Innovative Health Professions Curriculum Design Workshop

Presented By

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Workshop Objectives

By the conclusion of this workshop, participants will be able to:

1. List the six steps of curriculum development according to the Kern model.
2. Describe three ways to make a new piece of health professions curriculum fit into a continuum of health professions education.
3. Describe three learning activities that are consistent with contemporary ideas of adult learning.
4. Identify strategies to recognize and manage strong learner emotional reactions to a new piece of health professions curriculum.
5. Discuss three or more considerations when implementing a new curriculum.

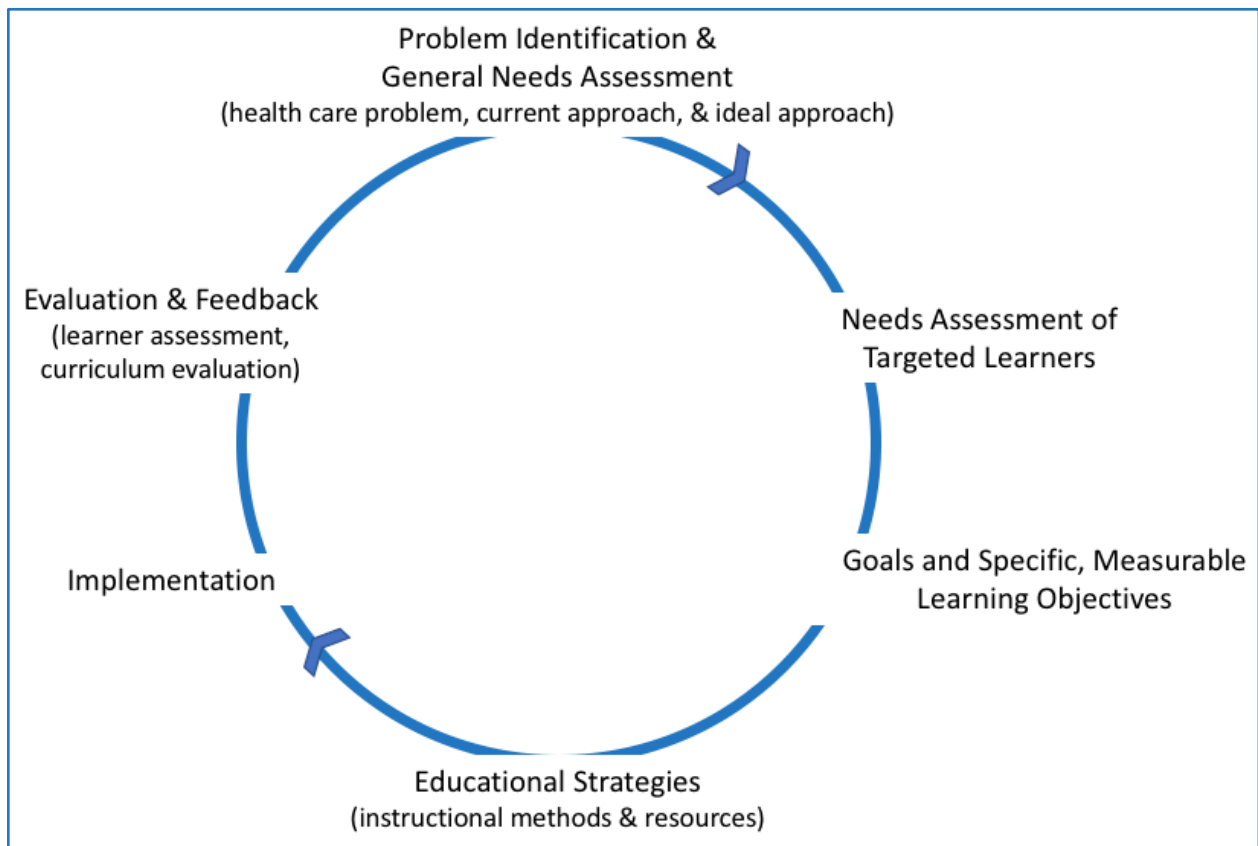**Workshop Agenda (105 minutes)**

- Introductions (10 minutes)
- Workshop overview (5 minutes)
- Learning & Assessment strategies small group exercise (35 min)
- Implementation strategies small group exercise (35 min)
- Take home messages (10 min)

Workshop Agenda Materials

1. Kern Model of Curriculum Development (p. 2)
2. Views of the UCSF Bridges Curriculum (pp. 3-4)
3. The Importance of Contextualization (p. 5)
4. Implementation Considerations (p. 6)
5. Workshop Case Study (p. 7)
6. Learning Strategies Small Group Worksheet (p. 9)
7. Implementation Strategies Small Group Worksheet (p. 11)
8. Take Home Message Worksheet (p. 13)
9. References (p. 15)
10. Medbiquitous Vocabularies Document (pp. 16-24)
11. Creative Commons License (p. 25)

The Kern Model of Curriculum Development

Problem Identification &
General Needs Assessment
(health care problem, current approach, & ideal approach)

Needs Assessment of
Targeted Learners

Evaluation & Feedback
(learner assessment,
curriculum evaluation)

Goals and Specific, Measurable
Learning Objectives

Implementation

Educational Strategies
(instructional methods & resources)

Based on an image from *Curriculum Development for Medical Education: A Six-Step Approach*;
DE Kern, PA Thomas, MT Hughes; Johns Hopkins University Press, 2009

High Level View of the UCSF Bridges Curriculum

Inquiry Immersion

Milestone Assessment: USMLE

Inquiry / Summer

Foundations 2
Clerkships, inquiry,
and advanced
foundational sciences

Inquiry Immersion

Foundations 1
Foundational sciences,
inquiry and clinical
microsystems clerkship

Career Launch
Advanced clerkships,
subinternships,
residency application
and Deep Explore

