

Pharmacy Education Innovation, Research and Scholarship: Publications by CIPhER Faculty, Fellows, and Students for the Academic Year 2020-2021
Peer Reviewed Publications

Colmenares EW, **McLaughlin JE**, **Morbitzer KA**, Eckel SF. Development and perceived value of a master's degree in health-system pharmacy administration training. *Am J Health-Syst Pharm.* 2021;78(1):74-79.

Frick A, Osa L, Ngo S, Anksorus H, Williams CR, Rodgers PT, Harris S. Establishing the role of the pharmacist in mental health: Implementing Mental Health First Aid into the doctor of pharmacy core curriculum. *Currents Pharm Teach Learn.* 2021;13(6):608-615.

Hahn FT, Bush AA, Zhang K, Patel A, Lewis K, Jackson A, **McLaughlin JE**. Exploring the career engagement, interests, and goals of pharmacy students identifying as underrepresented racial minorities. *Am J Pharm Educ.* 2021;85(4):304-310.

Kodweis K, Schimmelfing LC, Yang Y, **Persky AM**. Methods for optimizing student pharmacist learning of clinical note writing. *Am J Pharm Educ.* 2021;85(2):144-151.

Kornegay EC, Jackson TH, LaGarry-Cahoon A, Reside JM, **Wolcott MD**, Quinonez RB. "I don't think the problem's the student...I think it's us": Engaging faculty in curriculum innovation. *J Dent Educ.* 2021;85(4):582-588.

Lobczowski NG, Lyons K, Greene JA, **McLaughlin JE**. Socioemotional regulation strategies in a project-based learning environment. *Contemp Educ Psychol.* 2021;65.

Lyons KM, Lobczowski NG, Greene JA, Whitley J, **McLaughlin JE**. Using a design-based research approach to develop and study a web-based tool to support collaborative learning. *Comput Educ.* 2021;161.

Minshew LM, Williams CR, Dinkins MM, Haltom WR, Brown KPD, **McLaughlin JE**. Developing a process to manage challenges encountered by experiential education administrators. *Currents Pharm Teach Learn.* 2021;13(4):318-326.

Minshew LM, Zeeman JM, Olsen AA, Bush AA, Patterson JH, **McLaughlin JE**. Qualitative evaluation of a junior faculty team mentoring program. *Am J Pharm Educ.* 2021;85(4):288-296.

Morbitzer KA, **McLaughlin JE**, Devanathan AS, Ozawa S, McClurg MR, Carpenter DM, Lee CR. How-to guide for overcoming barriers of research and scholarship training in Pharm.D. and pharmacy residency programs. *JACCP JAm Coll Clin Pharm.* 2021.

Morbitzer KA, **McLaughlin JE**, Ozawa S, Beechinor R, Dumond J, Pomykal C, Bush AA, Zhang Q, Carpenter DM, Lee CR. Implementation and initial evaluation of a research and scholarship training pathway in a doctor of pharmacy curriculum. *Am J Pharm Educ.* 2021;85(1):55-66.

Morbitzer KA, Olsen AA, **McLaughlin JE**. A mapping review of teamwork training and assessment in pharmacy education. *Am J Pharm Educ.* 2021;85(3):185-195.

Persky AM, Fuller KA, Cate OT. The importance of avoiding entrustment decisions on entrustable professional activities in the classroom setting. *Am J Pharm Educ.* 2021;85(1):1-7.

Powell BD, Oxley MS, Chen K, Anksorus H, Hubal R, **Persky AM**, Harris S. A concept mapping activity to enhance pharmacy students' metacognition and comprehension of fundamental disease state knowledge. *Am J Pharm Educ.* 2021;85(5):8266.

Rhodes LA, Marciniak MW, **McLaughlin JE**, Pinelli NR. Leveraging an implementation fidelity framework to assess quality in experiential education. *Am J Pharm Educ.* 2021;85(4):297-303.

Sasser CW, **Wolcott MD, Morbitzer KA**, Eckel SF. Lessons learned from pharmacy learner and educator experiences during early stages of COVID-19 pandemic. *Am J Health-Syst Pharm (official journal of the American Society of Health-System Pharmacists)*. 2021;78(10):872-878.

