

Curriculum Vitae

Monica P. Schneider DDS, MS

Clinical Associate Professor

Department of Orthodontics and Pediatric Dentistry

Assistant Dean for Admissions and Recruitment

University of Maryland, Baltimore

School of Dentistry

Contact Information

University of Maryland, Baltimore (UMB)

School of Dentistry

650 West Baltimore Street - Room 6410

Baltimore, MD 21201

mschneider@umaryland.edu

Education

- 2025 Health Professions Education PhD
Doctoral Dissertation: "A Phenomenological Study of Predoctoral Dental Students' Experiences with Services-Learning"
UMB School of Graduate Studies
Baltimore, Maryland
Spring 2025
- 1994 Master of Science
University of Minnesota, School of Dentistry
Minneapolis, Minnesota
- 1993 Advanced Education Program in Orthodontics
University of Minnesota, School of Dentistry
Minneapolis, Minnesota
- 1990 Doctor in Dental Surgery (D.D.S.)
Cayetano Heredia Peruvian University
Faculty of Stomatology, Lima - Peru
- 1990 Bachelor in Stomatology (B.S.)
Cayetano Heredia Peruvian University
Faculty of Stomatology, Lima - Peru

Other Professional Knowledge and Skills

Fluent in spoken and written Spanish (native language)

Employment History

Academic Appointments in Higher Education

2022- present	Assistant Dean for Admissions and Recruitment UMB School of Dentistry
2022- present	Director, Dental Biomedical Sciences (DBMS) MS program UMB School of Graduate Studies and School of Dentistry
2018 – present	Clinical Associate Professor UMB School of Dentistry Department of Orthodontics and Pediatric Dentistry
2018 – present	Attending Orthodontist – Faculty Practice Clinic UMB School of Dentistry Baltimore, MD
2014 - 2021	Director- Pre-doctoral Orthodontics UMB School of Dentistry Department of Orthodontics and Pediatric Dentistry
2010 – 2017	Attending Orthodontist – Faculty Practice Clinic University of Maryland School of Dentistry Perryville, MD (satellite clinic)
2005 - 2018	Clinical Assistant Professor UMB School of Dentistry Department of Orthodontics and Pediatric Dentistry
2005 – 2009	Orthodontist - Faculty Practice Clinic University of Maryland School of Dentistry
2002 - 2005	Clinical Lecturer University of Michigan - School of Dentistry Department of Orthodontics and Pediatric Dentistry

2003- 2005 Orthodontist
University of Michigan- School of Dentistry
Dental Faculty Associates
Practice limited to orthodontics

2001- 2002 Adjunct Assistant Professor of Dentistry
University of Michigan - School of Dentistry
Department of Orthodontics and Pediatric Dentistry

1995 – 1996 Clinical Faculty
Peruvian University Cayetano Heredia - Faculty of Stomatology
Department of Orthodontics
Lima, Peru

Experience other than Higher Education

1995 – 2000 Private practice limited to orthodontics
Lima, Peru

Major Teaching and Administrative Responsibilities in Higher Education

Courses Directed – Graduate Orthodontics

UMB School of Dentistry

2015 - 2022 Course Director
“Orthodontic Biomechanics”
Organize and conduct course for first year Orthodontics residents
and international fellows (4-6 students)
Department of Orthodontics and Pediatric Dentistry

2014 - 2016 Course Director
“Foundation of Craniofacial Analysis”
Organize and conduct course for first year Orthodontics and
Pediatric Dentistry residents and international fellows (10-15
residents)
Department of Orthodontics and Pediatric Dentistry

- 2013 - 2016 Course Director
“Orthodontic Literature Review for ABO exam”
Organize course for second year Orthodontics residents (4 students)
Department of Orthodontics and Pediatric Dentistry
- 2007 - 2008 Course Director
“Growth and Development”
Organize and conduct course for second- and third-year
Orthodontics residents (8 students)
Department of Orthodontics and Pediatric Dentistry
- 2005 - 2014 Course Director
“Orthodontic Biomechanics”
Organize and conduct course for first year and second year
Orthodontics residents (8 students)
Department of Orthodontics and Pediatric Dentistry

University of Michigan - School of Dentistry

- 2002 - 2004 Course Director
“Orthodontic Biomechanics # 769”
Organize and conduct course for second year Orthodontics
residents (6 students)
Department of Orthodontics and Pediatric Dentistry
- 2001 - 2004 Course Director
“Mechanics of Orthodontic Materials # 577”
Organize and conduct course for first year Orthodontics residents
Department of Orthodontics and Pediatric Dentistry (6 students)

Peruvian University Cayetano Heredia – Faculty of Stomatology

- 1995 – 1996 “Seminars in Orthodontics”
Organize and conduct course for Orthodontics residents (20
students)
Department of Orthodontics

Courses Directed – Pre-Doctoral Education (Orthodontics)

UMB School of Dentistry

2008 – 2022	Course Director- Clinical course “Clinical Orthodontics ORTH 548” Course that gives students clinical exposure to Orthodontics by assisting graduate orthodontics residents (130 students) Department of Orthodontics
2008 – 2022	Course Director- Clinical and didactic course “Clinical Orthodontics ORTH 538” (130 students) Organize and conduct course that introduces students to clinical Orthodontics Department of Orthodontics
2007- 2013	Course Director - Didactic course “Orthodontics ORTH 522” Organize and conduct course that involves orthodontic diagnosis and treatment planning (130 students) Department of Orthodontics
2005 - 2012	Course Director- Didactic course “Growth and Development GROW 521” Organize and conduct course for second year dental students (130 students) Department of Orthodontics

Courses Taught

UMB School of Dentistry - Graduate Orthodontics

2022- present	Clinical teaching (1 clinical sessions/week) Graduate clinical supervision to orthodontic residents
2022 – present	Lecturer Orthodontic Biomechanics Participate in lectures biomechanics for orthodontic residents (2 hours of lecture) Department of Orthodontics and Pediatric Dentistry

2017 - present	Lecturer Foundations of Craniofacial Analysis Participate in lectures on cephalometrics (6 hours of lecture) Department of Orthodontics and Pediatric Dentistry
2017 - present	Lecturer “Orthodontic Literature Review for ABO exam” Participate with 5 sessions (5 hours of lecture) Department of Orthodontics and Pediatric Dentistry
2005 - present	Lecturer “Database Analysis ORTH 568” Participate with lectures on cast analysis, facial form analysis and cephalometrics (10 hours of lecture) Department of Orthodontics
2005 - 2010	Lecturer “Literature Review ORTH 586” Department of Orthodontics
2005 - 2021	Clinical teaching (4-6 clinical sessions/week) Graduate clinical supervision to orthodontic residents

UMB School of Dentistry Pre-Doctoral Education

2005 - 2021	Pre-doctoral clinical supervision (1 clinical session/week)
2022 - present	Lecturer “Clinical Orthodontics ORTH 538” (130 students) 1 hour of lecture
2016 - 2017	ODSC 599 “Research with mentor” 2 students
2012 - 2017	Lecturer Dentistry Today - For college students interested in a career in Dentistry 1 hour/year

HONORS AND AWARDS

- 2021 UMB Orthodontics Faculty of the Year Award
- 2018 UMB Orthodontics Faculty of the Year Award
- 2013 American Association of Orthodontics Foundation Biomedical Research Award
“Accelerated Tooth Movement in Adult Patients by Microperforations of Cortical Bone”
Total: \$25,000
- 2010 Ruth L. Kirschstein National Research Service Award.
Short – Term (3 months) Faculty Research Fellow under the University of Maryland School of Dentistry T32 Training Program in Oral and Craniofacial Biology
Mentor: Dr. Jin Ro, PhD
- 2009 Inducted as Faculty Member of Omicron Kappa Upsilon Phi Chapter
- 2007 American Association of Orthodontics Faculty Development Award
Total: \$10,000
- 1989 Outstanding Dental Research Student Award for Bachelor’s degree thesis
Hipolito Unanue Foundation, Lima Peru
- 1988 Outstanding Dental Student Award, Class rank: 1 - Class of 1988
Peruvian University Cayetano Heredia, Lima, Peru

Professional Activities and Service

Professional Development Activities

- 2023 President’s University Leadership Program (PULP)
Program designed for associate and assistant vice-presidents and well as associate and assistant deans, who have shown great potential as leaders, possess the drive to excel and advance at UMB, and are willing to dedicate the necessary time to the program. This initiative serves as a platform for UMB’s vice presidents and deans to provide additional professional development opportunities to individuals within their organizations.

- 2021 Diversity Equity and Inclusion in the Workplace
University of South Florida, Muma College of Business

- 2020 Increase Learner Engagement
Quality Matters Workshop (Web Conference)

- 2020 Active Learning Strategies Workshop
Quality Matters Workshop (Web Conference)

- 2020 Connecting Learning Objectives and Assessments
Quality Matters Workshop (Web Conference)

- 2020 Emerging Leaders Program – University of Maryland Baltimore
A ten-month leadership program created by the UMB Office of Human Resources for existing and aspiring UMB leaders who want to learn how to influence and inspire others, and who desire to impact team growth and organizational success
(September 2020 – May 2021)

- 2018 Professional Women Leadership Program – Towson University, Towson Maryland. (January 2018- May 2018)

- 2013 Orthodontic Faculty Educational Workshop – organized by FACEs Orthodontic Consortium, University of Michigan, Ann Arbor, Michigan.

Professional Society Memberships

- 2017-2019 American Cleft Palate Association
- 2015- The College of Diplomates of the American Board of Orthodontics
- 2015- American Board of Orthodontists
- 2015 - American Dental Education Association (ADEA)
- 2006 - Maryland State Society of Orthodontics
- 2006 - MASO (Middle-Atlantic Society of Orthodontics)
- 1991 - American Association of Orthodontists

Local, National and International Service

Local

- 2025 Maryland State Society of Orthodontics
Past-President
- 2024 Maryland State Society of Orthodontics
President
- 2023 Maryland State Society of Orthodontics
Vice President
- 2022 Maryland State Society of Orthodontics
Secretary/Treasurer
- 2021 Maryland State Society of Orthodontics
Director

National

- 2023 - present ADEA Associated American Dental Schools Application Service
(AADSAS) Advisory Committee
- 2021 Inclusion and Engagement Task Force Sub Committee
American Association of Orthodontists
- 2021 Judge for Poster Research Competition – ADEA Annual meeting
2021 (virtual)
- 2019 American Cleft Palate Association 2020 Program Task Force
- 2015 Chair - Education/Research Committee
Middle-Atlantic Society of Orthodontics (MASO)
Organize evaluation of research thesis for the MASO Kress Award
- 2013 - 2014 Member, Education/Research Committee (MASO)
Mid-Atlantic Society of Orthodontics

International

- 2008 Member, International Advisory Committee, Peruvian University of
Applied Sciences, School of Dentistry, Lima, Peru

Editorial Responsibilities

Editorial Board

2013 - 2016 University of Maryland - Dental School Magazine

Journal Reviewer:

2024 American Journal of Orthodontics and Dentofacial Orthopedics – Clinical Companion
2018 Cleft Palate- Craniofacial Journal
2011 American Journal of Orthodontics and Dentofacial Orthopedics
2011 Angle Orthodontist

University of Maryland School of Dentistry and Campus Service and Committee Assignments

2024 - present	CODA Review Committee Standard 4 Co-Chair
2022 - present	UMBrella Advisory Board Member
2022 - 2025	Leaders in Education: Academy of Presidential Scholars (LEAPS) Co-Chair Programming and Events Committee
2022 - present	Campus Review Committee (CRC) Office of the Registrar – Residency Member
2022 - present	Scholarships committee UMSOD Member
2022 - 2025	Middle States Accreditation Standard III Committee Member
2021 - 2022	Self-Study Steering Committee for the Accreditation of the School of Dentistry Dental Biomedical Master (DBMS) Program

2021-2022	Inclusive Excellence and Equity Dental School Committee Member
2017	Dental School Formulary Committee - Member
2017	Dental School Faculty Council - Member
2016	Dental School CODA Accreditation Committee- Standard 2-IV Group
2014 - 2022	Member - Pre-doctoral Directors Committee University of Maryland – School of Dentistry
2011	Member - Search Committee for Chair of the Department of Orthodontics and Pediatric Dentistry, University of Maryland – School of Dentistry
2009 - 2011	Member - Clinical Science Council Committee University of Maryland – School of Dentistry
2008 - present	Member - Dental School Clinical Progression Committee
2006 - present	Member - Dental School Preclinical Progression Committee
2006	Member - Dental School Curriculum Committee
2006 - 2008	Member - Dental School Student Affairs Committee
2006 - 2022	Member - Graduate Orthodontics Admissions Committee
2006 - 2015	Member – Dental School Admissions Committee
2005 - 2008	Member – Dental School Faculty Council
2005	Member – Search Committee for Chair of the Department of Orthodontics
2005	Member – Curriculum Task Force Committee
2005	Member – IT Steering Committee

2005

Member – Planning Committee for the Orthodontic
Electronic Patient Record

Admissions and Recruitment Presentations

- ADEA Go Dental - Pre-Health Recruitment Event, National Harbor, MD, March 2025
- Increasing Diversity in Dentistry (IDID)- Morehouse College – Pre-Dental Event, Atlanta, GA, November 2024
- University of San Diego, Pre dental group, September 2024
- Hispanic Student Dental Association – Dental, pre-dental fair, July 2024
- Society of American Indian Dentists – Pre-Dental Fair, Niagara Falls NY, June 2024
- Summer Tours/ Recruitment (3 tours in person, 1 virtual), UMSOD July 2024
- UMBC Meyerhoff Summer Bridge Program, University of Maryland- School of Medicine – June 2024
- Dentistry Today Program – UMSOD, June 2024
- ADEA Pre-dental Virtual Fair, May 2024
- Chesapeake Northeastern Association of Advisors for the Health Professions meeting, University of Maryland School of Medicine, DC, April 2024
- University of Maryland College Park Pre Health Symposium, April 2024
- Yeshiva University recruitment event (virtual) – April 2024
- Second Look – DDS Admitted students’ event, April 2024
- Campus Open House UMB, UMSOD, April 2024
- ADEA Go Dental – Pre-Health Recruitment Event, New Orleans, LA, March 2024
- Barry University, Florida – Pre dental group -Post Bac (virtual), March 2024
- VCU PRIME – Making Connections event - Pre health virtual fair, March 2024
- First Look – DDS Admitted students’ event, January 2024

- Increasing Diversity in Dentistry (IDID)- Morehouse College – Pre-Dental Event, Atlanta, GA, November 2023
- Summer Tours/Recruitment (3 tours in person 1 virtual), UMSOD, July 2023
- Dentistry Today Program – UMSOD, June 2023
- UMBC Meyerhoff Summer Bridge Program, University of Maryland- School of Medicine – June 2023
- Society of American Indian Dentists – Pre-Dental Fair, Creighton Dental School, June 2023
- Increasing Diversity in Dentistry (IDID)- Morehouse College – Pre-Dental Event, Atlanta, GA, November 2022
- Dentistry Today Program – UMSOD, June 2022
- Society of American Indian Dentists – Pre-Dental Fair, New Mexico, June 2022
- ADEA Go Dental - Pre-Health Recruitment Event, Portland, OR, March 2022

Mentoring Activities

Master of Science in Biomedical Sciences

UMB School of Dentistry- Primary Advisor- Committee Chair

2022-2025	Steven Zinn, DDS (Graduate Orthodontics Residency Program)
2021-2023	Sabrina Dorfmann, DDS (Graduate Orthodontics Residency Program)
2020-2022	Matthew Vumback DDS (Graduate Orthodontics Residency Program)
2019-2021	Ariana Feizi DDS (Graduate Orthodontics Residency Program)
2018-2020	Diana Lee DDS (Graduate Orthodontics Residency Program)
2017-2019	Akinwale Akinwande DDS (Graduate Orthodontics Residency Program)
2015-2018	Robert Laraway DDS (Graduate Orthodontics Residency)
2014-2017	Michael DePascale DDS (Graduate Orthodontics Residency Program)

- 2014 - 2017 Dana Silagi DDS (Graduate Orthodontics Residency Program)
2013 - 2016 Tina Mahmoudi DDS (Graduate Orthodontics Residency Program)

UMB School of Dentistry- Committee Member

- 2019 Eric Kim (Graduate Orthodontics Residency Program)
2018 Omar Elnabawi (Graduate Orthodontics Residency Program)
2018 Zahra Heidari DDS (Graduate Orthodontics Residency Program)
2017 Andrew Pedersen DDS (Graduate Orthodontics Residency Program)
2017 Amir Akhavan DDS (Graduate Orthodontics Residency Program)
2016 Ji Lim DDS (Graduate Orthodontics Residency Program)
2016 Janet Park DDS (Graduate Orthodontics Residency Program)
2015 Jun Hwang DDS (Graduate Orthodontics Residency Program)
2015 Yvette Battle DDS (Graduate Orthodontics Residency Program)
2015 Thomas Chae DDS (Graduate Orthodontics Residency Program)
2015 Robert Geiman DDS (Graduate Orthodontics Residency Program)
2014 Kyle Higginbottom DDS (Graduate Orthodontics Residency Program)
2014 Sarah Pavon DDS (Graduate Orthodontics Residency Program)
2014 Laura Friedman DDS (Graduate Orthodontics Residency Program)
2013 Lauren Widmer DDS (Graduate Orthodontics Residency Program)
2013 Nhu-Uyen Cung DDS (Graduate Orthodontics Residency Program)
2013 Evan Johnson DDS (Graduate Orthodontics Residency Program)
2013 Moshe Stern DDS (Graduate Orthodontics Residency Program)
2012 Anna Muench DDS (Graduate Orthodontics Residency Program)
2009 Daniel Hoffacker DDS (Graduate Orthodontics Residency Program)
2008 Christine Ferrell DDS (Graduate Orthodontics Residency Program)

Other Mentoring Activities

2016	Eberecukwu Njoku- Paul Ambrose Scholars Program Fellowship recipient
2015	Ahmed AlSinan DDS - International Scholar Program in Orthodontics – University of Maryland
2015	Min Hee Song– Centennial High School, Ellicott City, MD Intern Mentor Program
2014-present	Faculty Advisor for Orthodontics Interest Group Dental Students, D1, D2, D3 and D4
2011- 2015	Class Advisor for Dental School Class of 2015
2007-2010	Class Advisor for Dental School Class of 2010

Scholarly/Research Activities

Awards

2013- 2017	American Association of Orthodontists Foundation Biomedical Research Award
	Total: \$25,000
	“Accelerated Space Closure in Adult Patients”

Presentations

Invited Presentations

2019	“Life Journey to Academia in the United States” STAR-PREP Science Training for Advancing Biomedical Research Postbaccalaureate Program – Graduate Program in Life Sciences (GPILS) Seminar February 2019
2016	“Orthodontic Diagnosis and Treatment Planning” College of Oral Health Sciences at the University of Technology- Jamaica Kingston, Jamaica, September 2016 Four-day Orthodontics Course

- 2016 “Accelerated Tooth Movement in Orthodontics”
University of Illinois at Chicago- College of Dentistry
Department of Orthodontics
Chicago –IL, August 2016
- 2009 “Identification and Management of Space Problems in the
Developing Dentition”
Academy of General Dentistry Meeting
Baltimore – MD July 2009
- 2008 “Advances in Orthodontics”
Meeting of Peruvian Academy of Stomatology
Lima- Peru September 2008

Posters/Abstracts/Presentations

Walker, S.; Le, T.; Tigani, E.; Dock, J.; **Schneider, M.** Canine substitution to replace maxillary laterals in cleft lip and palate patient. E-poster AAO Annual Session, Philadelphia Pennsylvania, 2025

Schneider, M.; Kulo, V. Phenomenological Study of Predoctoral Dental Students experiences with service-learning. AADOCR Annual Meeting, New York, March 2025.

Schneider, M.; Cestone C. *Becoming a Master Educator: Understanding How Learning Theories Inform Practice, educational workshop presentation for ADEA meeting, March 2025.*

Schneider, M.; Kulo, V. Phenomenological Study of Predoctoral Dental Students experiences with service-learning. Graduate School Research Day, University of Maryland Baltimore, April 2024

Briscoe A, Garrett K, **Schneider M**, Limitations of Orthodontic Class III camouflage and the potential negative effects. E-poster AAO Annual Session, Chicago Illinois, 2023

Barnes K, Tigani E, Kim E, Lee D, **Schneider, M** Class II division 1 malocclusion treatment with extractions and temporary anchorage devices, E-poster, AAO Annual Session. Miami, Florida, May 2022

Telles, V, Hussain S, **Schneider M.** Interdisciplinary management of skeletal anterior open bite patient with periodontal attachment loss. E-Poster. AAO Annual Session, Miami, Florida, May 2022

Akinwande A, Price J, Stone M, **Schneider MP**. (Abstract) Alveolar bone height changes in patients treated with Conventional and Damon brackets. AAO Annual Session. Los Angeles California May 2019

Kaylie Nguyen, Tao Ma, Xianling Gao, Behzad Mostoufi, **Monica P. Schneider**, Hockin H.K. Xu, and Abraham Schneider Repurposing metformin to enhance the angiogenic response in dental pulp stem cell-based craniofacial bone regeneration. Summer research program. University of Maryland. School of dentistry. Baltimore MD August 2018

Laraway R, Mahmoudi T, **Schneider M**. Accelerated Orthodontic Tooth Movement in Adult Patients by Subsequent Micro-osteoperforations of Cortical Bone. Accepted for presentation (E-poster) 2018 American Association of Orthodontists Annual Session. Washington DC

Mahmoudi T, Laraway R, Al-Sinan A, Roosta A, **Schneider M**. Accelerated Orthodontic Tooth Movement in Adult Patients by Microosteoperforations of Cortical Bone. (E-poster) 2017 American Association of Orthodontists Annual Session. 2017 April 21-25. San Diego, CA

Publications

Peer-reviewed journal articles

Kaur, M.; Telles, V.; Hussain, R.S.; Kocan-Itani, J., Pae, E.K.; **Schneider, M.** (2024) Orthodontic retreatment with clear aligners of an adult patient with late development of an anterior open bite. *AJODO clinical companion* 4(6): 499-508

Nazemian, S., Brooks, J. K., **Schneider, M. P.**, Bashirelahi, N. (2023) What Every Dentist Needs to Know About In-House Clear Aligner Therapy, *Gen Den*, Nov-Dec 71(6):20-23

Feizi A, Brooks JK, Schneider MP, Wright JR, Bashirelahi N. (2020) What every dentist needs to know about clear aligners *Gen Dent* Jul-Aug: 68(4):23-26.