Graduation

UCSF School of Medicine
BRIDGES
CURRICULUM

CLINICAL & SYSTEMS APPLICATIONS
FOUNDATIONAL SCIENCES
INQUIRY, INNOVATION, AND DISCOVERY

Quarter	Date	Class of 2023	Class of 2022	Class of 2021	Class of 2020
Summer 2 Q	7/29/2019 - 8/2/2019	Vacation	Vacation/Inquiry	Foundations 2: Block 4	Career Launch: Block 5
	8/5/2019 - 8/9/2019	Launch			
	8/12/2019 - 8/16/2019	CIC — IDS 121A Ground School — CMC	CIC — IDS 122A Life Stages — CMC		
	8/19/2019 - 8/23/2019			ARCH 6	ARCH 8
	8/26/2019 - 8/30/2019			Longitudinal FCM 110/FS-in-F2 Days	Career Launch: Block 6
	9/2/2019 - 9/6/2019			Foundations 2: Block 5	
	9/9/2019 - 9/13/2019				
Fall Q	9/16/2019 - 9/20/2019	IDS 121A ARCH 1			
	9/23/2019 - 9/27/2019	CIC — IDS 121B ABC 1 — CMC			Career Launch: Block 7
	9/30/2019 - 10/4/2019				
	10/7/2019 - 10/11/2019		IDS 122B BMB — CMC		
	10/14/2019 - 10/18/2019				
	10/21/2019 - 10/25/2019				
	10/28/2019 - 11/1/2019	CIC — IDS 121B H&I — CMC			Career Launch: Block 8
	11/4/2019 - 11/8/2019				
	11/11/2019 - 11/15/2019				
	11/18/2019 - 11/22/2019	CIC — IDS 121B ABC 2 — CMC	IDS 122B ARCH 4	Foundations 2: Block 6	
	11/25/2019 - 11/29/2019		Vacation		Career Launch: Block 9
	12/2/2019 - 12/6/2019		CIC — IDS 122C DR — CMC		
	12/9/2019 - 12/13/2019				
	12/16/2019 - 12/20/2019	IDS 121B ARCH 2			
	12/23/2019 - 12/27/2019	Winter Break	Winter Break	Winter Break	Winter Break
	12/30/2019 - 1/3/2020				
Winter Q	1/6/2020 - 1/10/2020	IDS 123A Inquiry Immersion			Career Launch: Block 10
	1/13/2020 - 1/17/2020			Licensing Exams	
	1/20/2020 - 1/24/2020	CIC — IDS 121C REGN — CMC	Foundations 2: Block 1		
	1/27/2020 - 1/31/2020				
	2/3/2020 - 2/7/2020				Career Launch: Block 11
	2/10/2020 - 2/14/2020				
	2/17/2020 - 2/21/2020				
	2/24/2020 - 2/28/2020				
	3/2/2020 - 3/6/2020			Introduction to Career Launch/Designing and Conducting Research	Career Launch: Block 12
	3/9/2020 - 3/13/2020				
	3/16/2020 - 3/20/2020	CIC — IDS 121C H&S — CMC	Foundations 2: Block 2		
	3/23/2020 - 3/27/2020			Career Launch: Block 1	
	3/30/2020 - 4/3/2020				Career Launch: Block 13
Spring Q	4/6/2020 - 4/10/2020	IDS 121C ARCH 3			
	4/13/2020 - 4/17/2020	Vacation			
	4/20/2020 - 4/24/2020	CIC — IDS 121D PHD — CMC			
	4/27/2020 - 5/1/2020		ARCH 5	ARCH 7	Coda
	5/4/2020 - 5/8/2020			Career Launch: Block 2	
	5/11/2020 - 5/15/2020				
	5/18/2020 - 5/22/2020		Foundations 2: Block 3		
	5/25/2020 - 5/29/2020				
	6/1/2020 - 6/5/2020			Career Launch: Block 3	
	6/8/2020 - 6/12/2020				
	6/15/2020 - 6/19/2020	Vacation/Inquiry			
	6/22/2020 - 6/26/2020				
Summer 1 Q	6/29/2020 - 7/3/2020			Career Launch: Block 4	
	7/6/2020 - 7/10/2020		Foundations 2: Block 4		
	7/13/2020 - 7/17/2020				
	7/20/2020 - 7/24/2020				
	7/27/2020 - 7/31/2020				

Note: Class of 2021 and Class of 2022 columns include a vertical "Longitudinal FCM 110/FS-in-F2 Days" band.

The Importance of Contextualization

Context	Consideration(s)	Suggestions
Perfect Fit	How can this new curriculum element fit into the whole, leveraging prior related curriculum and preparing learners for the next curricular step? (What is the best delivery learning activity for this curriculum?)	• Link explicitly • Talk to instructors of related curriculum • Attend related sessions • Share learning resources
Other School Learners	How might a new curricular element include the university's other learners – especially other health professional learners – to advance interprofessional education? (What learning activity is best for involving these other learners?)	• Explore potential shared learning objectives • Leverage existing learning activities • Think outside the classic classroom
Clinical Settings	How might this new curriculum element be applied in clinical settings for the benefit of learners, other health professionals, and patients	• Find a clinical partner from an existing clerkship • Create a win-win with value-added patient care • Engage other health professionals
Local Community	Could this new curriculum include activities in the local community for the benefit of the community, learners, and school relationships?	• Integrate into existing learner-run activities • Explore new service activities • Have learners experience related community programs
Global Community	What national and global events and cultural norms does the new curriculum element touch upon?	• Incorporate current issues • Integrate literature, art, and other media
Learner Journeys	How might learner journeys influence their experience in this new curriculum element, especially considering the potential for triggering and increased stress.	• Provide learners choices for a deeper dive • Anticipate strong learner reactions, give advance warning • Have an action plan for whole group and individualized support

