

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

*Please note that completion of ALL fields is required.*

Primary Faculty Name:	Tara L. Newcomb
Department:	Dental Hygiene
Email Address:	tgarlow@odu.edu
Office Phone Number:	757-683-5766
Project Title: (10 words or less)	Radiographic Imaging for Mass Fatality Training in Dental Hygiene Students.
Brief Description (100 words or less)	The American Board of Forensic Odontology recommends utilization of dental hygienists on mass-disaster dental ID teams. Dental hygienists hold licensure in competencies directly benefiting dental forensics. Mass fatality preparedness is not widely included in dental hygiene curricula. This research supports computer based teaching and clinical practice on radiation technique and safety protocols when working with victim dental remains; the primary learning outcome is safe exposure of quality oral radiographic images on simulated victim remains. Local and national continuing education courses for dental and dental hygiene faculty and practicing hygienists for mass fatality incidences could also be implemented.

  x   JOINT PROPOSAL: Check here and complete the "FIG Additional Faculty for Joint Proposals" form at the end of this document.

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

**General Information about the proposed project:**

Course Delivery Type (mark one)	<input type="checkbox"/> Face-to-Face <input type="checkbox"/> Broadcast	<input type="checkbox"/> Web-based (online) <input checked="" type="checkbox"/> Hybrid
Course Offering (mark all that apply)	<input checked="" type="checkbox"/> Fall <input type="checkbox"/> Spring <input type="checkbox"/> Summer	
Course Average Enrollment per semester (mark one)	<input type="checkbox"/> 1-25 <input checked="" type="checkbox"/> 26-50 <input type="checkbox"/> 51-75	<input type="checkbox"/> 75-100 other: <input type="checkbox"/> (enter number)
Number of students potentially affected by your project annually	<input type="checkbox"/> <100 <input type="checkbox"/> 100-199 <input type="checkbox"/> 200-299	<input type="checkbox"/> 300-399 <input checked="" type="checkbox"/> 400-499 <input type="checkbox"/> >500

**Section 1: Learning Issue**

*Describe the specific teaching and learning issues being addressed by the proposal including background information and a short statement of the proposed solution.*

**Problem statement:** There have been many defining moments in U.S. history where challenges of mass fatality identification efforts have been clearly realized. Victims, their families and the community expect remains will be treated with formality, and that forensic procedures followed will ensure quick and accurate identification.<sup>1</sup> The American Board of Forensic Odontology recommends the use of a dental hygienist on mass-disaster dental ID teams. In the event of a mass fatality incident with numerous unidentifiable remains, rapid identification of remains becomes paramount; mass fatality preparedness generalized to dental hygiene educators, students, and practitioners could increase the number of trained, deployable members of a response team.<sup>2</sup>

Because of their survivability, the best biometric identification is the dental structures. Teeth are able to provide evidence of identification particularly when victims are exposed to severe extremes of heat, trauma or decomposition. The oral cavity is so well insulated against the high temperatures of fires, that often the teeth are well preserved.<sup>3</sup>

The dental hygienist holds licensure in competencies that directly benefit the forensic dental team including dental radiography and clinical examination of both hard and soft tissues of the oral cavity.<sup>4</sup> Since mass fatality preparedness is not widely included in dental hygiene curricula, education for preparation and training in anticipation of a disaster response is vital as this ensures success in identifying as many victims as possible.

One of the most accurate methods for dental identification of victim remains is the exposure of intraoral dental radiographic imaging. Limitations exist when dental

Proposal Request Form

---

professionals take radiographic images on postmortem remains in the areas of 1) radiographic technique 2) radiation safety protocol and use of personal protective equipment 3) infection control. Additionally, there is a lack of equipment and supplies necessary to expose quality radiographic images for identification purposes; therefore, the images that are taken tend to be of poor diagnostic quality and difficult to compare with antemortem dental records. Quality dental images are achieved with the assistance of image receptor holders for the placement of image receptors such as direct digital sensors and x-ray devices at appropriate angles to minimize distortion. When imaging victim remains, limitations to the use of image receptor holders are present, since these holders are held in place when a patient occludes or bites down. Victim skull remains are typically not found intact; therefore, the use of image receptor holders for precise radiographic images is difficult. Using and receiving training on portable radiographic equipment (image receptor holders, digital sensors, the handheld Nomad Pro™, lead apron and lead glove) most often used in mass fatality incidences. This provides the dental hygienist with both the knowledge of what type of equipment to bring to a mass fatality incident and the skills to use it on postmortem remains. Hand-held dental x-ray devices, such as the Nomad Pro™ are recommended in forensic dentistry, and offer comparable image quality results when compared to traditional wall mounted x-ray units.<sup>5</sup>

