is the first Apple-compatible fundus imaging device to overcome the challenges similar instruments have failed to address: field of view, ease of image capture and optical quality. Designed for use with dilated eyes, iNview provides a static 50° field of view as well as dynamic peripheral retina views out to 80°. The device offers both manual and auto-capture. In auto-capture, the iNview app takes a rapid series of images, running a proprietary algorithm to present the best-focused and defined images for review.

Student- and School-Focused Programs Continue at Vision Expo East

Registration is open for International Vision Expo East (April 14-17, 2016, in New York). For information about the many special perks and programs available for optometry students, deans, clinical directors,

faculty, staff and alumni, e-mail Professional Relations Manager Kristen Reynolds.

Also: The Vision Council held its 2016 Executive Summit in January at the Waldorf Astoria in Orlando, Fla. The summit had record-breaking attendance of nearly 350 optical industry leaders. The program featured opportunities for executive-level networking and leadership development and information about the latest economic trends and business strategies. Keynote speakers were: Jim Collins, top-selling business author; Brian Beaulieu, economist and CEO with ITR Economics; and Dr. Jonah Berger, author and Wharton professor. During the summit it was also announced that Martin Bassett, Walman Optical, will continue as Chairman of the Board.

Also: The national Think About Your Eyes campaign, in which the Vision Council is a partner, announced it had a stellar 2015, reaching more consumers and producing more eye exams than ever before. Nearly 1.3 billion consumer impressions were generated, and the message about the importance of vision health and annual comprehensive eye exams was seen or heard by more than 132 million adults. Six additional weeks of advertising are planned for 2016.

$50,000 Donation Goes to Optometry Giving Sight

BAUSCH + LOMB

Bausch + Lomb donated $50,000 to Optometry Giving Sight, a global fundraising organization that specifically targets the prevention of blindness and impaired vision due to uncorrected refractive error by providing access to eye examinations and glasses. The donation will support a broad range of sustainable training and education programs that improve eye health for people in developing and underserved communities. Optometry Giving Sight funds the development of sustainable eye and vision care projects in communities where these do not currently exist. The projects focus on local training and capacity building, infrastructure development and the delivery of accessible and affordable eye and vision care services. In addition, Optometry Giving Sight is a member of VISION 2020: The Right to Sight, a joint program of the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB). VISION 2020 aims to eliminate avoidable blindness through awareness raising, advocacy and resource mobilization and the implementation of national eye health plans in all countries.

Also: B+L expanded its specialty lens business with the addition of Alden Optical Laboratories Inc., a privately held manufacturer of premium specialty and custom soft and gas permeable contact lenses.

New Grant Program for Optometry Students

National Vision Inc. will announce by March 1, 2016, the winner and two runners-up in its new annual grant program for optometry students. The program, which is open to third- and fourth-year optometry students across the United States, asks applicants to write a 500-word essay or create a short video describing their perspectives on a particular topic for a chance to win the $5,000 grand prize. The topic for the 2015 contest was “The Importance of Affordable, Primary Eye Care in a Changing Health Care Environment.”

Information about the 2016-2017 grant program will be available in the fall.

Also: National Vision was the lead sponsor of the 2015 annual meeting of Volunteer Optometric Services to Humanity (VOSH), which was held in New Orleans in October 2015. The company has been a supporter of the non-profit organization for more than 10 years in a variety of ways, including by providing monetary, product and equipment donations. National Vision plans to donate $1,000 annually to an optometrist or optometry student supporting a Student VOSH clinic, per optometry school, as well as PlusOptix handheld autorefractors for use at the clinics. Bob Stein, Chief Philanthropic Development Officer for National Vision, recently joined the VOSH Board of Directors and serves as one of only two non-optometrists on the Board.