Savage A, Minshew LM, Anksorus HN, **McLaughlin JE**. Remote OSCE Experience: What First Year Pharmacy Students Liked, Learned, and Suggested for Future Implementations. *Pharmacy (Basel)*. 2021;9(1).

Steeb DR, Zeeman JM, Bush AA, Dascanio SA, **Persky AM**. Exploring career development through a student-directed practicum to provide individualized learning experiences. *Currents Pharm Teach Learn*. 2021;13(5):500-505.

Wolcott MD, Fearnow B, Moore Z, Stallard J, Tittlemore AJ, Quinonez RB. How to create a faculty-centered curriculum support system: Launching the Academic Support Center (ASC) to inspire excellence in curriculum change. *J Dent Educ*. 2021.

Wolcott MD, Kornegay EC, Brame JL. Piloting a first-year resident-as-teacher workshop to foster evidence-based teaching. *J Dent Educ*. 2021;85(1):16-22.

Wolcott MD, Lobczowski NG. Using cognitive interviews and think-aloud protocols to understand thought processes. *Currents Pharm Teach Learn*. 2021;13(2):181-188.

Wolcott MD, McLaughlin JE, Hann A, Miklavec A, Beck Dallaghan G, Rhoney DH, Zomorodi M. A review to characterize and map the growth mindset theory in health professions education. *Med Educ*. 2021;55(4):430-440.

Wolcott MD, McLaughlin JE, Hubbard DK, Rider TR, Umstead K. Twelve tips to stimulate creative problem-solving with design thinking. *Med Teach*. 2021;43(5):501-508.

Wolcott MD, McLaughlin JE, Hubbard DK, Williams CR, Kiser SN. Using Design Thinking to Explore Rural Experiential Education Barriers and Opportunities. *J Med Educ Curric Dev*. 2021;8:2382120521992333.

Wolcott MD, Reside JM, Bobbitt LJ, Quinonez RB. Characterization of school of dentistry prerequisite courses and recommendations for admission. *J Dent Educ*. 2021;85(3):293-299.

Meyer BD, Fearnow B, **Wolcott MD**. Introducing legislative advocacy into the dental school curriculum: A mixed-methods evaluation. *J Dent Educ*. 2020;84(12):1378-1387.

Minshew LM, Yi J, **Morbitzer KA, McLaughlin JE**. Use of capstone experiences in pharmacy education to synthesize and apply students' knowledge and skills. *Am J Pharm Educ*. 2020;84(11):1515-1522.

Olsen AA, **McLaughlin JE**, Harpe SE. Using multiple linear regression in pharmacy education scholarship. *Currents Pharm Teach Learn*. 2020;12(10):1258-1268.

Olsen AA, **Minshew LM, Morbitzer KA**, Brock TP, **McLaughlin JE**. Emerging Innovations and Professional Skills Needed Within Pharmacy Curricula. *J Med Educ Curric Dev*. 2020;7:2382120520943597.

Persky AM, Lee E, Schlesselman LS. Perception of learning versus performance as outcome measures of educational research. *Am J Pharm Educ*. 2020;84(7):993-1000.

Schellhase EM, Miller ML, Malhotra JV, Dascanio SA, **McLaughlin JE**, Steeb DR. Development of a Global Health Learning Progression (GHELP) Model. *Pharmacy (Basel)*. 2020;9(1).

Wolcott MD, Lobczowski NG, Zeeman JM, **McLaughlin JE**. Situational judgment test validity: An exploratory model of the participant response process using cognitive and think-aloud interviews. *BMC Med Educ*. 2020;20(1).

Wolcott MD, Mason MR, Broome AM, Tittlemore AJ, De Rossi SS, Quinonez RB. Faculty perspectives of an entrustable professional activity (EPA) framework in predoctoral dental education. *J Dent Educ*. 2020;84(9):955-963.

Wolcott MD, McLaughlin JE. Promoting creative problem-solving in schools of pharmacy with the use of design thinking. *Am J Pharm Educ*. 2020;84(10):1271-1276.

Wolcott MD, Quinonez RB, Ramaswamy V, Murdoch-Kinch CA. Can we talk about trust? Exploring the relevance of “Entrustable Professional Activities” in dental education. *J Dent Educ.* 2020;84(9):945-948.

Wolcott MD, Quinonez RB, Tittmore AJ, et al. Developing a curriculum blueprint and taxonomy: Process, progress, and pivots. *J Dent Educ.* 2020;84(12):1368-1377.