**Solution:** To provide didactic teaching and clinical practice on radiation technique and safety protocols using handheld radiology devices, to include using personal protective equipment and infection control recommendations when working with simulated victim remains.

**Section 2: Learning Outcomes**

*State the learning outcomes being sought and indicate their relevance to the issue.*

The primary learning outcome of this project is to safely expose quality, error free intra oral radiographic images on simulated victim remains. This skill is valuable in training dental professions to participate on mass fatality teams. Simulated dental remains and postmortem radiographic techniques will be used to accurately document dental information unique to victims. This type of training and evaluation is not currently available.

**Section 3: Approach**

*Explain your approach to the proposed solution in detail.*

To assess baseline knowledge of forensic odontology and radiographic technique in second year dental hygiene students (N=~40), researchers will first administer a 15 question exam (pretest) using validated test questions from a required first year oral radiology and anatomy course. Study participants (N=40) will be randomly divided into one of two groups. The experimental group will have unlimited access to a 30 minute computer based mini lecture using Adobe connect 1) radiation technique using a handheld x-ray device (Nomad Pro ®) on simulated dental remains 2) radiation safety protocol and use of personal protective equipment 3) infection control when

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

working with postmortem dental remains. The control group will receive a 30 minute traditional lecture based PowerPoint presentation on the same content. Both groups will then take a clinical lab practical testing their radiographic techniques using a handheld x-ray device (Nomad Pro™) on simulated dental remains and a 15 question exam (posttest) on 1) radiation safety protocol and use of personal protective equipment 2) infection control when working with postmortem dental remains 3) radiographic technique.

Specifically, the clinical lab practical will include using the Nomad Pro™ hand held x-ray device, a direct digital sensor, and modified image receptor holders to expose 6 intraoral dental images (Table 1) on human skulls and bisected bone remains. Intact human skulls, as well as a bisected mandible, and intact dentition coated in lubricant will represent the likeness of decayed victim remains, simulating diverse dental conditions seen in mass fatality incidences.

<b><i>X-ray Type</i></b>	<b><i>Exposure Site</i></b>	<b><i>Number Exposed</i></b>	<b><i>Time</i></b>
Premolar Bitewing (BW)	Both arches (lubricated)	1	5 min.
Posterior Periapical (PA)	Maxillary arch	1	5 min.
Posterior PA	Mandibular arch-bisected mandible	1	5 min.
Posterior PA	Mandibular arch-intact skull	1	5 min.
Anterior PA	Maxillary arch	1	5 min.
Anterior PA	Mandibular arch	1	5 min.

**Table 1: Clinical Lab Practical**

**Section 4: Evaluation Plan**

*Describe in detail how the learning outcomes will be evaluated.*

Evaluation will be administered to include 1) a clinical laboratory radiographic assessment (practical), 2) a 15 question exam (pretest/posttest) to all students participating in the study. Clinical lab radiographic assessments will be graded using a validated rubric for radiographic image acceptability for all 6 exposures, used with senior dental hygiene students in the clinical setting. These scores (both clinical and exams) will be compared between the two groups. A passing score for the clinical laboratory assessment will be 75% or higher, while a passing score for the pretest/posttest will be

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

---

77% or higher, following radiation safety standards and dental hygiene program requirements.