Implementation Considerations*

Category	Consideration(s)	Suggestions
Resources	What resources are needed to get this curriculum off the ground?	Consider needs in terms of: • Time • Facilities • Funding • Personnel • Technology
Support	What are the internal and external sources of support for the implementation (and success) of this curriculum?	Consider sources of support and champions in two categories: • Internal • External
Administration	What organizational structures are going to be needed for the execution of this curriculum?	Consider structures for: • Administration • Operations • Communications • Scholarship
Barriers	What types of barriers are likely to be encountered and how might they successfully be navigated/mitigated?	Consider barriers that are: • Financial • Individual • Competing Demands (e.g. service vs. learning)
Pilot	What is the best mechanism for rolling out this curriculum?	Consider the possible benefit of starting with a pilot and how to assess for its success. Consider additional steps the might be needed for full implementation.
Sustainability	What can be done to ensure that the curriculum can be a sustainable effort?	Consider ongoing needs of the curriculum for: • Maintenance • Enhancement

*Based on Chapter 6 "Step 5: Implementation" by MT Hughes in *Curriculum Development for Medical Education: A Six-Step Approach*; PA Thomas, DE Kern, MT Hughes, BY Chen; Springer Publishing Company, 3rd Edition, 2015.
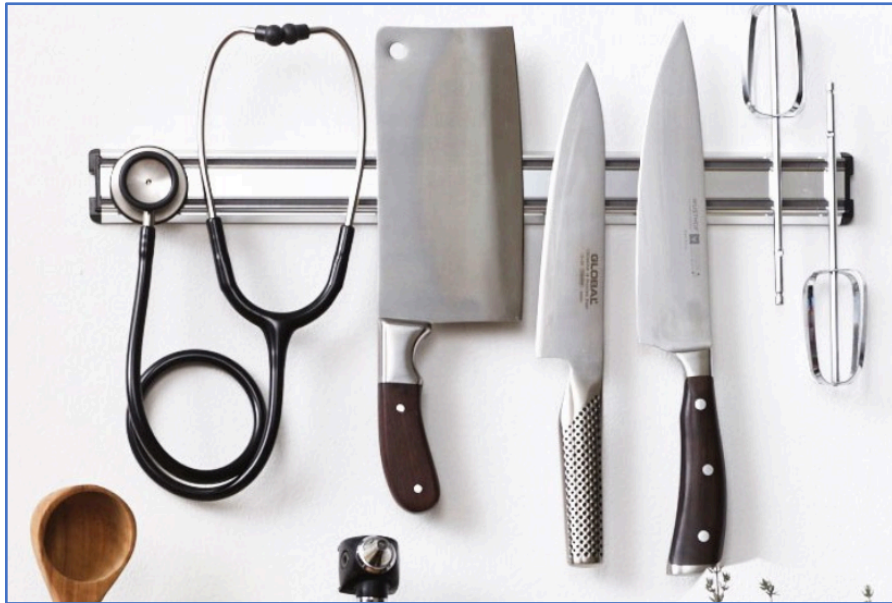
Workshop Case Study: Culinary Medicine

Image from *bon appétit* March 12, 2014

How many health professionals are prepared to provide an evidence-based and also practical answer their patient's question of, "What do I eat and drink for my particular medical condition?" An understanding of nutrition can help a health professional formulate an answer. Even better is a background in culinary medicine, a relatively new field that blends the art of food and cooking with medical science. Through its Goldring Center for Culinary Medicine, Tulane University School of Medicine has led the effort to advance medical student training in this new field. Imagine that you have been asked to lead a team of educators in designing a proposal for integrating culinary medicine into your existing health professional curriculum. It may help you to consider that that:

- The human burden of diet-related non-communicable health risks and diseases is already huge and continues to grow globally;
- Some eating patterns have been found to be as or more effective than prescription medication for some conditions;
- Culinary medicine is aimed at helping people reach good personal decisions about eating meals that help prevent and treat disease and promote well-being;
- A culinary medicine curriculum provides an opportunity to integrate the sciences of biochemistry, physiology, pathophysiology, and nutrition with the pleasure of eating and cooking;
- Special attention needs to be given to the sociocultural aspects of cooking and eating;

Activity 1: The Learning/Assessment Strategies Challenge Small Group Worksheet

Instructions

- Make brief introductions and designate a note-taker and a presenter
- Spend ~ 5 minutes outlining in broad brush strokes a Culinary Medicine curriculum embedded within a three-phase (preclerkship, core clerkship, advanced studies) health professions curriculum.
- Spend ~10 minutes generating ideas for learning activities and, if possible, assessment strategies organized by the contextualization categories presented earlier. You are welcome to use any means possible to leverage ideas from existing sources, including this handout and the internet.
- Spend ~5 minutes preparing a **90 second** presentation of your **PRIZE**-winning ideas.
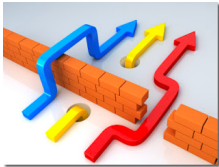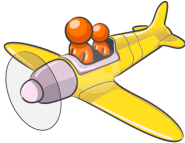
Context	Ideas	Context	Ideas
Perfect Fit		Local Community	
Other School Learners		Global Community	
Clinical Settings		Learner Journeys	

Activity 2: The Implementation Strategies Challenge Small Group Worksheet

Instructions:
- Designate a new note-taker and a presenter
- Spend ~ 5 minutes brainstorming ideas about implementation of the Culinary Medicine curriculum that you just designed.
- Spend ~10 minutes zeroing in on 2-3 implementation areas. You are welcome to use any means possible to leverage ideas from existing sources, including this handout and the internet.
- Spend ~5 minutes preparing a **90 second** presentation of your **PRIZE**-winning ideas.

Category	Ideas	Category	Ideas
Resources 		Barriers 	
Support 		Pilot 	
Administration 		Sustainability 	

Activity 3: Take Home Message(s)

Instructions: Write down up to three ideas from the workshop that are likely to "stick" and note why you find them sticky and how you might apply them "back home."

Sticky Idea	Why Sticky?	Possible Application?
1		
2		
3		

References

Curriculum Development for Medical Education: A Six-Step Approach; PA Thomas, DE Kern, MT Hughes, BY Chen; Springer Publishing Company, 3rd Edition, 2015.
A classic guide to curriculum development, useful as a textbook for a health professions educational leadership and scholarship course.