Mahmoudi T, Laraway R, Al-Sinan A, Roosta A, Pae EK, **Schneider M.** (2018) Accelerated Orthodontic Tooth Movement in Adult Patients by Micro-Perforations of Cortical Bone. *Int J Dent Oral Health* 4(6): dx.doi.org/10.16966/2378-7090.281

Clark R, Mahmoudi T, **Schneider M**, Bashirelahi N. (2018) What Every Dentist and Their Patients Should Know About Accelerated Orthodontic Tooth Movement *Gen Dent*. Jul-Aug;66 (4):16-20.

Al Jofi FE, T Ma, D Guo, **MP Schneider**, Y Shu, HHK Xu, and A Schneider. (2018) Functional Organic Cation Transporters Mediate Osteogenic Response to Metformin in Human Umbilical Cord Mesenchymal Stromal Cells *Cytotherapy* May 20 (5):650-659

Battle Y, **Schneider M**, Magder L, Pae EK. (2017) Disparity in Opinions on Lip Protrusiveness in Contemporary African American Faces, *Korean Journal of Orthodontics* Jan 48(1):23-29

X Zhang, Y Zhang, J Asgar, KY Niu, J Lee, KS Lee, **M Schneider**, and JY Ro. (2014) Sex differences in μ -opioid receptor expression in trigeminal ganglia under a myositis condition in rats. *European Journal of Pain*. February; 18(2): 151–161

Book Chapters

Schneider MP, Anagnostopoulos-King, F. Introduction- (2024) In DePaola LG, Windsor W, Ganesh N (Eds) Infection Control in the Dental Office (submitted in process)

Schneider MP, Leventer M. Introduction- (2020) In DePaola LG, Grant LE (Eds) Infection Control in the Dental Office (pp 1-7) Springer Nature Switzerland AG

Abstract

Title: A Phenomenological Study of Predoctoral Dental Students' Experiences with Service-Learning

Monica Schneider, Doctor of Philosophy, 2025

Dissertation directed by: Violet Kulo EdD, MS, MA, PhD Associate Professor and Program Director PhD in Health Professions Education (HPE), School of Graduate Studies, University of Maryland Baltimore

Abstract: The purpose of this qualitative phenomenological study was to explore the experiences of dental students with service-learning (SL) and their perspectives on community service and future professional practice. Mezirow's transformative learning theory guided this study as it focuses on how individuals make meaning of their new experiences and adapt or change perspectives. The study included 12 predoctoral fourth year dental students from five different dental schools in the United States (US). All participants were involved in a service-learning rotation as part of the dental school curriculum for year four students. Participants shared their experiences through semi-structured interviews. Data analysis and interpretation followed the six-step process as described by Creswell and Guetterman. Data analysis involved In Vivo and axial coding and categorizing codes into main themes and subthemes. To ensure trustworthiness researcher reflexivity, member checking, and peer debriefings were utilized.

The findings revealed five emerging themes including, growing as a professional, being part of a team, becoming a better dentist, giving back to the community, and experiencing gratitude. The results indicated that two weeks or more of a service-learning rotation resulted in a positive transformative learning experience for the participating

dental students as well as promoted their professional and personal growth. The findings can contribute to decision making about a SL course framework to better align the structure of the rotations to the academic goals of the schools. Overall, participants had a positive experience during their SL rotation, learned new things became more independent. They also indicated an increase in confidence, professional growth, perceived enhanced clinical skills after completing the rotation.

A Phenomenological Study of Predoctoral Dental Students' Experiences with Service-
Learning

by
Monica Schneider

Dissertation submitted to the Faculty of the School of Graduate Studies of the
University of Maryland, Baltimore in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2025

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Dedication

To my husband Abraham, for your love and patience. Thank you for believing in me, for your encouragement and for taking care of so much and supporting me through every challenge.

To my kids, Sarah and Jonah, thank you for bringing joy to the challenging moments and reminding me of what is most important.

Acknowledgements

I would like to thank Dr. Violet Kulo, my dissertation advisor for her support during this journey and for giving her expertise and her time at every stage of the process. Her guidance was invaluable in developing this project.

Thanks to Dr. Karen Gordes who was always available and met with me in the early stages of this project. Thank you also to Dr. Hyun-Jin Jun for her significant contributions that helped make this work better.

Thank you to Dr. Macek for your invaluable feedback and taking time to discuss various aspects of the project and to Dr. Keith Mays whose expertise in the topic was essential, thank you for taking time of your busy schedule to discuss the project.

To the HPE faculty thank you for challenging me, I believe I have grown as an educator because of all of you. To my HPE cohort, you made this journey so much better, you created a supporting and motivating environment.

Lastly to my colleagues at University of Maryland Baltimore, School of Dentistry that always supported and encouraged me.

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CHAPTER ONE: INTRODUCTION

Background

The Health Resources Service Administration and the PEW Charitable Trusts created the Community-Campus Partnerships for Health (CCPH) whose objective is to initiate relationships between educational institutions and the community to improve health through implementing a service-learning (SL) approach (Champagne, 2006). Consequently, SL has been incorporated gradually in many health professions curricula as a method to educate students. SL is defined as an educational experience in which students are involved in a service activity that is structured within a course (Bringle & Hatcher, 1996). SL does not only prepare competent health professionals who support the community, it is also a way to promote citizenship, encourage social change and improve the health of the community (Seifer, 1998). SL supports a recognized community need and allows students to experience a deeper learning of the course content. Students perform real world tasks where they can apply skills learned and demonstrate their abilities as well as become more confident (Stewart & Wubbena, 2014).

SL first appeared in the literature in the 1960s, however, the educational foundation of SL was developed from Dewey (1963) and Kolb's (1984) experiential learning theory (Dewey, 1963; Kolb, 1984). Experiential learning directly involves the learner with the event being studied. Dewey's initial writings laid out the foundation of SL which include the importance of experiential learning, reflection, and reciprocal learning. SL is a type of experiential learning that connects the learning goals of the students with social issues and gives them opportunities for academic and professional growth that are difficult to provide in a traditional setting without interaction with the

community (Champagne, 2006; Leonard et al., 2023). Effective SL is dependent on robust partnerships between the universities and the community, and faculty need to identify sites that align with the course objectives. The present state of SL may involve elective experiences, or some programs may require participation of all students (Stewart & Wubbena, 2014).

The reflective process promotes understanding of the material because learning is multidirectional, and students, instructors, and the community benefit from the experience (Dewey, 1963; Tai-Seale, 2001). When the SL experience includes meaningful reflection on the service activity, the effects on the students are positive (Bringle & Hatcher, 1996). Previous studies in SL have shown that SL could be an effective mode of instruction to accomplish a variety of positive cognitive and affective outcomes including academic, social, personal, and civic outcomes for students from different backgrounds (Britt, 2012; Deeley, 2010; Lo et al., 2022). Assessments are necessary to determine students' outcomes and evaluate community impact. These may include quantitative measures such as clinical-knowledge tests, attendance and multiple-choice exams or qualitative measures such as written essays, interviews and open-ended questions (Stewart & Wubbena, 2014). This study utilized Jacoby and Howard's (2014) SL definition, "service-learning is a form of experiential education in which students engage in activities that address human and community needs, together with structured opportunities for reflection designed to achieve desired learning outcomes" (pp. 1-2).

Many health professions have incorporated SL approaches in their curriculum. Specifically, the fields of nursing, medicine, and physical therapy where internships are an essential part of the learning experiences have contributed extensively to the SL

literature (Bentley & Ellison, 2005; Borah, 2018; Dadrewalla et al., 2021; Marcilla-Toribio et al., 2022; Reynolds, 2005). Similarly, dental education has been incorporating more active experiential approaches to learning, including SL, also referred to as community based dental education (CBDE) (Mays, 2016; Mays et al., 2019).

In the early 2000s various new dental schools established SL as a key experience in the senior year clinical training, and several traditional dental schools expanded SL opportunities to satisfy community needs such as dentist distribution in underserved areas and increasing community access to oral health (Hood, 2009). It is recommended that SL programs should be a fundamental part of the curricula, enhancing student learning at each phase of their dental education while focusing as well on the community needs (Hood, 2009). Mofidi et al. (2003) found that including self-reflection in SL experiences developed self-awareness, empathy, and self-confidence among dental students. The dental students who participated in the study described this learning experience as meaningful and in some instances “awakening” and “transformative” (Mofidi et al., 2003).

One of the main benefits of SL is the ability to encourage civic engagement and social responsibility during the students’ dental education (Hood, 2009). SL provides reciprocal learning where everyone involved learns from the other and it can also provide opportunities for dental students to work with other professions in community clinics and see how the health care system operates (Hood, 2009). Further, SL experiences in the health professions can promote student knowledge of diverse patient groups and social determinants of health. These experiences can help students understand how culture, lifestyles and behaviors of patients interact and can affect patient access to care (Behar-

Horenstein et al., 2015). Effective SL could be an integral component of the learning process that supports students in understanding societal issues such as health disparities (Demiroren & Atilgan, 2023).

Demiroren and Atilgan (2023) noted that SL benefits medical students' learning about the social determinants of health and helps develop a sense of social responsibility and sensitivity to marginalized populations (Demiroren & Atilgan, 2023). Indeed, Gadbury-Amyot et al. (2006) reported that dental students working with underserved communities increased their understanding of cultural diversity, access, and disparity issues affecting underserved populations. This experience had a positive impact on students' attitudes about service and the community members they served (Gadbury-Amyot et al., 2006).

Currently, the Commission on Dental Accreditation (CODA) Standard 2-26 describes SL experiences in the dental curriculum (American Dental Association, 2022).

The standard stipulates:

Dental education programs **must** make available opportunities and encourage students to engage in service-learning experiences and/or community-based learning experiences.

Intent: Service-learning experiences and/or community-based learning experiences are essential to the development of a culturally competent oral health care workforce. The interaction and treatment of diverse populations in a community-based clinical environment adds a special dimension to clinical learning experience and engenders a life-long appreciation for the value of community service. (Commission on Dental Accreditation, 2023, p. 30).

The current research on SL in dental education shows that schools implement SL experiences in diverse ways. For example, Mays (2016) surveyed the academic deans or directors of clinical outreach programs at 60 dental schools to determine the length and types of community rotations being offered, the placement of SL in the program

curriculum, as well as types of student assessments and reflection assignments affiliated with the SL experiences. The study found that schools provide varied SL experiences, and it is unclear whether students across dental schools have comparable experiences.

SL has the capability for transformational impact on students, communities, instructors, and higher education institutions (Clayton et al., 2013). Stewart and Wubbena (2014) asserted that medical students participating in SL may experience transformative learning. Specifically, students may experience a change in their frames of reference as they reflect on their assumptions and beliefs after a SL activity, which can result in an essential change in a student's basic beliefs. As a result, students may become advocates for the health of the community rather than solely focusing on the pathologies or symptoms of individual patients (Stewart & Wubbena, 2014).

Theoretical Context

This study was guided by Mezirow's transformative learning theory (TLT) (Mezirow, 1978). Mezirow's TLT posits that the process of learning utilizes former interpretations to create new and revised interpretations that will guide future behavior (Mezirow, 1978; Niño et al., 2011). Learning can be transformative when a learner's perspectives, assumptions or expectations undergo a fundamental change (Hatlevik & Hovdenak, 2020). Transformative learning takes place when a disorienting dilemma occurs, and there is a disconnect between previous understanding and practical experience or new knowledge (Hatlevik & Hovdenak, 2020). Transformation of previous frames of reference occurs when critical reflective practices are included. Reflection is essential and serves as a connection between concepts learned and practical experiences.

New frames of reference are characterized by being more inclusive and more open to change (Hullender et al., 2015).

According to Mezirow (2000) there are ten phases of transformative learning: “a disorienting dilemma, self-examination with feelings of fear anger, guilt or shame; a critical assessment of assumptions, recognition that one’s discontent and the process of transformation are shared, exploration of options for new roles, relationships and actions, planning a course of action, acquiring knowledge and skills for implementing one’s plan’ provisional trying new roles, building competence and self-confidence in new roles and relationships, a reintegration into one’s life on the basis of conditions dictated by ones perspectives” (p. 22). For transformative learning to occur students must have an opportunity to question existing frames of reference, beliefs, attitudes, and prejudices. These frames can be questioned and changed after learning in a “real world” setting (Van Schalkwyk et al., 2019). The transformative learning theory is relevant to this study because it focuses on how individuals make meaning of their new experiences and adapt or change perspectives.

Statement of the Problem

Dental students are challenged with bringing together the application of didactic and theoretical knowledge to dental practice with patients. SL combines established theoretical learning goals with experiential activities. The SL experience is designed to provide structured learning in a community setting grounded in clearly defined objectives, preparation and reflection that help students recognize the range of community-based patient services (Yoder, 2006). The problem is that SL experiences in dental schools vary in their organization, structure, type of assessments used, length of

the experience, and type of learning site (Hood, 2009; Smith & Mays, 2019; Suresan et al., 2019). It is not clear whether students get comparable SL experiences that might impact their perspectives on community service and future professional practice and if these SL experiences foster transformative learning.

Several quantitative studies have explored the impact of SL in dental education including predoctoral dental students' attitudes towards community service, academic outcomes, and clinical performance, confidence in treating underserved patients and selecting to practice in community based clinics as a first career choice with positive and negative results and have shown that dental students' SL learning activities are very diverse (Coe et al., 2015a; Major & McQuistan, 2016; Major et al., 2014; Piskorowski et al., 2012; Volvovsky et al., 2014). Qualitative studies to understand predoctoral dental students lived experiences with SL are limited, therefore the focus of the current study is to address a gap in the literature by exploring academic and co-curricular SL experiences in general dentistry of predoctoral dental students and their perceptions concerning community service and future professional practice. An in-depth exploration of dental students' experiences with SL can inform dental schools on how to integrate effective SL experiences in the curricula and potentially impact the community they serve.

Purpose of the Study

The purpose of this qualitative phenomenological study was to understand predoctoral dental students' lived experiences with SL in general dentistry and explored how these experiences influence their perceptions of community service and future professional practice. This study examined academic SL and co-curricular SL but not volunteer community service. Academic SL refers to SL that is credit based coursework,

supervised by a faculty member and part of the formal academic curriculum (Clayton et al., 2013). Co-curricular SL is not a component of a specific course or discipline; however, it is a complement of the curriculum and supports a comprehensive and well-rounded education (Bringle & Hatcher, 1996).

Research Questions

This study was guided by the following research questions.

Central Research Question

What are the lived experiences of predoctoral dental students who have completed a SL rotation in general dentistry?

Sub-Question One

How do predoctoral dental students perceive community service after completing a SL rotation in general dentistry?

Sub-Question Two

How do predoctoral dental students perceive their future professional practice after completing a SL rotation in general dentistry?

Significance of the Study

Within the literature there is growing evidence on the positive impact of SL experiences. SL can be meaningful for students in different areas since the experiences can have various learning objectives. SL has been shown to increase decision making and leadership skills and also positively impact academic outcomes for students (Crone, 2013). This study contributes to the dental education literature by presenting a deep understanding of predoctoral dental students' experiences with SL in general dentistry and their perceptions about community service and future professional practice.

Understanding their lived experiences can contribute to assisting dental educators in the design and inclusion of robust clinical SL experiences in the dental curricula, which can have an impact in the communities served.

In 2008, the American Dental Education Association (ADEA) Council of Sections Task Force developed a set of competencies that define expected entry-level skills of the beginning general dentist. It states that community-based service in dental schools can increase competence in all domains including, critical thinking, professionalism, communication, health promotion disease prevention practice management, informatics, and patient care (Hood, 2009). Research on SL in dentistry has mostly focused on implementation of community-based learning programs and has mostly centered on quantitative descriptions of the characteristics of the SL experience, for example, type and length of the SL experience and types of communities involved. The current SL literature has yet to explore in depth dental students' perceptions on community service and future professional practice from the perspective of transformational learning. This qualitative study provides a deep understanding of predoctoral dental students' SL lived experiences through the lens of transformative learning, which research has shown can result in an essential change in a student's beliefs (Stewart & Wubbena, 2014).

In addition, this study expands the understanding of Mezirow's (2000) transformative learning theory and adds to the base of the theoretical literature. Particularly, dental students SL clinical experiences presented a disorienting dilemma which is connected to the initiation of the transformative learning process (Mezirow, 2000). Participation in SL can benefit the academic and social aspects of learning (Crone,

2013), but transformation occurs when the students examine their current beliefs in an environment that fosters critical thinking and self-empowerment (Van Schalkwyk et al., 2019). Data gathered from the students' lived experiences have the potential to guide dental curricula with the goal of transforming students through SL.

Definition of Key Terms

The following conceptual definitions are provided to clarify the meaning of the terms used in this dissertation.

- 1 *Community Based Dental Education*- Dental education provided at community clinics as training sites for dental students and residents. Most clinics are smaller and can accept a few students at a time. Dental schools develop partnerships with these clinics for dental student and resident rotations (Formicola & Bailit, 2012)
- 2 *Dental Students*- Individuals enrolled in a Doctor of Dental Surgery or Doctor of Medicine in dentistry accredited by the Commission of Dental Accreditation (CODA).
- 3 *Experiential Learning* – Development of knowledge from real life experiences, it is represented by four stages of learning: concrete experience, reflective observation, abstract conceptualization and active experimentation (Kolb, 1984).
- 4 *Service-Learning* – “Service-Learning (SL) is a form of experiential education in which students engage in activities that address human and community needs, together with structured opportunities for reflection designed to achieve desired learning outcomes” (Jacoby & Howard, 2014, p. 1). SL is based on

theories of Dewey and Kolb which suggest that learning is enhanced when students are actively involved in gaining knowledge through experiential problem-solving and decision-making (Dewey, 1963; Kolb, 1984).

- 5 *Transformative Learning* – Mezirow’s theory of transformational learning postulates that learning is an understood process that employs previous interpretations to influence future behavior and a shift in opinion (Mezirow, 1978).
- 6 *Urban* – The definition of the US Census Bureau (2020) of urban is based on high residential population density with 50,000 or more people (Urbanized area) or populations between 2,500 and 5,000 (Urban clusters).
- 7 *Rural* – The definition of the US Census Bureau (2020) of rural is all population, housing and territory not included within an urbanized area often with less population density and less infrastructure.

Summary

SL in the field of dentistry has not been investigated in depth. The literature has focused mainly on descriptions of the type and length of CBDE experiences, course type, faculty and students’ experiences and characteristics of the communities involved (Hood, 2009; Smith & Mays, 2019; Suresan et al., 2019). Transformative qualities of SL experiences have been reported in other health professions (Ng et al., 2021; Vipler et al., 2022); however, it has not been investigated in the field of dentistry. Various SL strategies have been implemented in dental education (Gordon et al., 2019; Volvovsky et al., 2014), but it is unknown whether transformative learning occurs. The present qualitative phenomenological study aimed to understand predoctoral dental students’ SL

experiences in general dentistry and their perspectives on community service and future professional practice through the lens of transformative learning. Better understanding of the students' SL experiences will allow for development of a curriculum with intentional SL activities that have a positive impact on dental students' learning and that promote transformative learning.

This chapter discussed the background of SL, problem statement, purpose and significance of the study. The following two chapters will present an overview of the SL literature and methodology of this study. Chapter 2 will provide a historical perspective of SL and literature review in context to the study. It will discuss SL in health professions, various approaches to SL within health professions education with an emphasis on SL in predoctoral education in general dentistry, as well as the theoretical framework of the study. Chapter 3 will discuss the methodology of the study including research questions, study design, procedures, and data analysis in detail.

CHAPTER TWO: LITERATURE REVIEW

Introduction

The purpose of this qualitative phenomenological study was to understand predoctoral dental students' experiences with SL and their perspectives on community service and prospective professional practice. Chapter 2 is organized in three general areas describing the existing literature pertinent to SL in dental education. The first section describes SL, including an overview of the origin and educational foundation of SL, best practices of SL, benefits of SL, and SL in the health professions and specifically in dental education. This section concludes with identifying a gap in the literature, justifying the need for more research on SL in dental education. The second section reviews the theoretical framework supporting the proposed research. This section includes a review of the literature on transformative learning theory. The chapter concludes with a summary.

Related Literature

This review of related literature provides an in-depth understanding of what is currently known about SL in health professions and specifically in dental education. Research has been conducted on the best practices, benefits and effects of SL. Most of these studies were conducted in other health professions (Bentley & Ellison, 2005; Cham, 2004; Kearney, 2013). Research conducted on SL specifically in dental education is very limited. In reviewing the SL literature, there is a gap in the literature in qualitative studies on SL in dentistry exploring students' experiences in depth. With the shortage of dentists in underserved areas or rural populations there is a need to examine the influence of SL in dental students' perceptions of community service and future dental practice.

Development and Educational Foundation of Service-Learning

SL is described as an educational strategy that involves the engagement of students in active service that addresses community needs (Jacoby & Howard, 2014). SL was established and increased in many college campuses in the late 1960s and 1970s in the form of internships and cooperative education. In the 1960s the federal government established the Peace Corps, Volunteers in Service to America (VISTA), and the national center for SL. These organizations supported the initial stages of SL. Some of these early efforts emphasized helping others and did not engage students in learning how to address community needs (Jacoby & Howard, 2014). In 1990 and early 2000, campus SL centers were created with the goal of incorporating SL in curriculum through different educational opportunities such as learning communities, new student orientation, multicultural education, and others. In 2012, educational institutions were requested to include SL opportunities with the goal to have students acquire civic knowledge and skills that could be applied to every aspect of their educational life (Jacoby & Howard, 2014). Currently SL is widespread in many health professions (Behar-Horenstein et al., 2015; Bentley & Ellison, 2005; Cham, 2004).

