

UC San Diego

Independent Study Projects

Title

Radiologic anatomy

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ISP PROJECT: RADIOLOGIC ANATOMY

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CLASS OF 2018

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INSPIRATION

- A UNDERSTANDING OF ANATOMY AND RADIOLOGY IS FUNDAMENTAL TO MEDICAL EDUCATION AND CLINICAL PRACTICE, REGARDLESS OF SPECIALTY.
- IN 2010, UCSD SOM CHANGED ANATOMY FROM A DEDICATED BLOCK TO A “THREAD” WITH 30-40% REDUCTION IN LAB TIME AND EXCLUSION OF THE RADIOLOGY CURRICULUM.
- MEANWHILE, ON AVERAGE, US MEDICAL SCHOOLS HAVE INCREASED THEIR RADIOLOGICAL EDUCATION PROGRAMS (GANSKE, 2006).
- CADAVERIC ANATOMY EDUCATION HAS LIMITATIONS, NAMELY RESTRICTED PLANES OF VIEW.

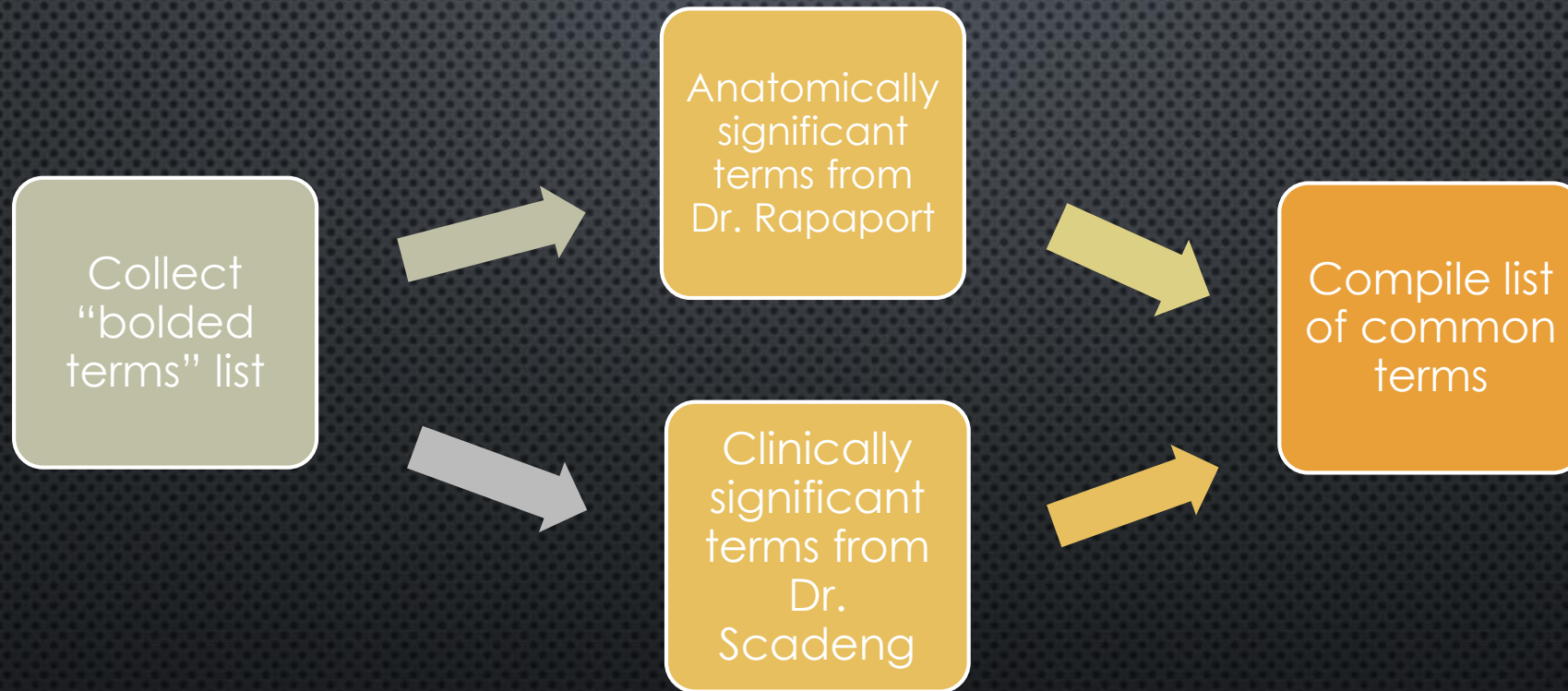
ISP GOALS