Crescenzi A, Capra R, Choi B, Li Y. Adaptation in information search and decision-making under time constraints. Proceedings of the 2021 ACM on Conference on Human Information Interaction and Retrieval (CHIIR '21). doi:10.1145/3406522.3446030.
[Paper presentation \(YouTube\)](#)

Podium Presentations

Minshew LM, McLaughlin JE, Cain J, Malone D. Cognitive apprenticeship in pharmacy education: A multi-institutional study. Paper presentation at: American Educational Research Association Annual Meeting: April 9-12, 2021. *Virtual due to COVID-19.

Wolcott MD, Brame J. Safe to speak: Fostering a psychologically safe teaching environment. Presented at American Dental Education Association (ADEA) Annual Session & Exhibition; March 13-16, 2021. *Virtual due to COVID-19.

Wolcott MD, Wilder RS, Henson HA. We learn best from peers: Tackling peer assessment of teaching. Presented at American Dental Education Association (ADEA) Annual Session & Exhibition; March 13-16, 2021. *Virtual due to COVID-19.

Crescenzi A, Capra R, Choi B, Li Y. Adaptation in information search and decision-making under time constraints. Proceedings of the 2021 ACM on Conference on Human Information Interaction and Retrieval (CHIIR '21). March 13-17, 2021. *Virtual due to COVID-19/Canberra, Australia. [Paper presentation \(YouTube\)](#)

Harris SC, Anksorus HN, Wernoski C, **Hahn FT**. From prevention to crisis: Addressing student, faculty, and staff well-being every step of the way. Platform Presentation at: UNC System Behavioral Health Convening 2021; Mar 2, 2021. *Virtual due to COVID-19.

Harris SC, Anksorus HN, Wernoski C, **Hahn FT**. Implementing mental health first aid training for pharmacy curriculum and professional education. Platform Presentation at: UNC System Behavioral Health Convening 2021; Mar 2, 2021. *Virtual due to COVID-19.

Wolcott MD. Mentoring without going mental: Strategies for effective mentorship in practice. Presented at American Society of Health-Systems Pharmacists (ASHP) Midyear Meeting; December 6-10, 2020. *Virtual due to COVID-19.

Wolcott MD, Fuller KF. Put me in coach! How to get your head in the game of coaching. Presented at American Society of Health-Systems Pharmacists (ASHP) Midyear Meeting; December 6-10, 2020. *Virtual due to COVID-19.

Wolcott MD. Oh, the places you'll grow: The power of growth mindset in precepting. Presented at American Society of Health-Systems Pharmacists (ASHP) National Pharmacy Preceptors Conference; October 22-23, 2020. *Virtual due to COVID-19.

Wolcott MD, Fuller KA. From research to me-search: How to make learner research work for you. Presented at American Society of Health-Systems Pharmacists (ASHP) National Pharmacy Preceptors Conference; October 22-23, 2020. *Virtual due to COVID-19.

Minshew LM, Williams C, Brown KP, Dinkins L, Haltom W. You've got challenges, we've got solutions: Developing a process to manage student and preceptor challenges encountered by experiential education administrators. Podium presentation at: American Association of Colleges of Pharmacy Annual Meeting; July 18-22, 2020; *Virtual due to COVID-19.

McLaughlin JE, Minshew LM, Cain J, Malone D. Making expert thinking visible: Cognitive apprenticeship in pharmacy education. SOTL Grant micro session at: American of Colleges of Pharmacy Annual Meeting; July 18-22, 2020; *Virtual due to COVID-19.

Persky A, Steeb D. Action speaks louder than written words: Engaging students through authentic assessment and exploring career development through individualized learning experience. Presented as a podium presentation at the American Association of Colleges of Pharmacy (AACP) Annual Meeting, July 18-22, 2020. *Virtual due to COVID-19.

Persky A, Medina M, Castleberry A. Mischief managed through different wizarding styles: understanding teaching styles and classroom management strategies. Presented as a podium presentation at the American Association of Colleges of Pharmacy (AACP) Annual Meeting, July 18-22, 2020. *Virtual due to COVID-19.

Persky A, Kennedy D, Castleberry A, Davis L. Teaching is teaching: does discipline really make a difference? Presented as a podium presentation at the American Association of Colleges of Pharmacy (AACP) Annual Meeting, July 18-22, 2020. *Virtual due to COVID-19.

