

RADIOLOGY RESIDENT 4TH YEAR CLINICIAN-EDUCATOR PATHWAY

This will be an approximately 12 week elective with time divided into short blocks (likely 1-3 weeks) during the 12 months of the 4th year. The overall goal is to graduate a resident with superior skills in teaching, evaluation and curricula design and with an understanding of educational research design.

ELECTIVE SUPERVISOR

Petra Lewis MD

ELECTIVE STRUCTURE

The elective encompasses 6 areas of study/application:

PEDAGOGY

Learning objectives

Upon completion of this elective, the resident will be able to:

1. Describe some current education theories including active learning, brain friendly learning, cognitive overload etc
2. Design practical applications of these theories, such as classroom flipping and small group workshop development.
3. Deliver his or her educational sessions using a learning method studied during this elective.
4. Conduct a high quality presentation, including soliciting audience participation, keeping to allotted time, clarity, brevity, pace
5. Create high quality multimedia educational material, such as Powerpoint™.

Assignments

- Read assigned education articles and texts
- ACR educational modules
- DCAL or GALI sessions (to be defined) at Dartmouth College
- AUR 2014 - AMSER, ACER and Educator Certificate sessions

- Other online teaching resources assigned by faculty (to be defined)
- GME educator sessions and possibly join some provided by other residencies
- Biomedical library sessions (e.g. Powerpoint sessions, Medline sessions)
- Departmental educational sessions
- One on one sessions with department faculty assigned according to topic
- If felt necessary by supervisor, attendance at TaskMasters or similar session to develop public speaking skills

Evaluation

1. Qualitative evaluation by elective supervisor during one-on-one sessions
2. Documentation of conference/session attendance and on-line resource completion where possible
3. Evaluation of application in lecturing/small group work by faculty and learners

TEACHING

Learning objectives

Upon completion of this elective, the resident will be able to:

- Conduct a high quality didactic teaching session
- Develop and run small group and other active learning sessions

Assignments

1. Design and teach one medical student workshop per elective rotation
2. Preclinical students: Participate in one/several of the following: dissection/prosection, radiology-cadaver correlations, radiology simulation labs, anatomy-radiology sessions for 1st year students (Dr. McNulty)
3. Lecturing: Develop and present two didactic sessions to department during the year (one education, one clinical)

Evaluation

- Evaluation of presentations by faculty/residents
- Evaluation of workshops by medical students and student elective director
- Evaluation of anatomy skills workshops by medical students and supervising faculty

CURRICULUM DESIGN

Learning objectives

Upon completion of this elective, the resident will be able to:

- Design a curriculum for a specific topic
- Write learning objectives associated with the curriculum

Assignments

1. Learn the concept of competencies in radiology education
2. Understand the concept of Blooms Taxonomy
3. Develop or improve one component of the current radiology resident or student curriculum (e.g. a 4th year elective structure)
4. Review published criteria for developing learning objectives
5. Develop learning objectives for this curricular component

Evaluation

- Qualitative evaluation by the elective supervisor

EVALUATION AND FEEDBACK

Learning objectives

Upon completion of this elective, the resident will be able to:

- Describe competency based evaluations
- Write effective and psychometrically sound multiple choice questions

Assignments

- Formulate a competency based evaluation for the curricular component developed during the elective
- Read the materials developed on giving feedback
- Read item writing guides (ABR, NMBE, other)
- Write 20 multiple choice questions suitable for students for Radiology ExamWeb
- Edit these questions with Dr Lewis or Dr. McNulty

Evaluation

- Evaluation of the competency based evaluation by the program or clerkship director
- One on one session with Dr Lewis discussing different feedback scenarios
- Evaluation of the submitted question items by Drs Lewis and McNulty

MENTORSHIP

Learning objectives

Upon completion of this elective, the resident will be able to:

1. Describe how the relationship between mentor and mentee can be productive to both individuals
2. Select and mentor a junior colleague
3. Deliver feedback to mentee in an effective and impartial manner

Assignments

- Read resources about mentoring (e.g. AUR, Academic Radiology, University of Saskatchewan College of Medicine module)
- Read resources and attend sessions on giving feedback (e.g. at AUR)
- Be a mentor to a student interested in radiology, with regular sessions with the student during the year

Evaluation

- Evaluation by the elective director and research mentor
- Evaluation by the medical student

RESEARCH

Learning objectives

Upon completion of this elective, the resident will be able to:

1. Describe the ways in which performing educational research differs from scientific/clinical research
2. Develop a small educational project apply this knowledge.
3. Fill out an application for CPHS approval of an educational project
4. Write abstracts and manuscripts on educational topics
5. Present educational research

Assignments

- Read assigned papers on educational research

- Plan an educational project that can be executed during the year with a mentor
- If required, work with faculty to submit an application or CPHS Exemption to the CPHS for the study. Note: if this is needed, the project will need to be planned and the application made during the resident's 3rd year.
- Execute this project
- Present the project results to the department
- Submit an abstract to AUR/RSNA/ARRS
- Write up the project for publication (long term goal)

Evaluation

- Evaluation by research mentor
- Evaluation by faculty at project presentation
- Acceptance of abstract at meeting
- Acceptance of publication