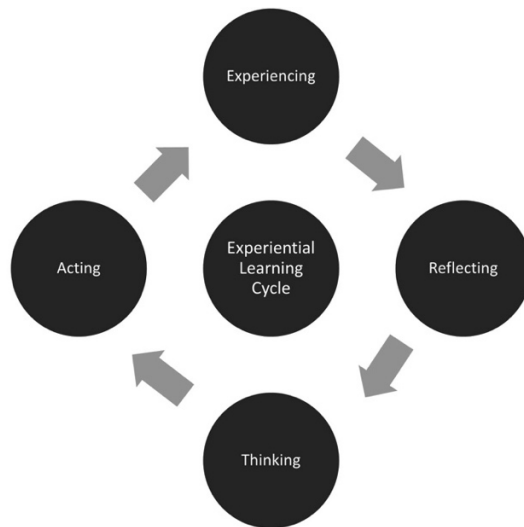
The educational foundation of SL was developed from experiential learning theory which postulates that experiential learning is the development of knowledge from real-life experiences (Dewey, 1963; Kolb, 1984; Yardley et al., 2012). Dewey (1963) designed experiential learning as a six-step process which included facing a problem, framing the problem, collecting information, formulating a hypothesis, testing the hypothesis, and a six-step process to inquiry. The inquiry process involved encountering the problem, formulating the problem or question to be resolved, gathering information

which suggests solutions, making a hypothesis, testing hypothesis and outlining conclusions (Dewey, 1963).

Kolb's (1984) model, a variation of Dewey's (1963) model, theorizes experiential learning as a four-component process. According to Kolb (1984), learning takes place when students gain knowledge from former experiences and apply this knowledge to comparable experiences. This model emphasizes the importance of reflection to be able to associate abstract content with real experiences. Kolb's experiential learning cycle divides the learning process in four components (see Figure 1). The first component of the cycle is concrete experience, which refers to everyday experiences that might be novel or familiar and can occur in professional, educational, or personal situations; the second component is reflective observation which occurs when the student reflects on a new experience considering previous knowledge. These observations can be influenced by previous experiences. The third component of the cycle is active conceptualization or thinking, this generates a new concept or a change of an existing concept and creates a new strategy or theoretical approach. The final component is acting or active experimentation which involves testing new concepts when the new content learned is applied (Kolb, 1984).

Figure 1

Experiential Learning Cycle



Note. Adapted from Kolb (1984).

SL is a specific type of experiential learning that connects the learning goals of the students with the needs of the community and by including academic content within the service experiences, it mutually benefits the students and the community served (Leonard et al., 2023). Other examples of experiential learning include, volunteerism, apprenticeships, clinical experiences, community service, fellowships, field work, internships, and simulations. SL, however, differs from other forms of experiential learning. For instance, while volunteerism and community service are centered on serving the community, internships and fieldwork are centered on learning the academic content. SL tries to find a balance between student learning and serving the community (Furco, 1996).

Furthermore, SL teachers guide students in the experiential learning cycle making the connection between abstract concepts to concrete experiences through meaningful reflection. In addition, it has been suggested that experiential approaches accommodate

students with different learning preferences better than traditional didactic methodologies (Cone, 1996). SL is typically associated with a credit course and supports the well-defined learning objectives of the course. SL experiences should be included in general and specific discipline education courses, study abroad experiences, internships missions and governance (Jacoby & Howard, 2014).

Service-Learning Partnerships

Jacoby and Howard (2014) noted that SL is an educational partnership between the academic institution and the community and must be beneficial to both parties. A successful partnership must be grounded in a shared vision that is collaborative and based on trust. It is also important to maintain these partnerships over time by having constant communication and evaluation of the SL experience. Examples of SL include experiences with one faculty member and one community partner, one student organization and one community partner, one educational institution partner and multiple community partners, multiple educational institution partners and one community partner, or SL center connecting with many community organizations (Jacoby & Howard, 2014).

According to Jacoby and Howard (2014), many institutions are establishing a single point of contact to develop SL potential partnerships with representatives of community organizations. This is important because faculty and staff members need reliable sources of information about the community organizations to consider including SL as an experience for students. Additionally, it is necessary to establish strategies to maintain the community relationships, including learning about the prospective partners, considering the commitment needed for a successful partnership, planning, and communicating with potential partners in a timely manner. It is also important to

determine whether there is compatibility between the learning institution and the community (Jacoby & Howard, 2014).

Successful partnerships are essential for the success of any SL experience. Most importantly, these partnerships must be beneficial to all participants, centered in clearly described and shared goals. They must ensure responsibility and accountability from all participating groups for accomplishing the planned goals. To develop a successful partnership the following stages are followed: 1) development of the partnership that provides benefits for all and is grounded on mutual goals, 2) building collaborations based on trust and respect, and 3) maintaining clear communication to preserve partnerships over time (Jacoby & Howard, 2014; Torres, 2000).

Best Practices of Service-Learning

The literature has discussed best practices for implementing SL in the curricula, for example, SL is not suitable to be integrated in every course, but it can be valuable in every discipline (Jacoby & Howard, 2014). SL components should be connected to a specific course and be related to the fundamental learning outcomes of that specific course (Cone, 1996). In general, SL courses are often part of a first-year curriculum to familiarize students with the SL model and it can be planned as a required, optional, or extra credit experience. Students in professional programs such as the health professions work in the community in many instances for lengthy periods of time when they participate in internships. These opportunities are considered SL when critical reflection and deliberate integration with academic content are included (Jacoby & Howard, 2014).

In a well-designed SL experience, academic credit is given for the learning and not for the service to ensure that academic rigor is not compromised. SL might be more

beneficial when it is connected to courses designed to enrich SL activities, in a way that the service has a positive impact on learning and the learning enhances the service (Celio et al., 2011; Crone, 2013; Jacoby & Howard, 2014). Students should be capable of learning from community experiences which may not be as structured as learning in a traditional setting (Jacoby & Howard, 2014). SL should be included in a course only if it is expected to help students become proficient at one or more of the intended learning outcomes. It can be incorporated as one-time projects, community-based components, research projects, and community service projects as part of the coursework (Jacoby & Howard, 2014). Since one of the goals of SL is to support the community, it is essential to request and include community feedback when designing and evaluating the SL experience (Celio et al., 2011).

Additionally, SL should support the students' learning experience by helping them to understand the course material better than when using other learning strategies. The number of hours of SL included in a course are not as important as matching the community experience to the anticipated course outcomes and intentionally including these experiences in the course. Critical reflection which is deliberately structured to associate the course material with the service experience is essential for producing deep learning. Thus, faculty and students should keep a record of these learning experiences for reflection to allow students to experience different ways of learning (Jacoby & Howard, 2014; Lim & Babar, 2016). Reflection coupled with the SL experience increases students' self-confidence, engagement and social responsibility (Celio et al., 2011). Furthermore, assessments and grading should be equivalent as in other academic courses,

and credit should be given only after evidence of learning through reflection papers, discussions, and examinations (Jacoby & Howard, 2014).

Britt (2012) described three approaches to SL pedagogy. The first approach is skill-set practice and reflexivity (the practice of doing), which is influenced by experiential education. Students learn by doing for others and with others. In a skill-set teaching method during SL, the students practice and reflect on the skills learned while involved in community service which, according to Kolb (1984), facilitates transforming the experience into knowledge. This approach emphasizes the experience and gives the student opportunities to increase their competency and confidence because they view their knowledge relevant to everyday problems that they can possibly contribute to solve. The second approach is civic values and critical citizenship SL pedagogy (the practice of becoming). This pedagogy is adopted with the goal of strengthening civic values and citizenship by engaging students with communities, thereby, promoting the development of their civic identity. This approach compels students to consider their values and interactions with the communities and reflect on self, society, and values (Britt, 2012).

Lastly, the third approach is social justice activism (the practice of engaging in social change) which fosters awareness of social inequities. Students develop relationships and collaborate with groups that are economically, socially, or culturally marginalized. This method also prepares students to be active participants of social transformation. Students see themselves as agents of change, even though in an individual course the change accomplished is limited. The goal is that students will acquire the knowledge to be interested in addressing these issues in the future. While all of these three approaches go beyond the classroom, the service element differs according

to the planned goals. In addition, by combining these three practices, students experience the various benefits from a single SL activity (Britt, 2012).

Benefits of Service-Learning

SL can enhance the academic and social components of the learning experience (Crone, 2013). Students can receive meaningful benefits from SL in different areas since all SL experiences are not developed with the same goals. The SL experience can focus on skill-acquisition, development of the students professional and civic identity and social awareness or a combination of all (Britt, 2012). SL has been shown to increase decision making and leadership skills and also positively impact academic outcomes for students (Crone, 2013). SL provides structured opportunities for student reflection about their experience, thereby enabling the students to build significant connections between the course concepts and the SL experiences through meaningful reflection (Bringle & Hatcher, 1996; Crone, 2013; Weber et al., 2010). In addition, the service delivered has to benefit the community by providing positive contributions to the population the students are serving (Deeley, 2010). Finally, students with a strong commitment to SL can participate in community-based research and SL capstone programs where they integrate and apply their learning throughout advanced scholarly work that addresses a community need (Jacoby & Howard, 2014).

Furthermore, SL that is directed to skill set practice and reflexivity develops the students' learning by supporting individual content competence, it can provide students the tools necessary for critical thinking and reflection (Britt, 2012; Deeley, 2010) as well as increase retention and lasting knowledge (Crone, 2013). SL pedagogy directed to civic values and critical citizenship can increase students' self-confidence and connect

the student to the community with real interactions (Britt, 2012). SL that is focused on social justice activism SL can develop students as change agents and motivate them to participate in policy making (Britt, 2012).

Additionally, SL helps students to learn difficult content and garner an understanding of how foundational concepts can be applied in real life scenarios. SL is particularly beneficial when students are analyzing complex problems and applying what they learned in different settings as it motivates students to learn the content comprehensively and to be engaged. Lastly, SL is valuable to learn to work in collaboration with faculty, peers and community members using knowledge from the discipline and addressing community needs through real world experiences (Jacoby & Howard, 2014).

Crone (2013) conducted a quantitative study to compare civic participation, self-efficacy toward service, attitudes for helping others and college education's role in addressing social issues for a social psychology course taught with and without SL purposely integrated with the content of the course. The participants included 75 college students at a predominantly Hispanic serving institution in the US that were enrolled either in a traditional social psychology course or a SL centered social psychology course. The participants completed the following validated instruments: Civic Participation scale, Attitudes Toward Helping Others scale, Self-Efficacy Toward Service scale, College Education's Role in Addressing Social Issues scale and the Personal Effectiveness of Community Service Scale (Crone, 2013). The results showed that participants in the SL course reported more concern about the community ($F= 12.28, p < 0.001$), increased belief in their ability to contribute to the community ($F= 5.94, p = 0.27$)

and desire to help the less fortunate ($F= 6.91, p = 0.011$) and had more positive attitudes about their academic abilities ($F= 5.18, p = .026$). The authors did not provide other statistics values. With respect to limitations, the SL course was taught by only one professor therefore the benefits could have resulted from the specific course and the lack of longitudinal data as the effects were reported after one semester of SL.

Conway et al. (2009) conducted a meta-analysis of SL effects on academic, personal, social and citizenship outcomes, and also examined specific moderators such as reflection and length of program and generalizability across education levels from K-12 to higher education and adult education groups. The study comprised of 103 research articles with the following inclusion criteria: the articles had a pre-test, post-test design with participation in community service between the pre and post-test. Information to classify the outcomes, statistical analysis and sample size were incorporated in the articles. The authors found positive changes for academic outcomes with a moderate effect size with $d = 0.43$, and a small effect size for personal outcomes with $d = 0.21$, social outcomes with $d = 0.28$, the confidence intervals for academic outcomes, personal outcomes and social outcomes did not include zero and the citizenship outcomes was $d= 0.17$. Programs with structured reflection showed larger changes and effects when compared with programs without structured reflection across educational levels with a significant difference for personal outcomes with reflection ($M = .29$) and without reflection ($M = .09$) both values had confidence intervals that did not include a zero ($p < .05$). There was a significant difference for citizenship outcomes with reflection ($M = .22$) and without reflection ($M = .12$) both values confidence intervals did not include zero ($p < .05$).

In a similar study, Celio et al. (2011) conducted a meta-analysis to elucidate the benefits to participants of SL programs. The authors reviewed 62 articles and found that SL programs produced statistically significant effects in attitudes toward self, attitudes toward school and learning, civic engagement, social skills and academic achievement with effect sizes that ranged from 0.27 to 0.43. Academic achievement had a higher effect size ($d = 0.43$) that was significantly higher compared to the other outcomes at a 0.05 level, 95% CI [0.29-0.58]. Limitations included there were only a small number of controlled outcome studies which limits the generalizability of the results and many studies in this review depended on student self-reported data (Celio et al., 2011).

Barriers to Implementing SL

The success of the SL experience for all participants depends on the proper management of the partnership and experience. Some institutions have a SL center that can support faculty, staff and students with the coordination and management of the SL experience. Since there is a wide range of SL experiences, challenges are also diverse. For instance, matching students with community organizations and SL experiences can be difficult. Students can work individually or as a group with a single or multiple community organizations, in addition, some community organizations request to be involved in the selection of students that will work with them (Jacoby & Howard, 2014).

Other barriers include transportation issues, inadequate student preparation before the SL experience, difficulty making time in the curriculum to include SL experiences, ethical dilemmas related to the projects, teaching strategies, and need of faculty development regarding SL (Jacoby & Howard, 2014). It might become problematic when public transportation is not adequate and students do not have their own transportation, or

the SL location is far from the institution's primary location. In addition, it is essential to prepare students for their service since they need to be well informed about the expected outcomes, community issues that the experience will be addressing, schedule, and receive a detailed description of their assignments. The faculty responsible for the SL experience should clarify any concerns students might have during orientation and training before starting the service (Jacoby & Howard, 2014; Phillips et al., 2017).

Another barrier to implementing SL is that educators might have issues balancing the time needed for SL projects with other work responsibilities. Finding SL opportunities close to the institution might facilitate coordination of the experience and resolve the time barrier. Finally, SL partnerships are complex and can be fragile, in fact, some partnerships are created for grant applications or for the institution promotional materials, however, to be successful SL must be supported by a campus-community relationship that benefits all participants. Only then will the benefits of SL for the students and the community be increased (Jacoby & Howard, 2014; Phillips et al., 2017).

Xavier and Jones (2021) explored the barriers to SL in a cohort of 80 Physician Assistant (PA) master's level program students. Sixty-one students completed a pre- and post-questionnaire that included their perceptions of community service as well as the benefits and barriers of the SL course. Students were presented statements about potential barriers and asked to rate the statements from seven response options ranging from "extremely unlikely" to "extremely likely." The barriers included less time for schoolwork, no opportunity to work in a paid position, having less energy, less time to work, less free time and less time to spend with family. The authors found statistically significant decrease in the pre-survey ($M = 4.951$) and post-survey ($M = 3.820$) responses

in having less time for schoolwork ($p < .01$), having less energy ($p < .01$), pre survey ($M = 3.344$) and post-survey ($M = 2.820$), having less free time ($p < .01$), pre-survey ($M = 4.557$) and post survey ($M = 3.918$) and having less time to spend with family ($p < .05$), pre survey ($M = 3.852$) and post-survey ($M = 3.295$). The authors did not report other statistics values.

Service-Learning in Health Professions Curricula

SL has been integrated into several health professional programs such as medicine, pharmacy, nursing, dentistry, and others as a critical component in their curriculum. By incorporating SL in the health professions, students have the opportunity to meet existing community needs and develop critical skills (Behar-Horenstein et al., 2015; Bentley & Ellison, 2005; Cham, 2004). Some of the positive effects of SL in health related fields comprise improvement in professionalism, compassion, empathy, cultural sensitivity, social responsibility, open mindedness, communication skills, confidence, teamwork, leadership, service orientation, discipline specific healthcare skills and reduction of biases (Leonard et al., 2023).

SL has also been introduced to undergraduate pre-health professional students. Leonard et al. (2023) studied SL in pre-professional undergraduate students and found that SL experiences assisted in the development of empathy, social responsibility, communication, and leadership. In this qualitative study, the sample consisted of 103 students at a liberal arts college enrolled in the Personal and Community Health 300-level course which included a SL component. Data were collected from open ended writing assignments and focus groups with guided prompts to assess interpersonal skills, challenges and career readiness. The data analysis showed that students indicated that SL

helped to improve communication skills, perspective taking and motivational skills. These skills are valued in all health professions and at the undergraduate level can offer a foundation for students to develop important professional skills when they enter a health care profession (Leonard et al., 2023).

Certainly, medicine is constantly changing and innovative approaches to instruct medical students are needed. The Liaison Committee on Medical Education (LCME) revised its accreditation standards in 2008 to include SL (Buckner et al., 2010). The current SL standard on medical education states that “The faculty of a medical school ensure that the medical education program provides sufficient opportunities for, encourages, and supports medical student participation in SL and/or community service activities” (Association of American Medical Colleges, & Liaison Committee on Medical Education, 2023, p. 8).

Tanna et al. (2020) conducted a qualitative study to identify factors that promoted SL on primary care clinical placement of medical students. The authors conducted focus groups with 18 year 3 medical students that participated in the ‘medicine in the community’ SL rotations in primary care. The results revealed four main themes: responsibility, working with uncertainty, supervision, and barriers. The students felt that they were considered as valuable and useful members of the medical team, which gave them a sense of responsibility. In addition, students learned to manage difficult interactions and improved their communication skills. The supervision of students was also important as students felt supported by the supervisors, which enhanced their sense of belonging. Lastly, barriers were reported such as logistics and inconsistency in supervision. The authors indicated that the self-selection of the participants was a

limitation of this study as the results might not represent the views of a wider student cohort. This study concluded that clinical experiences combined with active participation of students in the clinical team are key features to have a positive impact on motivation and resilience, managing uncertainty, and developing communication skills and as a result, students might have an effective transition to postgraduate training.

Given the shortage of primary care physicians in the US particularly in underserved areas, Packer et al. (2010) investigated short term SL experiences in medicine and developed a 4-day SL experience to explore the primary care residency rates of participating students. The participants included 53 medical students that completed the 4-day SL experience. This quantitative study compared a group of volunteer students with a group of assigned students. The results showed that the participants had positive perceptions of the experience, 94.3% strongly agreed that learning objectives were completed and 81.9% rated the educational experiences as outstanding or good, however, the primary care residency preference (34.4%) was not significantly different ($p = .0876$) than the entire class (33.4%). They also reported a non-significant ($p = .733$) trend of students choosing primary care residencies when they participated as volunteers (50%) vs an assigned experience (24%). The authors did not report other statistics values. The main limitation was the number of participants. The author's reported they could only accommodate 35% of the students over a 3-year period and demonstrated the need of multiple sites for SL experiences (Packer et al., 2010).

Demiroren and Atilgan (2023) conducted a qualitative phenomenological study on the impacts of SL on year one medical students. The medical students participated in a one-term mandatory course titled "*Becoming a Physician and Social Responsibility*." The

participants were divided in four groups and developed, planned, and conducted a project to help with the needs of the community. Thirty-two students (88%) agreed to participate in the study and the authors conducted focus groups interviews. The focus groups questions were checked by three experts and included four main questions on the topic of social responsibility. The researchers used inductive coding to analyze the data, created thematic maps and reviewed themes. The results indicated positive perceptions after the SL experience, and the common themes included responsibility, volunteering, sensitivity, kindness, community orientation, communication, teamwork, leadership, as well as project management skills. The authors concluded that reflection opportunities after SL experiences support the development of medical students' understanding of social responsibility (Demiroren & Atilgan, 2023).

Regarding the goals of SL in medical education it has been shown that there are substantial differences in the SL experiences and the community is not always involved in the planning stages of the experience. Faculty are incredibly positive about employing SL as a method for teaching about the social determinants of health. While there is interest in including meaningful SL experiences in the medical curriculum, there is still a need to further develop partnerships between the communities and universities (Hunt et al., 2011).

In pharmacy education, the American Association of Colleges of Pharmacy (AACP) Professional Affairs Committee (PAC) wrote a report in 2001 recommending the increase of SL in Doctor of Pharmacy programs (Brandt, 2001). In addition, the Accreditation Council for Pharmacy Education (ACPE) Accreditation Standards

recommends that SL should be incorporated into the pharmacy curriculum (Gonzales et al., 2020).

Several studies have explored SL in pharmacy education in the last decade, such as the quantitative study by Kearney (2013) which evaluated pharmacy related knowledge of first year pharmacy students from two different schools with comparable curricula with one using SL. The students taking the course using SL completed a questionnaire on the last day of the course and a similar questionnaire was given to a control group enrolled in a course that did not include SL. The results showed that the students that participated in SL had a significant positive impact ($M = 2.6$, $SD = 0.7$) in areas of professional communication, cultural competence, the elderly, and awareness of organizations that service the community ($p < .001$) than the control group ($M = 2.0$, $SD = 0.9$). The authors did not provide additional statistical values. One limitation of the study was that the authors could not determine how much knowledge was acquired by the SL course and what was learned previously from other courses.

Another quantitative study evaluated the SL elements at 34 pharmacy schools to make certain that the SL programs consist of a relationship between the academic institution and the community to develop civic responsibility in the students. Also, the study investigated whether SL experiences were integrated into the curriculum, included designed reflection time, and had a balance between the learning and the service. The study found that SL activities were diverse, there was a long-term collaboration with one community partner in 64% of the respondents, and 74% stated that students had opportunity for reflection. The authors concluded that while many schools included SL in

their curriculum there are inconsistencies in their interpretation of PAC guidelines (Schlesselman et al., 2015).

Pharmacy faculty have indicated positive attitudes towards SL, they believe that SL experiences benefit the student learning of essential skills, and the health of patients (Hedges et al., 2014). SL has also been an effective learning strategy to develop self-efficacy and empathy of pharmacy students and at the same time increase access to services for underserved communities (Lumish et al., 2022). Lastly, Gonzales et al. (2020) conducted a systematic review to assess student and patient perceptions of SL, evaluate different approaches to SL, and describe interprofessional approaches for SL. A total of 14 articles qualified to be reviewed: 13 articles reported on students' perceptions of SL, 10 articles assessed perceived improvements in student confidence regarding communication skills, and six articles described improvement in didactic and clinical knowledge. Most of the articles were from one pharmacy program, two articles were from multiple programs, seven articles required a SL component as part of the curriculum and five articles included the interprofessional education.

