Pathways: Fostering Self-Directed Learning, Critical Thinking, and Self-Reflection

Dr. Robert Eber - Dr. Renée Duff
Dr. Howard Hamerink - Ms. Emily Springfield
Session Overview

• Overview/background of Pathways— Bob Eber
• Renée Duff
  – Pathways Program Description
• Howard Hamerink
  – Results to Date/Examples of Student Work
  – Culture Change/Costs
• Emily Springfield
  – Assessment
  – Portfolios
• Questions (10 mins)
• Breakout sessions to discuss how to do it at your institution (20 mins)
• Report and wrap-up (10 mins)
There are those who look at things the way they are, and ask why... I dream of things that never were, and ask why not?

Robert Kennedy
“Whether you think you can or you think you can’t, you’re right.”

Henry Ford
“All great changes are preceded by chaos.”

Deepak Chopra
BP (Before Pathways)
- Student Research Program
- Scholars Program in Dental Leadership—2006
- Extracurricular activities
- Only some students engaged

Strategic Assessment Committee

Strategic Plan Development

Vision Implementation Committee
21st Century Dentistry

- Clinician
- Educator
- Researcher/Scientist
- Administrator/Academician
- Industry
- Community/ Public Health Care Advocate
- Public Policy Maker/ Organized Dentistry
- Dental Practice Builder/Entrepreneur
U-M SOD Curriculum Change

- Planning 2009
- Implemented Summer 2010
- Major Components
  - Revise didactic courses
  - Condense preclinic
  - Early entrance to clinic
  - Expanded outreach
  - Flex Time

—PATHWAYS
Quotes from Dean Peter Polverini regarding new curriculum

“We want all students to engage in scholarship”

“We are building the bridge as we walk on it.”
Why Pathways?

• Provides dedicated time for development of specific interests

• 100% of the “general” dentistry core curriculum is the same for all students---satisfies CODA
Pathways Goals

• Students will investigate areas of personal interest

• Students will become lifelong learners

• Students will participate in scholarly activity
2013 CODA Standards

• Critical Thinking
• Self Assessment
• Student Research

Kenya 2013
2-9 Graduates must be competent in the use of critical thinking and problem-solving, including their use in the comprehensive care of patients, scientific inquiry and research methodology.

**Intent:**
Throughout the curriculum, the educational program should use teaching and learning methods that support the development of critical thinking and problem-solving skills.

**Examples:**
Demonstration of the use of active learning methods, such as case analysis and discussion, critical appraisal of scientific evidence in combination with clinical application and patient factors, and structured sessions in which faculty and students reason aloud about patient care.
Self Assessment

• 2-10 Graduates must demonstrate the ability to self-assess, including the development of professional competencies and the demonstration of professional values and capacities associated with self-directed, lifelong learning.

• Intent:
  • Educational program should prepare students to assume responsibility for their own learning. The education program should teach students how to learn and apply evolving and new knowledge over a complete career as a health care professional. Lifelong learning skills include student assessment of learning needs.

• Examples of evidence to demonstrate compliance may include:
  • Students identify learning needs and create personal learning plans
  • Students participate in the education of others, including fellow students, patients, and other health care professionals, that involves critique and feedback
Student Research

• 6-3 Dental education programs must provide opportunities, encourage, and support student participation in research and other scholarly activities mentored by faculty.

• Intent:

• The dental education program should provide students with opportunities to experience research including, but not limited to, biomedical, translational, educational, epidemiologic and clinical research. Such activities should align with clearly defined research mission and goals of the institution. The dental education program should introduce students to the principles of research and provide elective opportunities beyond basic introduction, including how such research is conducted and evaluated, and where appropriate, conveyed to patients and other practitioners, and applied in clinical settings.
# Pathways Team