Persky A. Worked example or practice to teaching clinical note writing. Presented as a podium presentation at the American Association of Colleges of Pharmacy (AACP) Annual Meeting, July 18-22, 2020. *Virtual due to COVID-19.

Lyons KM, **McLaughlin J**, Brunner J, **Wolcott MD**, Fuller KA. Learning analytics: A glimpse into the future of teaching and learning. Presented at American Association of Colleges of Pharmacy (AACP) Annual Meeting; July 13-31, 2020. *Virtual due to COVID-19.

Turner K, Zeeman J, **Persky A**, **Wolcott MD**. Get to know yourself: Novel tools to enhance student self-awareness. Presented at American Association of Colleges of Pharmacy (AACP) Annual Meeting; July 13-31, 2020. *Virtual due to COVID-19.

Williams C, Cooley JH, Larson S, Smith MD, **Wolcott MD**. Four schools tackle meaningful preceptor development. Presented at American Association of Colleges of Pharmacy (AACP) Annual Meeting; July 13-31, 2020. *Virtual due to COVID-19.

Zeeman, JM, **McLaughlin JE**, Franks AS, Castleberry A, Medina MS. The assessment hat (or Hats!) we all wear: Assessment across an array of faculty roles. Presented at the American Association of Colleges of Pharmacy, Long Beach, CA, July 13-31, 2020. *Virtual due to COVID-19.

Cox WC, **McLaughlin JE**. Unlocking the potential: Case-writing tips and strategies for multiple mini-interviews. Presented at the American Association of Colleges of Pharmacy, Long Beach, CA, July 13-31, 2020. *Virtual due to COVID-19.

Invited Talks

Persky A. Basics of active learning: using theory to drive practice: Part II. Presented as a series of workshops for Mercer University College of Pharmacy, June 1, 2021, virtual.

Wolcott MD. How does intersectionality intersect with me? Presented at American Society of Health-Systems Pharmacist (ASHP) Diversity, Equity, and Inclusivity Certificate; June 2021, Bethesda, MD.

Frick A, Salvati LA, Bright D. Virtual teaching during the pandemic. Presented at AACP Pharmacogenomics SIG; May 2021; virtual.

Wolcott MD. Considerations for LGBTQIA+ communities in pharmacy education. Presented at Research in Education and Practice Symposium; May 17-18, 2021; Chapel Hill, NC.

Persky A. Curricular Efforts in Active Learning: One Size Does Not Fit All. Presented as a webinar for the American Association of Colleges of Pharmacy (AACP), May 5, 2021, virtual.

Ernst M, **McLaughlin JE**, Cochran G, Baker WL, Moga D, Snyder ME. Statistical issues & Regulatory and ethical issues. Presented to American College of Clinical Pharmacists, Research and Scholarship Academy Midyear Meeting, St Louis, MO, April 2021, virtual.

Kane-Gill S, Thomas J, **McLaughlin JE**. Survey and interview design. Presented to American College of Clinical Pharmacists, Research and Scholarship Academy, April 2021, virtual.

Bernacki M, Larson J, Jordan S, **McLaughlin JE**, Shemer G. Teaching as research: Am I making a difference? 2020 UNC Center for Faculty Excellence Showcase on Teaching, April 2021.

McLaughlin JE. Equipping faculty for collaborative education and research. Presented to South University School of Pharmacy, April 2021, virtual.

McLaughlin JE. Curriculum integration in pharmacy education. Presented to Pacific University School of Pharmacy, March 2021, virtual.

Persky A. Developing Critical Thinking Skills: Theory to Practice. Presented as a workshop for Concordia University School of Pharmacy, March 11, 2021, virtual.

Ernst M, **McLaughlin JE**, Cochran G, Thomas J, Kane-Gill S. Research primer (educational research in clinical pharmacy), Research basics, & Building effective research teams. Presented to American College of Clinical Pharmacists, Research and Scholarship Academy, February 2021, virtual.

McLaughlin JE. Cultivating design mindsets to address social crises. Elon University Center for Design Thinking, February 2021.

McLaughlin JE. Best practices for interviewing graduate school candidates. UNC Eshelman School of Pharmacy Graduate Education and Research Retreat, January 2021.