The results showed that pharmacy students perceived improvements in medication knowledge, confidence, and patient interactions. The authors also found that students had positive perceptions regarding SL which might correlate with future engagement with the community. Students reported improvement in confidence after SL experiences and development of leadership skills since they worked with a team of other health professionals. Patient perceptions towards students were positive. The study discussed the limitations of the articles reviewed such as the inconsistency on how SL is incorporated in the curriculum and the various methods of collecting data, including pre-

post SL surveys, open response surveys, reflective learning logs and interviews causing significant interstudy variability (Gonzales et al., 2020).

SL has also been explored in nursing education since nurses need to be prepared to practice in diverse populations and communities. For example, the Department of Nursing Education of the University of Louisiana at Lafayette implemented the community as a client (CAC) project as the community/mental health course clinical rotation (Stagg & McCarthy, 2020). The goals of CAC were to promote learning through SL experiences, increase awareness of community needs, and become proficient in community assessments, data collection and analysis. The nursing students expressed that they had a positive perception of the experience and that the experience prepared them for future professional skills. The students reported that they had a better understanding of how to implement a community health event. The authors concluded that these experiences may lead to more awareness and advocacy in practicing nurses (Stagg & McCarthy, 2020).

In a recent article by Cohen et al. (2023), the authors described how to integrate SL in the nursing curriculum to offer experiences where the students could relate didactic content with real nursing settings. A SL experience was incorporated into a 'Nursing Concepts' junior-level nursing course that addressed sociocultural perspectives in nursing, death and dying, health promotion for patients with chronic illness and other common disorders. One of the SL sites was the North Dakota State Diabetes Screening Program where nursing students screened patients to identify diabetes at an early stage and provide preventive care. The SL experience included a reflection of the students' perceptions and skills development. Nursing students after the SL experiences showed

improvement in oral communication skills, appreciation of the value of community service, and increased confidence in their abilities (Cohen et al., 2023).

Taylor and Leffers (2016) conducted an integrative review to identify and analyze qualitative studies published from 1997 to 2014 for evidence of SL assessment in nursing education. Nine articles were analyzed, and common themes included greater understanding of community strengths and needs, collaboration, teamwork, emotions, and adjustment, civic engagement, and culture awareness. An interesting finding was that it took time for students to adjust to the new environments suggesting that longer preparation before the SL experience might be needed. Students perceived personal growth through SL, and it was also noted that SL experiences need to be sequenced properly to maximize the opportunities for student growth. One limitation of the study was the absence of standardization of SL experiences. Some of the articles did not cover the theoretical frameworks, SL outcomes, academic levels of students and size of the student group. Additionally, the length of the student experiences and reflection varied (Taylor & Leffers, 2016).

Another integrative review presented evidence on perceptions and educational and non-educational benefits of SL activities for nursing students (Marcilla-Toribio et al., 2022). The goal of the study was to synthesize evidence on the use of SL in nursing education and discover what types of activities are employed, the educational and non-educational benefits of SL and students' perceptions. The authors evaluated 22 research articles and found that 10 articles were qualitative studies and seven mixed methods studies. Overall, students' perceptions on SL were positive and there was a connection between the students participating in SL and educational outcomes such as practical

learning, communication skills and teamwork and non-educational outcomes such as empathy and questioning prejudice. The authors concluded that active participation in SL programs benefits the nursing students and the community. The main limitations of the studies included lack of a control group, no pre intervention measurements, lack of a validated tool, and variability in study designs (Marcilla-Toribio et al., 2022).

In physical therapy Marques-Sule et al. (2022) conducted a randomized clinical trial to study the impact of SL on physiotherapy students with the authors comparing SL to a traditional approach to learning. The sample included 32 students with a SL group that worked on real patients that had heart transplantation and acute coronary syndrome and a traditional learning group that had a collaborative approach and no real patients. They assessed moral sensitivity, ethical competences and knowledge and teaching quality. A physical therapy professional with over 10 years of experience performed both teaching methodologies. After the intervention the students completed a survey on moral sensitivity using the Revised Moral Sensitivity Questionnaire (RMSQ) and in ethical and gender competences using the Higher Education Transversal Skills and Gender questionnaire. In addition, knowledge acquisition was measured with a retention test. The results showed no significant differences between groups at baseline ($p > 0.05$). After the intervention the SL group showed significantly higher scores for moral sensitivity $F(1, 36.0) = 16.9$, ($p < .001$), ethical competency, $F(1, 30.3) = 18.6$ and knowledge retention $F(1, 27.6) = 10.3$, ($p < .001$) with a moderate to high effect size. The authors did not report other statistics values. The SL program also increased motivation. The limitations of this study included the small sample size and that it was conducted in a single university in Spain and would be difficult to generalize the results to other countries. The

conclusion of these study agrees with the results in other health professions that SL had a positive impact on students. Limitations include the sample was from a single university which limits extrapolation of the results (Marques-Sule et al., 2022).

Hartman et al. (2022) conducted an exploratory descriptive study to examine the characteristics of doctor in physical therapy (DPT) students associated with their future professional practice plans and intention to work in medically underserved areas and populations after graduation. The participants were first, second- and third-year students enrolled in a DPT program and recruited from University of Minnesota, University of Wisconsin-Madison, Emory University and The University of Texas El Paso. A total of 201 students completed a 28-question survey. The findings showed that growing up in medically underserved areas and having a parent that immigrated to the US had a high and moderate association ($p < .0001$ and $p < .0016$), respectively, with the intention to work in medically underserved areas.

The authors also found statistically significant associations in the univariable analysis between intention to work in a medically underserved area with the following variables: growing up in a medically underserved area (OR= 5.6, 95% CI= [2.6, 13.3], $p < .001$), physical therapy SL in medically underserved area in the US (OR= 3.6, 95% CI= [1.6, 8.4], $p < .001$), undergraduate community service (OR= 3.1, 95% CI= [1.4, 8.2], $p = .006$), and fluent in multiple languages (OR= 2.1, 95% CI= [1.1, 4.4], $p = .032$). Race and ethnicity and SL during the DPT training had a low association. The authors stated that limitations involved potential sample bias and that the surveys included information on the intent to practice but not employment data. An important conclusion was that student participation in SL experiences might influence students' interest to work with

underserved populations. Incorporating SL activities in the curricula might be an important component of developing future clinicians that will practice in underserved communities (Hartman et al., 2022).

In comparison to the other health professions described above, Oliveira et al. (2023) noted that SL is underutilized in PA education and faculty training is necessary to develop authentic SL experiences. While there is limited PA literature on SL, a recent systematic review revealed that even though SL could be used to teach several PA competencies most of the articles included in the review were related to volunteer activities and not all elements of SL were present, for example, several were lacking clear course objectives and structured reflection (Oliveira et al., 2023).

Most of the research discussed in this section is focused on quantitative studies and the number of qualitative studies is very limited. This indicates that there is a methodological gap in the literature regarding SL experiences in health professions. Thus, qualitative research is needed to gain a richer understanding of perceptions and experiences of students participating in SL.

Service-Learning in Dental Education

Most dental programs in the US are 4-year programs. It is common to have didactic foundational training and preclinical hand skills training (simulation) the first 2 years of dental school with limited patient contact. Years 3 and 4 are typically spent treating patients in a dental school clinic and providing dental care to the community through external rotations. Graduates from dental programs need to be able to engage in culturally competent professional practice where the primary goal is to provide exceptional care to all patients. The literature has reported that community-based service

in dental schools can increase competence in many domains including, critical thinking, professionalism, communication, self-confidence, health promotion disease prevention, practice management, informatics, and patient care (Hood, 2009; Smith & Mays, 2019; Suresan et al., 2019).

Some dental schools in the US have community service and SL as the main clinical training focus during the last year of dental education. For example, East Carolina University aims to train graduating dentists who will practice in rural and underserved areas and Arizona School of Dentistry & Oral Health offers a certificate in public health oriented to community service. Other dental schools have established or are in the process of developing SL programs to meet the needs of their communities (Hood, 2009).

In the US, the majority of senior dental students participate in external clinical rotations that are a minimum of three weeks in duration (Gordon et al., 2019). While community service can be designed to inspire students to practice in underserved settings, the results of the impact of SL on future intended practice choice have been varied (Behar-Horenstein et al., 2015). Gordon et al. (2019) studied the influence of SL and other factors on future practice decisions among East Carolina University dental graduates. Data for this cross-sectional study were collected from written student reflection, self-reported practice plans survey asked at graduation and practice characteristics survey obtained from alumni. The sample consisted of 156 students who were dental students between 2015 to 2017 and 72 alumni. The response rate for the surveys were 95% for the student survey and 46% for the alumni survey.

The study findings showed positive attitudes toward SL assessed by the analysis of the written reflections, the alumni participants also showed positive attitudes about the SL rotations and felt prepared to care for underserved populations (90%). The majority of their study participants, 72% of students and 67% of the alumni, chose to practice in North Carolina. One third of the dental graduates elected to practice in rural areas, most of these students were from rural hometowns. The study acknowledges limitations, one of which is that data were collected from a single new dental school in a short period of time, and another limitation was the small number of alumni respondents. In addition, the authors were not able to differentiate the specific impact of the SL experience in comparison to other educational factors such as admissions strategies and non-SL didactic methods. The authors reported percentages and did not report statistical values. The authors concluded that this educational model might be effective in retaining new dentists within the state and may encourage some dental graduates to practice in rural areas (Gordon et al., 2019).

Research has shown that dental students are more comfortable working with underserved communities after extramural SL experiences. Specifically, The Herman Ostrow School of Dentistry of the University of Southern California (USC) has provided oral health care to individuals who identify as homeless for several years. Students participating in the external rotation treating individuals experiencing homelessness completed a survey on attitudes towards the individuals who identify as homeless. The sample comprised junior and senior dental students that participated in the community outreach program. The participants completed the Attitudes towards the Homeless Questionnaire (ATHQ) at the start of their rotation and seven weeks later at the end of the

rotation. A total of 242 records of students completed the pre and post-test and the results showed that the scores of ATHQ increased from baseline ($M = 70.36$) to post-test ($M = 71.38$). The mean difference was 1.02 ($t = 2.5, p = .01$). The authors did not report other statistics values. A limitation of this study was the short duration of the study, only seven days. The majority of the students (85%) stated that the rotation helped them feel more comfortable treating patients who are experiencing homelessness and 98% stated that they had a pleasant experience with the SL rotation (Habibian et al., 2010).

Another quantitative study conducted at University of Michigan explored how dental students and faculty attitudes towards underserved patients and community service changed at the beginning and end of the school year and if there was a difference in attitudes between required and volunteer service (Volvovsky et al., 2014). A total of 330 dental student and 54 full time faculty responded to a survey that included questions on attitudes towards treating underserved patients, voluntary participation, and attitudes toward community service in general. The study showed that first year dental students had significantly more positive attitudes towards providing care for underserved populations and toward community service ($M = 4.51$) than more advanced students, second-, third- and fourth-year students ($M = 4.18; 4.09; 4.09$) that experienced long term rotations required for community service ($p < .001$). It is possible that the students' developing awareness of social issues and the uncertainty of their ability to make a significant impact on oral health disparities caused the decrease in positive attitudes.

In addition, the majority of faculty had positive attitudes regarding community SL and 83% were in favor of students taking time to participate in SL providing care for patients in need. However, 8% of faculty had negative attitudes towards student

participation in community SL. The authors did not report additional statistical values. Limitations of the study include it was conducted in one dental school and the students were sent for only one or two weeks to each site, this might not be long enough to gain a deep understanding of the site and the community (Volvovsky et al., 2014).

To investigate how SL affected dental students' beliefs about cultural competence, professionalism, and career development, Behar-Horenstein et al. (2015) conducted a qualitative study involving a six-week SL program participation by five incoming first year dental students. Students were assigned to one of three health care settings that included a homeless center in an urban setting, a medical organization for uninsured or underinsured patients and a county health department that concentrates in health issues of migrant workers. After conclusion of the program the participants reflected on their experiences during the program. The authors analyzed the responses and found that study participants showed an awareness of social care issues and desire to address health disparities. Limitations of the study include, participants belonged to one dental school and the applicants for the program were self-selected. It is possible that they already had an interest in community service (Behar-Horenstein et al., 2015).

The impact of the SL program at Virginia Commonwealth University School of Dentistry on senior dental students' attitudes about community service was evaluated with a pre and post-test using the Community Service Attitude Scale (CSAS). A total of 56 students completed both tests. The results showed that there were significant changes in connectedness ($p = .0022$), normative helping behavior ($p = .0013$), benefits ($p = .0195$), career benefits ($p = .0050$) and intention ($p = .0328$). The study's limitations were a small sample size that did not allow to perform multiple comparisons, and the study

examined SL at one dental school. The authors concluded that the SL program produced a positive impact in dental students' attitudes toward SL (Coe et al., 2015a).

Reflection is an important component of the SL experience. A survey of US dental schools conducted in 2016 showed that 80% of dental schools include reflection papers to assess SL learning and increase awareness of social and policy issues on patients (Smith & Mays, 2019). Furlini et al. (2018) conducted a scoping review to determine dental students' readiness to treat underserved populations. The review showed that there is no consensus on the evaluation elements needed to evaluate student readiness for SL experiences with underserved populations and that further research is warranted in this area (Furlini et al., 2018).

In another study, Suresan et al. (2019) examined the impact of outreach programs in academic development, personal development and civic responsibilities using a pre-test, post-test approach with a sample of 100 final year dental students from Kalinga Institute of Dental Sciences in India. The baseline survey consisted of 22 closed-ended questions that measured the effect of outreach programs on three domains: academic development, personal development, and civic responsibilities. For the intervention, the students were divided in eight groups and participated in required SL experiences at outreach program in satellite centers. The post-test consisted of 24 closed-ended questions to assess their experience working in a group and treating patients and community involvement. Ninety students agreed to participate in the study and the results showed that post-test scores increased in all three domains: 1) academic baseline ($M = 6.05$, $SD = \pm 2.44$) and post intervention ($M = 6.52$, $SD = \pm 2.10$), 2) personal baseline ($M = 8.04$, $SD = \pm 2.84$) and post intervention ($M = 13.56$, $SD = \pm 3.44$), and 3) civic domain

baseline ($M = 6.36, SD = \pm 2.23$) and post intervention ($M = 8.55, SD = \pm 2.71$). All domains had a statistically significant value ($p < .05$). No additional statistical values were reported. Some limitations of this study include the small sample size and the variability of experiences among students as all students did not participate in all dental outreach programs.

Lastly, a recent 2023 study evaluated the impact of SL on students' attitudes toward community service (Bahammam & Bahammam, 2023). The authors conducted a survey of students enrolled in clinical SL using a convenience sample from the College of Dentistry at Taibah University in Saudi Arabia. From a total of 120 students enrolled in clinical SL, 96 completed the survey with a response rate of 81%. The instrument used was the Community Service Attitude Scale (CSAS) and the SL experience was a 25-day rotation at 12 different external sites. The post-test was administered at the completion of the SL program and the retrospective pretest was completed three weeks after finishing the SL program. The results showed that there was an overall significant change in student attitude particularly in normative helping behavior when comparing the pre- test ($M = 5.82, SD = \pm 1.20, CI = [5.430, 5.634]$) and post-test ($M = 6.12, SD = \pm 1.18, CI = [5.722, 6.343]$), ($p = .0021$), connectedness pre-test ($M = 5.41, SD = \pm 0.52, CI = [5.050, 5.775]$) and post-test ($M = 5.69, SD = \pm 1.54, CI = [5.375, 6.133]$), ($p < .001$), and career benefits pre-test ($M = 5.12, SD = \pm 1.01, CI = [4.881, 5.157]$) and post-test ($M = 5.37, SD = \pm 1.91, CI = [5.234, 5.578]$), ($p < .004$). Limitations of this study include small sample size and that it was a single center study. Both studies in dentistry were conducted in foreign dental schools which emphasizes the need for studies in US dental schools.

The literature highlights the many positive effects of SL in the health professions. As discussed previously, research found that clinical experiences combined with active participation of students in SL have a positive impact on motivation and resilience, managing uncertainty, developing communication skills, confidence, teamwork, empathy, social responsibility, moral sensitivity, career benefits, increasing knowledge, cultural competence, and improving patient interactions (Bahammam & Bahammam, 2023; Demiroren & Atilgan, 2023; Gonzales et al., 2020; Hartman et al., 2022; Leonard et al., 2023; Marcilla-Toribio et al., 2022; Marques-Sule et al., 2022; Suresan et al., 2019). These positive effects occur when best practices for SL are followed, including preparation before the experience and reflection. Even though health professions accreditation agencies require that academic instruction includes SL, it is also clear that there is great variability on how SL programs are designed and incorporated within curriculum depending on the learning objectives of the course and the community needs.

Challenges in training faculty to provide adequate SL experiences that will impact student learning and provide meaningful service to the community were also noted (Behar-Horenstein et al., 2015; Demiroren & Atilgan, 2023; Marcilla-Toribio et al., 2022; Marques-Sule et al., 2022; Schlesselman et al., 2015). Specifically, in dental education there is variability among dental schools on the length and type of SL experience that each school has implemented. Prior research has focused on types of SL experiences in dental schools and perceptions of students and faculty through surveys after their SL experiences. There is a gap in qualitative literature in dental education which has mainly focused on quantitative studies. Additional research is needed to explore in depth whether

and how SL experiences transform dental students' beliefs and perspectives about SL in American dental schools.

Theoretical Framework

The theoretical framework for this study was based on Mezirow's (2000) theory of transformative learning. Transformative or transformational learning refers to "change in the way we see ourselves and the world in which we live" (Merriam & Baumgartner, 2020, p. 166). Important concepts in transformational learning include experience, critical reflection, and reflective communication and action (Merriam & Baumgartner, 2020). Mezirow proposed that learning not only adds knowledge but also transforms the learner. Mezirow (2000) defines learning as the utilization of previous understanding of knowledge to build new or adjusted understandings which will influence future actions. There are two dimensions to our previous knowledge; a habit of mind and a point of view. A habit of mind is defined as a set of beliefs that categorize the meaning of our experiences. A point of view is constructed by meaning schemes which are a collection of beliefs, values and judgements that influence an individual interpretation (Mezirow, 1997).

When we experience a transformation in our attitudes (meaning scheme), or in the total perspective (habit of mind), transformational learning takes place. This transformation can be rapid or can occur at a slower incremental pace. The process starts with the learner experience; however, the learner needs to reflect on how the experience has been interpreted. The learner can then revise assumptions and transform the assumptions. SL may assist in challenging personal beliefs by presenting knowledge that contradicts with prior knowledge (Mezirow, 1997).

Mezirow's (2000) transformative learning theory suggests that learning produces important transformation in a person's mindset, and the source to starting transformation is initiated by a disorienting dilemma. Transformational learning is associated with psychological change (which is change of self), convictional change (which is change in what one believes to be true) and behavioral change (which is a change in lifestyle) (Mezirow, 2000). Transformations are prompted when frames of reference are no longer helping us with a new situation; the process of critical reflection can transform our frames of reference and create better and more open frames that are capable of change. According to Mezirow (2000) there are 10 phases to transformative learning: 1) a disorienting dilemma, 2) self-examination with feelings of fear, anger or shame, 3) critical assessment of assumptions, 4) recognizing feelings of discontent and that the process of transformation is shared with others, 5) searching for new roles, new relationships and actions for the transformation to take place, 6) planning the course of action to take, 7) acquiring new knowledge and skills to implement new plans, 8) trying new roles, 9) practicing the new roles to build competence and self-confidence and 10) reintegration to one's life on the basis of the new conditions determined by one's new perspectives.

Transformative learning takes place through objective or subjective reframing. Objective reframing requires critical reflection on the assumptions of others in task-oriented problem solving and subjective reframing requires critical self-reflection of one's assumptions about a narrative, system, organization, feeling and interpersonal relations and the ways one learns (Mezirow 2000). Another requirement for transformative learning is discourse, which is a form of specialized dialogue that engages

in searching for a collective understanding of an explanation of a belief. Reflective discourse comprises critical assessment of assumptions and effective participation in discourse and transformative learning requires emotional intelligence (Mezirow, 2000). Goleman (1998) states that the major social competencies for emotional intelligence include empathy, social skills and self-regulation and claims that emotional intelligence accounts for 85 to 90% of success at work, as is more influential than I.Q. or expertise.

In adult education, transformative learning has traditionally been described as a learning theory that explains what happens during one's life. Examples of a disorienting dilemma that initiate the transformative process can be death of a family member or loss of a job. Nevertheless, educators could foster transformative learning through pedagogical design to develop a more inclusive and open worldview (Vipler et al., 2021). Transformative learning is relevant to health professions education since through critical reflection learners may transform into better practitioners and through social change perspective, the learners may recognize disparities in the health care system (Vipler et al., 2021).

Springfield et al. (2015) conducted a qualitative study to assess transformative learning for an e-learning dental hygiene completion program utilizing voluntary focus groups. The authors used the Transformation Rubric for Engaged Learning they had developed earlier. Thirty students across five cohorts participated in the study and the themes of confidence, pride, skills, identity, and perspective were identified. Change in perspective was the highest category of change identified in the study followed by skills and identity. The limitations of the study included the small sample size and the use of a newly created rubric. The authors concluded that the e-learning program had a significant

transformative influence on students' perceptions of their skills perspectives and confidence.

Neve et al. (2020) conducted a qualitative study on six medical and eight dental students from University of Plymouth in England, who spent four days working with disadvantaged groups. The aim of the study was to gain understanding of students' experiences of social engagement and associated learning. Students utilized a daily audio diary during the four days of the experience. The data analysis found that a major theme was the intense emotions conveyed by students. Other themes were related to students developing their skills and knowledge mostly in the areas of teamwork and communication. This study suggests that SL is a valuable teaching strategy to learn more about the social determinants of health and the impact in specific populations. The authors concluded that disconcerting environments may enable transformative learning.