- MY ISP PROJECT IS A NEW EDUCATIONAL TOOL IN THE FORM OF A MEDPICS EXPANSION DEDICATED TO IMAGING OF NORMAL HUMAN ANATOMY
- IT SERVES TO ADDRESS:
 - 1) THE DEARTH OF RADIOLOGY EXPOSURE AND EDUCATION IN THE NEW INTEGRATED STUDIES CURRICULUM
 - 2) THE INCREASING NEED FOR IMAGING KNOWLEDGE AND SKILLS
 - 3) SOME OF THE LIMITATIONS OF THE CURRENT CADAVERIC ANATOMY EDUCATION AT UCSD SCHOOL OF MEDICINE
- THE PROJECT HAS TWO GOALS:
 - 1) TO RE-INTEGRATE RADIOLOGY INTO THE PRE-CLINICAL CURRICULUM OF UCSD SCHOOL OF MEDICINE.
 - 2) TO STRENGTHEN AND COMPLEMENT THE EXISTING ANATOMY CURRICULUM OF UCSD SCHOOL OF MEDICINE.

THE PROCESS

1. IDENTIFY APPROPRIATE “BOLDED TERMS” FROM THE 29 LABS OF THE FIRST YEAR ANATOMY CURRICULUM
2. FIND IMAGES IN THE PACS LIBRARY
3. CREATE ANNOTATED IMAGES
4. VERIFY ANNOTATED IMAGES WITH A RADIOLOGIST
5. UPLOAD ONTO MEDPICS WEBSITE
6. ADMINISTER TO STUDENTS

IDENTIFY APPROPRIATE “BOLDED TERMS”



