



Faculty Development Curriculum and Resource List

The Alliance of Directors and Vice Chairs of Education in Radiology (ADVICER) is a special interest group (SIG) under the umbrella of the Association of University Radiologists (AUR). ADVICER members have oversight and executive managerial responsibility for many or all of the educational programs within their respective departments.

Through semiannual meetings, periodic communications, and material on the AUR website, ADVICER enhances the leadership skills of its members and provides them with the tools necessary to optimize the educational experiences of their faculty, trainees, and students.

Below is a compilation of faculty development resources intended for use by ADVICER members. This list can be used for personal faculty development or can be used in the developing of faculty in ADVICER member's departments.

In an effort to avoid editorializing, an assessment of each item has not been provided, though in some cases, user comments are available via the links provided.

With questions, comments, or suggested additions, please contact David Naeger, MD, University of California, San Francisco (David.Naeger@ucsf.edu).

Curriculum Design

Types curriculum design. Learning Objectives. Design thinking.

Power Point File	Curriculum Design Overview: <i>Introduction to curriculum design, Objectives, teaching strategy, assessment.</i>	https://vumc.box.com/s/ck9edlidzmkitec44hh8mindy386mhkj
Book	Curriculum Design Overview: <i>A comprehensive review of designing a curriculum in medical education.</i>	https://www.amazon.com/Curriculum-Development-Medical-Education-Six-Step/dp/1421418525/ref=sr_1_1?ie=UTF8&qid=1525411170&sr=8-1&keywords=curriculum+development+for+medical+education+a+six-step+approach
Website	Learning Objectives: <i>Blooms Taxonomy Explained.</i>	http://edorigami.wikispaces.com/Bloom%27s+Digital+Taxonomy
Article	Learning Objectives: <i>How to write learning objectives in radiology education.</i>	https://www.academicradiology.org/article/S1076-6332(12)00543-0/fulltext
Video	Learning Objectives: <i>How to write learning objectives in radiology education.</i>	https://www.youtube.com/watch?v=fntmUTulZ4s&feature=youtu.be
Video	Flipped Classroom: <i>Short narrated introduction.</i>	https://www.youtube.com/watch?v=on0wS9V5KM&feature=youtu.be
Worksheet	Flipped Classroom: <i>This template can guide educators in thinking of flipped classroom techniques suitable for various learning objectives. The worksheet also addresses the blooms level of the objectives and the assessment methods.</i>	https://drive.google.com/file/d/0BwHzuqgno4wWeVBJRERLSTY5M2s/view
Videos	Design Thinking: <i>Overview videos.</i>	https://www.youtube.com/watch?v=a7sEoEvT8l8 https://www.youtube.com/watch?v=r0VX-aU_T8

Teaching Techniques

Cognitive Load/Brain friendly teaching. Teaching to optimize learning and retention. Teaching to specific audiences.

Video	Brain Friendly Teaching: <i>Discussion of conative load in presentations and how to maximize retention.</i>	https://www.youtube.com/watch?v=zbG_WfVGG01o&feature=youtu.be
Book	<i>Conative Load: Evidence-based Guidelines for managing cognitive load.</i>	https://www.amazon.com/Efficiency-Learning-Evidence-Based-Guidelines-Cognitive/dp/0787977284
Book	Teaching with Multimedia: <i>Evidence based on a number of principle to optimizing cognitive processing</i>	https://www.amazon.com/Multimedia-Learning-Richard-E-Mayer/dp/0521735351/ref=sr_1_1?ie=UTF8&qid=1453680118&sr=8-1&keywords=multimedia+learning#reader_0521735351
Book	Teaching to Optimize Retention: <i>Reviews the science of learning.</i>	https://www.amazon.com/Make-Stick-Learning/dp/0674729013/ref=sr_1_1?ie=UTF8&qid=1453680152&sr=8-1&keywords=making+it+stick
Video	Spaced Learning: <i>Short video regarding the importance of revisiting information and the optimal timing.</i>	https://www.youtube.com/watch?v=BLS4rylubBM
Power Point File	Repeated Retrieval: <i>Designing educational activities around repeatedly retrieving key information in an effort to improve long-term retention.</i>	https://vumc.box.com/s/cpwtkzsm8ha7lwp6i1b60di8hrngnpe
PDF	Teaching to Millennials: <i>Chapter 6: “Why Don’t My Students Think I’m Groovy?:The New “R”s for Engaging Millennial Learners”</i>	http://teachpsych.com/Resources/Documents/ebooks/eit2009.pdf#page=29
Article	Teaching to Millennials: <i>2011 article reviewing “The Challenges and Opportunities of Teaching “Generation Y”</i>	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3244307/
Article	Teaching to Millennials: <i>Written by a millennial.</i>	https://www.academicradiology.org/article/S1076-6332(18)30092-8/fulltext
Article	Active Learning: <i>2004 article reviewing what constitutes active learning and supporting evidence.</i>	https://onlinelibrary.wiley.com/doi/epdf/10.1002/j.2168-9830.2004.tb00809.x