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<thead>
<tr>
<th>Research Pathway</th>
<th>Leadership Pathway</th>
<th>Healthcare Delivery Pathway</th>
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<tbody>
<tr>
<td>Darnell Kaigler, Director</td>
<td>Russ Taichman, Director</td>
<td>Bob Eber, Director</td>
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<tr>
<td>Daniel Chiego, Co-Director</td>
<td>Renée Duff, Co-Director Emeritus</td>
<td>Howard Hamerink, Co-Director</td>
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<td>Charlene Erickson, Administrative Assistant</td>
<td>Dominica Sweier, Co-Director</td>
<td>Rebecca Flynn, Administrative Assistant</td>
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<tr>
<td>Emily Springfield, Educational and IT Consultant</td>
<td>Charlene Erickson, Administrative Assistant</td>
<td>Emily Springfield, Educational and IT Consultant</td>
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Program Features
Three Paths, One Program

- Health Care Delivery (HCD)
- Leadership
- Research
Three Paths, One Program
Pathways Comparison

D4
- Externship or extend project (opt)
- 1-5 semesters
- In clinic, lab, or library
- Often in groups

D3
- Many topics, less depth
- Mini rotations
- Externships (opt)

D2
- Mini rotations
- CATs
- Supplementary Learning Opportunities (Seminars, conferences, etc.)
- Leadership skills
- Group Project
- CATs

D1
- Supplementary Learning Opportunities (Seminars, conferences, etc.)
- Externship or extend project (opt)
- 5 semesters
- Develop policies and programs
- Patient care, provider training, etc.

Supplementary Learning Opportunities
- 8 semesters
- Single topic in great depth
- Clinical or laboratory research
- Most rigidly scheduled

Healthcare Delivery
- Fall course
- Winter course
- Investigate Options
- Project
- Options

Leadership
- Investigate Options
- Project
- Options

Research
- Investigate Options
- Project
- Options
Guides

• Assigned by administration
• All full time faculty members serve as guides
• Meet with students 1X/term
• Collegial networking contact
• Help students:
  – Find a mentor
  – Find learning opportunities in area of focus
  – Plan for internships/externships in focus if needed
Mentors

- Selected by student
- Should have expertise in student’s area of focus
- Pathways project mentor
  - Development
  - Approval
  - Execution
  - Assessment and Reporting
Curricular Components

• Intro course DENT 524
• Guide meetings/learning planning
• SLOs (Supplemental Learning Opportunities)
• Project
  – Proposal
  – Updates
  – Report
• Externship (optional)
• Pathways Day
**Curricular Components**