**Section 5: Impact of project**

*Describe how the project, once completed, can be a model, template, or prototype for use by other instructors. I think we should add something on how we can use this in the education setting as well.*

The States Chief Medical Examiner, Dr. Leah Bush has been proactive in advocating the need for an organized, interprofessional effort to strengthen community and institutional relationships in preparing dental hygienists for mass fatality events. The Commonwealth of Virginia, Department of Health, Tidewater Office of the Chief Medical Examiner Norfolk (TOCME) and Old Dominion University, College of Health Science, School of Dental Hygiene (ODU) has established a Memorandum of Understanding (MOU). The MOU states the goal of the partnerships is “to have a pool of formally trained para-professionals capable of assisting in identifying remains through dental comparison processes is a need of TOCME that can be met by ODU.” (Appendix A).

TOCME utilizes the Norfolk Medical Reserve Corps to train local medical volunteers especially for Mass Casualty Preparedness and is currently seeking ways to develop a local forensic odontology team. Norfolk Medical Reserve Corps could provide a platform in implementation of this proposed project because it is an established Virginia Department of Health component and for use in national Disaster Mortuary Operational Response Team (DMORT) training components. Additionally, this project could provide local and national continuing education courses that are computer based (Adobe connect) for dental and dental hygiene faculty and practicing hygienists who have an interest or previous involvement in mass fatality incidences.

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

**Section 6: Budget Plan**

*In the table that follows, briefly describe the proposed budget plan and complete the Itemized Proposed Budget.*

<b>Description of the Proposed Budget Plan:</b>				
<p>Utility wax will be used to attach the modified RINN XCP® DS Fit image receptor holding device and direct digital sensor (image capturing device) to expose intraoral radiographic images on simulated victim remains (real human research skull). Dental hygiene students will use the Nomad Pro® handheld radiation emitting device for the exposure of all images; therefore, it is necessary to include a full body lead apron, badges to monitor radiation exposure (dosimeter badges), and lead gloves for complete radiation protection to the dental hygiene student. The Nomad Pro® is proven to be safe for handheld use by the operator due to the external backscatter shield as well as internal shielding; however, due to the decreased distance from the source of radiation exposure, researchers are employing all measures to ensure that there is no additional amount of radiation exposure to the dental hygiene student during this research.<sup>6</sup> A graduate research assistant will be used to assist with conducting the study, scheduling the clinical laboratory assessment, and data collection.</p>				
<b>Itemized Proposed Budget:</b>				
Budget Item (equipment, personnel, software, etc.)	Qty	Total Cost	Source of Funds	
			Amount from FIG	Amount from Other Source
Utility wax strips	1	12.00	12.00	0
Dosimeter badges	40	400.00	400.00	0
Lead apron	1	300.00	300.00	0
Graduate research assistant	1	5000.00 (per semester)	0	5000.00 (DH dept.)
Lead gloves	1 pair	100.00	100.00	0
RINN XCP DS FIT	2	150.00	150.00	1 provided by DH dept.
Real Human Skull-research quality	1	1850.00	0	1850.00 (DH dept.)
Direct digital sensor	1	8100.00	2000.00	6100.00
<b>Total</b>		<b>15,912.00</b>	<b>2962.00</b>	<b>12,950.00</b>

**Section 7: Technology**

*Describe the technology or technologies selected. Indicate the relevance and applicability to this project by explaining why you chose a particular technology or technologies. Include your selection criteria and product comparison, if applicable. Contact CLT if you need assistance identifying available technologies.*

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

---

A handheld x-ray device, (Nomad Pro™), direct digital image capturing sensors, and modified image receptor holders will be used to train dental hygiene students because this equipment is portable and can be taken in the field to on-site, temporary morgues. Digital radiographs are preferred because they can be sent as electronic records to national missing persons or victim identification databases more easily.

For instruction of radiographic imaging on simulated dental remains, researchers will incorporate a computer based mini lecture using Adobe connect; specific features used will include custom URL links of recorded mini lectures for student access. Mini lectures will include video of instructor and narrations of PowerPoint slides. This technology is preferred because it is supported by Adobe connect workshops where faculty can customize lectures and implementation is student friendly (students need internet connection and browser). Evaluation also includes a pretest/posttest proctored through Blackboard. Research faculty contacted CLT, and have confirmed this as an available technology.

