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Optometric Education: Volume 47 Number 2 (Winter-Spring 2022)

Table of Contents

Features

Educator's Toolkit

UDL: A Framework for Meeting Diverse Learning Needs

Keshia S. Elder, OD, MS, MS, FAAO | Optometric Education: Volume 47 Number 2 (Winter-Spring 2022)

Keshia S. Elder, OD, MS, MS, FAAO

The demographics of students entering post-secondary education are changing. Today's students have diverse backgrounds. They are more likely than in the past to be first-generation college students, military students, nontraditional (e.g., older) students, minorities or English language learners. Additionally, more students with disabilities are enrolling in colleges and universities. Studies and other data documenting these demographic shifts are cited throughout the literature, including by Boothe et al.,[1] McGuire et al.[2] and Scanlon et al.[3] Diverse learners have diverse learning needs and face various barriers to learning successfully.

This increasingly diverse population of post-secondary students is the applicant pool for schools and colleges of optometry. Therefore, it becomes more important than ever for optometric educators to decrease barriers to learning so the instructional needs of all optometry students continue to be met. While compliance with the federal Americans with Disabilities Act of 1990 and section 504 of the Rehabilitation Act of 1973 remains mandatory, UDL provides an enhanced approach as it can meet the learning needs of a wider range of students.[4]

The UDL Framework

Figure 1.
Click to enlarge

Based on the science of how people learn, UDL is a teaching framework designed to provide a flexible learning environment to meet the needs of diverse students.[5] Applying UDL principles to instructional settings reduces learning barriers by providing instructional environments that are more accessible and effective for students.

UDL was developed in 1984 and has been defined as "a set of principles for curriculum development that gives all individuals equal opportunities to learn."[6] UDL employs the universal design concept from architecture, which holds that tools and buildings should be accessible to everyone. Similarly, instructional techniques, strategies, materials and activities should be accessible to everyone.[7] The three primary principles of UDL are 1) engagement, 2) representation, and 3) action and expression. Engagement (the *why* of learning) refers to stimulating motivation and interest in multiple ways. Representation (the *what* of learning) refers to presenting and collecting information and content in multiple ways. Action and expression (the *how* of learning) refer to allowing learners alternative ways to navigate the learning environment and demonstrate knowledge. **Figure 1** provides a fundamental description of UDL. CAST, the nonprofit education research and development organization that created

the UDL framework, has published guidelines to assist educators with implementation. The guidelines contain cross-discipline suggestions for ensuring learners can access and participate in learning activities **(Figure 2)**. Additional detailed information can be found in the interactive UDL guidelines graphic organizer. With its *UDL Rising to Equity* initiative, CAST is currently updating the UDL guidelines to redress systemic barriers to equitable learning access and outcomes.

Figure 2. Click to enlarge

Table 1. Click to enlarge

Changes Can Be Incremental

The goal of implementing the UDL framework is to design learning experiences that consider learner variability and eliminate unnecessary barriers to learning. Although developing inclusive learning environments can be a daunting task, it is possible to begin by incorporating relatively simple and minimally time-consuming changes **(Table 1)**. Additional course changes can be made incrementally over time.

More resources pertaining to UDL and UDL implementation are below.

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Links to Additional UDL Resources

WEBSITES

About Universal Design for Learning

The IRIS Center

UDL Toolkit by Fred Cochran

Accessibility of Electronic and Information Technology (for compliance with Rehabilitation Act, section 508)

Web Content Accessibility Guidelines, (WCAG) 2.1 (for compliance with Rehabilitation Act, section 508)

PODCASTS

Think UDL, Hosted by Lillian Nave

The UDL Approach, Hosted by Loui Lord Nelson, PhD

TEXTS

Chardin M, Novak K. Equity by Design: Delivering on the Power and Promise of UDL. Corwin Press; 2020 Jul 20.

Dirksen J. Design for How People Learn. New Riders; 2016.

Novak K, Rose D. UDL Now!: A Teacher's Guide to Applying Universal Design for Learning in Today's Classrooms. CAST Professional Publishing; 2016.

Ralabate PK. Your UDL Lesson Planner: The Step-by-Step Guide for Teaching All Learners. Brookes

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2. McGuire JM, Scott SS. Universal design for instruction: extending the universal design paradigm to college instruction. Journal of Postsecondary Education and Disability. Fall 2006;19(2):124-34.
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Industry News

Desiree Ifft | Optometric Education: Volume 47 Number 2 (Winter-Spring 2022)

Industry News

Distribution Agreement Broadens Access to Genetic Eye Test

Eye doctors can now obtain the AvaGen genetic test (Avellino Lab USA Inc.) through Keeler USA.

AvaGen is the first genetic test that helps to determine a patient's risk for keratoconus and the presence of TGFBI corneal dystrophies. It allows for earlier detection of these conditions and more confident patient management to help protect and preserve vision.