### Session Schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic A</th>
<th>Topic B</th>
<th>Topic C</th>
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<tbody>
<tr>
<td>9/9/19</td>
<td>2:00 PM Introduction to the Pathways:</td>
<td>3:00 PM Periodontology: Dr. Jill Bashinski</td>
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<td>Pathways Directors</td>
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<tr>
<td>9/16/19</td>
<td>2:00 PM Academic Dentistry/Teaching:</td>
<td>3:00 PM Pediatric Dentistry: Dr. Christy</td>
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<td></td>
<td>Dr. Phil Richards &amp; Rashad/ Sheridan</td>
<td>Ken</td>
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<td>9/23/19</td>
<td>1:00 PM Oral &amp; Maxillofacial Surgery:</td>
<td>1:45 PM Presentation Skills: Dr. Mike</td>
<td>2:45 PM Hospital Dentistry: Dr. Stephanie</td>
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<td>Dr. Sean Edwards</td>
<td>Razzaog</td>
<td>Maunz</td>
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<td>9/30/19</td>
<td>1:00 PM Folieck: Introduction and</td>
<td>2:00 PM Endodontics: Dr. Neville</td>
<td>2:45 PM Manuscript Writing: Dr. Steve</td>
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<td>Guide Meetings: Emily Springfield</td>
<td>McDonald</td>
<td>Bayne</td>
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<td>10/7/19</td>
<td>1:00 PM Orthodontics: Dr. Scott Conley</td>
<td>1:45 PM PERRS/RB (approx. 30 min.): Dr.</td>
<td>2:15 PM Customer Service: Dr. Jim</td>
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<td>Howard Ramoni</td>
<td>McNamara</td>
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<td>10/14/19</td>
<td>1:00 PM Models of Healthcare Delivery in MI:</td>
<td>2:00 PM Oral Medicine: Dr. CA</td>
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<td>Dr. Bill Piskorowski</td>
<td>Munloch-Kirch</td>
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<td>10/21/19</td>
<td>1:00 PM About HCD Projects: Bob Howard</td>
<td>Student Projects - HCD</td>
<td>2:30 PM Oral Pathology: Dr. Nisha</td>
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<tr>
<td>10/26/19</td>
<td>1:00 PM Research in the School of</td>
<td>2:00 PM Digital Dentistry: Dr. Dennis</td>
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<td>Dentistry: Dr. Charlotte Mistretta</td>
<td>Fastender</td>
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<td>11/4/19</td>
<td>1:00 PM Organized Dentistry: Dr. Dan</td>
<td>2:00 PM Postodontics: Dr. Mike</td>
<td>2:45 PM KSRP Presentation: Dr. Kapilla,</td>
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<tr>
<td></td>
<td>Edwards</td>
<td>Razzaog</td>
<td>Dr. Eber &amp; KSRP Students</td>
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<tr>
<td>11/11/19</td>
<td>1:00 PM Panel Discussion Facilitated by Dr.</td>
<td>2:00 PM Statistics in Dentistry: Dr.</td>
<td>3:00 PM Use of Reference Managers: Mark</td>
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<td>Durcell Knight</td>
<td>Durcell Knight</td>
<td>McNamara</td>
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<td>11/18/19</td>
<td>1:00 PM About Research Projects: Damell</td>
<td>Student Projects - Research</td>
<td>2:30 PM &quot;Developing your Professional SE:</td>
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<tr>
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<td>Knight</td>
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<td>Presentation Strategy&quot;: Amy Horvitz/Hayes</td>
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<td>11/25/19</td>
<td>Linda Mehlich - Leadership Presentation/</td>
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<td>Activity</td>
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<td>12/2/19</td>
<td>1:00 PM About Leadership Projects:</td>
<td>Student Projects - Leadership</td>
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<td>Ross/Rameu</td>
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<td>12/9/19</td>
<td>Pathways Review &amp; Selection</td>
<td>Course 524 Final Exam</td>
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*First two class sessions begin at 2:00 pm. All others begin at 1:00 pm.*
Curricular Components

• SLOs
  – Requirement is path dependent
  – Leadership and Research
    • 2 per term
  – HCD
    • 20 with 10 in chosen focus over 4 years
Curricular Components
Suggested Focuses

- Digital Dentistry
- Endodontics
- Facial Pain
- Hospital dentistry
- General Dentistry
- Graduate Operative
- Geriatric dentistry
- Implantology
- Oral and Maxillofacial Pathology
- Oral Medicine

- Oral and Maxillofacial Radiology
- Oral and Maxillofacial Surgery
- Orthodontics and Dentofacial Orthopedics
- Pediatric Dentistry
- Periodontics
- Prosthodontics
- Public Health Dentistry
- Teaching
Curricular Components

- Project
  - Proposal
  - Updates
  - Report
Curricular Components

• Externship (Optional)
  – Examples:
    • Community Event
    • School-wide Event
    • Organized Community Outreach
Curricular Components

• Pathways Day

Save the Date

Come CELEBRATE the Class of 2014’s achievements at the 1st Annual PATHWAYS DAY!

Who: All dental and dental hygiene students, faculty, and staff
Where: Palmer Commons
When: March 28, 2014 from 1:00-5:00 P.M.

*Food and fun guaranteed during the course of the afternoon!"
Path-Specific Components

- HCD mini-rotations
- HCD focus
- Critically Appraised Topic (CAT)—required for all
- Leadership course
- SPDL (Scholars Program in Dental Leadership) seminars
- Research Journal Club
Results to Date
Examples of Student Projects
Completed HCD Projects