**Section 8: Post-Award Consultation and Support**

*Describe the type of consultation and support you anticipate you will need should this grant be awarded.*

Research faculty will take Adobe Connect Workshops I and II for consultation and support.

Research faculty will seek support from ODU School of Dental Hygiene chair and faculty in recruiting student participants. IRB consultation and approval will be finalized before the start of the project.

**Section 9: Joint Proposal**

*Summarize the number of faculty members and their disciplinary relationship; then complete the form for Additional Faculty for Joint Proposals to provide detailed information about each individual.*

*Total Number of faculty: 2*

*Number of Departments involved: 1*

*Number of Colleges involved: 1*

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

---



Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

---

**ADDITIONAL FACULTY FOR JOINT PROPOSALS**

PROJECT TITLE Radiographic Imaging for Mass Fatality Training in Dental Hygiene Students.

PRIMARY FACULTY Tara L. Newcomb and Ann M. Bruhn

Faculty Name:	Ann M. Bruhn
Department:	Dental Hygiene
Email Address:	abruhn@odu.edu
Office Phone Number:	757-683-3851

Faculty Name:	
Department:	
Email Address:	
Office Phone Number:	

Faculty Name:	
Department:	
Email Address:	
Office Phone Number:	

Faculty Name:	
Department:	
Email Address:	
Office Phone Number:	

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

---

**References**

1. Zohn H, Dashkow S, Aschheim K, Dobrin L, Glazer H, Kirschbaum M, Levitt D, Feldman C. The Odontology Victim Identification Skill Assessment System. *J Forensic Sci* 2010; 55 (3): 788-791.
2. American Board of Forensic Odontology, INC. Guideline for the development of a disaster dental identification team; Bowers CM, Bell GL. *Manual of Forensic Odontology*. 3<sup>rd</sup> ed. Montpelier VT, American Society of Forensic Odontology 1995; 324-33.
3. Sobel MN. Forensic science and law: investigative applications in criminal, civil, and family justice. *J Forensic odontology*. 2006; 443.
4. Brannon RB, Connick CM. The Role of the Dental Hygienist in Mass Disasters. *J Forensic Sci*. 2000; 45 (2): 381-383.
5. Pittayapat P, Thevissen P, Fieuws S, Jacobs R, Williams G. Forensic oral imaging quality of hand-held dental X-ray devices: Comparison of two image receptors and two devices. *Forensic Science International*. 2010; 194: 20-27.
6. Danforth RA, Herschaft EE, Leonowich JA. Operator Exposure to Scatter Radiation from a Portable Hand-held Dental Radiation Emitting Device (Aribex™NOMAD™) While Making 915 Intraoral Dental Radiographs. *J Forensic Sci*. March 2009; 54(2): 415-421.

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

---

**Appendix A: Commonwealth of Virginia, Department of Health, Tidewater Office of the Chief Medical Examiner Norfolk (TOCME) and Old Dominion University, College of Health Science, School of Dental Hygiene (ODU) Memorandum of Understanding (MOU)**

MEMORANDUM OF UNDERSTANDING  
FOR  
OLD DOMINION UNIVERSITY DENTAL HYGIENE TECHNICIAN  
BETWEEN  
COMMONWEALTH OF VIRGINIA, DEPARTMENT OF HEALTH  
OFFICE OF THE CHIEF MEDICAL EXAMINER  
NORFOLK, VIRGINIA  
AND  
OLD DOMINION UNIVERSITY

This agreement is entered into by and between the Commonwealth of Virginia, Department of Health, Tidewater Office of the Chief Medical Examiner, Norfolk, Virginia, hereafter referred to as "TOCME" and with Old Dominion University, College of Health Science, School of Dental Hygiene, hereafter referred to as "ODU".

TOCME is always in a state of preparation and planning for mass fatality events. These events require local, state and federal agencies to participate and collaborate at all levels within and among various agencies and organizations. In the event of a mass fatality with numerous unidentifiable decedents, rapid identification of remains becomes paramount. The nature of many mass fatality events deteriorates many of the identifiable features of decedents; however, dental features frequently remain intact. Having a pool of formally trained para-professionals capable of assisting in identifying remains through dental comparison processes with little prior notice and within a short traveling distance of the event is a need of TOCME that can be met by ODU.