Van Schalkwyk et al. (2019) conducted a scoping review on transformative learning in health professions. The studies reviewed highlighted that for transformation to occur, the students need to question and reexamine their current beliefs. In addition, the environment should be conducive of critical thinking and self-empowerment. Common strategies that foster transformative learning are those where students are engaged with the community, particularly in rural or underserved areas. The outcomes of transformative learning included increased awareness of others, humility, and integrity (Van Schalkwyk et al., 2019).

In another study, Vipler et al. (2021) performed a scoping review of transformative learning in graduate medical education. The study identified multiple experiences that could be recognized as disorienting dilemmas, mostly difficult clinical

situations. The disorienting dilemmas included real encounters and simulation involving medical errors, ethical issues, or communication difficulty. Limited resources when treating underserved populations and factors related to the learning climate (pressure from faculty) were also identified as disorienting dilemmas. The study discusses the importance of critical reflection since disorienting dilemmas were often the content of reflection. In addition to faculty and peers, other staff members such as nurses, community organizers, and patients were also an important aspect of the transformative discourse. Transformative learning was linked to professionalism and professional identity formation and learners were experiencing transformation without recognition of the theory by their educators (Vipler et al., 2021).

In a qualitative study conducted by Ng et al. (2021), transformative learning was investigated in an interprofessional student-run clinic in downtown Toronto. The participants were health professions students that had completed a three consecutive week clinical rotation and attended a mandatory reflection session as part of the volunteer rotation. A total of 23 students participated including the professions of medicine, nursing, pharmacy, physiotherapy, and social work. The results showed that transformative learning occurred with changes in self-awareness, systems thinking, team learning, individualized learning and interprofessional care. Limitations of this study included the need of longitudinal assessments to gain knowledge on the long-term effects of transformative learning and the participants were self-selected volunteers that could be already interested in working in an interprofessional setting.

The finding in Ng et al.'s (2021) study regarding students' changes in self-awareness was supported by another mixed-methods study conducted to evaluate

transformative learning in 615 medical students, 63 physician assistant students, and 661 residents and fellows during the coronavirus (COVID-19) pandemic (Vipler et al., 2022). The study used the Transformative Learning Survey to assess the outcomes and processes related to transformative learning. The results showed that there were no significant differences between students and residents and fellows outcome measures for transformative learning (self-awareness, acting differently, openness, shift worldview). However, there was a significant difference ($p = 0.025$) between students experience of transformative learning and residents and fellows through the process of social critique. Across all participants, the most frequently present subdomain of transformative learning was self-awareness. The changes in self-awareness were explained by the impact of having multiple opportunities for reflection during quarantine. The qualitative analysis identified four themes in response to COVID-19 including, positive changes, negative changes, existential changes and no change. (Vipler et al., 2022).

While there are a few studies on SL in dental education, there is a gap in the literature regarding qualitative studies on longer SL experiences that include reflection. As discussed earlier, transformative learning occurs when one is introduced to a new situation or disorienting dilemma and needs different frames of reference through which to view the world (Mezirow, 2000). The transformative learning theory is relevant to this study because SL experiences present excellent opportunities to introduce dental students to new situations in the real world that can foster critical reflection, which occurs when they question their previously held assumptions and beliefs, thereby, promoting transformation. The SL rotation could present as a disorienting dilemma. As a result, the students might go through the transformative learning phases, develop the process of

critical reflection, change their perspectives, and search for new actions and roles.

Understanding predoctoral dental students' experiences through the lens of transformative learning could not only improve learning but might also support the development of the students' role as effective health care providers.

Summary

This chapter presented a literature review of SL related to health professions and particularly dental education and the need to explore SL experiences through the lens of transformative learning theory. SL is based on experiential learning theory which is the utilization of real-life experiences for development of knowledge. SL is a type of experiential learning practice where students are engaged in active learning with the goal of addressing community needs and determinants of health (Jacoby & Howard, 2014). Successful SL happens when the active participation is carefully organized in partnership with the community, making sure the experience is beneficial to both the students and the community, both organizations have a shared vision and the association is built on trust (Jacoby & Howard, 2014). SL is not appropriate for every course, but it can be of value in all health professions, and it should only be included if it is expected to help students with the learning objectives of the course. To be considered SL, thoughtful integration with academic content and critical reflection must be included (Cone, 1996).

Research has found that SL provides several benefits to students including self-efficacy towards service, positive academic and social outcomes, and improved attitudes towards self, learning and civic engagement (Britt, 2012; Deeley, 2010). In addition, to have a successful SL experience for all participants, proper management of the activity and appropriate support for the students, faculty and staff is crucial. The barriers that

educators can encounter when introducing SL include finding time in the curriculum to incorporate SL activities, and transportation to external sites for engagement in SL (Jacoby & Howard, 2014).

SL has been incorporated in health professions programs including medicine, pharmacy, nursing, and others (Cohen et al., 2023; Kearney, 2013; Stewart & Wubbena, 2015). The literature has shown improvement in students' professionalism, communication skills, confidence, teamwork, cultural competence, and service orientation as a result of SL experiences (Leonard et al., 2023). Faculty have also indicated positive attitudes towards SL and identify it as a useful educational strategy for teaching about the social determinants of health (Hedges et al., 2014). In dental education SL has also been incorporated into the curriculum since collaboration with the community is key to developing clinical practice in dental students. Although CODA standards mandate the use of SL in dental education, the SL experiences of dental schools are not comparable, and currently a wide range of SL activities are offered (Smith & Mays, 2019).

A detailed evaluation of the literature examining various aspects of SL was showed that SL can improve students' cognitive and non-cognitive skills (Conway et al. (2009). It was also noted that for the SL experience to be successful it needs to follow best practices, including appropriately designed learning activities and reflection practices (Celio et al., 2011; Crone, 2013; Jacoby & Howard, 2014). Literature on the theoretical framework supporting this dissertation was also presented, which included the transformational learning theory (Mezirow, 2000). The literature review provided the basis for this qualitative study. Its purpose was to explore the pre doctoral dental

student's lived experiences with SL in general dentistry and how these experiences influence their perceptions of community service and future professional practice.

CHAPTER THREE: METHODOLOGY

Introduction

The purpose of this qualitative phenomenological study was to understand lived experiences with SL in general dentistry and explore how these experiences might have influenced perceptions of community service and future professional practice among predoctoral dental students. Chapter 3 presents an overview of the methodology that was used including the research design, research questions, participants, and sampling, as well as the procedures that were followed to conduct the study. Additionally, I will describe data collection procedures and analysis, researcher's positionality, trustworthiness, and ethical considerations are discussed, and I will end with a summary of the chapter.

Research Design

Qualitative research collects participants experiences, perceptions, and behaviors to understand real-world problems (Creswell & Poth, 2018; Tenny et al., 2023). Phenomenology is a qualitative research design that studies the lived experiences of an individual (Creswell & Poth, 2018; Neubauer et al., 2019). This study design investigates a phenomenon from the perspective of the individuals that have experienced it and aims to elucidate the fundamental meaning of the phenomenon. New meanings and assumptions can develop to explain how we understand the experience (Neubauer et al., 2019). Furthermore, a phenomenological study describes individual lived experiences to find what all participants have in common and describe the universal essence of the experience or phenomenon (Creswell & Poth, 2018). To answer the research questions, this qualitative research study used a phenomenological design to explore dental students' experiences during a SL rotation.

I selected a phenomenological design because it was the most appropriate for identifying the experiences and perspectives of predoctoral dental students during SL in general dentistry. This method allowed the dental students participating in the study to explain how or what they experienced during the SL rotation and allowed the students to share their experiences and perspectives. By using phenomenology, I was able to examine the human experience of SL and describe the most important aspects of the participation in the experiences (Creswell & Poth, 2018).

The preliminary procedures for conducting this phenomenological research included the following: 1) I determined that the research question was best studied using a phenomenological approach and 2) I identified the phenomenon to study. Additionally, I needed to apply the concepts of bracketing or epoché and set aside previous experiences with the phenomenon studied (Moustakas, 1994). This process served to identify and partly set aside personal experiences to focus on the experiences of the participants. It can be challenging for the researcher to bracket personal experiences since the researcher brings prior assumptions to the interpretation of the data (Creswell & Poth, 2018). Phenomenological approaches highlight the importance of personal perspective and interpretation to understand subjective experience and an individuals' motivations and actions. Multiple methods can be used to collect data including interviews, conversations, observations, focus groups, and analysis of texts

Research Questions

This study was guided by the following research questions:

Central Research Question

What are the lived experiences of predoctoral dental students who have completed a SL rotation in general dentistry?

Sub-Question One

How do predoctoral dental students perceive community service after completing a SL rotation in general dentistry?

Sub-Question Two

How do predoctoral dental students perceive their future professional practice after completing a SL rotation in general dentistry?

Participants and Sampling

The sample for this study consisted of predoctoral dental students enrolled in a 4-year accredited dental school program in the US who had experienced a SL clinical rotation during the clinical training portion of their dental education program. A SL rotation in this study is defined as: (1) an experiential learning approach that aims to encourage civic awareness and participation (Jacoby & Howard, 2014), (2) the SL experience is part of a course where the student receives a grade for the learning and is not a volunteer experience, and (3) the SL experience must include a reflection component of either a reflection paper or discussion after the rotation has concluded.

The inclusion criteria included the following: (1) dental students currently enrolled in at a dental school accredited by the Commission on Dental Accreditation (CODA) who are in their fourth year of dental school, (2) students who have

participated in a SL clinical rotation of at least 2 weeks in duration, (3) the clinical rotation was connected to a credited course and the course objectives and (4) the rotation included a reflective paper or reflective discussion after the SL experience. The inclusion criteria of CODA accreditation were to ensure that the dental program meets the standards set by the profession. Participants were excluded from this study if they participated in SL rotations as a volunteer activity, if the SL rotation was less than 2 weeks in duration, and if the SL experience was not part of a course for credit.

I used purposive sampling to identify predoctoral fourth-year students from the dental schools with SL rotations that satisfied the study criteria. This sampling strategy deliberately selected a group of students that could best inform the answer to the research questions (Merriam & Tisdell, 2015). According to Creswell and Poth (2018), an adequate sample size for a phenomenological study is between 5-25 participants, a sample that is likely to support data saturation. My goal for this study was to recruit between 10-15 participants. Potential participants from the dental schools that met the study criteria were identified using a recruitment email that described the purpose of the study and the requirements to participate.

Procedures

The University of Maryland Baltimore Institutional Review Board (IRB) reviewed and approved the study protocol prior to conducting the study. The protocol was determined to be exempt. Subsequently, I sent an email outlining the research purpose to academic deans, directors of community based dental education programs or faculty involved in community based dental activities of all accredited dental school programs. The email included a link to a Qualtrics (<https://www.qualtrics.com/>) survey

(Appendix A and B). This survey was designed to gather information on the type of SL conducted at their schools and to establish if the SL experience offered at their schools corresponded with the definition of SL employed in this study.

Their contact information was obtained from each dental school's website and from the American Dental Education Association (ADEA) directory. The survey consisted of several multiple-choice and open-ended questions on the type of external clinical rotations at their program, the length of the clinical rotations, the assessments completed during clinical rotations and whether a reflection paper, (or reflective discussion) was included as part of the SL experience (Appendix B). The survey was sent to 63 accredited dental schools with 4-year programs in the US. Twenty-three (36.5%) dental schools responded to the survey. The academic deans and directors from the responding schools served as gatekeepers to connect me with potential study participants (Creswell & Poth, 2018). The results of the survey identified the dental schools offering SL experiences that correspond to the established criteria for this study. Of the 23 schools that responded nine (39.1%) dental schools met the inclusion criteria and qualified for the study.

After obtaining information on dental schools that qualified for the study, I obtained access to potential participants through the key gatekeepers. Establishing rapport with gatekeepers was an essential part of the recruitment process (Creswell & Poth, 2018). I sent the contact individual from each university that qualified to participate in the study an email with the study information. This email explained that the dental school qualified to participate in the study (Appendix C) and asked the individual to send a recruitment invitation to the D4 students that had completed their SL rotation soliciting

their participation in the study (Appendix D). I sent the email to the gatekeepers from each school up to three times, as needed, to maximize response. The email to the students included a description of the study information and a link to a Qualtrics form soliciting consent to participate in the study (Appendix E). To thank the participants for their time, I offered to send them a \$35.00 electronic gift card upon completion of the interviews.

The students that completed the informed consent Qualtrics form were contacted using the email they shared to schedule a semi-structured one-on-one interview. Potential participants were contacted up to two more times, as needed, after the initial email. If a student responded to the email and opted to participate in the study, I scheduled a 60-minute appointment with the participant to conduct the semi-structured interview to collect data. The interview process adhered to a detailed interview guide (Appendix F). The interviews began with a review of the consent. Participants were reminded they could withdraw from the study at any time. I conducted and recorded the interviews using Zoom (<https://zoom.us/>).

Interview data were organized and stored following a matrix that was developed to organize the data and identifying information of the participants. All identifiable research documents were assigned an identification number in chronological order of interview and each participant was assigned a pseudonym. These identifiers allowed me to keep a record of the interview of each participant and the corresponding dental schools and demographic information. To ensure confidentiality, all potential identifying information of participants conveyed during interviews was removed from the research materials (participant email, school name, location and other identifying information). The interview recordings were then transcribed to text using Otter.ai software (Otter.ai,

2024) and transcriptions were reviewed and checked for accuracy by comparing them to the recordings and correcting any discrepancies. After the interview was transcribed, the document was forwarded to each participant by email to verify the accuracy of the transcript. Participants were asked to make any revisions, if necessary, and send back the document with the revisions. Transcriptions of the interviews were stored in password-protected digital files and will be retained securely for five years after which the data will be deleted.

Data Collection

In depth, semi-structured interviews were conducted to collect data on SL experiences of predoctoral dental students. I carried out individual semi-structured interviews using Zoom (<https://zoom.us/>). Basic demographic information of the participants was collected including age, gender, ethnicity, state of residency, name of dental school, geographical area raised, and communities served in the past.

Interview Protocol and Interview Process

I developed the interview protocol using the following validated instruments, Transformative Outcomes and Processes Scale (TROPOS) (Cox, 2017) and the Transformative Learning Survey (TLS) (Stuckey et al., 2022). The TROPOS is a 30-item instrument that is used to assess transformative learning among participants in educational programs, the instrument demonstrated sufficient reliability scores ($\alpha > .70$) (Cox, 2017). The instrument has four subscales that include, social support, attitude toward uncertainty, criticality, and transformative outcomes (Cox, 2017). The TLS includes two open-ended questions describing a transformative event followed by 90 fixed response items to assess the outcomes and processes of engaging in transformative

learning in any context. Reliability (α) of TLS scales ranged from 0.68 to 0.91 (Stuckey et al., 2022). Four domains describe transformative learning, which include: outcome, extra-rational process, rational process, and social critique. Fourteen scales describe the different ways transformative learning can occur. The *outcome domain* includes acting differently, self-awareness, openness and shift worldview components, while the *extra-rational domain* includes arts based, dialogue support, emotions, imaginal (role of imagination in learning and change), soul work (symbols and images that pay a role un personal selectivity) and spiritual (sense of connection to a life force) elements. The rational process domain includes action, critical reflection, disorienting dilemma, discourse and experience parts, and the social critique domain includes, empowerment, social action, unveiling oppression and ideology critique (Stuckey et al., 2022). Both instruments collect quantitative data but served as guides to including questions concerning transformative learning specifically as it relates to disorienting dilemma, acting differently and critical reflection.

The interview protocol also included questions I developed from my understanding of dental education acquired through professional experience. Initially, I developed 18 interview questions that subsequently were revised and modified. A thorough review of the interview questions was completed by two University of Maryland, Health Professions Education program faculty members. The preliminary interview protocol was also reviewed by two School of Dentistry faculty members. To finalize the interview protocol, I reviewed each interview and survey question with one

committee member with expertise in SL externships to ensure that the interview questions were adequate to answer the research questions (Kallio et al., 2016).

The open-ended questions were worded with prompts that encouraged detailed and unique responses such as “describe”, “in what ways” and “what aspects”. The order of the questions was rearranged to follow the usual sequence of events during the SL rotation. For example, the reflection question was moved to the end of the interview guide since reflection is usually completed at the end of the rotation. After multiple reviews, I had 10 final interview questions (Appendix G) and the demographic related questions were moved to a separate survey (Appendix H). After completion of the first semi-structured interview, my reflection on participant’s responses indicated that the questions were adequate to address the research questions. Additionally, I met with my dissertation advisor, who also served as my methodologist, to discuss the responses and initial coding for the first interview.

The interview protocol followed the design guidelines by Creswell and Guetterman (2019), which included reviewing with the participants the purpose of the study and the consent forms followed by open ended questions encouraging the participants to elaborate on their ideas if necessary. Before starting each interview, I reviewed the informed consent and purpose of the study and answered any questions the participant might have had. Following, the introduction, participants were asked 10 open-ended questions that included information about the dental school they attended, a general overview of the dental program and length and location of the SL rotation followed by questions about their SL experiences. Follow up questions were asked if

necessary for clarification and participant interviews continued until saturation was reached.

Data saturation is a key element of qualitative research methodology and refers to the point where the data is not providing new information (Creswell & Guetterman, 2019). Upon reaching saturation, the investigator has sufficiently examined the study's phenomenon and data collection can stop. Phenomenological research emphasizes achieving a saturation point where the essence of the participants' lived experiences can be fully understood without new information emerging (Creswell & Guetterman, 2019). I reviewed the first interview transcript with my advisor to corroborate my views and initial coding before conducting additional analysis. I reached data saturation during the eighth interview when responses started to become repetitive but decided to conduct two more interviews to confirm that saturation had occurred. After completing 10 interviews and reviewing the interview transcripts, I discussed the data with my dissertation advisor and decided to complete two more interviews to corroborate that saturation had been reached to answer the research questions resulting in a total of 12 participants. Guba and Lincoln (1982) recommended keeping a reflexive journal as a way to practice reflexivity. I completed a reflection journal entry after each interview as a way to bring awareness to any biases I may have had.

Data Analysis

Data analysis included reviewing the interview transcriptions and identifying words, sentences or quotes that provided an understanding of how the participants experienced SL (Creswell & Poth, 2018). According to Saldaña (2021) the phenomenological analysis involves “extracting verbatim significant statements from the

data, formulating meanings about them through the researchers' interpretations, clustering the meanings into a series of organized themes, then elaborating on the themes through rich descriptions" (p. 268).

The process of bracketing was achieved by completing a reflection journal prior to analyzing the data to isolate my own preconceptions and assumptions before examining the participants' experiences (Creswell & Poth, 2018). Data were analyzed and interpreted following the six-step process described by Creswell and Guetterman (2019). As a first step, I prepared and organized the data for analysis. Next, I proceeded with the exploration and coding of the data and, third, used the codes to construct descriptions and themes. In the fourth step, the findings were represented through descriptions of the participants experiences then, in the fifth step, data were interpreted to derive the meaning of the phenomenon. Lastly, validation procedures were conducted to confirm the accuracy of the findings. The second step of exploring and coding the data is described in the next paragraph.

I used qualitative data analysis software, Dedoose (<https://www.dedoose.com>) to code and categorize data. During the initial coding stages, I conducted note-taking and reflective journaling. Following a preliminary exploratory analysis to understand the data, I began coding with the research questions in focus, maintaining flexibility to develop additional codes. First cycle coding was conducted using In Vivo coding, which uses the participants' actual words from the qualitative data so researchers can portray the meanings that are fundamental to people's experiences (Saldaña, 2021). I met with my dissertation advisor to discuss coding of the first interview, we both coded independently and compared our codes then we met and discussed the participants' answers to ensure

the responses provided insight into the research question and sub-questions. We later had another meeting to compare codes for two more interviews. During the initial coding, I took time for reflective thoughts. Second cycle coding was completed using axial coding to determine which codes were the major ones and which ones were minor codes. At this stage, similar codes were grouped to reduce the number of In Vivo codes and sorted into conceptual categories to help identify themes and subthemes (Saldaña, 2021). As themes emerged modifications to the codes occurred, as needed. I met with my thesis advisor several times to evaluate the codes and major reoccurring themes. Once the themes were established, I shared the information with two of my dissertation committee members for feedback to ensure credibility.

Researcher's Positionality

Worldview

The worldview I used for this study was social constructivism. Social constructivists seek to understand the world we live in and generate subjective and varied meanings of our experiences. It is essential to rely on the views of participants since subjective meanings are formed through interaction with others and historical and cultural norms (Creswell & Poth, 2018). The process of how SL experiences impact dental students' perceptions of community service and prospective professional practice were determined by each participant sharing their individual experience. I listened carefully to the responses to the open-ended questions and interpreted the participants' descriptions and meanings about their SL experience to discover the underlying meaning of the phenomenon. This was accomplished by acknowledging my own experiences and biases and ensuring that the interpretations are based on the data collected.

Researcher's Role

Good qualitative research requires that the investigators openly position themselves relative to the project, and engage in self-understanding about the biases, values and experiences that they bring to the study (Creswell & Poth, 2018). I am a Hispanic dentist (orthodontist) originally from Lima-Peru with educational experiences in my country of birth and the US. I have had various roles in my dental training, specialty training and academic career including having participated in SL experiences. My training as a dental student working with underserved and rural communities in Lima, Peru, a dental resident working in the US and later a faculty member in the US might have influenced my perceptions of SL. I used the process of bracketing by maintaining a reflection journal during data collection and prior to data analysis to separate my own views, beliefs, and biases when examining the participants' experiences.

Trustworthiness of the Study

Specific criteria should be considered in qualitative research to ensure a trustworthy study (Shenton, 2004). Guba (1981) presents the criteria that a qualitative investigator should consider: including: credibility, transferability, dependability, and confirmability to show that the research measured what it was planned to do, it could be applied to other contexts, the results could be reproduced and the researcher presented the results without bias (Guba, 1981; Shenton, 2004). I explore each of these criteria in the following sections.