- Kenya Summer Research Program (HCD/Leadership)
- Wolverine Patriot Project (HCD/Leadership)
- Local and Topical Anesthesia: Relationships between Beliefs, Attitudes and Behavior
- Radiology/CBCT related Knowledge, Interests and Attitudes: Students’ and Clinicians’ Perspectives
- CAD/CAM Complete Fabrication
- Comparison of multiple surgical guides vs. single surgical guide techniques on single implant placement
- Develop Digital Dentistry Website
- Osceola County Veteran’s Clinic Project
- America Reads Dental Education Project—Inner City Detroit
- Guatemala Mission
Wolverine Patriot Project: Access to Care for Homeless Veterans

Gaylord, Michigan
Students: Wolverine Patriot Project

Five second-year dental students, led by Jesse Edwards, himself a veteran, established the Wolverine Patriot Project to bring free oral health care to homeless veterans in Gaylord, Michigan. The other dental students sharing the award were Tony Guinn, Dental Class of 2015 president, Ameen Shahnam, Kevin Goles, and Mariam Dinkha.

“This group of dental students exemplifies what dentistry should be all about: bringing the best possible care to those who suffer from a lack of dental care and making the world a better place,” said Dean Peter Polverini.

2013 Annual James T. Neubacher Award Ceremony Certificate of Appreciation

The University of Michigan's Council for Disability Concerns established the James T. Neubacher Award in October 1990 as a memorial to Jim Neubacher, an alumnus of the University who was a columnist for The Detroit Free Press and an advocate for equal rights and opportunities for people with disabilities.
Oral Health Care Project for Veterans Wins National Award

Wolverine Patriot Project leaders (front row, L to R): Dental students Jesse Edwards, Kevin Goles, Mariam Dinkha, Ameen Shahnam, Tony Guinn; (back row): Drs. Edward Duski, Janis Chmura Duski, Bill Piskorowski, assistant dean for Community-Based Dental Education.

Student-Led Wolverine Patriot Project Wins Tarrson Award

Ann Arbor, MI — February 11, 2014 — A program launched by a group of dental students at the University of Michigan School of Dentistry to provide oral health care to disabled and homeless veterans in northern lower Michigan has won a major national award from the American Dental Association Foundation.

Led by third-year dental student Jesse Edwards, students in the Wolverine Patriot Project saw an urgent oral health care need that was not being met and did something about it.

For their efforts, the dental students were named recipients of the 2013 Bud Tarrson Dental School Student Community Leadership Award. The award recognizes dental school student programs that demonstrate excellence in providing help to underserved groups of individuals in the U.S.

“I was studying for exams when I received an e-mail with the news about winning the award,” Edwards said. “I was so excited that, after calming down, I called Tony Guinn and Dr. Bill Piskorowski to share the good news.”
Ann Arbor, MI — November 9, 2012 — A third-year dental student at the University of Michigan School of Dentistry recently won third place for her poster presentation at the annual session of the American College of Prosthodontists.

Jill Kristine Dery was recognized for her work that focused on an innovative approach to conventional removable complete denture fabrication using CAD/CAM technology. Her mentor, Dr. Renee Duff, a clinical associate professor of dentistry, said the technology applied in Dery’s work “may lead to fewer appointments for patients and shorter treatment times in select cases.”

Dery used a digital denture process that involved CAD/CAM technology. The technology has been used for some time in areas of dentistry such as fixed restorations, implant planning, placement, and restoration. Dery’s approach to using CAD/CAM in conventional removable complete denture fabrication is a recent innovation, according to Duff.

Dery focused on digital dentistry for her Pathways Program. The School’s program is designed to give predoctoral dental students opportunities to investigate an area of oral health care that interests them. “I have seen the usefulness of this technology in my father’s office,” Dery said. “I would like to learn as much as possible about the different applications of digital dentistry while I’m in the dental program here at Michigan.”
Local and Topical Anesthesia: Relationships between Beliefs, Attitudes and Behavior
MC MCOBB, S ARONOVICH & MR INGLEHART
University of Michigan - School of Dentistry, Ann Arbor, MI

ABSTRACT

OBJECTIVES: To investigate how a sense of competence concerning administering local anesthesia (LA) is related to (a) beliefs about the factors that are related to fail to obtain adequate anesthesia, (b) LA and TA related attitudes, and (c) actual behavior related to administering LA and TA.