Educator's Podium

Teaching Optometry Students How to Study Actively

Nancy B. Carlson, OD, FAAO | Optometric Education: Volume 41 Number 2 (Winter-Spring 2016)

Students enter optometry college with varying undergraduate backgrounds and a wide variety of study skills. They are eager to learn but are not always prepared to learn for mastery: the deeper understanding of material that can be recalled and applied later to clinical situations. In optometry college, cramming for exams and/or trying to memorize everything just does not work. In a study of first-year optometry students, McGinley, Carlson and Hoppe[1] (2008) found the study skills students reported using in undergraduate college would be inadequate for the volume and intensity of work that would be expected of doctoral level students in their didactic program. In a follow-up study, McGinley and Carlson[2] (2010) found that over the course of the first year in their professional program, a significant number of students improved their time management skills and their consistency in studying and decreased cramming.

First-year optometry students spend approximately 30 hours per week in lecture, labs, seminar and clinical activities. Students take seven or more courses during their first semester, a larger load of courses than most of them had as undergraduates. Furthermore, all courses are important, and none can be largely ignored successfully. Time management becomes crucial when so much time has already been committed to the academic schedule. Students must learn how to study efficiently, continue to take care of their health with good nutrition and exercise, and have some fun. Faculty can help students who need to improve their study skills through individual meetings or group presentations and discussions. This Educator's Podium explores study methods that have been successfully used by students in health professions programs and makes recommendations for faculty and students for the didactic portion of their programs.

What Can Be Learned from the Literature?

The journal *Optometric Education* published only three articles related to study skills for optometry students in the past five years.[3-5] Yet optometric educators know that many of their students need help. As soon as the first midterm exams are over, there are always students wanting to know why they have done so poorly when they have put so much time and effort into preparing. A discussion with these students often reveals that they have only studied for two to three nights before the exam rather than throughout the term; their study method is to re-read their course handouts or notes several times; they have not done the required reading or the recommended reading; and have not studied with anyone else in their class. These students clearly need to learn to study differently. They need to be more actively engaged with the material they are learning in order to truly master it. While memorization has a place in optometry college, deeper learning or mastery is also needed to be able to recall information later and apply it to patient care.

In the 1990s, Bonwell and Eisen[6] promoted active learning techniques for the classroom and for studying. Active learning helps students to analyze, synthesize and evaluate course material and leads to longer retention of information to use later in clinical situations. Re-reading course notes or trying to memorize everything in the course is very passive and does not promote long-term retention of material.

Freeman, Eddy, McDonogh, Smith et al.[7] (2014) reviewed 225 studies comparing traditional lecture to active learning activities and found that student performance improved an average of 6% if they were engaged in active learning activities rather than just passively listening to lectures. Students who did not participate in active learning were 1.5 times more likely to fail the course they were taking.

Prince[8] (2004) looked at the effectiveness of active learning among engineering students. He found that students remember more content if some active learning activities are introduced in lecture and if they engage in collaborative and cooperative learning. One strategy he recommends is having the lecturer pause for a few minutes during class while students work with each other to make a brief summary in their own words to clarify their notes on the presentation. This has been shown to improve student long-term retention of basic concepts. Prince also reports on studies done by Johnson, Johnson and Smith[9,10] (1998) that show that academic achievement and self-esteem improved among students who worked collaboratively with one another.

Active Study Skills

While few articles have been written for optometry students about study skills, many papers and websites can be found for college students in general and for medical students and other health professions students. These articles, including those written by community college faculty, can be very useful for teaching optometry. Heller and Marchant[11] (2015) recommend a structured, content-learning approach in their introductory psychology course that resulted in the students in the intervention group performing significantly better on three exams and achieving higher course grades for the semester. Heys and Wawrzynski[12] (2013) presented results of a study that showed that male students who are peer educators show significant growth not only in the content area they are teaching but also in interpersonal skills, awareness of diversity and communication skills. This supports the report by Prince on cooperative and collaborative work among students. McDaniel[13] (2014) presents a list of five do's and don'ts to promote critical thinking rather than just teaching to the test. These papers, and many others, can help faculty to teach students efficient ways of learning.