Chapter 2: Being a Doctor, Foundations of Professional Education in *Educating Physicians: A Call for Reform of Medical School and Residency*; M Cooke, DM Irby, BC O'Brien; Jossey-Bass, pp. 34-71, 2010
Highly useful framework of core domains of physician's work, discussion of physicians become adept in each domain, and implications for education.

Shaping the College Curriculum: Academic Plans in Context; LR Lattuca and JS Stark, Jossey-Bass, 2009.
Comprehensive discussion of all aspects of curriculum development, including institutional and sociocultural factors that influence curriculum planning.

Teaching and Learning Strategies That Work; R Hoffman, SY McGuire, *Science*, 325: 04, 1203-1204, 2009.
A short article with wise advice from two experienced chemistry professors.

Preparation for future learning: a missing competency in health professions education? M Mylopoulos, R Brydges, NN Woods, J Manzone, DL Schwartz, *Medical Education*, 50:1, 115-123, 2015
A discussion of the importance of adaptive learning by a leader in this emerging field.

Understanding the Employee as an Adult Learner, *HR Toolkit* website, HR Council
http://hrcouncil.ca/hr-toolkit/learning-understanding.cfm
A concise, clear presentation of ideas about adult learning process and learning styles.

What is Culinary Medicine and What Does It Do?, J La Puma, *Population Health Management*, 19(1):1-3, 2015
A short introduction to this backdrop for the application exercises within our workshop.

Medbiqutous Vocabulary.
https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwil8_PGqMvYAhVP5GMKHSAJBGEQFggpMAA&url=https%3A%2F%2Fmedbiq.org%2Fcurriculum%2Fvocabularies.pdf&usg=AOvVaw05LWbKvAzyX2WkoHqxhfhS
A terrifically useful list of terms for instructional methods, assessment methods, and resource types accompanied by definitions of each. Especially helpful for exploring the breadth of educational opportunities.

Curriculum Inventory
Standardized Instructional and Assessment Methods and Resource Types

Suggested citation:
MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee. (2016). *Curriculum Inventory standardized instructional and assessment methods and resource types* (March 2016 version). Washington, DC: Association of American Medical Colleges.

Instructional Methods	**Assessment Methods**	**Resource Types**
IM01: Case-Based Instruction/Learning	AM01: Clinical Documentation Review	RE01: Animation
IM02: Clinical Experience - Ambulatory	AM02: Clinical Performance Rating/Checklist	RE02: Audience Response System
IM03: Clinical Experience - Inpatient		RE03 :Audio
IM04: Concept Mapping	AM03: Exam – Institutionally Developed, Clinical Performance	RE04: Cadaver
IM05: Conference		RE05: Clinical Case
IM06: Demonstration	AM19: Exam – Institutionally Developed, Laboratory, Practical	RE06: Distance Learning - Asynchronous
IM07: Discussion, Large Group (>12)		RE07: Distance Learning - Synchronous
IM08: Discussion, Small Group (<12)	AM04: Exam – Institutionally Developed, Written/Computer-based	RE08: Educational Technology
IM09: Games		RE09: Electronic Health/Medical Record EHR/EMR)
IM10: Independent Learning	AM05: Exam – Institutionally Developed, Oral	
IM11; Journal Club		RE10: Film/Video
IM12: Laboratory	AM06: Exam – Licensure, Clinical Performance	RE11: Key Feature
IM13: Lecture		RE12: Mannequin
IM14: Mentorship	AM07: Exam – Licensure, Written/Computer-based	RE13: Medical Images
IM15: Patient Presentation - Faculty		RE14: Mobile Application
IM16: Patient Presentation - Learner	AM08: Exam – Nationally Normed/Standardized, Subject	RE15: Patient – Receiving Clinical Care
IM31: Patient Presentation - Patient	AM09: Multisource Assessment	RE16: Patient – Teaching
IM17: Peer Teaching	AM10: Narrative Assessment	RE17: Plastinated Specimens
IM18: Preceptorship	AM11: Oral Patient Presentation	RE18: Written or Visual Media (or Digital Equivalent)
IM19: Problem-Based Learning (PBL)	AM12: Participation	
IM20: Reflection	AM13: Peer Assessment	RE19: Scenario
IM21: Research	AM14: Portfolio-Based Assessment	RE20: Searchable Electronic Database
IM22: Role Play/Dramatization	AM16: Research or Project Assessment	RE21: Standardized/Simulated Patient (SP)
IM23: Self-Directed Learning	AM17: Self-Assessment	RE22: Task Trainer
IM24: Service Learning Activity	AM18: Stimulated Recall	RE23: Ultrasound
IM25: Simulation		RE24: Virtual Patient
IM26: Team-Based Learning (TBL)		RE25: Virtual/Computerized Laboratory
IM27: Team-Building		RE26: Wet Laboratory
IM28: Tutorial		
IM29: Ward Rounds		
IM30: Workshop		

MedBiquitous Curriculum Inventory Working Group Curriculum Inventory Standards, March 2016