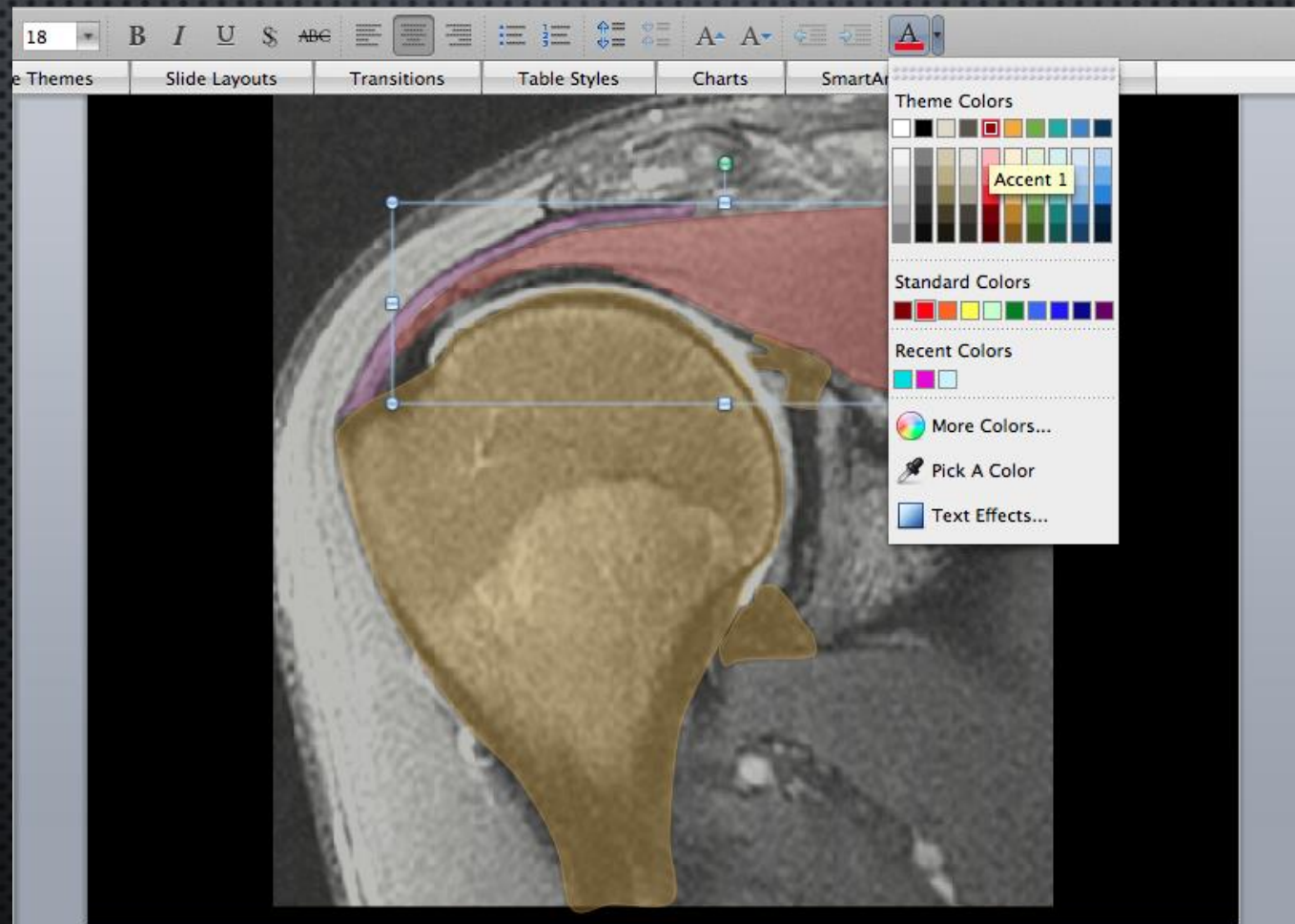
FIND IMAGES IN THE PACS LIBRARY

- USED THE “PICTURE ARCHIVING AND COMMUNICATION SYSTEMS (PACS)” LIBRARY OF THE UCSD HEALTH SYSTEM
- SELECTED IMAGES BASED ON QUALITY, MOST APPROPRIATE IMAGING MODALITY, AND LEAST ABNORMALITIES
- NARROWED SEARCH TO YOUNGER HEALTHY PATIENTS FROM THE PAST 5-10 YEARS
- ALL MATERIALS WERE DE-IDENTIFIED IN COMPLIANCE WITH HIPAA REGULATIONS
- NOTABLY, AS UCSD IS AN ACADEMIC INSTITUTION, ALL PATIENTS HAVE GIVEN CONSENT TO USE THESE IMAGES FOR EDUCATIONAL PURPOSES THROUGH THE GENERAL TREATMENT FORM THAT INCLUDES RELEASE

CREATE ANNOTATED IMAGES

- USED MICROSOFT POWERPOINT
- ONE POWERPOINT PER ANATOMY LAB
- EACH ANATOMICAL STRUCTURE (OR BOLDED TERM) WAS A SLIDE
- POWERPOINT SLIDES WERE THEN CONVERTED TO INDIVIDUAL FILES LABELED BY STRUCTURE NAME.