The test examines 75 keratoconus-related genes and more than 2,000 variants of those genes to develop an actionable genetic risk score for keratoconus.

New Device for Vision Assessment Combines Three Measurements

The Myopia Master from Oculus is the first device to combine axial length, refraction and central corneal radii measurements. According to the company, this combination of measurements makes the instrument much more than an auto-refractometer and opens new patient care possibilities for eyecare professionals.

The Myopia Master uses interferometry to measure axial length, a method that is quick, contactless and not influenced by the accommodation status of the eye. The device can be mounted on a workstation or ophthalmic table, and the software is operated directly via the built-in display.

Visit www.myopia-master.com/us to learn more.

Elementary School Vision Clinic Reflects Company's Values Around Diversity

Earlier this year, in honor of Dr. Martin Luther King Jr. and in service of parent company EssilorLuxottica's ongoing commitment to fostering diversity, Transitions Optical's Diversity Advisory Board partnered with OneSight to host a one-day vision clinic at Deerwood Elementary in Kissimmee, FL.

According to Patience Cook, Director of North America marketing for Transitions Optical, "In alignment with Dr. Martin Luther King Jr.'s value of equality, it was the goal of all involved in the clinic to help provide access to high-quality vision care services to those students who may not have the transportation or resources available to receive a comprehensive eye exam or learn about the importance of eye health. We aspired to educate and enable all students, especially those within the multicultural community, of which research shows are more often disproportionately affected by eye diseases and vision loss, to learn the importance of healthy sight and help improve their vision so that they may see life through a clear lens. With the help of our Diversity Advisory Board members, who represent expertise in the largest and fastest-growing minority demographic groups in the United States, we also hoped to spark student interest in optometry, ophthalmology and opticianry so that they may help to advance equity and increase representation in the eyecare industry when they get older."

Through TransitionsPRO.com/Multicultural, the company provides free resources to help eyecare professionals better serve and improve communication with their culturally diverse patients. Those interested in being involved with the Transitions Diversity Advisory Board can contact cservice@transitions.com for more information.

Online Learning Center Aims to Raise Awareness About AMD

To build awareness around age-related macular degeneration (AMD) and help the public understand that vision loss may be more than a typical sign of aging, eye supplement manufacturer MacuHealth relaunched its Learning Center.

The Learning Center not only includes the latest news about the company's products but also features educational articles about AMD, information about the eye and advice from Jim Stringham, PhD, the company's Chief Scientific Officer. MacuHealth plans to continue to add content to the site throughout the year.

On-Demand Webinars Highlight Myopia Management and Refraction Technologies

Eyecare providers can gain instant access to free on-demand educational webinars from Topcon Healthcare. Currently available webinars are “The Evolution of Refraction” and “Myopia Management 101: The Importance of Measuring Axial Length.”

“The Evolution of Refraction” highlights recent innovations in refraction and methods for delivering care in the modern healthcare landscape. New England College of Optometry faculty members discuss how they have been able to integrate these tools into their clinics and evolve their educational curricula to build the next generation of clinical practices.

“Myopia Management 101: The Importance of Measuring Axial Length,” presented by Maria Liu, OD, MPH, PhD, FAAO, University of California – Berkeley School of Optometry, covers the clinical and scientific importance of integrating axial length measurement into a pediatric myopia management practice.

In Response

In Response to “Review of Standardized Testing in Doctoral Health Professions Admission Requirements”

Steven H. Schwartz, OD, PhD | Optometric Education: Volume 47 Number 2 (Winter-Spring 2022)

The role that standardized exams should play in optometry program admissions is a timely and important topic, and Ooley et al. (2021) are to be commended for their comprehensive review of usage of such exams by doctoral-level health professions programs. Their paper, “Review of Standardized Testing in Doctoral Health Professions Admission Requirements,” was published in the Fall 2021 edition of *Optometric Education*.[1] Of the 11 professions (not including optometry) included in their survey, only graduates of medical (allopathic and osteopathic), dental and podiatry programs are licensed to both diagnose and medically treat disease in humans. Data included in the paper indicate that all the educational programs for these professions require the completion of standardized exams for admission.

Optometrists, like the professionals cited above, are licensed in all states to independently diagnose disease in humans and prescribe medications for treatment. Moreover, in at least five states, optometrists may be licensed to perform certain laser procedures, and at least nine states permit minor surgery. When looking for peer professions that may serve as models for optometry school admissions requirements, an important consideration should be whether the profession is granted the responsibility to diagnose and medically treat disease in humans. As is evident in the list of professions listed in the authors’ paper, most doctoral-level healthcare professions do not have this scope of practice and, consequently, these professions do not serve as appropriate peers for this type of analysis.

While Ooley et al. (2021) point out that pharmacists may provide injections and independently dispense contraceptives in certain states, these professionals are not licensed to diagnose and medically treat disease. It is of note that applications to pharmacy programs have plummeted in recent years.[2] The extent to which this is a factor in the absence of a requirement for standardized admissions exams is not clear.