Credibility

Credibility is the equivalent of internal validity which ensures that the study measures what was proposed. I used the following methods to adequately record the

phenomenon as recommended by Shenton (2004): adoption of well-established research methods, develop familiarity with participants, triangulation by interviewing multiple participants, reiterative questioning, and discussion sessions with dissertation committee members to review the project. In addition, I completed reflective commentary and used member checking to assure accuracy of the data provided to support the credibility of the study (Shenton, 2004). According to Shenton (2004) triangulation can be achieved by involving a wide range of participants (triangulating via data sources). Contributions to the data come from a range of participants therefore individual viewpoints are confirmed against others to obtain an accurate representation of the experiences.

Transferability

Transferability is equivalent to external validity and is related to whether the study results can be applied to other settings (Shenton, 2004). The use of purposive sampling is intended to maximize the range of information acquired by selecting participants with relevant experiences (Lincoln & Guba, 1985). The sampling technique utilized in this study has the potential to increase the degree to which results of the study can be transferred to other settings by selecting a diverse sample and providing thick descriptions of the participants. Purposive sampling was chosen to identify key participants who had the lived experience of SL and were the most appropriate participants for this study. Another strategy I used to ensure transferability was developing thick, detailed descriptions of the participants and SL sites. I also provided comprehensive information about the study methods and procedures, time frames of data collection to allow readers to have a proper understanding of the study and be able to replicate it in the future.

Dependability

Dependability refers to reliability which demonstrates that if the project is repeated with the same conditions, methods and participants the results will be comparable (Shenton, 2004). To establish dependability the procedures of the study are reported in detail including the research design and implementation, data collection and reflective review. The dependability process included discussions and data review with my dissertation advisor who examined the process of data collection and analysis and discussions with dissertation committee members.

Confirmability

Confirmability relates to neutrality and objectivity, the researcher needs to ensure that the results are the experiences of the participants and not the preferences of the investigator (Guba, 1981; Shenton, 2004). Detailed description of the methods, triangulation by interviewing multiple participants, and reflection to delineate the process of interpretation of findings support the confirmability of the study. I also used member checking by sending the interview transcripts to the participants to ensure confirmability. All participants received a copy of their transcript to verify accuracy.

Ethical Considerations

I obtained approval from the IRB of the University of Maryland, Baltimore before starting this study. Ethical considerations include the written informed consent document for the participants which was reviewed and approved by the IRB committee. The informed consent describes the study conditions and stipulations and states the right of participants to withdraw from the study at any time. These stipulations assure respect for participants, concern for welfare and justice. Further, participants were assigned unique

identification numbers as well as pseudonyms, and they had the opportunity to decline to answer any questions at any time. All data were confidential and stored in a password-protected folder. Participants were informed of the systems in place to maintain and ensure their privacy. Lastly, participants were able to review their transcripts to verify their accuracy.

Summary

The purpose of this qualitative phenomenological study was to explore how SL experiences transformed predoctoral dental students' perceptions of community service and prospective professional practice. A qualitative phenomenological approach was appropriate for this study because it examined the human experience of SL and allowed the dental students participating in the study to explain how and what they were experiencing during the SL rotation and shared their experiences and perspectives. After I obtained IRB approval, predoctoral 4th year dental students were recruited to participate in semi-structured interviews to share their unique and shared experiences as well as their perspectives after participating in a SL clinical rotation. Participants were recruited using purposive sampling. This sampling strategy intentionally selects participants that can best inform the answer to the research question (Merriam & Tisdell, 2015).

Interview questions were developed using the Transformative Outcomes and Processes Scale (Cox, 2017) and the Transformative Learning Survey (Stuckey et al., 2022), two instruments designed to explore transformative learning. Data collection was completed by conducting semi-structured interviews with 12 participants following an interview guide. Data were analyzed and interpreted following Creswell and Guetterman's (2019) six-step process. To ensure credibility, I used member checking,

reflection and peer debriefing. I used bracketing methods such as journaling and peer debriefing, to ensure I maintained awareness of my research positionality. Chapter four will describe the participants and themes that emerged from the data analysis. It showcases describing the lived experiences of the predoctoral dental students who had completed their SL clinical rotation.

CHAPTER FOUR: FINDINGS

Introduction

This study explored the lived experiences of predoctoral dental students with SL in general dentistry and how they perceived the experience with regard to community service and future professional practice. Chapter 4 presents the demographics of the 12 participants, a description of each participant, and a description of the theme development process. The research findings that answer the research questions are presented with supporting quotes. The chapter concludes with a summary of the findings.

Participants

This section presents a description of each participant to provide perspectives for their experiences. The description of participants follows the order of their consent to participate in this research study. The summaries include a synopsis of the student's SL rotation experience.

The study comprised of 12 participants enrolled in five dental schools from the following states: North Carolina, Utah, Texas, Illinois, and Washington. Four dental schools were public institutions and one school was private. Public dental schools receive funds from the state or government resources and are usually affiliated with state universities. Private dental schools are usually associated with private universities and are funded independently therefore tuition is generally higher. The participants included eight female students and four male students with ages ranging from 24 to 40 years old. With regard to race and ethnicity, four participants were White, two were Hispanic, one was Black/African American, and five were Asian or Pacific Islander. Table 1 presents the participants' demographic information. They were assigned the following

pseudonyms to maintain anonymity: James, Victoria, Margaret, Vanisha, Kyle, Alana, Zara, Daisy, Parker, Cooper, Diana, and Claudia.

Table 1

Participant Demographics

Pseudonym	Age	Gender	Ethnicity	Race	Geographic Area Raised
			Hispanic or Latino		
James	29	Male	No	White	Suburban
Victoria	27	Female	Yes	No response	Suburban
Margaret	28	Female	No	Asian or Pacific Islander	Suburban
Vanisha	40	Female	No	Asian or Pacific Islander	Rural
Kyle	26	Male	No	Asian or Pacific Islander	Urban
Alana	28	Female	No	White	Suburban
Zara	24	Female	No	Asian or Pacific Islander	Suburban
Daisy	28	Female	No	Black/African American	Urban
Parker	28	Male	No	White	Suburban
Cooper	28	Male	No	White	Suburban
Diana	27	Female	No	Asian or Pacific Islander	Urban
Claudia	25	Female	Yes	No response	Urban

James

James started his SL rotation as part of a SL course that started at the beginning of D4 year. At his school, students apply for different externships, and he was offered a rotation in another state where he stayed for 4 weeks. The site provided housing a rental car and paid his travel expenses. He was the only student at this site, and he was mentored by two dentists at the dental office he was working at. The site was located in a rural area and patients came from many of the neighboring towns. He mentioned he

enjoyed working at this site and hoped to have the opportunity to participate in another rotation.

Victoria

Victoria indicated that SL is taught at her school starting as early as orientation, where they receive information on what is expected in D4 year in regard to SL rotations. The students rotate through different dental clinics in their state which she mentioned reflected the different geographical characteristics, from the mountainous towns to the coastal towns. The clinic she was assigned to was located between two major cities; however, she indicated it was still a very rural location. Victoria indicated that some patients were not concerned about finances, but other patients had Medicaid insurance and more barriers to proceeding with treatment. There were other dental students at the same site. She was there for nine weeks.

Margaret

Margaret shared that during her D4 year there are opportunities to do externships. She went to another state for four weeks and worked there 40 hours a week at two different dental service organization (DSO) offices. She had a mentor dentist assigned but three other dentists were working at the site as well. Margaret described the population treated at these sites as mainly Caucasian and even though the offices were only 20 minutes apart, one office had a more affluent patient base where she could do more advanced and costly procedures such as implants and crowns compared to the other center where they mainly completed simple restorations. She was the only student during the rotation and only the second student to rotate at this clinical site, as it was a new clinical site for the school.

Vanisha

Vanisha explained that a graduation requirement at her school is to complete of one or two SL rotations. The first one is a requirement, and the second one is optional. She completed a 5-week rotation and was the only student at that site. The population she treated was 90% Hispanic. Vanisha does not speak Spanish therefore she pointed out that not speaking the language posed a significant barrier for her. She highlighted that the dental team, including the dentist supervisors and dental assistants spoke Spanish which helped her to bridge the language barrier. She indicated that the population she treated was low-income with dental care mostly covered by the state insurance.

Kyle

Kyle said his school partners with community health clinics in the state and in other states. His SL rotation was scheduled for five weeks, and he was assigned to a community health clinic in an urban area. The SL rotation location provided housing and a car rental if the dental student needed a car. This community health clinic served a population that was covered mainly by the state insurance. He was assigned to a preceptor, and he was the only student at the site. The dental office had a sliding fee scale for patients, meaning it took income into account when determining fees for treatment. The site had a large immigrant population that spoke different languages, including Spanish, Russian and Ukrainian. He is on a scholarship and committed to work in a community health center for a minimum of two years after graduation.

Alana

Alana said her SL experience is incorporated in the curriculum starting in D1 year. During the D4 year the students rotate in community SL clinics through the state.

Her rotation was nine weeks in a high producing clinic. The patient population was a mixture of patients who were covered by the state dental insurance, patients with no insurance that were treated using a sliding fee scale and patients who had no financial concerns. Some of the patients were migrant farm workers who came to the state because of their work. She is on a military scholarship for her four years of dental school.

Zara

Zara had a 4-week rotation during her D4 year, her school has many sites available in state and out of state. She is interested in orthodontics therefore the site she requested was focused mainly on pediatric and young adult patients. Most of the patients were on Medicaid insurance and Hispanic. It was a fast-paced office where she would see about eight patients a day. She did not have to relocate to work at that site but had approximately a 40-minute daily commute to get to the dental office. She plans to continue with post-graduate training after finishing dental school.

Daisy

Daisy described that SL at her dental school starts during D1 year where the students get foundational information on SL and D4 year is when they take part in the extramural rotations. She did a rotation for four weeks in a community clinic in the city. The four weeks were not consecutive, she would go back to see her patients at the dental school clinic for a week and return to the community clinic the following week. The population was mostly African American and lesbian, gay, bisexual, transgender and queer (LGBTQ). Many of the patients had Medicaid insurance and some patients had private insurance.

Parker

Parker mentioned that at his school the students start learning about opportunities to work with underserved populations in their first year of dental school where they have classes on public health including how to work with low-income populations and access to dental care and in their fourth year is when they participate in externships. Parker did a 3-week rotation in a very small town of about 6,000 people. This was a very low-income area with some patients traveling from further away because there was no other dental care in the area.

Cooper

Cooper indicated that at his dental school, SL is introduced from the start during the first year. The clinical SL rotations start in the summer of D4 year. He did a 3-week rotation in a comprehensive outreach clinic with a medical doctor office on the ground floor and a dental office on the second floor. In this clinic, the patients paid a very reduced fee for treatment. At this site, most of the patients were Caucasian and Hispanic. Cooper commuted about an hour to get to the dental office.

Diana

Diana stated that SL started at D1 year of her dental training. The students are assigned to go to a Federally Qualified Health Center (FQHC) and provided oral hygiene instruction to the patients after the staff dentist had completed the dental treatment. Diana completed her rotation during her D4 year in a rural community four hours away from the dental school. The community had a population of approximately 900 people. Many patients traveled one or two hours to get to the clinic because there were no other dental clinics in the area. Diana was there for two weeks then went back to the dental school for

a week and returned to the rotation for two additional weeks. She was the only student at the site. She was provided housing during her rotation. The population treated was Caucasian and African American, and mainly farmers or families of farmers.

Claudia

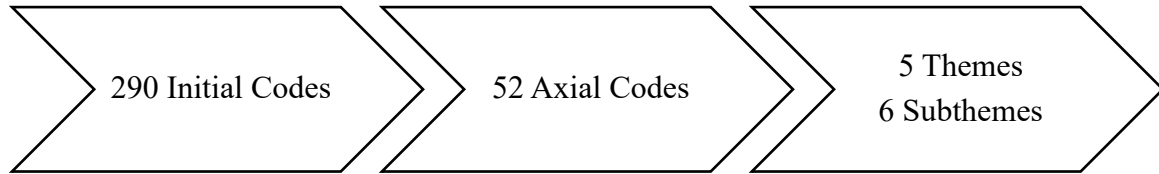
Claudia mentioned she learned about community service starting the first year of dental school and during her D4 year. The students spend four weeks on extramural rotations at different sites. Her rotation was in a mobile dental van, she was the only student at the site. The dental van would travel all over the city to a different location each day. She treated different populations depending on the sites the mobile van would go. In one of the locations the population was mainly teenagers experiencing homelessness, she also went to nursing homes to treat the elderly and other sites with Hispanic populations and low-income populations.

Theme Development

After participants verified the accuracy of their transcripts, I coded them line by line using In Vivo coding to generate initial codes ($n = 290$). The data were labeled with the exact word or a short phrase from the data that directly reflected the essential experiences of the participants (Saldaña, 2021). The second cycle of coding involved the formation of initial categories using axial coding ($n = 52$). Finally, I examined the axial codes across interview transcripts to identify shared themes (Appendix I). The theme development process is presented in Figure 2.

Figure 2

Theme Development Process

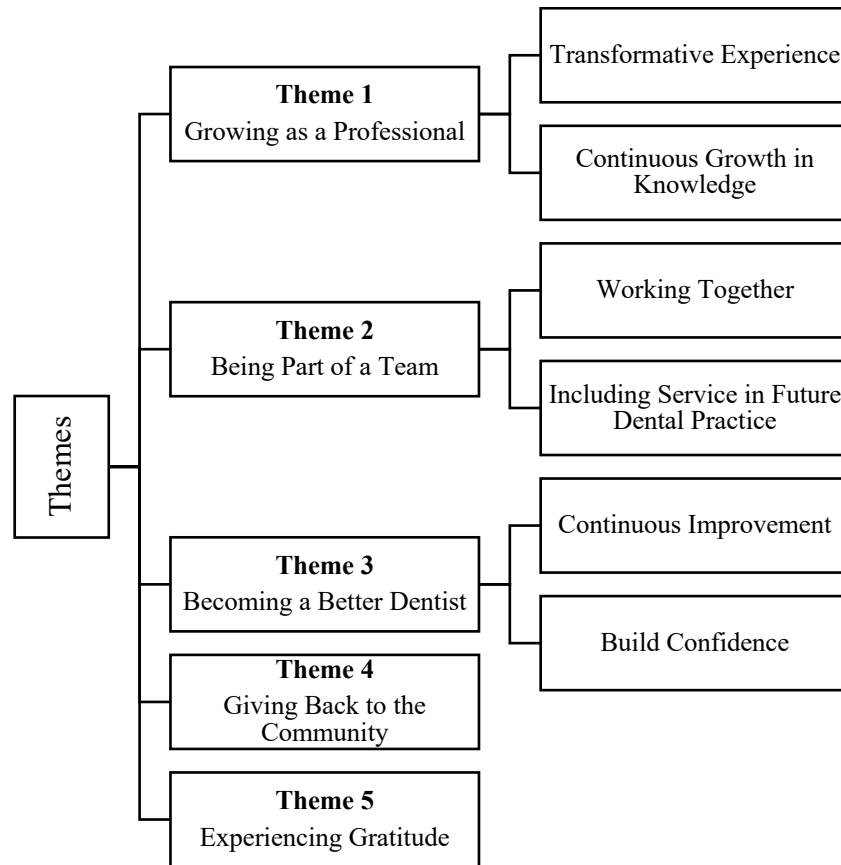


Results

The central research question and sub-questions that guided this phenomenological study are answered in this section. The five overarching themes answering the central question and sub-questions that emerged from the study were 1) Growing as a professional, 2) Being part of a team, 3) Becoming a better dentist, 4) Giving back to the community and 5) Experiencing gratitude. Three of the main themes contained subthemes. Growing as a professional included two subthemes: transformative experience and continuous growth in knowledge. Being part of a team contained two subthemes: working together and including service in future dental practice and becoming a better dentist consisted of two subthemes: continuous improvement and build confidence. Figure 3 presents the final themes and subthemes.

Figure 3

Themes and Subthemes



Theme 1: Growing as a Professional

A recurrent theme that developed from the analysis of data was growing as a professional. This theme highlights the transformative experiences the participants had specifically regarding communication skills, and professionalism and the extensive amount of information they obtained every day. This theme also presents growth in professionalism which is a set of attributes including empathy, resilience and communication skills (Birden, 2012). The participants were pursuing new challenges and

eager to learn. They were enhancing their communication abilities to succeed as professionals. This theme includes two subthemes: transformative experience and continuous growth in knowledge.

Transformative Experience

The 12 participants mentioned that they experienced significant professional growth during the rotation. These experiences centered around improving their communication skills with patients and how the participants valued the experiences in a professional setting outside the dental school. James noted that the rotation supported his growth, and even challenging situations became opportunities for growth. He explained his experience saying, “there was a lot of really hard parts of it, but I feel like I grew more from the hard parts than I did the easy parts, and so no, I wouldn't change anything about my rotation.” This was echoed by Victoria, Cooper, and Diana who emphasized that the fast-paced environment of their rotations fostered their growth in professionalism and communication skills with patients. Victoria described how being young led to different perceptions with regard to professionalism, still, she stated that she was required to sustain a professional demeanor:

We're younger, and people think of us to be a certain way, but you have to be very professional. And in my opinion, you have to learn how to grow up more in a professional setting when you're in dental school.

A number of participants expressed the same opinion about professional growth, Cooper pointed out “I feel like I had a lot of professional growth” and Diana also mentioned that after her three-week rotation in a FQHC she experienced professional growth, “I definitely improved, I definitely learned how to be more professional in that

sense and grow in that regard.” Similarly, Claudia mentioned the importance of her improvement in communication not only with patients but also with the attending dentists. She said:

I just feel like it also has helped me in terms of my communication, just making sure that I'm using words and sentences that show that I'm not just there to do the work, get my experience, get out, but to show that I care.

Referring to communication with the attending dentists she continued, “I've learned how to talk to the attendings more like my colleagues and maintain that level of respect with them and professionalism.”

All the participants acknowledged that the SL rotation was an impactful experience. James traveled to a different state for his rotation and expressed that the rotation was a “valuable experience for me that I’ll definitely never forget” and Zara said it was “definitely a good experience.” Margaret described her experience also as very positive and that she is constantly talking about it, “honestly, it was so good, it was great” and “I keep talking about it to all my friends back at school.”

The reflection assignment helped some of the participants evaluate their SL experience. They described the reflection exercise as positive and a way to revisit their transformative experiences. Zara had a favorable outlook about the reflection assignment, she described:

I love the idea of summaries and reflections, because you actually sit down and think about it more than just thinking about it as, like an afterthought. When you're writing it down, you are affirming what you think about the place.

Parker also had similar sentiments and about the reflection paper:

When I was writing the reflection paper, I was trying to think of what I what did I learn the most? That's kind of like I said before, the thing I learned the most was the workflow. Now I can be a lot more efficient, because I remember first starting in the school, I was just taking forever. I got to make sure I do this, and I have everything written down, and I just go really slow, because I always like, double check myself. But now it's kind of second nature where it's just I got to do this and this and keep going. That reflection helped me to really remember that was the best thing I learned.

In contrast, Kyle and Cooper had the opposite view about the reflection assignment and did not find it beneficial. Kyle said, “I felt it was more to help the school gather information on which sites are helpful for our students and which sites are not, versus me reflecting on my experience”, and Cooper pointed out:

For me, the reflection paper was just kind of another assignment I had to do and turn in. I'm a fan of reflecting, not a fan of small essays, but I hate long essays ... but I don't think the reflection impacted the experience very much for me.

Continuous Growth in Knowledge

All the participants indicated that the SL rotation was an overall positive learning experience. They expressed that they were constantly expanding and gaining new knowledge, were eager to learn and gain as much information as possible. Zara is interested in pediatric dentistry and requested to be placed in a center with a younger patient population, she mentioned, “I do like the place that we worked at. I did learn a lot too.” Margaret completed her rotation in a different state and expressed how enthusiastic

she was about the SL rotation, saying, “I want to see as much as I can. I want to learn as much as I can.”

The participants also commented on how impressed they were at the volume of knowledge they had acquired during the SL rotation compared to their learning at their dental schools. Margaret expressed, “what I learned in that month was like one to two years’ worth of what I learned in dental school” and Alana had a busy patient schedule during her rotation working with mainly farmers, she pointed out that “it was just crazy to me how much I was able to do and how much I was able to learn in just nine weeks.”

James was also working in a site with high volume of patients, he mentioned: “I was able to grow I had a lot more patient interaction and a lot more procedure interaction and so I grew more in that month than I ever could have school”, and Vanisha stated, “I improved myself after this five week period.” Victoria’s SL rotation was in a rural location with a combination of patients that could afford dental treatment and patients with the state insurance. She reflected on her growth in knowledge, saying, “it was just so much information in those nine weeks.”

Theme 2: Being Part of a Team

Being part of a team was a prevalent theme, showing strong collaboration between the students, the attending dentists and staff. Being part of a team promotes collaboration and allows sharing knowledge and skills. In addition, collaborative environments provide support and encourage personal and professional development. This theme highlighted the sense of belonging that came from being part of a team and also reflected the dedication of the team to serve the community. The participants

appeared motivated to work and learn in these environments. The subthemes included in this theme were working together and including service in future dental practice.

Working Together

The participants described the significance of forming relationships at the workplace and the importance of being part of the dental team. During their rotations they worked with dental assistants and described how the workload was shared among the dental team. In addition, they had positive interactions with the attending faculty. Cooper's rotation was in a comprehensive outreach clinic with a medical and dental office to give patients comprehensive care in a collaborative practice model, he had positive comments about working with the team that was helpful and recognized he was a student. He shared:

I'm so thankful to have a good team around and people help set up and take down and talk to the patients with me and just watch my back. It's hard being a dental student, you just do everything yourself all the time, and everyone kind of expects you to know how to do it.

Diana appreciated the mentoring that occurred during her rotation, saying:

I think also, though, in this type of environment, especially like as someone who, if you're recently graduated, you don't have a lot of experience in your working in a community health service and just like having a mentor there, or having another dentist there that has been working there for a while is so important, and if you're alone, I think that can really, really impact your experience. So, I was grateful that there was a dentist there, kind of mentoring me.