Instructional Methods

Instructional Method	Definition / More information
Case-Based Instruction/ Learning	**Use of patient cases (actual or theoretical) to stimulate discussion, questioning, problem solving, and reasoning on issues pertaining to the basic sciences and clinical disciplines** (Anderson, 2010)
	Synonymous with/Includes: Case Study
	Does not include: Conference; Discussion, Small Group (≤12); Patient Presentation - Faculty; Patient Presentation - Learner; Problem-Based Learning (PBL); Simulation; Team-Based Learning (TBL)
	Note(s): Distinguished from Simulation in that, in CBL, learner is not necessarily practicing the role of care provider, yet in Simulation, learner is practicing some aspect(s) of provider role.
Clinical Experience - Ambulatory	**Practical experience(s) in patient care and health-related services carried out in an ambulatory/outpatient setting where actual patients are studied and treatment and/or counseling is given** (ERIC, 1968 & 1981; *CI Standardized Vocabulary Subcommitee*)
	Synonymous with/Includes: Clinical Reasoning; Communication Skills; Community-Based; Outpatient; Patient Care; Patient Care Activity; Problem Solving
Clinical Experience - Inpatient	**Practical experience(s) in patient care and health-related services carried out in an inpatient setting where actual patients are studied and treatment and/or counseling is given** (ERIC, 1968 & 1981; *CI Standardized Vocabulary Subcommittee)*
	Synonymous with/Includes: Clinical Reasoning; Communication Skills; Patient Care; Patient Care Activity; Problem Solving
Concept Mapping	**Technique [that] allows learners to organize and represent knowledge in an explicit interconnected network. Linkages between concepts are explored to make apparent connections that are not usually seen.** (Weiss & Levinson, 2000, citing Novak & Gowin, 1984)
Conference	**Departmentally-driven and/or content-specific presentations by clinical faculty/professionals, residents, and/or learners before a large group of other professionals and/or learners** (e.g., Mortality and Morbidity, or "M & M," Conference--Biddle & Oaster, 1990--and Interdisciplinary Conference--Feldman, 1999; also see Cooke, Irby, & O'Brien, 2010b)
	Synonymous with/Includes: Grand Rounds; Mortality/Morbidity (M & M) Conference; X-Ray; Tumor Board
	Does not include: Discussion, Large Group (>12); Lecture
Demonstration	**A description, performance, or explanation of a process, illustrated by examples, observable action, specimens, etc.**
	Synonymous with/Includes: Autopsy
	Does not include: Laboratory
Discussion, Large Group [>12]	**An exchange (oral or written) of opinions, observations, or ideas among a Large Group [more than 12 participants], usually to analyze, clarify, or reach conclusions about issues, questions, or problems** (ERIC, 1980)
	Does not include: Conference
Discussion, Small Group [≤12]	**An exchange (oral or written) of opinions, observations, or ideas among a Small Group [12 or fewer participants], usually to analyze, clarify, or reach conclusions about issues, questions, or problems** (ERIC, 1980)
	Does not include: Case-Based Learning/Instruction; Conference; Problem-Based Learning (PBL); Team-Based Learning (TBL); Tutorial; Workshop
Games	**Individual or group games that have cognitive, social, behavioral, and/or emotional, etc., dimensions which are related to educational objectives** (ERIC, 1966a)
Independent Learning	**Instructor-/ or mentor-guided learning activities to be performed by the learner outside of formal educational settings (classroom, lab, clinic)** (Bowen & Smith, 2010); **Dedicated time on learner schedules to prepare for specific learning activities, e.g., case discussions, TBL, PBL, clinical activities, research project(s)**
	Synonymous with/Includes: Independent Study; Homework
	Does not include: Self-Directed Learning

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Journal Club	**A forum in which participants discuss recent research papers from field literature in order to develop critical reading skills (comprehension, analysis, and critique)** (Cooke, Irby, & O'Brien, 2010a; Mann & O'Neill, 2010; Woods & Winkel, 1982)
	Synonymous with/Includes: Critical Reading
	Note(s): "[A] forum for the education of residents in the techniques of critical reading, that is, the ability to understand the format of an article, analyze the process by which the study was done, recognize the limitations of the work, and critique the results and interpretation" (Woods & Winkel, 1982); "[A] forum for discussion of recent papers in [a] specialty [and] mechanism for residents [and/or learners] to learn how to assess the quality and import of clinical research papers" (Cooke, Irby, & O'Brien, 2010a)
Laboratory	**Hands-on or simulated exercises in which learners collect or use data to test and/or verify hypotheses or to address questions about principles and/or phenomena.**
	Synonymous with/Includes: Autopsy; Anatomy Lab; Gross Lab; Histology Lab; Wet Lab
	Does not include: Demonstration
Lecture	**An instruction or verbal discourse by a speaker before a large group of learners** (Institute for International Medical Education, 2002)
	Synonymous with/Includes: Didactic; Recording of a lecture
	Does not include: Conference; Discussion, Large Group (>12)
Mentorship	**The provision of guidance, direction and support by senior professionals to learners or more junior professionals** (U.S. National Library of Medicine, 1987)
	Synonymous with/Includes: Advising; Career Development; Coaching; Professional Development
	Does not include: Preceptorship
Patient Presentation - Faculty	**A presentation by faculty to faculty, residents, and/or other learners of patient findings, history and physical, differential diagnosis, treatment plan, etc.** (Wiener, 1974; CI Standardized Vocabulary Subcommittee)
Patient Presentation - Learner	**A presentation by a learner or learners to faculty, resident(s), and/or other learners of patient findings, history and physical, differential diagnosis, treatment plan, etc.** (Wiener, 1974)
Patient Presentation - Patient	**A presentation by a patient to faculty, residents, and other learners that tells or recounts the patient's experience** (CI Standardized Vocabulary Subcommittee)
Peer Teaching	**Learner-to-learner instruction for the mutual learning experience of both "teacher" and "learner"; may be "peer-to-peer" (same training level) or "near-peer" (higher-level learner teaching lower-level learner)** (Soriano et al., 2010)
	Synonymous with/Includes: Near-Peer Instruction; Peer Instruction; Peer Teaching; Peer Tutoring; PeerAssisted Learning
Preceptorship	**Practical experience in medical and health-related services wherein the professionally-trained learner works under the supervision of an established professional in the particular field** (U. S. National Library of Medicine, 1974)
	Synonymous with/Includes: Externship
	Does not include: Mentorship; Service Learning Activity
Problem-Based Learning (PBL)	**The use of carefully selected and designed patient cases that demand from the learner acquisition of critical knowledge, problem solving proficiency, self-directed learning strategies, and team participation skills as those needed in professional practice** (Eshach & Bitterman, 2003; see also Major & Palmer, 2001; Cooke, Irby, & O'Brien, 2010b; Barrows & Tamblyn, 1980)
	Does not include: Case-Based Instruction/Learning; Discussion, Small Group (≤12); Team-Based Learning (TBL)
Reflection	**Examination by the learner of his/her personal experiences of a learning event, including the cognitive, emotional, and affective aspects; the use of these past experiences in combination with objective information to inform present clinical decision-making and problem-solving** (Mann, Gordon, & MacLeod, 2009; Mann & O'Neill, 2010); reflecting on patients' experiences using narrative and/or storytelling (*Advances in Health Sciences Education*, *18*(4), 727-743. http://link.springer.com/article/10.1007/s10459-012-9411-y)
	Synonymous with/Includes: Journaling, Narrative, Story-telling