Video	Case Based Learning: <i>Including a discussion of teaching with cases at the PACS workstation.</i>	http://secure-apps.acr.org/LCMSVideos/Case_Based_Teaching/story.html
Article	Reading Room-Based Education: <i>A review how to increase active learning in the reading room setting.</i>	https://www.ncbi.nlm.nih.gov/pubmed/?term=say+goodbye+to+the+radi+holiday
Article	Guidelines for the Scholarly Use of Images	https://www.academicradiology.org/article/S1076-6332(16)00068-4/abstract

Educational Tools and Technology

Use of learning management systems. Using technology to teach, including audience response systems. Presentation recording.

Article	Learning management systems: <i>RadioGraphis article describing the use of Moodle and Manila</i>	http://pubs.rsna.org/doi/abs/10.1148/rg.272065077
Application	Learning management System: <i>Apple eco system-based application to manage courses</i>	http://www.apple.com/education/ipad/tunes-u/
Commercial Product	Learning Management System: <i>Commercial web-based learning management system.</i>	https://www.canvaslms.com/higher-education/
Open Source and Commercial Product	Learning Management System: <i>Open source web-based learning management system, which often is often used via commercial partners.</i>	https://moodle.org/ https://moodle.com/partners/?tex_country=united-states&view=list
Video	Teaching with an Ipad: <i>Annotating and controlling presentations in real time.</i>	https://www.youtube.com/watch?v=3t8S_jjDIHU&feature=youtu.be https://www.youtube.com/watch?v=kFRo_WQazA&feature=youtu.be
Commercial Products	Presentation/Webinar recording: <i>Commonly used programs for recording presentations used for websites and for flipped classroom sessions. Some have free trials.</i>	https://www.techsmith.com/video-editor.html https://explaineverything.com/
Commercial Products	Presentation/Webinar recording: <i>How to record webinars using WebEx teleconferencing software.</i>	https://www.youtube.com/watch?v=h7pLj3lJKsc
Commercial Products	Audience Response Systems: <i>Free and paid subscriptions available. These are commonly used audience response systems whereby audience members respond via an web enable devices and/or via SMS.</i>	https://www.polleverywhere.com/ https://www.turningtechnologies.com/turningpoint https://www.rsna.org/DiagnosisLive/
Book	Simulation in Radiology: <i>Detailed review of using simulation in the training of radiologists.</i>	https://www.amazon.com/Simulation-Radiology-Hugh-J-Robertson/dp/019976462X/ref=sr_1_1?ie=UTF8&qid=1525409647&sr=8-1&keywords=Simulation+in+Radiology
Article	Simulation in Radiology: <i>Review article focusing on interventional Radiology</i>	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3473666/

Article	Teaching with Social Media: <i>2018 Review on using social media to educate.</i>	https://www.jacr.org/article/S1546-1440(17)31125-0/abstract?code=jacr-site
Video	Power Point Tips: <i>Inserting an image stack into a PowerPoint presentation.</i>	https://www.youtube.com/watch?v=P1Wl9qlqNj0

Assessment

Writing high-quality multiple-choice questions. Constructing tests and quizzes.