METHODS & RESULTS

Respondents: Data were collected from 350 dental students in 14 different dental schools in the U.S. (20% N=71; 25% N=96; 80% N=281). About half of the respondents were female students (female: 47%).

Procedure: Academic year at all U.S. dental schools received an email explicating the purpose of the study and asking them to forward a recruitment email to their students.

Table 1 shows the students’ self perceived confidence concerning administering LA increases over the course of the dental school years to a quite high level of competence. Table 2 shows that large percentages of respondents reported that extractions and restorative dentistry procedures are associated with inadequate LA. Attitudes related to LA were most negative as the students progress through the four years of their dental education (see Table 3). Attitudes towards LA were quite positive among students in all 4 years of the program. Table 4 shows that their self perceived confidence and attitudes towards LA were related to self perceived confidence and attitudes towards LA.

Table 1. Percentage of Students Reporting Adequate LA under Different Circumstances

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<th>First Year</th>
<th>Second Year</th>
<th>Third Year</th>
<th>Fourth Year</th>
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<tr>
<td>Extractions</td>
<td>71%</td>
<td>85%</td>
<td>92%</td>
<td>96%</td>
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<td>Restorative Dentistry</td>
<td>68%</td>
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<td>94%</td>
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Table 2. Percentage of Students Reporting Satisfactory LA under Different Circumstances

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DISCUSSION

Given the high percentage of dental patients with dental fear and anxiety, it is crucial to provide dental treatment in such a way that patients do not have pain during their treatment. This study therefore explored dental care providers’ beliefs about the factors that are related to fail to obtain adequate anesthesia. Attitudes concerning LA are important to consider when evaluating dental care providers’ beliefs about LA.

CONCLUSION

- Dental students’ self reported confidence in LA increases over the four years of their dental education to a quite high level.
- Their attitudes related to LA become more positive over the course of the dental school years.
- Clinical experiences related to LA are rather extensive, esp. in community-based clinics.
- While their attitudes related to LA are rather positive, their attitudes towards LA are more negative as the students progress through their program.
- They can support clinicians’ efforts to relieve patients’ pain for example when injections are given and should therefore be a valuable tool for any clinician.

REFERENCES


ACKNOWLEDGMENT

We would like to thank the Academic Dean of the U.S. dental schools for supporting this research by forwarding the recruitment email to dental schools and by providing access to the survey respondents taking the time to respond to this survey. We also want to thank Mr. Michael Aronovich and Mr. John Rothstein for helping us with preparing the data for analysis and the University of Michigan School of Dentistry’s Summer Research Opportunity Program for its support.
ABSTRACT

Objectives: To assess knowledge, interests and attitudes of dental, dental hygiene and graduate students and practicing clinicians concerning traditional radiology and cone beam computed tomography (CBCT) and to explore how knowledge, interests and attitudes are related.

Methods: Data were collected from 363 dental students, 70 dental hygiene students, 13 graduate students, and 66 clinicians.

Results: The overall interest in learning about radiology and CBCT was high, with the clinicians and graduate students being most interested. The clinicians and graduate students had the highest percentage of educational or professional experiences with CBCT; however, clinicians were more confident in interpreting CBCT scans. There was no significant difference between the respondents in believing that radiology is an important diagnostic tool for dentists, dental hygienists, and specialists. Attitudes concerning radiation exposure for patients when receiving CBCT scans showed that dental students had low levels of concern, while clinicians had the highest levels of concern. Clinicians believed that patients were less concerned about radiation exposure when having a CBCT scan. The more respondents knew about radiology and CBCT scans, the more they wanted to learn about it (r=0.21, p<0.001), the more they were concerned about their patients (r=0.23, p<0.001), and the more they thought their patients were concerned about radiation exposure when receiving CBCT scans (r=0.17, p<0.001).