Petra Lewis MD
Vice Chair of Education DHMC
July 26, 2013

APPENDIX: LEARNING RESOURCES

READING MATERIAL

PEDAGODGY

- What the best college teachers do. Ken Bain, Cambridge, MA: Harvard University Press, 2004.(can be borrowed from DCAL and Ebook from Amazon available)
- How Learning Works: Susan Ambrose et al. John Wiley 2010 (Ebook from Amazon available)
- Efficiency in Learning: Ruth Clark et al. John Wiley/Pfeiffer 2006 (Ebook from Amazon available)
- Medical College Georgia: Medical teacher's handbook. Janis Work et al. (pdf in educator resources packet)
- AUR 2012 Corrie Yablon: "Types of educational research" (pdf in educator resources packet)
- Classroom activities for Active Learning. UNC (pdf in educator resources)
- Smoothing Out Transitions: How Pedagogy Influences Medical Students' Achievement of Self-regulated Learning Goals. Casey White. Advances in Health Sciences Education (2007) 12:279-297 (pdf in educator resources)
- AUR 2012 Aine Kelly "Assessing educational outcomes" (pdf in educator resources packet)
- Baylor Clinician Educator Handbook (pdf in educator resources packet)
- Does Active Learning Work? Michael Prince J. Engr.Education 93,223-231 2004 (pdf in educator resources packet)
- Maureen Lage, Glenn Platt, Michael Treglia (2000), [*Inverting the Classroom: A gateway to Creating an Inclusive Learning Environment*](#), Journal of Economic Education
- Successful teaching poster. Davis, Ohio Osteopathic College . (pdf in educator resources packet)

EDUCATIONAL RESEARCH

- Beckman TJ, Cook DA, Developing scholarly projects in education: a primer for medical teachers. Medical Teacher 2007 mar;29(2-3):210-18. (pdf in educator resources packet)

- Cook DA, Beckman, TJ. Reflections on experimental research in medical education. Adv in Health Sci Educ Theory Pract 2010 Aug; 15(3) 455-64. (pdf in educator resources packet)
- Frankel RM, Devers KJ. Study design in qualitative research 1: Developing questions and assessing resource needs. Educ Health 2000; 13 (2);251-61. (pdf in educator resources packet)
- Devers KJ , Frankel RM. Study design in qualitative research 2: Sampling and data collection strategies. Educ Health 2000; 13(2); 263-71. (pdf in educator resources packet)
- Ringsted C, Hodges B, Scherpbier A. 'The research compass': an introduction to research in medical education: AMEE Guide no. 56. Med Teach. 2011;33(9):695-709. (pdf in educator resources packet)

EVALUATION AND FEEDBACK

- Barebones guide to item writing. Petra Lewis. (pdf in educator resources packet)
- ABR Item writing guide (pdf in educator resources packet)
- Giving Effective Feedback: A Faculty Development Online Module and Workshop University of Colorado (folder in resources packet)
- Giving Feedback (The Good and the Bad.) UCLA. (DVD from Dr. Lewis)

MENTORING

- Mentoring Principles, Processes, and Strategies for Facilitating Mentoring Relationships at a Distance. Kalyani Premkumar, University of Saskatchewan College of Medicine (folder in resources packet)
- Mentoring workshop. Hofstra (in educator resources packet)

CURRICULUM DEVELOPMENT

- AUR 2012 session on Learning Objectives (folder in resources packet)
- Effective use of Performance Objectives for Learning and assessment .University of New Mexico school of medicine. (in resources packet)

ONLINE RESOURCES

University of Arkansas Copyright module:

<http://www.uams.edu/oed/CopyrightModule/index.html>

ARRS Teacher's Toolkit

<http://www.arrs.org/Education/EduToolkit/TeachingTips.aspx>

Death by Powerpoint (Alexi Kapterev)

<http://www.slideshare.net/thecroaker/death-by-powerpoint>

Brain Friendly Teaching (Petra Lewis)

<http://youtu.be/zbgWfVGG01o>

University of Waterloo teaching tips

<https://uwaterloo.ca/centre-for-teaching-excellence/resources/teaching-tips>

University of Minnesota active learning site

<http://www1.umn.edu/ohr/teachlearn/tutorials/active/what/index.html>

University of Michigan short videos on how to engage students

<http://www.crlt.umich.edu/faculty/Thurnau/ThurnauVideos>

Virginia Commonwealth University on Active Learning

http://www.vcu.edu/cte/resources/tlc/2_2_active_learning.htm

Salman Khan talk at TED 2011 on classroom flipping.

<http://www.youtube.com/watch?v=gM95HHI4gLk>

Classroom flipping

<http://www.slideshare.net/bdean1000/the-flipped-classroom-version-2>

University Washington Mentoring module

<http://www.rad.washington.edu/academics/mentor/registration>

Hofstra Faculty Development materials (multiple useful resources including active learning resources on the classroom tab)

<http://medicine.hofstra.edu/faculty/facdev/index.html>

COURSES

AUR: AMSER and ACER programs as well as the APDR Teaching Certificate Program

Harvard Macy Program for Post-Graduate Trainees: Future Academic Clinician-Educators

<http://www.harvardmacy.org/Programs/Programs-PostGrad.aspx>

RSNA: Educator track

ARRS: Education series

MERC (Medical Education Research Certificate) from AAMC

<https://www.aamc.org/members/gea/merc/>

Toastmasters: (public speaking training)

<http://www.toastmasters.org>