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Research	**Short-term or sustained participation in research.** *Research* is defined as a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program which is considered research for other purposes. For example, some demonstration and service programs may include research activities. (U.S. Department of Health & Human Services 45 CFR 46 http://www.hhs.gov/ohrp/humansubjects/guidance/45cfr46.html)
Role Play/ Dramatization	**The adopting or performing the role or activities of another individual**
	Synonymous with/Includes: Practicing Skills (with peers)
	Does not include: Simulation (as with Simulated/Standardized Patient) – See Resource Types)
Self-Directed Learning	**Learners taking the initiative for their own learning: diagnosing needs, formulating goals, identifying resources, implementing appropriate activities, and evaluating outcomes** (Garrison, 1997; Spencer & Jordan, 1999)
	Does not include: Independent Learning; Independent Study, PBL, TBL
Service Learning Activity	**A structured learning experience that combines community service with preparation and reflection.** LCME Glossary of Terms for LCME Accreditation Standards and Elements 2015-2016, October 2015)
	Synonymous with/Includes: Community Service
Simulation	**A method used to replace or amplify real patient encounters with scenarios designed to replicate real health care situations, using lifelike mannequins, physical models, standardized patients, or computers** (Passiment, Sacks, & Huang, 2011)
	Does not include: Role Play/Dramatization
Team-Based Learning (TBL)	**A form of collaborative learning that follows a specific sequence of individual work, group work and immediate feedback; engages learners in learning activities within a small group that works independently in classes with high learner-faculty ratios** (Anderson, 2010; Team-Based Learning Collaborative, n.d.; Thompson, Schneider, Haidet, Perkowski, & Richards, 2007)
	Does not include: Case-Based Instruction/Learning; Discussion, Small Group (≤12); Problem-Based Learning (PBL)
Team- Building	**Workshops, sessions, and/or activities contributing to the development of teamwork skills, often as a foundation for group work in learning (PBL, TBL, etc.) and practice (interprofessional/-disciplinary, etc.)** (Morrison, Goldfarb, & Lanken, 2010)
Tutorial	**Instruction provided to a learner or small group of learners by direct interaction with an instructor** (ERIC, 1966c)
Ward Rounds	**An instructional session conducted in an actual clinical setting, using real patients or patient cases to demonstrate procedures or clinical skills, illustrate clinical reasoning and problem-solving, or stimulate discussion and analytical thinking among a group of learners** (Bowen & Smith, 2010; Wiener, 1974)
	Synonymous with/Includes: Attending Rounds; Bedside Rounds; Bedside Teaching: Teaching Rounds; Student group visit as part of "Doctoring" or "Physical Diagnosis" course
	Does not include: Clinical Experience - Ambulatory; Clinical Experience - Inpatient; Patient Presentation - Faculty; Patient Presentation – Learner
Workshop	**A brief intensive educational program for a relatively small group of people that focuses especially on techniques and skills related to a specific topic** (U. S. National Library of Medicine, 2011)
	Synonymous with/Includes: Seminar

Note: The concepts of **Flipped Classroom, Clinical Correlation, Clinical Case Modules, Case Inventories**, and similar terms that describe a particular use of multiple instructional methods or specific types of clinical documentation are not included in this list. It is the opinion of the MedBiquitous Curriculum Inventory Working Group Standardized Vocabulary Subcommittee that these terms are reflected by or are combinations of existing Instructional Methods or Resources.

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Assessment Methods (All Assessment Methods are Formative OR Summative

Assessment Method (may be *formative* or *summative*)	Definition / More information
Clinical Documentation Review	**The review and assessment of clinical notes and logs kept by learners as part of practical training in the clinical setting** (Bowen & Smith, 2010; Irby, 1995)
	Synonymous with/Includes: Case Log; Chart Review; Clinical Encounter Log; Patient Workup
	Does not include: Portfolio-Based Assessment
Clinical Performance Rating/ Checklist	**A non-narrative assessment tool (checklist, Likert-type scale, other instrument) used to note completion or achievement of learning tasks** (MacRae, Vu, Graham, Word-Sims, Colliver, & Robbs, 1995; Turnbull, Gray, & MacFadyen, 1998) also see "Direct Observations or Performance Audits," Institute for International Medical Education, 2002)
	Synonymous with/Includes: Rating Scale; Likert Scale; Reflection Feedback; Video Performance Rating*; Rubric*
	Does not include: Multisource Assessment; Peer Assessment; Self-Assessment
Exam - Institutionally Developed, Clinical Performance	**Practical performance-based examination developed internally to assess problem solving, clinical reasoning, decision making, and[/or] communication skills** (*Includes observation of learner or small group by instructor*)
	Synonymous with/Includes: OSCE; Virtual Patient; Practical Exam; Internal (practical) Exam; Image Analysis; Script Concordance; Simulation Exam; MiniCEX; CEX; SCEE (Simulated Clinical Encounter Examination)
Exam – Institutionally Developed, Laboratory Practical (Lab)	**Examination activities that use hands-on or simulated exercises in which students collect or use data to test and/or verify hypotheses or to address questions about principles and/or phenomena.** *Synonymous with/Includes:* Laboratory Practicum; Anatomy Practical
Exam - Institutionally Developed, Written/ Computer-based	**Examination utilizing various written question-and-answer formats (multiple-choice, short answer, essay, etc.) which may assess learners' factual knowledge retention; application of knowledge, concepts, and principles; problem-solving acumen; and clinical reasoning** (Cooke, Irby, & O'Brien, 2010b).
	Synonymous with/Includes: Written Exam; Internal (written) Exam; MCQ; Multiple Choice; Quiz; Script Concordance
Exam - Institutionally Developed, Oral	**Verbal examination developed internally to assess problem solving, clinical reasoning, decision making, and[/or] communication skills.**
Exam - Licensure, Clinical Performance	**Practical, performance-based examination developed by a professional licensing body to assess clinical skills such as problem solving, clinical reasoning, decision making, and communication, for licensure to practice in a given jurisdiction (e.g., USMLE for the United States); typically paired with a written/computer-based component** (MCC, 2011a & 2011c; NBOME, 2010b; USMLE, n.d.); **may also be used by schools to assess learners' achievement of certain curricular objectives**
	Synonymous with/Includes: USMLE Step 2-CS, COMLEX Level 2-PE; MCC Part II; CEFM
Exam - Licensure, Written/ Computer-based	**Standardized written examination administered to assess learners' factual knowledge retention; application of knowledge, concepts, and principles; problem-solving acumen; and clinical reasoning, for licensure to practice in a given jurisdiction (e.g., USMLE for the United States); typically paired with a clinical performance component** (MCC, 2011a & 2011b; NBOME, 2010b; USMLE, n.d.); **may also be used by schools or learners themselves to assess achievement of certain curricular objectives**
	Synonymous with/Includes: USMLE Step 1; USMLE Step 2-CK; COMLEX Level 1; COMLEX Level 2- CE; COMLEX Level 3; MCC Part I; CEFM
Exam - Nationally Normed/ Standardized, Subject	**Standardized written examination administered to assess learners' achievement of nationally established educational expectations for various levels of training and/or specialized subject area(s) (e.g., NBME Subject or "Shelf" Exam)** (NBME, 2011; NBOME, 2010a)
	Synonymous with/Includes: NBME; NBME Subject Exam; NBME Shelf; COMAT Subject Exam; COMSAE; COMVEX