Article	Item (Question) Writing: <i>2 page guide published in RadioGraphics</i>	https://pubs.rsna.org/doi/full/10.1148/r.g.337125749
Video	Item (Question) Writing: <i>18 minute video reviewing the basics of writing high-quality questions.</i>	https://www.youtube.com/watch?v=-EOUo8sX7Vc&feature=youtu.be
Article	Constructing test and quizzes: <i>Review article addressing test validity, reliability, and fairness, as well as the use of blueprints and statistical analysis of question and test performance.</i>	https://www.ajronline.org/doi/abs/10.2214/AJR.15.15944
Book	Psychometric Methods: <i>Understanding how tests are evaluated as to their ability to evaluate learners.</i>	https://www.amazon.com/Psychometric-Methods-Methodology-Social-Sciences-ebook/dp/B01N4DLD0I/ref=sr_1_sc_3?ie=UTF8&qid=1525411393&sr=8-3-spell&keywords=psychometric
Article	Formative vs Summative Assessment: <i>An overview.</i>	https://www.tandfonline.com/doi/abs/10.1080/00405841.2016.1148989
Website/Testing Software	Medical Student and Resident Assessment: <i>Testing software and tests developed by radiology educators for residents and students.</i>	https://www.acr.org/Lifelong-Learning-and-CME/Learning-Activities/RadExam http://radiology.examweb.com/Login/radiology/index.cfm

Educational Scholarship

Designing, implementing, and publishing research on education.

Video	Planning Educational Scholarship: <i>Evaluating different types of educational scholarship, and selecting publication/distribution strategies.</i>	https://www.youtube.com/watch?v=QKVAoKWl2ew
Webinar Series	Alliance of Clinician-Educators (ACER)/Alliance of Medical Student Educators in Radiology (AMSER) Educational Scholarship Webinar Series: <i>Videos to be added throughout 2018.</i>	http://www.aur.org/ACER-AMSER-Webinar-Series/
Webinar Series	Radiology Alliance for Health Services Research (RAHSR)/Radiology Research Alliance (RRA) On-line Statistical Webinar Series	https://www.aur.org/RAHSR-RRA-Statistical-Webinar-Series/

Advancement and Other Topics
Succeeding as a clinician educator.

Video	Getting promoted as a Clinician-Educator	https://www.youtube.com/watch?v=83NOPGVe_k
Power Point File	Getting promoted as a Clinician-Educator: <i>The Academic/Education Portfolio</i>	https://vumc.app.box.com/s/xbbbz3h1xun77d2qekw2p0ruaujgokik
Article	Getting promoted as a Clinician-Educator: <i>The Academic/Education Portfolio</i>	https://www.ncbi.nlm.nih.gov/pubmed/27742179
Article	Giving Learners Feedback	https://www.sciencedirect.com/science/article/pii/S1076633217300636?via%3Dihub
Article	Using Feedback to Improve Your Teaching and Courses	https://www.sciencedirect.com/science/article/pii/S1546144015003981?via%3Dihub
Video	Time Management: <i>Managing email – Inbox zero.</i>	https://www.youtube.com/watch?v=HNqPy5TYJoU
Book	Time Management: <i>A well-respected resource used to optimize efficiency.</i>	https://www.amazon.com/Getting-Things-Done-Stress-Free-Productivity/dp/0143126563/ref=sr_1_1?ie=UTF8&qid=1525411508&sr=8-1&keywords=getting+things+done&dpID=51phPkRksUL&preST=SY344_BO1,204,203,200_QL70_&dpSrc=srch
Article	Diversity and Inclusion: <i>Radiology specific article with description of unconscious bias.</i>	https://www.jacr.org/article/S1546-1440(16)30792-X/fulltext
Video	Diversity and Inclusion: Unconscious Bias: Does Radiology Have a Blind Spot?	https://www.youtube.com/watch?v=-fHj-yWhew
Website	Peer Review: <i>The why, what, and how of setting up a system of peer educators giving feedback.</i>	https://cft.vanderbilt.edu/guides-sub-pages/peer-review-of-teaching/
Book	Management: <i>Understanding what motivates us and those that we work with.</i>	https://www.amazon.com/Drive-Surprising-Truth-About-Motivates/dp/1594484805/ref=sr_1_1?ie=UTF8&qid=1525411567&sr=8-1&keywords=drive+pink