Bonwell and Eisen[14] (1991) recommend techniques to use in the classroom setting to actively engage students in discussion and in learning the material during class. Active learning can be done in or out of class, by individual students or by a group of students, and either orally or in writing. Active learning promotes the deeper type of learning needed by healthcare students. Re-reading notes many times, a strategy that may have worked for undergraduates, does not engage students fully enough to help them to master the material.

Much of the information on how to study in medical school emphasizes active study skills. Some of the information is in journal articles and some on websites, frequently from the student services offices at medical schools. For example, in her article "How to Drink from a Fire-hose without Drowning," Apperson[15] describes the problem with studying that medical students face as similar to that of optometry students: a large volume of material that must be mastered with less available study time than they had as undergraduates. She recommends active study techniques including knowing the big picture by scanning notes and/or PowerPoint presentations before class, organizing information by annotating class notes right after class, memorizing what is necessary and frequently reviewing it, and trying to apply information to more complex clinical situations through quizzes and practice problems. Jacobs[16] (2014) gives the same list as Apperson but for pharmacy students.

Augustin[17] (2014) recommends repetition of information that must be memorized. In addition, testing the material on several different occasions helps students to retain the information. Feedback given after each testing session shows the students what to focus on to improve quiz or test scores for the next time and leads to longer retention. Active recall such as writing what has been learned rather than passively re-reading it also improves long-term retention. Quizzes given before information has been presented in lecture helps students focus on what they need to learn and aids in retention of concepts. Augustin reported on an experiment by Storm, Bjork and Storm[18] (2010) that showed students who spaced their study at differing intervals retained more than students who studied the same material on a fixed interval schedule.

The website for the Academic Skills Center at Dartmouth College[19] lists the following for improving concentration, memory and motivation: study in chunks, study in daylight hours, study actively, and find the right place to study. The site also includes handouts, videos and links to other websites on how to study. The handout on How to Study Actively recommends reading before going to class, attending class, asking questions, reviewing notes right after class, outlining major topics, asking yourself questions, reading the text, doing homework and reviewing and integrating the material.

Petersen of The Albert Einstein College of Medicine[20] (2012) reported that nine out of 10 students find that working with other students improves their understanding and their exam scores. Working with a group helps a student figure out what he knows and what he does not know. Petersen recommends groups of three to four students with one serving as a monitor at each meeting of the group. The group should agree on the amount of time they will meet and what will be covered at the study session. Students should prepare for the session by bringing a list of key points to be covered and a list of their own areas of confusion. Students can teach each other and learn from each other through oral quizzes at group study. Study groups help students know what material they know well and what they need to work on. Being part of a study group also decreases procrastination: The student has to be prepared to work with others before the group meets.

The social media site KevinMD.com[21] (2012) gives the following advice to new medical students: cramming is bad; avoid study groups; focus, dammit; don't get down on yourself; learn what medicine is all about. While "avoid study groups" is in contrast to the advice from Dr. Petersen at Einstein Medical College, there is no one study method that will work for all students. "Cramming is bad" is a more direct way of saying that health professionals must learn for mastery and be able to recall information and apply it to patient care.

In his editorial "What Makes a Good Teacher? Lessons from Teaching Medical Students," Markert[22] (2001) says, "Learning is seen not as the storage of information but as the continuous process of filtering new knowledge through the structures we have developed from prior learning and

TABLE 1
Active Study Strategies for Optometry Students

Review notes/handouts before lecture and mark the areas where you have questions
Attend class and take notes on your handouts to clarify concepts
Review the class notes after class
Condense notes into main points and use these to review often
Make flashcards for information that must be memorized: e.g., definitions, formulas, and review often
Study with a group; be sure everyone in the group is participating
Study as though you will have to explain the topic to someone else and do this often in group study; be sure everyone participates
Write questions for your study group and share them; think about what you think the professor will ask you on an exam
To maximize your lab experience, review the lab handout before lab, review relevant notes before lab, and do any assigned reading before lab
Review lab handouts after they have been graded and returned to you
Practice! Practice! Practice!
Ask for help when you need it (from your professor or from Student Services)
Review often
Stay healthy! (eat well, exercise, meditate)
Have fun!