Introduction

The majority of dental schools in the U.S. do not include instruction in high-level use of CBCT for pre-doctoral students. This state of affairs raises concerns among radiologists who argue that if general dentists are permitted to purchase and use CBCT equipment, dental education about CBCT use should be a requirement to prepare these future dental practitioners to apply 3D imaging appropriately for diagnosis and treatment planning (1). CBCT offers the ability to view normal anatomical structures and compare them to variants of normal or pathological changes. This study further explored the CBCT-related knowledge, interests and attitudes of students and clinicians.

CBCT Slices: 3 Different Views

Coronal Sagittal Axial

OBJECTIVES

To assess:
- the knowledge, interests and attitudes of dental, dental hygiene and graduate students and practicing clinicians concerning traditional radiology and cone beam computed tomography (CBCT) and
- how knowledge, interests and attitudes are related.

METHODS AND RESULTS

Survey data were collected from 363 dental students (D1: 108; D2: 191; D3: 90; D4: 64), 70 dental hygiene students (DH2: 23; DH3: 19; DH4: 28), 13 graduate students, and 66 clinicians.

The results showed that the overall interest in learning about radiology and CBCT was high (index based on 3 items with 5-point answer scale with strongest interest: Mean=4.12), with the clinicians and graduate students being most interested (means: 4.57 / 4.55). The clinicians and graduate students had the highest percentage of educational or professional experiences with CBCT (65% and 39% respectively); however, clinicians were more confident in interpreting CBCT scans (Mean=2.85). There were no significant differences between the respondents in believing that radiology is an important diagnostic tool for dentists, dental hygienists, and specialists (Mean=4.78). Attitudes concerning radiation exposure for patients when receiving CBCT scans showed that dental students had low levels of concern (Mean=2.98), while clinicians had the highest levels of concern (Mean=3.60). However, clinicians believed that patients were less concerned about radiation exposure when having a CBCT scan (Mean=2.66).

The more respondents knew about radiology and CBCT scans, the more they wanted to learn about it (r=0.21, p<0.001), the more they were concerned about their patients (r=0.23, p<0.001), and the more they thought their patients were concerned about radiation exposure when receiving CBCT scans (r=0.17, p<0.001).

CONCLUSIONS

Interest in learning more about radiology and CBCT scans is high among dental and dental hygiene students and professionals. Given that increased education was associated with higher concerns for patients and the perceptions that patients were more concerned about radiation exposure when receiving CBCT scans should alert educators to address these concerns in educational interventions.

REFERENCE


ACKNOWLEDGEMENTS

We want to thank the Healthcare Delivery Pathways Program at the University of Michigan School of Dentistry for funding this project, and the students and faculty/clinicians for responding to our survey.
Leadership Projects

• *The Importance of Leadership Development in Dental Education: A Student Perspective

• Dental Amalgam vs. Composite: A Comparison of six measures of the Environmental Impact of the Production of Each Material.

• *Wolverine Patriot Project

• Error Management in Radiographic Interpretation Through the Use of Checklists

• Impacts of alterations in the circadian clock on autoimmune diseases

• Selecting appropriate outreach models to Service Rural Communities

* Published or award-winning
The Importance of Leadership Development in Dental Education: A Student Perspective

Lior Aljadeff, BS; Rachel E. Krell, BA; Amy B. Lesch, BA; and Harold M. Pinsky, DDS (mentor)

Published in: Compendium May 2013, Volume 34, Issue 5
Research Projects

- Novel clinical implication of CLOCK genes in patients with salivary gland tumors
- *Remineralizing Deproteinated Enamel Caries Lesions with Carbonated Amorphous Calcium Phosphate
- *Optimal Storage Media for Dental Pulp Mesenchymal Stem Cells
- *Role of epithelial specific Tgf-β3 signaling during palatal fusion
- Metabolomic analysis of saliva and plaque to identify biomarkers for dental caries

* Presented at conference
Emily Eubanks Wins 2nd Place in National Research Competition

Ann Arbor, MI — November 14, 2013 — A third-year dental student at the University of Michigan School of Dentistry won a second-place award for her research from the Student Clinicians of the American Dental Association (SCADA). The national competition was held during the ADA's annual session in New Orleans.