TOCME is continuously embarked on the mission of researching and finding the identities of unidentified remains found throughout Virginia with the ultimate goal of bringing some closure and relief to family members who may have been searching for their loved one. A collaborative effort between TOCME and ODU would only prove to strengthen our efforts to provide identities for the missing decedents found within TOCME jurisdiction.

It is in the best interest of the TOCME to enter into a formal training or working relationship with ODU and their Dental Hygiene Students to help meet TOCME needs for the clinical investigation of Dental records in efforts to provide identities to unidentifiable decedents. It is of benefit to ODU and the Dental Hygiene Students of ODU to gain the clinical experience necessary to identify decedents whose remains have been rendered unrecognizable by normal means.

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

---

**The parties acknowledge and agree to the following:**

While training or working at the Medical Examiner's Office facility or temporary morgue, the dental hygiene student will be under the supervision of facility officials for training or working purposes and will be subject to and required to abide by, all facility rules and applicable regulations, including the confidentiality policies of the TOCME.

This program will not result in, nor is it meant to displace employees or impair existing contracts for services.

The number and assignment of dental hygiene students will be mutually agreed upon between TOCME and ODU to the beginning of each training or working period. TOCME reserves the right to refuse acceptance of any dental hygiene student or bar any dental hygiene student when it is determined that further participation would not be in the best interest of the TOCME. Violation of the TOCME confidentiality constitutes a bar to participation by a student.

The TOCME will not use ODU or the name of the dental hygiene students in any of their publicity or advertising media without prior consent of ODU.

There will be no training or working expense reimbursement between ODU and the TOCME as a result of this agreement. Additionally, the dental hygiene student assigned under this MOU is prohibited from receiving compensation, in any form, from the TOCME or any other source.

The dental hygiene student affected by this agreement, assigned to the Medical Examiner's Office facility or temporary morgue, under the express agreement of ODU, remains primarily a student of ODU.

**In addition to other provisions in this agreement, TOCME specifically agrees to:**

1. Make available the clinical and related facilities needed for training or working.
2. Arrange schedules that will compliment other education programs.
3. Designate an official to coordinate dental hygiene student's learning experiences. This will involve planning with faculty or staff members for the assignment of the dental hygiene student to specific clinical cases and experiences, including attendance at selected conferences, courses, and programs conducted under the direction of the TOCME.
4. Provide reasonable storage, dressing and locker room space for participating dental hygiene students.
5. Provide for the personal protective equipment and practices appropriate for the given training or work environment consistent with current local, state and federal OSHA standards.
6. Medical care of dental hygiene students will be the responsibility of the student per ODU policy. The TOCME is not responsible for the medical care of students while training.
7. The TOCME and ODU further agrees not to seek indemnification from either party as a result of this agreement.

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

---

- a. To provide supervised clinical experiences for students which fulfill the curriculum requirements of the School of Dental Hygiene and meet the objectives agreed upon by the University and the Clinical Facility.
  
- b. Provide facilities for clinical experiences which include reasonable library, classroom, conference room and locker room space and whenever possible, office and storage space;
  
- b. Provide the services of unit staff members who will:
  - i. Act as the Facilities liaison to the ODU coordinating faculty members with the planning of clinical experiences and patient care assignments; and
  
  - ii. Meet with ODU coordination faculty members to discuss the quality of the Clinical experiences and any problems which may have arisen in the provision of those experiences; and
  
- c. Plan, administer and retain responsibility for all aspects of the patient care program and provide for qualified supervision of all patient activities; and
  
- d. Allow faculty members of the University's School of Dental Hygiene, College of Health Sciences, access to the representative of the TOCME for the purposes of coordinating, observing and instructing students engaged in TOCME experiences;
  
- e. Provide, on forms furnished by the University or as otherwise approved by the University, an evaluation and report on the performance of each student participating on a full-time basis in the clinical experience.