Margaret was surprised to learn the fundamental role of the dental team, she pointed out: “I knew assistants were very helpful, but I think it opened my eyes even more that, like, no, they're the foundation of the dental office. They run the office.” Vanisha fulfilled the rotation in a clinic where the population she treated was mainly Spanish speaking patients and she does not speak the language. The dental team at this site was comprised of Spanish speaking dentist, assistants and staff members. Vanisha relied on the dental team to communicate and was thankful for their help, she mentioned: “I felt so privileged to be the part of their dental team.”

Kyle, Zara, and Daisy described how they developed the ability to identify and resolve the challenging situations that presented. Kyle said: I think the biggest challenge for me initially was I didn't have the experience to know what to do when things aren't ideal.” He further described that when he was conducting a challenging dental procedure and was having trouble during the procedure, one of the attending dentists gave him suggestions on how to solve the problem. He continued, “and that helped a lot, and I think, like those little things where, if you've never run into those problems before, you don't really know what's the fast way to get through that issue.”

Zara mentioned that working at a different office and with new materials with a team helped her to address challenges:

And after a year of doing dentistry, you kind of understand, obviously you're not the best at working at a different office, working with different supplies, things like that, but you start to problem solve yourself. Instead of if something goes wrong when you're a third year, you just call for the doctor, you just you don't know what to do. But especially now as a fourth year, something's going wrong,

and you know why it went wrong, and then you can kind of figure it out yourself too.

Daisy reflected on how she learned different strategies to accomplish the same goal from the attendings and other members of the dental team, she said:

You are able to learn a lot of different things and a lot of a lot of different ways to go about the same thing, instead of just learning what you've learned at school, there's so many different ways that you can approach something else.

The participants had remarkably positive interactions with the attending dentists and expressed they were supportive. Victoria stated that “you go into it very kind of doubtful of yourself and your skills. But the attendings were so encouraging,” and Diana also commented, “I was grateful that there was a dentist there, kind of mentoring me.”

Claudia, when referring to the attending dentists during the interview, noted, “instead of them just being your teachers, it was like they are our colleagues now.”

Including Service in Future Dental Practice

A number of participants stated that they would aspire to incorporate community service in their future professional path in a meaningful way. The participants recognized the shortage of oral health providers meeting the needs of underserved communities and practicing in areas with limited access to dental care. Zara mentioned:

It really started to get me thinking outside the box more you what's more important? why? What do I want to do dentistry for? who is it for? What am I doing this for? All those questions started formulating more, and I've gotten a better idea of what I want to do in the future, and how I want to help people.

Claudia pointed out that she experienced change and, after the experience, she wanted to be involved in contributing to the community as a dentist. She was identifying the best ways to integrate service and volunteer work with practicing in a private office:

So that's something that, I guess I kind of changed, is just like trying to realize, trying to figure out how exactly I can fit all of that, because at the end of the day, I got to have a family, and make sure I provide, but also find ways where I can give back. So, trying to figure out how, in the future I can, you know, get those to work and then network with the doctors at my school, for example, who do volunteer work to see how they're able to make that happen.

When talking about her future plans, Claudia continued:

I think they've changed in the way that, like I know, I want to get out there and work and we have to make money, but I would still at least, maybe a Saturday, or if I have the day off, go out and volunteer more, do more community service.

Alana, reflecting on her future dental practice after working in a high producing office that she enjoyed the group practice environment, said, "I'd still want to be in a group setting if I did go out into private practice. But I've definitely been more intrigued with the idea of private practice and like community health centers."

Theme 3: Becoming a Better Dentist

Throughout the data analysis a recurrent theme of becoming a better dentist was evident. The perception of clinical improvement as a result of the SL rotation and working at a faster pace compared to their work at their respective dental schools was apparent in all the participants. They expressed that their confidence increased and that they were proud of the work they were doing. The participants described how they

developed and improved their technical skills during the rotation and how the foundational concepts taught in school were reinforced. The rotation offered a clear understanding of what a dentist's job experience was like. This theme included two subthemes: continuous improvement and build confidence.

Continuous Improvement

The participants conveyed that while the experience was challenging at times it contributed to their becoming better dental providers. The rotation facilitated the improvement of their clinical and patient management skills while redirecting focus on their patients' needs. Cooper, who worked in an office with a busy schedule where patients paid a reduced fee, said, "I realized that I was faster than I thought, I got even faster, I think I got better at patient management and, getting the flow, because there was less stopping in the flow of the process." Claudia also recognized that she became more independent, and her perceived clinical skills improved, she said, "we were very independent while we're out in rotation. Clinical skills, also, they get faster and better, and so there's a lot of room for improvement. You see where your weaknesses, where your strengths are."

Most of the participants expressed that their experience gave them a better understanding of what serving as a dental provider looks like outside a dental school environment. Kyle mentioned, "I think the highlight was, I think just being in a setting that's closer to full on practicing dentistry, because as dental students, we want to become dentists, so kind of bridging that gap." James realized that he was capable of becoming a dentist. He pointed out, "I can do this, and I can be, I can be a dentist." Victoria initially doubted her abilities but then realized she was capable of becoming a better provider. She

said, “I was very afraid at first, but I think me being pushed into the deep end allowed me to see myself as a better clinician than I thought I was.” Parker pointed to improvements in his perceived clinical skills:

I feel like my skills got better, like my speed of work, speed of examining a patient and the biggest thing, I think, that I took away from this was having a better understanding of the workflow to bring them in, do the medical history, grab necessary X rays. So, I feel like I got that down a lot faster, so I can be more effective now.

Build Confidence

Another subtheme under the main theme of becoming a better dentist was gaining more confidence as a provider. Most of the participants indicated that their confidence increased as a result of the SL rotation. Victoria said, “that experience really helped me gain confidence as a clinician and learn how to approach patients in a way that makes them feel comfortable and accepted.” Reflecting on the future, Kyle also mentioned:

I think in terms of, my future outlook as a dentist, I feel more confident right now having done a rotation, I feel like I can work a little bit faster, and I feel like my decision making is a little better as a dental student right now.

Regarding her increase in confidence, Zara shared the perception of the faculty at her dental school after her SL rotation:

I think especially this semester too, a lot of my professors have told me at school that I've gotten more confident, a little bit faster as well, which I think just comes from the fact that I saw eight patients a day versus those two.

Victoria reflected on how she was using the skills learned at her school during the rotation, saying, “it brought up my confidence as a student provider so much, and it made me look back and be like, Oh my gosh. I'm actually not that bad. I think I'm pretty good.” Parker and Cooper expressed how the experience helped enhance their confidence. Parker stated:

Going back to school I felt more confident and ready to treat them. Because, before you always have that little anxiousness of, oh, this is starting to be one of my first times to do this procedure, so I'm getting real nervous look over notes, but now I see it more as of excitement and just opportunity to learn.

Cooper also mentioned gaining confidence, he said about his improvement:

I think mostly in my confidence, as well as maybe my time management and kind of understanding my own limitations. I think it's hard in the school setting to know what you're really capable of, because there's so many checks and you know the faculty are pulled so many different ways for the different students.

Theme 4: Giving Back to the Community

Another central theme that developed was giving back to the community. The participants described the powerful experience of making a positive impact in the communities they served by providing dental care. The connection with the community helped the students gain a sense of purpose as they used their knowledge and clinical skills to make a meaningful contribution to the community. Most of the participants said that they always had a desire to help and make a difference and had been involved in a diverse number of community service activities in the past. Cooper had previously participated in a global volunteer opportunity. He stated, “I've always been excited for it,

and I'm a big, big fan," he continued, "I've always been service oriented, I've always been excited for community service, I actually had served as a missionary in Brazil for two years before I started my bachelor's program". Similarly, Zara mentioned:

Before dental school, as well I was really big on community service and during dental school as well, I went on mission trips, I actually went to Jordan and did dental care there for two weeks. I've been really big on community service and especially with this rotation as well.

Alana has a master's degree in public health which gave her an understanding of the many health challenges impacting different communities. She shared:

I have always been passionate about community service, and I got a master's in public health after undergrad, before I started dental school, and so it's something I've known, I've been interested in, and I've shadowed in private practice offices, ... being at the service learning rotations that we have, I really see, a larger view of the population and more of the underserved communities.

Upon reflecting on her passion for service, Victoria mentioned, "I have always been very passionate about serving underdeveloped areas and people who may not have had the same resources as others."

The participants also admitted their SL rotations provided clarity regarding how service to the community might look like. Diana said that now she is "interested or exploring the idea of working in an FQHC or doing, more community service as a career." James echoed the same sentiment and pointed out:

I've always had a desire, coming into dental, I've always wanted to have service, be a big part of my practice, and who I am as a dentist; working in this community, I was able to visualize more of like what I actually could do.

Cooper had a similar opinion and said: "I think it solidified a little more what that service can look like, and even what that service can look like if I just want to do that kind of thing." Kyle and James expressed that they appreciated the communities where they completed the SL rotations for how they supported opportunities to learn and grow as professionals. The SL experiences enhanced their perceived clinical skills and expanded their understanding of the profession of dentistry. As a result, they were inspired to give back. Regarding his appreciation for the patients he treated, Kyle said:

I do think that a lot of our dental education relies on seeing patients that can't afford to see or choose not to see other providers who the typical private clinics, so I think in some way, I do feel like we are as dental students indebted to them, because they are willing to be seen by students.

James pointed out that the experience "inspired me to make like to ensure that is a part of my practice as a dentist to be able to give back to those who are unable to give for themselves."

Several participants said that after their SL rotations they are open to explore different possibilities for their future practice. Vanisha expressed that the SL rotation was a very rewarding experience, and she was interested in exploring the possibility of working in a community center. She said, "I should be open with any of the opportunities, so working with community healthcare I learned that we are providing more healthy smiles in community health centers than working with other associations."

James was already networking and searching for opportunities in rural areas, he mentioned:

I've actually talked to the people there, and I've talked to other companies and everywhere that I'm looking now for jobs because that is kind of what we are doing this phase and every one of the places are actually adjacent to really rural areas. Because I think this is the population I prefer to serve.

After her rotation Zara said she was aware of the barriers for access for care in dentistry and mentioned challenges with insurance:

I do know the struggles of how a lot of dental offices have so many issues getting accepted to become a Medicaid provider and all that. That being said, I do want to work on it. I do want to get a big amount of dentists that also want to do that as well and we can offer help to everyone that needs it.

Alana worked with a mixture of patients, some who did not have insurance. After the experience, she said she wanted “to be a private practice dentist who does accept Medicaid and Medicare.”

Theme 5: Experiencing Gratitude

The fifth theme that emerged from the interviews was experiencing gratitude. This theme highlights the participants’ appreciation of the gratefulness of the community for the work they did for them and how their contributions as dentists could have a meaningful impact. Knowing that their efforts were met with gratitude and had a significant and positive impact on the patients’ dental health was deeply rewarding for the participants. They appreciated the experience and felt valued for their contributions to the community. James mentioned: “people there were just so thankful to get good dental

work.” Cooper was genuinely moved by the connections formed with people in the community, he pointed out:

In that short amount of time, I could feel, he already was really thankful to me. He had a lot of trust in me and that I had given him this hope that he really had not had before, and that how quickly that depth of relationship was able to form really struck me.

Cooper also said, “not all my patients at the dental school are always super grateful, and he was so grateful, I mean it was a lasting memory” highlighting the difference between the interactions with patients at the dental school compared to the SL rotations. Vanisha had a similar experience with a patient, she shared, “when he left, he was literally in happy tears, saying thank you. I say, it's that kind of gratitude, that made me so happy.”

For most participants the experience was very rewarding, and they mentioned increased empathy and understanding of the challenges that emerge when working in these communities. Another important aspect was the ability to make a difference in the communities. James said, “I'm able to like watch change people's lives”, Diana mentioned that the rotations gave her “that added level of understanding, respect towards the patient, and just really, really as a dental provider” adding “my mindset has kind of shifted to be like, what if there something going on within the patient's life, adding a little bit more empathy. I guess and understanding to that sense.”

Reflecting on his SL experience, Kyle mentioned, “it's a very rewarding place to be in just because there is intrinsically, clearly, I'm doing a good thing here, and I'm helping see these patients”, Alana also said, “it's really rewarding to see these people coming into our clinics for the first time and being able to make a small difference in

their life and something that they might not realize affects their whole body.” Alana, whose rotation was nine weeks in a high producing clinic, pointed out, “I don't think there was anything that each place could have done differently. It was a really good experience.” Zara echoed Alana’s sentiments, saying, “it was definitely a good experience.”

Research Question Responses

This section presents concise answers to the central research question and sub questions that guided this study. I identify the themes and subthemes that address each question, supported by representative participant quotes. The themes and subthemes will be discussed in depth in the next chapter.

Central Research Question

What are the lived experiences of predoctoral dental students who have completed a SL rotation in general dentistry?

The themes of growing as a professional, being part of a team, becoming a better dentist and experiencing gratitude and the sub-themes of transformative experience, continuous growth in knowledge, working together, continuous improvement and build confidence answered the central question. The lived experiences of the participants included professional growth and learning something new every day. For example, Cooper said, “I feel like I had a lot of professional growth” and James mentioned that it was a “valuable experience for me that I’ll definitely never forget.” The participants also experienced gaining new knowledge as Margaret pointed out, “I want to see as much as I can. I want to learn as much as I can.” Additionally, the participants perceived

improvement in their clinical skills and enjoyed being part of the dental team. Vanisha explained, “I felt so privileged to be the part of their dental team.”

Sub-Question One

How do predoctoral dental students perceive community service after completing a SL rotation in general dentistry?

The themes of being part of a team, giving back to the community, and experiencing gratitude and the sub-theme of working together answered sub-question one. The participants had positive perceptions of the SL rotation; they acknowledged the importance of being part of the dental team. The rotation gave them a clear understanding of what their role in the dental team was and they felt valued by the patients. Copper explained his perception of community service, “I think it solidified a little more what that service can look like, and even what that service can look like if I just want to do that kind of thing.”

Sub-Question Two

How do predoctoral dental students perceive their future professional practice after completing a SL rotation in general dentistry?

The themes of being part of a team, giving back to the community, and experiencing gratitude and the sub-theme of including service in future dental practice answer sub-question two. The participants wanted to include community service or volunteering in the future and wanted to work in a group setting if possible, in a structure similar to the SL rotation. For example, James said that the SL rotation “inspired me to make like to ensure that is a part of my practice as a dentist to be able to give back to those who are unable to give for themselves.”

Summary

Twelve participants in this study shared their lived experiences and perceptions regarding community service and future professional practice after a SL rotation. This study included five overarching themes that aimed to answer the central question and sub-questions. The themes were: 1) Growing as a professional, 2) Being part of a team, 3) Becoming a better dentist, 4) Giving back to the community and 5) Experiencing gratitude. Three of the main themes included subthemes. Transformative experience and continuous growth in knowledge were subthemes of growing as a professional. Being part of a team contained two subthemes: working together and including service in future dental practice and becoming a better dentist consisted of two subthemes: continuous improvement and build confidence. All participants stated they had a positive experience during their SL rotation, learned new things at a faster pace and were more independent. All participants mentioned an increase in confidence, professional growth and perceived an enhancement of their clinical skills after completing the rotation and stated that this confidence was noticed by the faculty and their student peers when they returned to their dental schools.

Working as a member of a team had a significant influence during the experience. Participants viewed themselves as belonging to the dental team. The role of dental provider became real for them. They appreciated the relationships formed with the attending dentist, dental assistants and staff members. Participants also shared that, while they had always been involved in community service and always had the desire to make a difference, the rotation helped them see how they could help the community as dental providers. Participants valued the gratefulness of the communities they served and were

surprised and inspired by the relationships they developed with their patients. Participants said they were open for opportunities to work in community centers after graduation or incorporating community service into their dental practices.

CHAPTER FIVE: DISCUSSION

Introduction

This qualitative phenomenological study explored lived experiences with SL in general dentistry among dental students and it showed these experiences influenced their perceptions of community service and future professional practice. This chapter discusses the relevance and meaning of the findings in light of the existing literature and the transformative learning theory. As described in chapter four, some themes and subthemes addressed the central research question and sub-questions concurrently. The discussion is followed by a description of the empirical, theoretical, and practical implications. The chapter also includes the limitations of the study and recommendations for future research.

Interpretation of the Findings

Predoctoral dental students face challenges with bringing together the application of didactic and theoretical knowledge to clinical dental practice in real life scenarios. The SL experiences are intended to provide structured learning in a community setting (Yoder, 2006). Well-designed SL-experiences are connected to a course in a way that the service has a positive impact on learning and the learning enhances the service (Celio et al., 2011; Crone, 2013; Jacoby & Howard, 2014). This study explored the experiences of predoctoral dental students after their SL rotation and considered their perspectives on community service and their future plans for dental practice after graduation. In this study the SL experiences varied in duration, ranging from three to nine weeks. The results revealed that the students had a positive experience during their SL rotation and enjoyed working with the community. Some of the students hoped to have more opportunities to

engage in such experiences in the future. One important aspect to consider is the timing of the interviews. This study was completed at the beginning of the D4 year and for most of the participants, it was their first SL rotation. The participants expressed enthusiasm about the difference between the SL rotations and the dental school experience. It is possible that had the interviews been conducted at the end of D4 year after the students had completed other rotations, the level of excitement might have diminished as the experience was no longer new and might not have been a disorienting dilemma.

One of the key themes that emerged was growing as a professional. Stewart and Wubbena (2014) conjectured that students can experience transformative learning when they participate in SL. Indeed, the theme of growing as a professional emphasizes the transformative nature of the SL experience. Participants spoke about improving their communication skills, increasing their sense of professionalism, and learning something new every day. They were engaging in new challenges, considered disorienting dilemmas and were eager to learn. This finding support prior research on transformative learning in graduate medical education in which difficult clinical situations, consisting of real encounters with patients, ethical issues, and communication difficulties, were identified as disorienting dilemmas (Vipler et al., 2021). The results showed that transformative learning was associated with professionalism and professional identity formation. Similarly, several participants in this study reported growing as a professional and improving their communication skills with patients, staff, and the supervising dentists as a result of the SL experience.

The participants stated that they became better dentists and perceived an enhancement of their clinical skills after the SL rotation, these results are similar to other

findings in the literature. Britt (2012) described the SL approach of skill-set practice and reflexivity (the practice of doing), which is influenced by experiential education. In a skill-set teaching method during SL, Kolb (1984) argued that students can put to practice the skills learned while in community service which enables the transformation of the experience into knowledge. As a result, the student has opportunities to increase their competence and confidence because they view their previous knowledge relevant to everyday problems that they can possibly contribute to solve. This study also supports the findings of Hedges et al. (2014) who conducted a survey among pharmacy faculty members to assess the environment of SL within the pharmacy curriculum. The participants indicated that SL could teach pharmacy students valuable skills and have a positive impact in the patient health. In the present study and consistent with the literature, participants reflected on how they perceived that their clinical skills improved during the rotations by doing more dental procedures; thereby becoming faster and better clinicians.

Jacoby & Howard (2014) discussed how SL helps students learn challenging content and understand the application of foundational concepts and skills. Stewart and Wubbena (2014) agreed and further noted that SL fulfills a community need while students experience thorough understanding of the course content, applying the skills learned, and increasing their confidence. In this study, some of the participants noted the difference in treating patients at the dental school compared with the SL rotations and emphasized the faster pace of work experienced during the rotation. They expressed that the number of patients they treated was larger in comparison to the number of patients they treated at their dental schools which contributed to their increased learning and

growth. Some other participants mentioned that during the SL rotation they were able to recognize the extent of what they learned at their schools and felt ready to challenge the SL rotation.

One important aspect in designing a SL experience involves the inclusion of a reflection assignment which the literature suggests is essential for producing deep learning (Jacoby & Howard, 2014; Lim & Babar, 2016). In addition, reflection combined with the SL experience increases students' self-confidence, engagement and social responsibility (Celio et al., 2011). In this study, all participants had to complete a reflection activity or assignment. Consequently, they expressed greater confidence in their clinical skills and communication skills. However, the perception of the participants regarding reflection showed mixed results. Some of the participants said that the reflection discussion or assignment helped them appreciate the amount and depth of the knowledge they gained during the SL experience. Other participants reported that they did not recognize the value of reflection and felt it was just one more assignment to complete. This was of particular concern because reflection is a significant component of a well-designed SL experience. I expected that the participants would have assigned more importance to the reflections. Possible explanations for the lack of appreciation for the reflection exercises were that some participants may have perceived a lack of relevance and others might not have had adequate practice writing an effective reflection.

A benefit of a SL experience directed to civic values is an increase in students' self-confidence and connection to the community (Britt, 2012). SL in the health professions has shown that the students perceived improvements in knowledge, increased confidence in their abilities, improvement in patient interactions and communication

skills (Cohen et al., 2023; Gonzales et al., 2020). All the participants in this study stated that after the SL rotation their confidence in their abilities as dentists has increased. Some participants said they were nervous before the rotations, but the experience helped them become more comfortable with treating patients, their decision making in regard to treatment improved and they were excited about the opportunity to learn. They also indicated that when they returned to their respective dental schools, the clinical faculty noticed the development in clinical skills, patient management and confidence as a provider.

Another area of significant theme was being part of a team. SL experiences support collaboration between faculty, peers and community members from the discipline to address the community needs (Jacoby & Howard, 2014). The participants provided rich descriptions of the dental team at the community centers and the importance of collaboration to support best outcomes for the patients. They pointed out how, in dental school, they worked with no dental assistants and had to complete most of the work alone. Tanna et al. (2020) carried out an investigation to identify which factors promoted SL on primary care clinical placement of medical students. The results showed that medical students felt that they were considered as valuable members of the team and developed a sense of responsibility.

In addition, these medical students improved their communication skills and learned how to manage difficult interactions. This is supported by the findings of this study, whereby the dental students described how they valued being considered as part of the dental team, which increased their confidence and independence. They appreciated sharing the workload with the dental team and described positive interactions with the

supervising dentists. Tanna et al.'s (2020) study also highlights the importance of the supervisors. Specifically, when students feel supported by the supervisors, their sense of belonging is enhanced. In the present study the dental students appreciated the encouragement given by the supervising dentists and being treated like colleagues. Some of the participants said they would prefer to work in a group practice with a team incorporating community service to the practice. Although they were not sure how this would look, they admitted the SL rotations encouraged them to think about it.