Click to enlarge

experience." We need to help our students with study skills that will set them up for the lifelong learning that is needed in health care in the 21st century and give them ways to attach new information to previously learned information to make it easier for them to remember. Active learning techniques foster this.

Brown, Roediger and McDaniel[23] (2014) state, “Elaboration is the process of giving new material meaning by expressing it in your own words and connecting it with what you already know. The more you can explain about the way your new learning relates to your prior knowledge, the stronger your grasp of the new learning will be and the more connections you create that will help you remember it later.” Students can do this by summarizing what they know about a topic during their group study sessions and when they condense their notes for later review and study.

“See one, Do one, Teach one,”[24] is a popular learning strategy in medical education. The student observes what he will be doing, then does it with an expert watching and providing feedback. Finally, the student, in his own words, teaches what he has learned to another student. This strategy encourages active learning and helps the student to self-reflect on what he has learned. Simulations and web-based learning have replaced this strategy to some extent, especially for learning techniques that might be invasive or harmful to the patient. However, the basic principles in this learning method are sound and still useful.

Active Teaching of Active Learning

Although optometry students are college graduates when they start optometry college, they are not always prepared for the volume, intensity and long-term retention that is needed to study optometry successfully. Faculty need to help students acquire study skills along with acquiring new knowledge. **Table 1** shows a summary of many of the active study techniques that were presented in this Educator’s Podium and can be given to first-year optometry students during orientation to help them hit the ground running and “not drown while trying to drink from a fire-hose.” Even the well-prepared students can benefit from learning new ways to study and make their studying more efficient. Students who are not doing as well as they expected can benefit from changing their study habits to more active techniques because studying in the same way they have been is likely to result in the same disappointing outcome.

Students also need to be reminded that they have to take care of themselves and remain healthy to maximize their learning. They need to eat three nutritious meals per day and maintain an exercise program to help reduce stress. Meditation is also a great stress reliever. YouTube[25] contains numerous sites for both long and short meditation sessions. The sites for “Mandala Meditation” have soothing music, great kaleidoscope graphics, generally play for less than 10 minutes and are very appealing to students, even those who have never meditated before. Students who meditate every day and also right before an exam generally have less stress than those who do not.

Finally, students need to enjoy their experiences at optometry college. They need to be involved in both social and service activities. Their classmates are their future colleagues and many are likely to be part of their lives throughout their careers.

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Dr. Carlson is a New England College of Optometry Professor Emeritus.

Industry News

Invitation to Participate

Deadline Extended for Upcoming International Optometric Education Theme Edition

Desiree Ifft | Optometric Education: Volume 41 Number 2 (Winter-Spring 2016)

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.

This theme issue builds on the work of the ASCO International Optometric Education Committee and International Optometric Educators Special Interest Group (SIG).

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

Invitation to Participate

Upcoming Theme Issue Will Focus on Diversity and Cultural Competence

Desiree Ifft | *Optometric Education: Volume 41 Number 2 (Winter-Spring 2016)*

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

Don't Miss It

Coming in April

Desiree Ifft | Optometric Education: Volume 41 Number 2 (Winter-Spring 2016)

Stay tuned to your Inbox for the announcement that the Spring 2016 issue of *Eye on Education* — the online newsletter from the Association of Schools and Colleges of Optometry (ASCO) — is available.

The issue will include the latest news about ASCO initiatives and activities as well as items of interest from the schools and colleges of optometry and the Association's corporate partners.

Also: Visit ASCO's website to take advantage of a variety of resources, including the recently posted "Career Opportunities for ODs in Academia: Teaching & Research Needs," a PowerPoint module that explores the need for increasing the faculty ranks at optometric institutions.

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