Emily Eubanks received the award in basic science research for her work that focuses on using stem cells from a patient's wisdom teeth to regenerate dental tissues to grow new wisdom teeth. She earned the trip to the ADA annual session after winning the Grand Prize during the School's annual Research Day competition in February.

Since wisdom tooth extraction is a routine procedure, using wisdom tooth stem cells may one day offer dentists and their patients a new option to consider instead of using implants or other prostheses to replace lost teeth.

“The traditional method of isolating similar types of stem cells involves collecting them from bone marrow in the hip, which is invasive and can be painful,” Eubanks said. “But the approach I am working on is neither invasive nor painful.” As she conducted her research, Eubanks discovered that saline can be used to store and preserve wisdom tooth stem cells. Eubanks is mentored by Dr. Darnell Kaigler, an assistant professor in the Department of Periodontics and Oral Medicine.
Faculty Results
The most confusion for you?
What is expected?

- I know what is expected of me regarding Pathways work
- I know what is expected of students in their Pathways work
- Students seem to know what's expected of them in their Pathways work
- I am comfortable using Foliotek to track student Pathways work
Guide meetings

- It's easy to schedule a meeting with my student
- I feel I offer valuable input in helping my student decide a project topic
- I feel I offer valuable input in helping my student find a mentor
- I have a more collegial relationship with my student due to guide meetings
- Overall, my guide meetings are a good use of time
Project mentoring

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

- Know what is expected of me during the project proposal process
- The project proposal process is easy
- I know what is expected of me to mentor the project
- I am impressed with the work my mentees do on their projects
- Overall, mentoring students on projects is a good use of my time
Perhaps because there is no obvious penalty for being wrong (or for not being as right as one might like), decision-making in the face of uncertainty (i.e., in the absence of data) is a time-honored educational tradition.
Culture Change

• Perhaps because there is an obvious penalty for being wrong
• (or for not being as right as one might like),
• decision-making in the face of uncertainty
• (i.e., in the absence of data)
• should not be a time-honored educational tradition.
Take the hill
**Blooms Taxonomy**

**Evaluation**
- Assessing theories; Comparison of ideas; Evaluating outcomes; Solving; Judging; Recommending; Rating

**Synthesis**
- Using old concepts to create new ideas; Design and Invention; Composing; Imagining; Inferring; Modifying; Predicting; Combining

**Analysis**
- Identifying and analyzing patterns; Organisation of ideas; recognizing trends

**Application**
- Using and applying knowledge; Using problem solving methods; Manipulating; Designing; Experimenting

**Comprehension**
- Understanding; Translating; Summarising; Demonstrating; Discussing

**Knowledge**
- Recall of information; Discovery; Observation; Listing; Locating; Naming
Applying Adult Learning Principles

<table>
<thead>
<tr>
<th>ADULT LEARNER CHARACTERISTICS</th>
<th>TEACHING STRATEGIES</th>
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<tr>
<td>• Independent/Self-directed in what they learn.</td>
<td>• Present information and solicit the participants for experiences they have had in the past with the topic.</td>
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<td>• Draw on considerable past experience</td>
<td>• Ask participants for solutions to problems, to share ideas and/or to debate opinions.</td>
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Adapted from "Characteristics of Adult Learners and Implications for Teaching Technical Information" by S. Joseph Levine, PhD
# Adult Learner Interests

## TOPICS AND INFORMATION

- That are related to their stage in life
- That solves problems presently facing them
- That can be immediately applied

## STRATEGY

- Use real world examples offered by participants
- Use compelling case studies.
- Ask participants how they will be using, making application of, the ideas and information presented.