An additional noteworthy finding in this study relates to the theme of giving back to the community. According to Britt (2012), SL pedagogy can include the development of civic values and critical citizenship (the practice of becoming). This pedagogy is implemented by engaging students with communities, thereby promoting the development of their civic identity (Britt, 2012). The study conducted by Hartman et al. (2022) among DPT students explored the intention to work in underserved areas after graduation. This quantitative study found significant associations with growing up in a medically underrepresented areas, participating in community service during undergraduate studies, participating in SL during the DPT program and belonging to a minority group. In the present study, all the participants expressed that they had always been passionate about giving back to the community and that they had been involved in different activities during college and for some even before college. Three of the participants belonged to a minority group, and one grew up in a rural area.

The study participants were very enthusiastic about the SL rotation and eager to help the community and make a difference. Even though they were all involved in volunteer activities for their communities in the past, the participants said they were not

sure how to incorporate community service in their new professional careers. The SL rotation gave them a clear view of what providing dental care to the community as a dentist might resemble. The participants expressed that as D4s, they are exploring the next steps in their careers. Some participants were committed to serving in the military and other participant was applying to specialty training after dental school. It is important to note that none of the participants reported changing their career plans because of the SL experiences, they admitted becoming more receptive to different opportunities that involved working in community centers and rural communities and they expressed their inspiration to give back to the community.

This study's findings also support Leonard et al.'s (2023) results, which showed that SL improved the areas of compassion, confidence, teamwork, professionalism empathy, social responsibility, open mindedness, leadership, service orientation, communication skills and cultural sensitivity, discipline specific healthcare skills and reduction of biases. In addition, a study by Gadbury-Amyot et al. (2006) showed that dental students working with underserved communities increased their understanding of cultural diversity, access, and disparity issues affecting underserved populations and had positive attitudes about service and the community members they served. The participants in this study described they gained a better appreciation for the communities they served. The participants expressed that they do not have the same experience at their dental schools where they need more and longer appointments to complete simple procedures for their patients. At their dental schools' patients can get frustrated with them and in some instances do not show appreciation for the work they do. This experience differs from the SL rotation. They were moved by the gratefulness of the community,

they also mentioned that the SL rotation helped them gain a better understanding of the challenges that people in these communities might face to receive dental care. Lumish et al. (2022) reported that SL was an effective approach to develop self-efficacy and empathy. Furthermore, some students in this study stated they developed more empathy for the patients and said they found great satisfaction knowing that they were helping people and making a difference.

The length of the SL could play a role in the perception of predoctoral dental students of community service and future dental practice. This study explored extended SL rotations that lasted from three to nine weeks. In contrast, Packer et al. (2010) investigated primary care residency rates after a short-term SL experience of 4 days in a group of medical students. They found that there was no difference in future primary care residency enrollment rates when compared to the entire class. In this study the participants shared that they were able to build relationships with the patients and work closely with the dental team, which became one of the highlights of their experience. The participants reported that the positive SL experiences inspired them to find ways to participate in community service after graduation and give back to the community. It is possible that longer SL rotations give students the opportunity to establish meaningful relationships with their patients and the communities which might be difficult to accomplish during shorter SL experiences.

Empirical Implications

In the US the majority of dental students participate in external rotations and most of the SL studies in the dental education literature are primarily quantitative research studies that have provided a wide scope of data, including self-reported practice survey

plans, attitudes toward underserved patients and community service and readiness to treat underserved populations (Furlini et al., 2018; Gordon et al., 2019; Volvovsky et al., 2014). Coe et al. (2015a) used a pre-posttest design to evaluate dental students' attitudes toward community and Volvovsky et al. (2014) surveyed faculty and students' attitudes towards underserved patients and community service. The results of these studies revealed that students and faculty had positive attitudes towards community service.

While these studies provide important information, they do not fully describe the details of the lived experiences of students. The present qualitative phenomenological study aimed to understand the lived experiences of dental students after they completed a SL rotation and examined the meanings and perceptions of their individual experiences which cannot be easily obtained from quantitative studies. The results of this study provided a fuller picture of how the participants lived through the SL rotation providing context and meaning to their experiences. The findings from this study add to the current literature on SL in dental education and increase understanding of the phenomenon at the individual level, specifically, for predoctoral dental students.

Implications for Practice

The results of this study present insights that are particularly relevant for development of effective SL rotations. By exploring the perceptions of dental students, dental schools will be able to better align the structure of the SL rotations to their academic goals. The findings can contribute to decision making about the course frameworks and assessment techniques ensuring that dental students are learning and gaining valuable experience, and the community is receiving the dental care they need. One important consideration from this study for dental schools planning SL rotations is

that the collaboration of a well-organized dental team and attending dentists that are encouraging and supportive is essential for creating a positive experiential learning experience and promoting a sense of belonging. The students mentioned being part of a team as a significant factor in creating a positive experience and enhancing their confidence. A component of the SL rotations should include faculty training on the benefits of a supportive environment to the learning experience.

Even though shorter rotations of a few days might be easily integrated in the dental curriculum, they limit the student interactions and their ability to form relationships with the patients and the dental team. This study found that three to nine weeks of SL rotations lead to positive experiences for the participants. The students established relationships with the community and the faculty mentors fostering confidence and professional growth. Dental educators might consider supporting SL rotations that are longer to allow the students to get immersed in the community, refine their clinical and professional skills and increase their confidence.

The dental school curriculum is extremely rigorous and includes a high volume of content. To extend the SL rotations, dental schools could allow dental students to challenge dental competencies during the SL rotations and receive comparable credit for the procedures they complete during the rotation to those received at the dental school clinic. However, not all the attending dentists working at the community centers are faculty members of the dental school and they would need to be calibrated to be able to grade the students the same way it's done at their dental schools.

The reflection portion of the SL rotation offered a diverse set of views. Some students found the reflection process was insightful and others expressed that reflection

was not beneficial for their personal development. Educators can take into consideration the development of more meaningful reflection processes in the future. The participants expressed unfavorable perception of longer written assignments. The reflection processes could include a short-written assignment to allow students to think about the experience and how the SL rotation impacted them, as well as include group discussions in which students share experiences and learn from each other to foster engagement and a sense of belonging to a community of practice.

Implications for Theory

The theoretical framework for this study was based on Mezirow's (2000) theory of transformative learning. As previously described in chapter two, the theory highlights the process of conducting a critical evaluation of assumptions, perspectives, and beliefs and describes 10 phases to transformative learning (Mezirow, 2000). The findings of this study were reflective of the transformative learning theory. In this study, the disorienting dilemma was the SL clinical experience which was different from typical dental school clinical experiences and designed to challenge the assumed beliefs and encourage critical reflection. Aligned with Mezirow's (2000) theory, the disorienting dilemma is essential in transformational learning because it challenges students to question previous assumptions and modify or change their current ways of thinking. The results of this study revealed that the participants experienced several breakthrough moments during their SL rotations. They were working in different communities, meeting people with different backgrounds and they were able to recognize how much they had learned in dental school resulting in increased confidence in their capabilities as dentists.

Furthermore, the participants mentioned an increased awareness of the needs of the community and the desire to include service in their future professional careers. They wanted to make a difference in the communities and, upon completing their SL rotations, they had a clearer picture of how that could be accomplished. Transformation learning is focused on critical reflection, and some participants had a very positive evaluation of the reflection exercise they completed during the SL rotation while other participants did not appreciate having to complete an essay after the rotation. However, they all mentioned that they thought about how much they learned and are thinking about how they can include service in their careers. Therefore, refining the critical reflection to focus on the experiences and how they possibly challenge previous beliefs, taking into consideration the influence of the environment on the experience would be beneficial to learning.

Limitations of the Study

This qualitative phenomenological study provided an in depth understanding of the lived experiences with SL of pre-doctoral dental students, however the transferability of the findings might be limited because the sample may not have been representative of the broader population of predoctoral dental students (Lincoln & Guba, 1985). Another limitation was potential self-selection bias. The participants chose to join the study, and they may have done so because they had strong opinions about their SL experiences. These strong opinions may not have been reflective of typical student experiences (Etikan et al., 2016). Case in point, all the participants reported that they had always been passionate about service. They all had been involved with helping underserved communities during their college years or before. Some of the participants also mentioned their families were always involved in community service and volunteering,

therefore, they grew up with an example of helping underserved communities as volunteers. This passion might have been the reason why they chose to participate.

A third limitation was the potential lack of accurate recall of the experience. The participants needed to recall personal experiences and there could have been a considerable lapse of time between their SL experiences and the interviews.

Nevertheless, I asked during the interview when the SL rotation was to assess if there was a considerable time gap. In this study the data collection was completed at the beginning of D4 year therefore because the rotations start in D4 year these rotations were relatively close in time (Creswell & Poth, 2018).

Other limitations included self-censorship. Some participants might have limited or censor themselves during interviews to provide a positive image of themselves and their dental schools, potentially impacting the responses. Motivation bias was another potential limitation. Participants received a \$35 gift card to thank them for their time. Some participants might have provided minimal responses if the primary motivation was the gift card rather than genuine interest in the study. In this study, however, all students expressed enthusiasm about their participation and were looking forward to the results. The SL experience might have been somewhat different as each dental student did not go to the same clinical facility and interacted with different communities. However, the study focused on identifying the disorienting dilemma and change in attitudes and point of view that can occur as a result of a SL experience. Lastly, this is a qualitative study and statistical analysis cannot be performed. In addition, qualitative studies are affected by the subjectivity of the researcher, but I used bracketing to set aside my biases, personal experiences, and assumptions.

Despite these limitations, one of the strengths of this qualitative study is that meaningful data were obtained directly from the participants using interviews. The semi-structured interviews yielded information that has greater depth than data delivered from surveys. In addition, the participants provided rich descriptions that helped better understand their experiences with SL.

Recommendations for Future Research

The themes of teamwork and increasing confidence were apparent from the interviews. The relatively long SL rotations cultivated a sense of belonging among the participants. There is a lack of studies that focus on the length of the SL rotation in dental education. Future studies could compare the perceptions of predoctoral dental students doing short-term rotations of less than 2 weeks to explore if the dental students increase their confidence and had the same positive perception of teamwork after the shorter SL experience. The participants in this study stated that after the SL rotation they were committed to community service. New studies could explore the dental practice choices of dental graduates from schools that offer a longer SL rotation compared with those that offer shorter ones.

Future research could also extend to the demographic characteristics and behaviors of the dental students with regard to community service. A quantitative study could explore if there is a correlation between growing in an underrepresented area, participation in community service during undergraduate studies, and belonging to a minority group to subsequent choices about dental practice. Furthermore, more research is needed to explore reflection practices. A future study could explore the reflection experience in depth. This study had conflicting opinions related to reflection. Educators

need to understand the best strategies for reflection after an SL experience to foster transformational learning. Research could focus in identifying the most effective methods. Written reflection encourages deep thoughts and fosters personal growth, and oral reflection encourages active engagement, enhances students' communication skills and promotes discussion. It is possible that a short reflection paper followed by a discussion with faculty and other students might be an area to explore further. Another future study could explore other constructs such as how students form social relationships and connections with each other and the dental team as they learn to belong to and become full participants in the community of practice.

Conclusion

The purpose of this study was to investigate the lived experiences with SL in general dentistry of predoctoral dental students and explore how these experiences influenced their perceptions of community service and future professional practice. This study utilized a qualitative phenomenological design. The participants shared their experiences and reflections from the SL rotations. The study found that SL rotations of three to nine weeks of duration resulted in transformative learning experiences for students. The participants had the opportunity to engage with the community and the dental team. The results revealed that the SL experience promoted professional growth, improved perceived clinical skills, confidence, teamwork and desire to give back to the community.

Practical implications from this study include recommendations for future SL course structure. Dental schools should ensure that SL sites have a well-organized dental team that will mentor the dental students and create positive learning environments. The

benefits would be facilitated by longer rotations where the dental students develop relationships with the attending dentists. Additionally, the attending faculty will need training on the benefits of a supportive environment to the learning experience. A major component of transformative learning is critical reflection. Dental educators need to develop more meaningful reflection opportunities for the students including class discussions to ensure that students have a positive and transformative experience.

Appendix A: Email to Academic Deans, Community Service Directors, and Faculty

Dear.....

My name is Monica Schneider, and I am a PhD candidate at the University of Maryland, Baltimore in the Health Professions Education Program. My dissertation research is titled: “A Phenomenological Study of Predoctoral Dental Students' Experiences with Service-Learning”. As an _____ (academic dean, community service director, community service faculty), I am requesting you to complete the following survey (link below) about the service-learning experiences in your dental school. The survey will take approximately 5 minutes and participation is voluntary.

[Link for survey]

Thank you for your time and consideration. If you have questions related to this survey, please contact me at mschneider@umaryland.edu

Monica Schneider
Clinical Associate Professor
Assistant Dean for Admissions and Recruitment
University of Maryland School of Dentistry
650 W. Baltimore St 6204
Baltimore, MD 21201
mschneider@umaryland.edu

**Appendix B: Survey for Academic Deans, Community Service Directors, and
Faculty**

School Name: _____

1. Is the community-based education experience at your school part of a dental school course?
 Yes
 No

2. Do students receive a grade for the course where the community-based education experience is included?
 Yes
 No

3. Do students receive clinical credit for the procedures performed during the community-based education rotations?
 Yes
 No

4. Does your school allow students to be assessed on clinical competencies at the external rotations?
 Yes
 No

5. Do students participate in a reflective discussion or complete a reflective paper after the clinical rotation?
 Yes
 No

6. Number of weeks in student's community-based rotations
 0-1 weeks
 2-5 weeks
 6-8 weeks
 9-11 weeks
 12 or more weeks

7. How many different sites your school has for external rotations?
 1 site

- 2 sites
- 3 sites
- 4-6 sites
- 7-10 sites
- More than 10 sites

8. Type of external clinical rotations affiliated to your dental school (select all that apply).

- Community clinic
- School off-site clinic
- Public Health clinic
- Indian Health Service clinic
- Federally Qualified Health Clinics
- Other _____

Appendix C: Email to Gatekeepers

Dear.....

My name is Monica Schneider, and I am a PhD candidate at the University of Maryland, Baltimore in the Health Professions Education Program. My dissertation research is titled: “A Phenomenological Study of Predoctoral Dental Students' Experiences with Service-Learning”. Your school offers a service-learning experience that meets the inclusion criteria for the study I am conducting. I am recruiting year 4 dental students that have completed a 2-week service-learning (community-based education) rotation. As an _____ (academic dean, community service director, community service faculty), I am requesting you forward the information and link below to D4 dental students at your school that might be interested in volunteering to participate in the study. The study involves a semi-structured virtual interview (45-60 minutes) about the service-learning experience.

Appendix E (Information for students)
[Link for survey] (Informed consent)

Thank you for your time and consideration. If you have questions related to the study, please contact me at mschneider@umaryland.edu

Monica Schneider
Clinical Associate Professor
Assistant Dean for Admissions and Recruitment
University of Maryland School of Dentistry
650 W. Baltimore St 6204
Baltimore, MD 21201
mschneider@umaryland.edu

Appendix E (Information for students)
[Link for survey] (Informed consent)

Appendix D: Participant Recruitment Email

Dear student,

I would like to invite you to participate in a doctoral research study exploring predoctoral dental students' experiences with service-learning.

I am in search of volunteers that will be interviewed for approximately 45- 60 minutes.

The study has the following inclusion criteria.

- 4th year (D4) student from an accredited dental school
- Participated in a service-learning rotation of at least 2 weeks in duration
- The service-learning experience was part of a dental school course for credit
- The experience incorporated discussion/reflection about the service-learning experience

Please fill out the consent form (link below) if you would like to participate. Thank you for considering and please don't hesitate to contact me for more information.

[Insert link]

Sincerely,

Monica Schneider DDS, MS
mschneider@umaryland.edu

Appendix E: Consent Form

You are invited to participate in a research study about dental students' experiences and perspectives on service-learning.

Title of the Research Study:

A phenomenological Study of Predoctoral Dental Students' Experiences with Service-Learning

The goal of this research study is to explore the lived experiences of pre-doctoral dental students who have completed a service-learning rotation.

Research Investigator

Dr. Monica Schneider
mschneider@umaryland.edu

Address: 650 W Baltimore St 6410, Baltimore, MD 21201

You qualify to participate in the student if you are a D4 dental student, have participated in a clinical externship (service-learning clinical rotation) of 2 weeks or more and have completed a reflection activity after your rotation.

Participation in this study is voluntary and may not benefit you directly, however it will help dental educators understand the impact of service-learning experiences for dental students. Your participation will involve a 45-60 minute semi-structured virtual interview. This project has been approved by the University of Maryland Institutional Review Board (protocol number)

You may end your participation at any point in the study. The information you will share will be kept completely confidential.

To thank you for your valuable time a \$35.00 (thirty-five dollars) electronic gift card will be sent after the interview is completed.
If you consent to the above, please select "I consent" to continue.

I consent
I do not consent

Survey Block

Please give us an email address to contact you to schedule the interview.

Thank you for your participation

Appendix F: Interview Guide

Date:

Interviewer:

Interviewee:

Instructions

1. At the beginning of the interview, the purpose of the study will be restated, questions about the study will be answered, Informed Consent will be reviewed.
2. I will communicate to students that participation is voluntary and they can end the interview at any time without penalty.
3. I will assign each participant a number.
4. The participant will be asked permission to start recording the Zoom interview.
5. I will verify that the informed consent is completed and that participation is voluntary.
6. I will start the interview using the interview guide.
7. A thank you note will be sent to participants.

Script

Thank you for volunteering to participate in the study. As explained before, this study aims to investigate predoctoral dental students' experiences with service-learning. I expect the interview to last no more than 60 minutes (1 hour) and you may choose to stop at any time. Please be as detailed as possible with the responses. Your personal information will be stored separately from the responses. At no time will your responses be associated with your name or the dental school you attend. All records will be stored in a password-protected secure file for a minimum of five years after the data is collected.

Do you have any questions or concerns about this study or interview?

With your permission I would like to record this interview. Please know that anything you share with me will be treated with confidence. For purposes of this study, you will be identified as participant _____ (001, 002, 003...)

May I start the recording?

Recording has started

Before we begin, thank you very much for volunteering to participate in this research study. Have you reviewed and signed the Informed Consent Form?

I will continue with the questions on your experiences with the service-learning experience at your dental school.

Appendix G: Interview Protocol

1. How is SL taught at your school please describe the year course, etc.?
2. Please describe the site, location of the SL experience and population served during your SL rotation. How long ago was your SL experience/rotation? How many weeks? How many sites?
3. Describe the most impactful (meaningful) experience during your SL rotation? Tell me what happened, any moment of insight and discovery? What were your feelings and thoughts about it? What did you do?
4. Can you describe additional highlights of your SL experience? Did anything surprise you?
5. Did you experience professional and/or personal growth? What new things about you as a professional did you learn during your SL experience?
6. Please describe changes if any, you experienced in your attitudes or perspectives of community service after your SL experience?
7. How have your views of your own future career path or for newly graduated dentists changed? Did any of your plans change after your SL experience? In what ways do you believe this experience contributed to your development as a dentist?
8. Describe your changes if any, as a result of reflection/debriefing after completing the SL experience.
9. What aspects of the SL you did not like? What aspects of the SL could be improved?
10. Is there anything you would like to add that my questions have not addressed?

Appendix H: Demographic Survey

1. Gender

- Male
- Female
- Prefer not to respond

2. Age _____

3. State of residency _____

4. Ethnicity

- Hispanic or Latino
- Not Hispanic or Latino

5. Race

- White non-Hispanic
- Black non-Hispanic
- American Indian or Alaskan Native
- Asian or Pacific Islander
- 2 or more races
- Unknown

6. What is the type of geographic area where you were raised?

- Rural
- Urban
- Suburban

7. Have you worked with underserved communities in the past?

- Yes
- No

8. Have you worked with communities different than your own?

- Yes
- No

9. Dental School Name _____

- Public
- Private

Appendix I: Axial Codes

Theme	Subtheme	Axial Code #	Axial Codes
Theme 1			Growing as a Professional
	I		<i>Transformative Experience</i>
		1.	Trusting decisions
		2.	Growth in a professional setting
		3.	Communication skills
		4.	Positive idea of reflection
		5.	Worthwhile experience
		6.	Personal growth
		7.	New experiences
		8.	Want to do more rotations
		9.	Would not change anything
	II		<i>Continuous Growth in Knowledge</i>
		10.	Acquired extensive knowledge
		11.	Learned to troubleshoot
		12.	New information
Theme 2			Being Part of a Team
	III		<i>Working Together</i>
		13.	Formed relationships
		14.	Oral health needs
		15.	Teamwork
		16.	Encouragement
		17.	Support
	IV		<i>Include Service in Future Dental Practice</i>
		18.	Need to learn more
		19.	Bigger picture
		20.	Working in group setting
		21.	Combine private practice with community service
		22.	Privilege to be part of the team
Theme 3			Becoming a Better Dentist
	V		<i>Continuous Improvement</i>
		23.	Faster diagnosis and treatment
		24.	Better clinician
		25.	See the real world
		26.	Improvement
		27.	Independence
		28.	Management of emergencies
		29.	Patients' needs
		30.	Time management
	VI		<i>Build Confidence</i>
		31.	Gain confidence after rotation

		32.	Understanding Limitations
		33.	Accepting of all patients
		34.	Rewarding profession
		35.	Proud
Theme 4			Giving Back to the Community
		36.	Visualize future work
		37.	Giving back
		38.	Inspired
		39.	Combine volunteer with practice
		40.	Open for opportunities
		41.	Passionate about serving
		42.	Programs that help people
		43.	Learn how people live
		44.	Focus on people
		45.	Medicaid Insurance
		46.	Indebted to the community
Theme 5			Experiencing Gratitude
		47.	Gratitude of patients
		48.	Kindness of patients
		49.	Unique experience
		50.	Empathy
		51.	Change people's lives
		52.	Rewarding

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