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Multisource Assessment	**A formal assessment of performance by supervisors, peers, patients, and coworkers** (Bowen & Smith, 2010; Institute for International Medical Education, 2002) (*Also see* Peer Assessment)
	Synonymous with/Includes: Multi-Rater Assessment; 360-Degree Assessment
Narrative Assessment	**An instructor's or observer's written subjective assessment of a learner's work or performance** (Mennin, McConnell, & Anderson, 1997)**;** *May Include*: **Comments within larger assessment; Observation of learner or small group by instructor**
	Does not include: Clinical Documentation Review; Clinical Performance Rating/Checklist; Peer Assessment; Self-Assessment
Oral Patient Presentation	**The presentation of clinical case (patient) findings, history and physical, differential diagnosis, treatment plan, etc., by a learner to an instructor or small group, and subsequent discussion with the instructor and/or small group for the purposes of learner demonstrating skills in clinical reasoning, problem-solving, etc.** (Wiener, 1974)
Participation	**Sharing or taking part in an activity** (ERIC, 1966b)
	Synonymous with/Includes: Attendance
Peer Assessment	**The concurrent or retrospective review by learners of the quality and efficiency of practices or services ordered or performed by fellow learners.**
	Does not include: Multisource Assessment; Narrative Assessment
Portfolio-Based Assessment	**Review of a learner's achievement of agreed-upon academic objectives or completion of a negotiated set of learning activities, based on a learner portfolio** (Institute for International Medical Education, 2002) **("a systematic collection of a student's work samples, records of observation, test results, etc., over a period of time"**— ERIC, 1994)
Research or Project Assessment	**Assessment of activities and outcomes (e.g., posters, presentations, reports, etc.) of a project in which the learner participated or conducted research** (Dyrbye, Davidson, & Cook, 2008)
	Synonymous with/Includes: Multi-Media Production
Self-Assessment	**The process of evaluating one's own deficiencies, achievements, behavior or professional performance and competencies** (Institute for International Medical Education, 2002)**; Assessment completed by the learner to reflect and critically assess his/her own performance against a set of established criteria** (Gordon, 1991) (*NOTE:* Does not refer to *NBME Self-Assessment*)
	Synonymous with/Includes: Observation of self on video
	Does not include: NBME Self-Assessment (National Board of Medical Examiners (NBME) Self-Assessment Services, n.d.)
Stimulated Recall	**The use of various stimuli (e.g., written records, audio tapes, video tapes) to re-activate the experience of a learner during a learning activity or clinical encounter in order to reflect on task performance, reasoning, decision-making, interpersonal skills, personal thoughts and feelings, etc.** (Barrows, 2000)
	Synonymous with/Includes: Chart-stimulated recall (CSR)