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form

---

**In addition to other provisions of this agreement, ODU specifically agrees to:**

1. Ensure compliance by students with all the Medical Examiner's Office facility or temporary morgue's rules and applicable instructions.
2. Prohibit the dental hygiene student from publishing any materials developed as a result of the training or working experience that have not been approved for release, in writing, by the TOCME.
3. To maintain and require the School, its employees, agents, and faculty, to maintain the confidentiality of all medical records and data, including, without limitation, individually identifiable health information (the "Protected Health Information") and obtain appropriate authorization prior to any disclosure of such records and data.
4. To present students for clinical experiences who have adequate preclinical instruction and who, in the discretion of the faculty of the University, have adequately fulfilled the preclinical requirements of the curriculum.
5. To assure that students who are presented for clinical experiences meet the physical examination requirements of the TOCME after notification from the TOCME of the specific requirements.
6. To obtain comprehensive malpractice insurance coverage for students and faculty in an amount not less than \$2,000,000 in accordance with §2.2-1837 and §8.01-581.1 *et seq.*, Code of Virginia.
7. Inform all students of the rules, regulations, policies and procedures of the TOCME once the TOCME has provided a copy of them to the University and require their conformance to such rules, regulations, policies and procedures;
8. With as much lead time as practical, advise the Faculty of the number of students who will be presented for experiences and the dates and hour each such student will be assigned to experiences as determined by program curricula and class schedules;
8. Provide the services of a faculty member of the School of Dental Hygiene, who will:
  - i. Plan, in conjunction with staff member(s) of the TOCME the experiences and assignments which fulfill the requirements of the Dental Hygiene curriculum; and
  - ii. Meet with staff member(s) of the TOCME to discuss the quality of the experiences and any problems which may have arisen in the provision of those experiences.
9. Retain responsibility for the education of students in and for the curriculum of that program, its design, delivery, and quality; and

Faculty Innovator Grant 2013  
Center for Learning and Teaching

Proposal Request Form


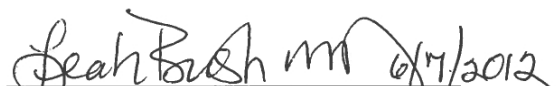
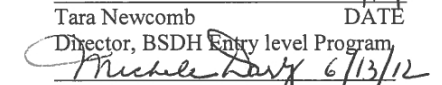
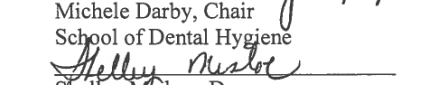
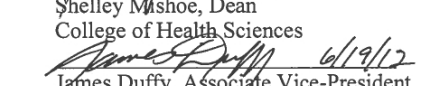
10. Maintain all educational records and reports relating to the experiences of its students.

11. To maintain and require the School, its employees, agents, and faculty, to maintain the confidentiality of all TOCME client records and data, including, without limitation, individually identifiable health information (the "Protected Health Information") and obtain appropriate authorization prior to any disclosure of such records and data.

It is expressly agreed that this written statement embodies the entire agreement of the parties regarding this affiliation, and no other agreements exist between the parties except as herein expressly set forth. Any changes or modifications to this agreement must be in writing and be signed by both parties.

It is understood that the Chair of the ODU School of Dental Hygiene and the Chief Medical Examiner will have the right to terminate this affiliation agreement without notice at any time, if determined necessary to be in the interests of ODU's education requirements and mission, or be in the interest of the TOCME's mission requirements.

The terms of this agreement will commence as of the date signed by both parties, and will continue until completion of training or working or until terminated by either party. Termination by either party will require that written notification be sent by registered mail 30 days prior to the termination date or via scanned signed original through email 30 days prior to the termination date.

 Tara Newcomb Director, BSDH Entry level Program	6/12/12 DATE	 Leah Bush, MD Chief Medical Examiner	6/17/2012 DATE
 Michele Darby, Chair School of Dental Hygiene	6/13/12 DATE	Office of the Chief Medical Examiner 400 East Jackson Street Richmond, VA 23219	
 Shelley Mishoe, Dean College of Health Sciences			
 James Duffy, Associate Vice-President Old Dominion University	6/19/12 DATE		