In a companion paper in the Fall 2021 issue of *Optometric Education*, the predictive utility of standardized admissions exams is discussed, particularly with respect to the lack of published papers for optometry.[3] This is an important issue that deserves more attention. Analysis regarding the continued usage of standardized admissions exams in optometry should, nonetheless, focus on comparisons with professions that have been granted comparable professional responsibilities ? namely medicine, dentistry and podiatry, which all currently require completion of standardized exams for admission to their programs. Elimination of such a requirement at this time would make optometry an outlier when compared to these peer professions.

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Editorial

Celebrating Teaching Case Reports

Aurora Denial, OD, FAAO, DAAO (OE) | Optometric Education: Volume 47 Number 2 (Winter-Spring 2022)

Aurora Denial, OD, FAAO, DAAO (OE)

This edition of *Optometric Education* celebrates teaching case reports. The concept of teaching case reports for this journal was developed by Barry Kran, OD, FAAO, from the New England College of Optometry, and Elizabeth Hoppe, OD, MPH, DRPH, former editor of the journal. The first two teaching case reports ? *Management of Anisometropic Amblyopia and Head Posture in a Patient With Oculocutaneous Albinism* by Dr. Kran and *A Case of Bilateral Ocular Ischemic Syndrome* by Andrea L. Murphy, OD, Richard Frick, OD, FAAO, and Dorothy Hitchmoth, OD, FAAO ? were published in the winter 2009 edition. Since 2009, the journal has published 64 teaching case reports. I commend Drs. Hoppe and Kran for developing this creative merger, which has benefited faculty, students and clinicians.

A teaching case report combines an interesting clinical case with teaching elements. It is a teaching experience and a learning experience. Teaching case reports represent a collection of cases that are researched, organized and peer-reviewed. The cases can be used in a didactic classroom, clinical setting or in the remediation of students. Little did we know that in 2020 they would also be used to augment students' clinical experiences during a global pandemic.

Writing a successful teaching case report is within the grasp of all clinical faculty. To get started, authors should identify an interesting prospective case. The case should demonstrate clinical importance and relevance. Authors should discern why the chosen case or learning is important to a student's academic career. Authors should read the description of teaching case report elements below and consult the *Optometric Education* publication guidelines, which contain additional important information about content, presentation and format. Knowing this information before writing and submitting saves time and minimizes revisions. In addition, authors should search through published teaching case reports and not waste time writing about a topic that is similar to what has been published recently. The goal is to create a collection of cases that represent a diversity of ocular conditions. (Access the archive by clicking on OPTOMETRIC EDUCATION in the navigation bar at the journal's website.)

Elements of a Teaching Case Report

The required elements of a teaching case report are background, case description, education guidelines, discussion, conclusion and references.

Background: The background is a brief introduction to the case. It contains the intended audience, relevance of the case ("so what?" and "who cares?"), along with background information on the ocular condition/disease presented in the case. The intended audience may be identified for the entire case. In some complex cases, the intended audience may differ for different aspects of the case.

Case description: The case description is the presentation of the case. The author should hold all aspects of discussion until the education guidelines or discussion section. This allows educators to extrapolate data from the case without having to dissect out discussion comments. Tables, graphs, diagrams and pictures are usually helpful. Original test results, e.g., visual fields and optical coherence tomography, are encouraged. Patients should be described as a person not a case, and patient confidentiality should be respected at all times.

Education guidelines: This section includes the teaching components of the case report, i.e., the information needed to facilitate a discussion of the case. The teaching components are the learning objectives, key concepts, discussion points (questions to facilitate discussion), teaching methodology and assessment (how the learning objectives will be assessed).

Discussion: The discussion section is the vehicle for teaching the case. It should reflect clinical as well as education elements. Teaching methodology and discussion points should drive the discussion. The discussion section should include a summary and interpretation of key findings, comparison to known findings in the literature, how and why decisions were made and, if applicable, what lessons are to be learned from this experience.

Conclusion: The conclusion summarizes the case and learning experience.

References: References should be listed in the order they are cited in the text. They should be cited in the text by superscript numbers. National Library of Medicine reference style should be used.

Also, teaching case reports should be submitted with an abstract of approximately 100 words and approximately five key words that reflect the primary subject matter of the paper to assist reference librarians and others in retrieval and cross-indexing. Acknowledgments and disclosures should also be included if applicable.

A Valuable Opportunity for All Faculty

Teaching case reports are peer-reviewed publications. They provide faculty the opportunity to showcase their clinical acumen as well as teaching methodology and creativity. At many institutions, a published teaching case report can be a valuable asset in a portfolio for promotion or tenure. It provides insight and understanding regarding teaching philosophy. Because many faculty are not formally trained in education, writing a teaching case report provides a learning opportunity for the author. All faculty who are engaged in patient care and teaching should consider this opportunity and write a teaching case report.

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