Adapted from "Characteristics of Adult Learners and Implications for Teaching Technical Information" by S. Joseph Levine, PhD
Adult Learner Final Considerations

- Adult learners are motivated from within

- Recognize and respect that each participant places a different value on education and learning

Adapted from "Characteristics of Adult Learners and Implications for Teaching Technical Information" by S. Joseph Levine, PhD
Program Costs

- Directors
- Staff
- Faculty time
- Portfolio Software
  - $12,000 startup
- Projects
  - Budget $500 per student
- Outside speakers
- Kickoff
- Pathways Day
- Experience—Priceless!
Practicalities
Lessons Learned

• Launched without 4 year plan in place
  – True for entire curriculum
• HCD Pathway had to be built after program was in its 2nd term
• Shortage of mentors for the volume of expected projects
• Scope of projects must be reasonable
• Need full participation of faculty guides
  – Needed Dean’s support
• Information Management
  – Portfolio software should have been in place day 1
  – Pathways Manual needed day 1
A Work in Progress
Program Assessment
Assessment Plan

- Track student progress in online system
- Analyze student accomplishment of program goals
- Student satisfaction
- Faculty satisfaction
- Resources needed
## Assessment plan details

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<tr>
<th>Goal</th>
<th>Specific Aim</th>
<th>Method of Analysis</th>
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<td>Students will develop a deep sense of personal direction and</td>
<td>Students will choose a focus within the profession</td>
<td>• Count of focus declarations within each pathway; track the count in each focus</td>
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<td>enthusiasm for their chosen role within the profession. (All students)</td>
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<td>• Track the number of times students change focus (“Major changes in interests” question on guide meeting notes)</td>
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<td>Students will Express enthusiasm for their chosen path of study</td>
<td>• Student survey</td>
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<td>• Student focus group</td>
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<td>• “Describe area of interest” question on guide meeting notes (random sample evaluated by rubric)</td>
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<td>Students will become lifelong learners. (All students)</td>
<td>Learning methods and techniques of staying current in the field</td>
<td>• Track number and diversity of Supplemental Learning Opportunities</td>
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<td>• Focus group question “How do you plan to stay current in your field?”</td>
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<td>• Survey question “How do you plan to stay current in your field?”</td>
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<td>Analyzing their own interests</td>
<td>• Count number of times students and guides discuss students’ interests (checkbox on guide meeting notes)</td>
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<td>• Analyze a sample of portfolios for evidence of self-analysis</td>
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<td>• Survey and focus group questions “Have your interests changed over time? Please describe.”</td>
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<td>Taking the lead role in planning and executing a major project</td>
<td>• Compare number of hours spent on projects by students, mentors, and guides.</td>
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<td>• Students rate the degree to which they “led” the project (Likert scale on course eval)</td>
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<td>• Mentors rate the degree to which each mentee “led” the project (Likert scale on project eval)</td>
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<td>Developing skills that will transfer to their continuing education after</td>
<td>• SLO completion rates and times – did students complete in a timely fashion? Group them all at the end? Complete more than required?</td>
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<td>graduation, such as finding, completing, and tracking professional development</td>
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<td>Sharing results of their projects locally and nationally through presentations</td>
<td>• Count, titles, and venues of all publications and presentations derived from the Pathways project</td>
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<td>and/or publications</td>
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Online tracking - student view

UM Dentistry Portfolio

The Assessment portion of Foliotek is where you will work on adding and removing elements and files to various sections of your portfolio. You can begin working by clicking on a section below "Edit this portfolio" and adding/removing elements or adding files to those various elements. You can also preview any upcoming evaluations, view defined resources for your portfolio or share your portfolio with peers. If you get stuck, use the help menu (the link is located in the upper right of your screen).

Tutorials

- PERSONAL PORTFOLIO BUILDER
  Learn how to create and share your personal portfolio.
  [5 min. 18 sec.]

- FILES & EVALUATIONS
  Learn about the files repository & how to submit and view evaluations.
  [3 min. 26 sec.]

To-Do List

- Finish and submit 'Research Project Proposal (Class 2015)'
  Link [due 4/5/2012]

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Student Terms & Conditions
Last Updated 6/2/2011

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Questions
Breakout Session
Breakout Questions

1. What are you currently doing at your institution to engage students and faculty in self-directed learning?

2. What are the strengths of the pathways model as presented?

3. What could be improved in the pathways model as presented?

4. What are the opportunities at your institution for implementing a program similar to pathways?

5. What would be the obstacles you would face in trying to implement a program similar to pathways at your institution?
Thank you!

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- Dr. Renée Duff
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