EXAMPLE OF ANNOTATED IMAGE



CREATE ANNOTATED IMAGES



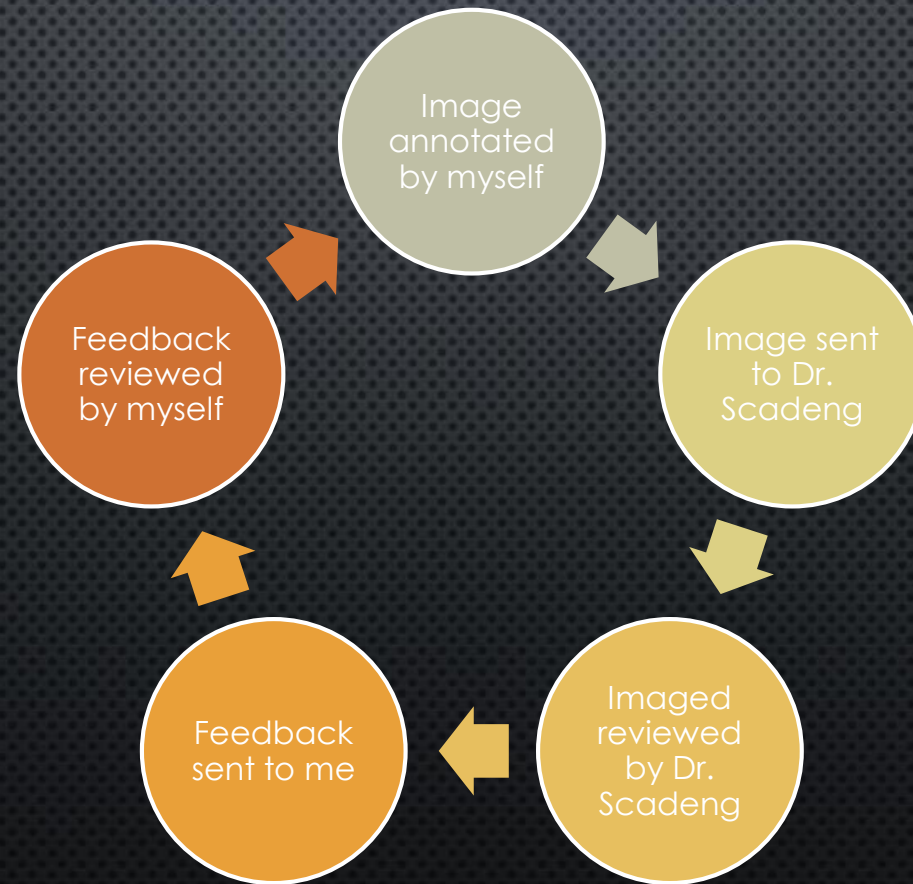
- 29 labs

- 1-7 images

- 2-12 structures

**In total, over 80 images and
over 400 structures**

VERIFY ANNOTATED IMAGES WITH A RADIOLOGIST



UPLOAD ONTO MEDPICS WEBSITE

	E	F	G	H	I	J	K
1	Topic Name	Topic Order	Sub Topic Name	Image Name	Image File Name	Image Preparation	Image View
7	Lab 1 - Osteology and Surface	1	Head	Skull	Foundations - Lateral 2 (Skull).png	X-Ray	Lateral View
8					Foundations - Lateral 2 (Skull)-coronal_suture.png		
9					Foundations - Lateral 2 (Skull)-lambdoid_suture.png		
10					Foundations - Lateral 2 (Skull)-angle_of_mandible.png		
11					Foundations - Lateral 2 (Skull)-ramus-of_mandible.png		
12					Foundations - Lateral 2 (Skull)-neck_of_mandible.png		
13					Foundations - Lateral 2 (Skull)-head_of_mandible.png		
14			Cervical Spine	Spine	Foundations - Sagittal 1 (C-Spine).png	X-Ray	Lateral View
15					Foundations - Sagittal 1 (C-Spine)-spinous_process.png		
16					Foundations - Sagittal 1 (C-Spine)-posterior_arch_of_atlas.png		
17					Foundations - Sagittal 1 (C-Spine)-inferior_articular_process.png		
18					Foundations - Sagittal 1 (C-Spine)-superior_articular_process.png		
19					Foundations - Sagittal 1 (C-Spine)-transverse_process.png		
20			Thorax	Clavicle	Foundations - PA 2 (Clavicle).png	X-Ray	PA View
21					Foundations - PA 2 (Clavicle)-clavicle.png		
22					Foundations - PA 2 (Clavicle)-acromion.png		
23					Foundations - PA 2 (Clavicle)-coracoid_process.png		
24					Foundations - PA 2 (Clavicle)_spinous_process_of_vertebrae.png		

UPLOAD ONTO MEDPICS WEBSITE



DEMONSTRATION OF FINAL PRODUCT

Medpics.ucsd.edu

ADMINISTER TO STUDENTS

- CREATED AN INTRODUCTORY LECTURE ON THE DIFFERENT IMAGING MODALITIES, THEIR USES, AND HOW TO READ THEM
- MATERIAL FIRST DISTRIBUTED TO CLASS OF 2014-2015 IN FALL QUARTER
- TESTED DURING EACH OF THE FOUR REGIONAL ANATOMY PRACTICAL LAB EXAMS HELD THROUGHOUT THE YEAR
 - THORAX, ABDOMEN AND PELVIS, MUSCULOSKELETAL, HEAD AND NECK
 - APPROXIMATELY 4 QUESTIONS PER LAB EXAM
- PRE-EXAM REVIEW SESSIONS HELD BY DR. SCADENG