Hahn F, Albon S, **McLaughlin JE.** Exploring relevance in pharmaceutical sciences education. UNC Eshelman School of Pharmacy Graduate Education and Research Retreat, January 2021.

Wolcott MD. Identifying a growth mindset framework to inform clinical teaching. Presented at University of Minnesota School of Dentistry Faculty Development Seminar; January 28, 2021; Minneapolis, MN.

Ernst M, **McLaughlin JE**, Cochran G, Baker WL, Moga D, Snyder ME. Statistical issues & Regulatory and ethical issues. Presented to American College of Clinical Pharmacists, Research and Scholarship Academy Midyear Meeting, St Louis, MO, October 2020, virtual.

Vazquez A, Floyd J, Torres K, Pierre M, Kudova R, David R, Taylor B, **Persky A.** Imposter Syndrome. Presented as a panel discussion for the American Society of Biochemistry and Molecular Biology, September 24, 2020, virtual.

Persky A. Moving to active learning. Presented at a workshop for Touro University College of Pharmacy (NY), September 9, 2020, virtual.

Daley M, Ku B, **McLaughlin JE**, Trowbridge M. Design thinking in health education. Invited panelist for 2020 Design and Health Symposium, hosted by NC State College of Design, Chair: Rider TR, August 2020,

Persky A. Active learning from theory to practice to virtual. Presented at a workshop for Ferris State University College of Pharmacy, July 30, 2020, virtual.

McLaughlin JE. (July, 2020). Making expert thinking visible: Cognitive apprenticeship in pharmacy education. Presented to the American Association of Colleges of Pharmacy Annual Meeting, Long Beach, CA, July 2020, virtual.

Poster Presentations

Greene J, Lobczowski N, Lyons K, **McLaughlin JE.** Connecting talk types to socioemotional formation and regulation. Presented at International Society of Learning Sciences. June 2021. **Virtual due to COVID-19.*

Bentley AC, Bell LC, **Minshew LM, Wolcott MD**, Williams CR. Describing learner perspectives of quality educators to inform preceptor development design. Poster presented at American Society of Health-Systems Pharmacists (ASHP) Midyear Meeting; December 6-10, 2020. **Virtual due to COVID-19.*

Hahn F, McLaughlin JE, Zeeman J. We Are Pharmacy: Evaluation of Pharmacy Learning Communities. Poster presented at: 2020 ACCP Annual Meeting - Trainee Poster Session; October 2020. **Virtual due to COVID-19.*

Cox WC, **Hahn F, Wolcott MD, McLaughlin JE.** The relationship between a multiple mini-interview and situational judgment test for admissions. Poster presented at American Association of Colleges of Pharmacy (AACP) Annual Meeting; July 19-22, 2021. **Virtual due to COVID-19.*

Kodweis K, Schimmelfing L, Yang Y, **Persky A.** Comparison of Worked Examples to Practice to optimize transfer of clinical note writing skills. Poster presented at the American Association of Colleges of Pharmacy Annual meeting, July 18-22, 2020. **Virtual due to COVID-19.*

Persky A, McLaughlin JE. Promoting educational research through school-based peer review. Poster presented at the American Association of Colleges of Pharmacy (AACP) Annual meeting, July 18-22, 2020. *Virtual due to COVID-19.

Hahn FT, Frick AD. A Scoping Review of the Operationalization of Integration in Pharmacy Curricula. Poster presented at: 2020 AACP Annual Meeting - Trainee Poster Session; July 2020; *Virtual due to COVID-19.

McLaughlin JE, Lupton-Smith C, Bell E, Hubal R, **Persky A.** Automated analysis of course evaluation comments: the use of sentiment analysis to characterize classroom teaching. Presented at the American Association of Colleges of Pharmacy, Long Beach, CA, July 13-31, 2020. *Virtual due to COVID-19. **+Best Poster Award, Social and Administrative Sciences Section**

Fuller K, Lupton-Smith C, Kahandage V, Hanh A, **McLaughlin JE.** Automated analysis of preceptor comments: the use of sentiment analysis to characterize student issues. Presented at the American Association of Colleges of Pharmacy, Long Beach, CA, July 13-31, 2020. *Virtual due to COVID-19.