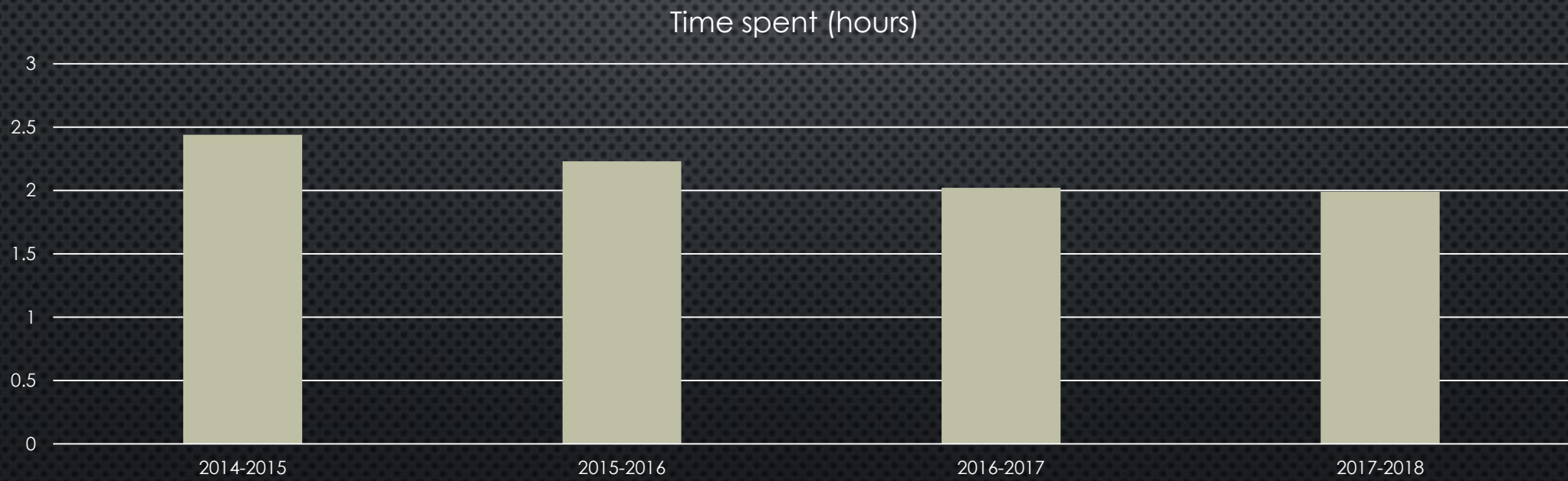
OASIS EVALUATIONS

Pros	Cons
Important to education and career	Website had technical difficulties
Complements anatomy labs	Wanted interactive sessions with radiologist
Concise, not time consuming	Wanted more lectures, ideally each block
Well organized	Wanted more frequent review sessions
Review sessions extremely helpful	Not emphasized in class
Self-test mode in MedPics	Not enough landmarks
Highlight feature in MedPics	Not enough orientation diagrams
Introduction lecture helpful	Would like more material
Fun and interesting	