McLaughlin JE, Lupton-Smith C; Hume C, Jarstfer M. (July 2020). Using text mining to identify key skills and characteristics of jobs for PhD graduates. Poster presentation at the American Association of Colleges of Pharmacy, Long Beach, CA, July 13-31, 2020. *Virtual due to COVID-19.

Jarstfer M, Ainslie K, Cox WC, Miklavec A, Lowe KB, **McLaughlin JE.** Using the multiple mini interview to assess candidates for a PhD program in pharmaceutical sciences. Poster presentation at the American Association of Colleges of Pharmacy, Long Beach, CA, July 13-31, 2020. *Virtual due to COVID-19.

Minshew LM, McLaughlin JE, Zeeman J, Bush AA, Patterson H. We all need mentors! Evaluation of a team-based junior faculty mentoring program. Poster presentation at the American Association of Colleges of Pharmacy, Long Beach, CA, July 13-31, 2020. *Virtual due to COVID-19.

Teaching & Learning Resources

Morbitzer K, McLaughlin JE. Online Learning Teaching Tips. September 2020.

CIPhER Grants and Awards

Examples, Grants

Morbitzer KA (Co-I), Wolcott MD (Co-I). Influencers of career goals and attainment among BIPOC pharmacy trainees. ASHP Foundation – Pharmacy Leadership Scholars. June 2021-May 2022. Sasser CW (PI).

McLaughlin JE (PI). CIPhER Teaching & Learning Certificate Program. UNC Eshelman Institute of Innovation. April 26, 2021 – April 25, 2023. Total funding \$148,601.

McLaughlin JE (Co-I), Ozawa S (Co-I). Assessing the Economic Burden of COVID-19 Vaccine Hesitancy in the US. Merck. January 2021-December 2021.

Wolcott MD, Rhoney D, McLaughlin JE (Co-PI). Growth Mindset Across PharmAlliance Institutions. PharmAlliance grant. December 2019 – December 2021. Total funding \$21,481.

McLaughlin (Co-I), Brouwer K, Watkins P. NIGMS T32 Administrative Supplement to Enhance Program Evaluation Capacity. July 2020-June 2021. Total funding \$80,000.

Wolcott MD (Co-PI). Experiential Teaching Assistant: A Preceptor's Rapid Resource for Clinical Teaching. UNC Eshelman Institute of Innovation Translational Tier 1 Grant. July 2019–July 2020.

McLaughlin JE (Co-I), Jarstfer M (PI). NextGen training of pharmaceutical scientists: Mentoring professional development cohorts to increase interdisciplinary training. UNC – The Graduate School. April 2019-April 2022.

McLaughlin JE (Co-I), Henneghan J (PI). Medical learning through machine learning (ML2). U.S. Department of Defense, Funding Opportunity Number: W81XWH-17-R-MS11. January 2018-December 2020.

Examples, Awards/Honors

McLaughlin JE. *American Journal of Pharmaceutical Education.* Top 25 Reviewer in 2021.

Persky A. Class of 2024 Instructor of the Year, *UNC Eshelman School of Pharmacy*. 2021

McLaughlin JE, Hahn F, Albon S. Exploring relevance in pharmaceutical sciences education. *UNC Eshelman School of Pharmacy Research and Graduate Retreat*. Best Presentation. 2021

Meyer B, Fearnow B, **Wolcott MD.** Introducing legislative advocacy into the dental school curriculum: A mixed-methods evaluation. *Ohio State University College of Dentistry Research Day*. Paper of the Year. February 2021.

McLaughlin JE, Lupton-Smith C, Persky P, Hubal R, **Bell E.** Automated analysis of course evaluation comments: The use of sentiment analysis to characterize classroom teaching. *American Association of Colleges of Pharmacy*. Best Poster – Pharmacy Social and Administrative Services Section. 2020.

McLaughlin JE, Rhodes L, Marciniak M, Melendez C, Leadon K, Pinelli N. Exploratory analysis of entrustable professional activities as a performance measure during early practice experience in a Doctor of Pharmacy program. *American Journal of Pharmaceutical Education*. Best Paper Finalist, Rudus A. Lyman Award for best paper published in AJPE. 2020

Persky A, Castleberry A, Medina M. Developing critical thinking skills in pharmacy students. *American Association of College of Pharmacy*. Best Scholarship of Teaching & Learning Paper Award – Social and Administrative Sciences Section.