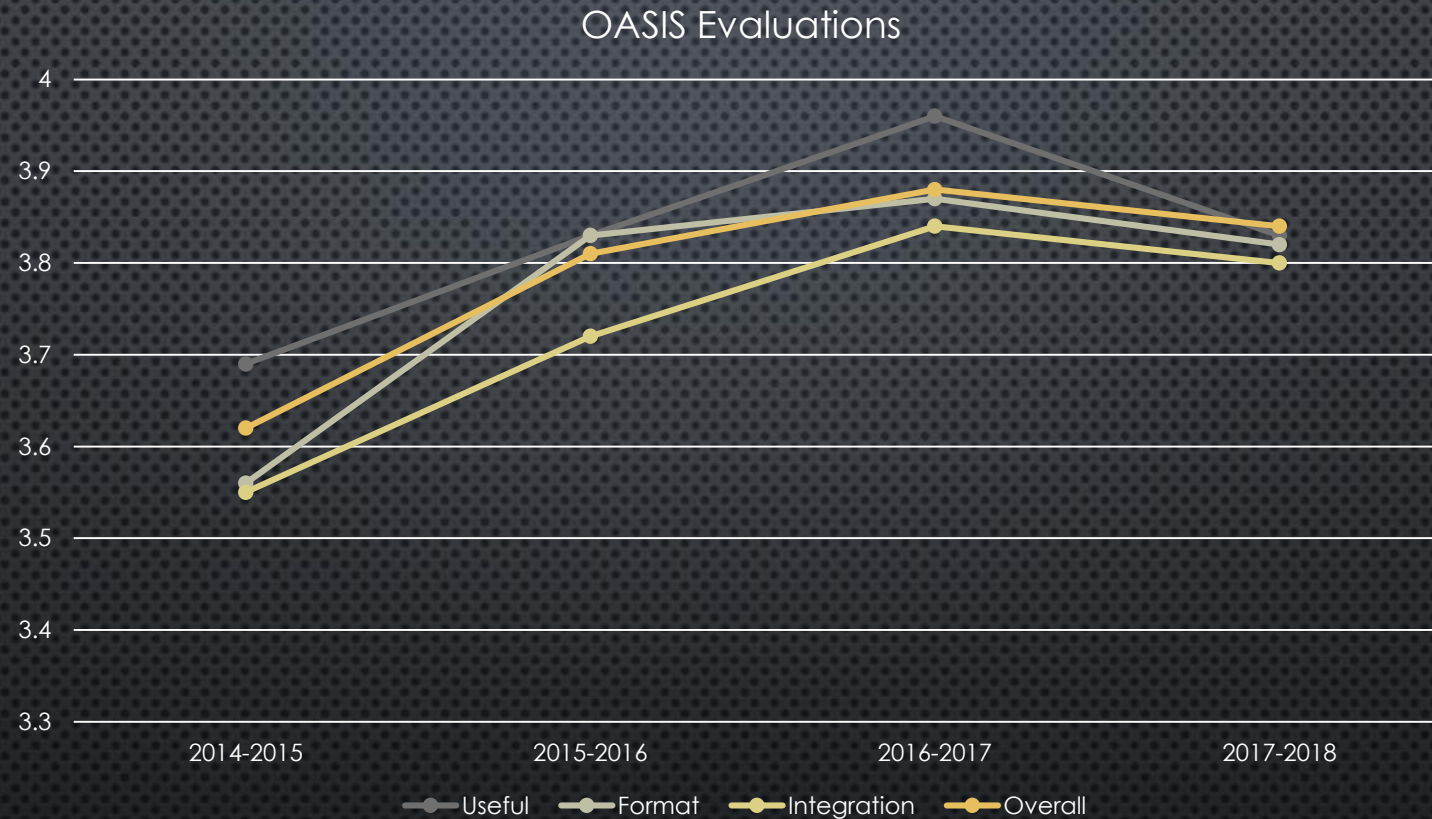
EVALUATION COMMENTS

- “HAVING THIS FORMAT ALLOWS US ALL TO SEE AND BECOME FAMILIAR WITH “DISSECTING” THE IMAGES IN OUR MINDS. A VERY VALUABLE TOOL.”
- “VERY HELPFUL IN TEACHING US THE CLINICAL/PRACTICAL SIDE OF ANATOMY IN DAY-TO- DAY MEDICINE”
- “IT'S A RESOURCE THAT I WOULD FEEL FAR LESS EQUIPPED WITHOUT.”
- “THE ONLINE RADIOLOGY SESSIONS WERE MY FAVORITE PART OF THE ANATOMY THREAD.”

EVALUATIONS



EVALUATIONS

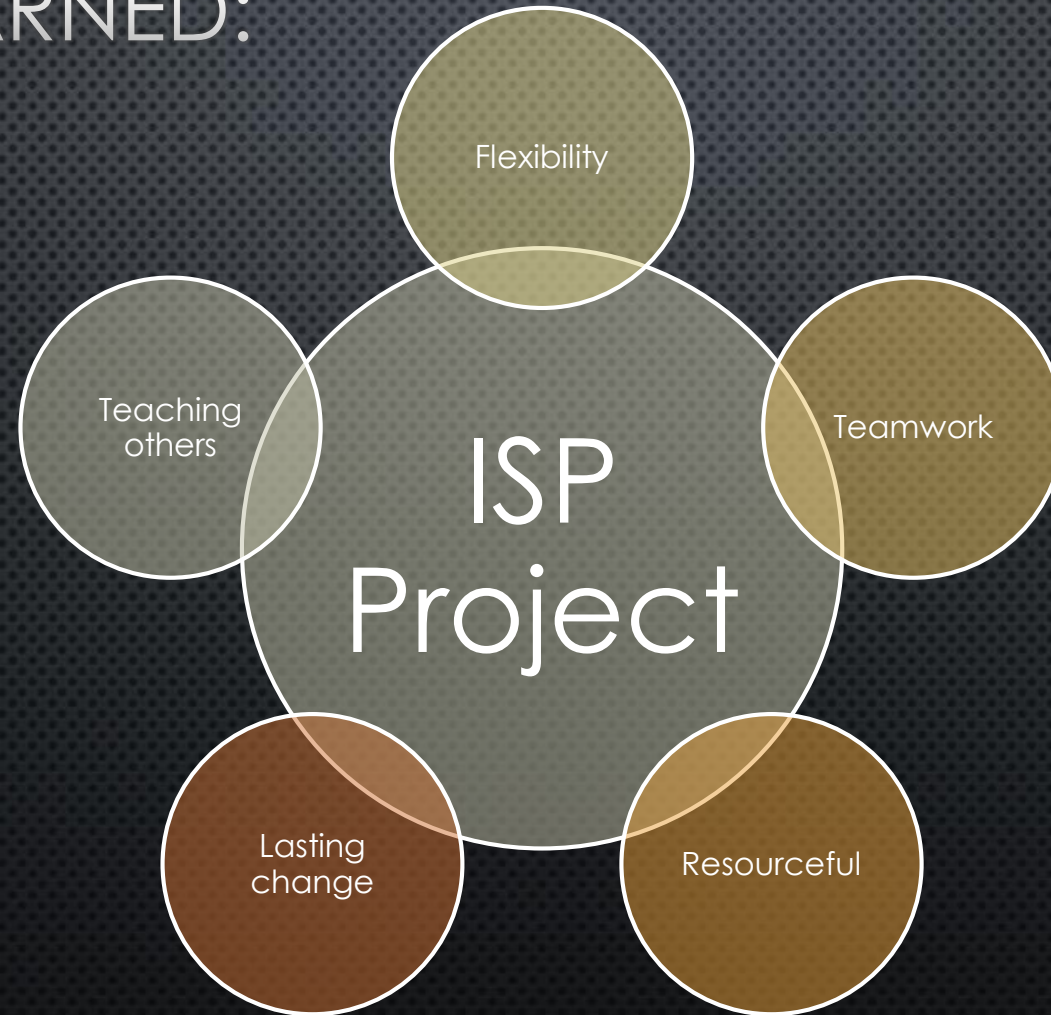


- 1) THE ONLINE RADIOLOGY SESSIONS WERE USEFUL IN TEACHING ME NORMAL RADIOGRAPHIC ANATOMY.
- 2) THE FORMAT/PROCESS OF THE ONLINE RADIOLOGY SESSIONS WORKED WELL.
- 3) THE ONLINE RADIOLOGY SESSIONS INTEGRATED WELL WITH AND FACILITATED MY MASTERY OF THE GROSS ANATOMY I STUDIED IN THE LAB
- 4) OVERALL, THE ONLINE RADIOLOGY SESSION WAS A WORTHWHILE AND ENJOYABLE LEARNING EXPERIENCE

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WHAT I LEARNED:



POTENTIAL IMPROVEMENTS & FUTURE DIRECTIONS

- ANTHONY YIP, MS2 – ISP PROJECT TO “REVAMP” RADANAT
 - INTRODUCTORY TUTORIAL, 3D HUMAN MODEL WITH CROSS-SECTIONAL INDICATOR PLANES
- SCROLLING FEATURE FOR CT AND MRI
- PATHOPHYSIOLOGY ON IMAGING
- ECHOCARDIOGRAM VIDEOS
- ULTRASOUND – ALTHOUGH ALREADY EXISTS AS A NEW CURRICULUM

SUSTAINABILITY

- ANATOMY COURSE FACULTY
 - GIVEN FINAL MATERIALS NEEDED TO CHANGE THE CURRICULUM IF NEEDED
 - WILL REVIEW YEARLY OASIS EVALS
- EdCOM
 - MULTIPLE STAFF MEMBERS WHO HAVE BEEN INVOLVED WITH RADANAT, AS WELL AS MEDPICS HISTOLOGY
- FUTURE MEDICAL STUDENTS AND ISP PROJECTS

THANK YOU

- COMMITTEE MEMBERS
 - DR. DAVID RAPAPORT, CHAIR
 - DR. HAYDEE OJEDA-FOURNIER
 - DR. MIRIAM SCADENG
- ANATOMY FACULTY
 - DR. DAVID RAPAPORT
 - DR. MARK WHITEHEAD
 - DR. PAUL KINGSTON

THANK YOU

- EdCOM
 - BRIAN WEBB, EdCOM DIRECTOR
 - MATT LOWREY
 - JOSH BRESLOW
- UCSD SOM MEDICAL STUDENTS, CLASS 2014 - FUTURE