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Resource Types

Resource	Definition / More information
Animation	**A series of visual representations imparting an impression of motion when shown in succession. Includes visual output from a simulation. (http://purl.org/dc/dcmitype/MovingImage)**
	Does not include: Film/Video
Audience Response System	**An electronic communication system that allows groups of people to vote on a topic or answer a question. Each person has a remote control ("clicker") with which selections can be made; Typically, the results are instantly made available to the participants via a graph displayed on the projector.** (Group on Information Resources, 2011; Stoddard & Piquette, 2010)
Audio	**Devices or applications used to acquire or transfer knowledge, attitudes, or skills through study, instruction, or experience using auditory delivery** (see "Electronic Learning," ERIC, 2008b)
	Synonymous with/Includes: Podcasts
	Does not include: Recordings of lectures, Mobile Application
Cadaver	**A human body preserved post-mortem and "used...to study anatomy, identify disease sites, determine causes of death, and provide tissue to repair a defect in a living human being"** (MedicineNet.com, 2004)
	Synonymous with/Includes: Corpse; Dissection; Prosection; Prosection Specimen; Skeleton
Clinical Case	**Clinical information provided for teaching and assessment. May provide a complete patient description (with findings) or represent a brief description of a presenting situation or finding. (CI Standardized Vocabulary Subcommittee)**
	Does not include: Standardized Patient, Virtual Patient, Clinical Case Module
Distance Learning - Asynchronous	**Education facilitated through communications media (often electronic), with little or no classroom or other face-to-face contact between learners and teachers, and which "does not occur in real time or involve simultaneous interaction on the part of participants. It is intermittent and generally characterized by a significant time delay or interval between sending and receiving or responding to messages"** (ERIC, 1983; 2008a)
	Synonymous with/Includes: Computer-Assisted Learning (CAL); Computer-Assisted Instruction (CAI)
Distance Learning - Synchronous	**Education facilitated through communications media (often electronic), with little or no classroom or other face-to-face contact between learners and teachers, "in real time, characterized by concurrent exchanges between participants. Interaction is simultaneous without a meaningful time delay between sending a message and receiving or responding to it. Occurs in electronic (e.g., interactive videoconferencing) and non-electronic environments (e.g., telephone conversations)"** (ERIC, 1983; 2008c)
	Synonymous with/Includes: Computer-Assisted Learning (CAL); Computer-Assisted Instruction (CAI)
Educational Technology	**Mobile or desktop technology (hardware or software) used for instruction/learning through audiovisual (A/V), multimedia, web-based, or online modalities** (Group on Information Resources, 2011); **Sometimes includes dedicated space** (see Virtual/Computerized Lab)
	Synonymous with/Includes: Computer; Desktop Computer; Laptop; iPad; Netbook, Smartphone; E- reader; Web Portals; Collaboration Tools (Wikis, Blogs); Simulation Tools (see also, Mannequin, Searchable Electronic Database, Standardized/Simulated Patient, Task Trainer, Virtual Patient, Virtual/Computerized Lab); Audio/video Casting; e-Portfolios (see also, Portfolio-Based Assessment)
Electronic Health/Medical Record (EHR/EMR)	**An individual patient's medical record in digital format...usually accessed on a computer, often over a network...[M]ay be made up of** *electronic medical records* **(EMRs) from many locations and/or sources. An Electronic Medical Record (EMR) may be an** *inpatient* **or** *outpatient* **medical record in digital format that may or may not be linked to or part of a larger EHR** (Group on Information Resources, 2011)

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Film/Video	**A camera-based recording of visual and audible components. Audio might not be included. (http://purl.org/dc/dcmitype/MovingImage)**
	Does not include: Recordings of lectures or other Instructional/Educational activities—Use appropriate method from Instructional Methods list and Resource, e.g., Distance Learning or Educational Technology, Mobile Application
Key Feature	**An element specific to a clinical case or problem that demands the use of particular clinical skills in order to achieve the problem's successful resolution; Typically presented as written exam questions, as in the Canadian Qualifying Examination in Medicine** (Page & Bordage, 1995; Page, Bordage, & Allen, 1995)
	Synonymous with/Includes: Patient Management Problems (PMPs); Clinical Decision Making (CDM) exam
	Note(s): "1) a critical or essential step(s) in the resolution of a problem, 2) a step(s) in which examinees ...are most likely to make errors in the resolution of the problem, or 3) a difficult or challenging aspect in the identification and management of the problem in practice" (MCC, 2010, p. 6)
Mannequin	**A life-size model of the human body that mimics various anatomical functions to teach skills and procedures in health education; may be low-fidelity (having limited or no electronic inputs) or high-fidelity (connected to a computer that allows the robot to respond dynamically to user input)** (Group on Information Resources, 2011; Passiment, Sacks, & Huang, 2011)
Medical Images	**Medical images of anatomic structures through the use of electromagnetic radiation or sound waves. Medical imaging techniques include radiographys, fluroscopy, CT scans, PET scans, MRIs, and ultrasonograms. (adapted from http://medical-dictionary.thefreedictionary.com/radiology by Curriculum Inventory Standardized Vocabulary SubCommittee)** **Includes: Radiologic Imaging; See also sonogram.**
Mobile Application	**A mobile application, most commonly referred to as an app, is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer. Apps are generally small, individual software units with specific function. (Adapted from www.techopedia.com by** Curriculum Inventory Standardized Vocabulary SubCommittee))
	Synonyms: **app, Web app, online app, or smartphone app**
	Does not include: Audio, Film/Video
Patient-teaching	**An actual clinical patient with whom students interact to learn about a specific clinical condition, symptom, or finding, the patient's experience with illness, or interaction with the healthcare system.. (CI Standardized Vocabulary Subcommittee)** *Does not include:* Simulated Patient, Standardized Patient, or Patient-receiving clinical care
Patient – receiving clinical care	**An actual clinical patient with whom the student is involved for clinical documentation, care, and / or treatment.** (CI Standardized Vocabulary Subcommittee)
	Does not include: Simulated Patient, Standardized Patient, or Patient-teaching
Plastinated Specimens	**Organic material preserved by replacing water and fat in tissue with silicone, resulting in "anatomical specimens [that] are safer to use, more pleasant to use, and are much more durable and have a much longer shelf life"** (University of Michigan Plastination Lab, n.d.); See also: Wet Lab
	Note(s): "Preserved tissue is first dissected and then dehydrated with acetone. It is immersed in a silicone bath under vacuum until the replacement of acetone is completed. After plastination, the resulting tissue is safe to handle (i.e., toxic fixatives are eliminated), the tissue has no odor and it is extremely durable. Thus, the anatomical specimens are safer to use, more pleasant to use, and are much more durable and have a much longer shelf life" (University of Michigan Plastination Lab, n.d.)
Scenario	**A written outline of a postulated sequence or development of events in a real or simulated clinical setting for use in instructional and assessment simulations. (CI Standardized Vocabulary Subcommittee)**
Searchable Electronic Database	**A collection of information organized in such a way that a computer program can quickly select desired pieces of data.**
	Synonymous with/Includes: PubMed
Standardized/ Simulated Patient (SP)	**Individual trained to portray a patient with a specific condition in a realistic, standardized and repeatable way (where portrayal/presentation varies based only on learner performance)** (ASPE, 2011)
	Synonymous with/Includes: Gynecological Teaching Associates (GTA); Male Urogenital Teaching Associates (MUTA)
	Note(s): "SPs can be used for teaching and assessment of learners including but not limited to history/consultation, physical examination and other clinical skills in simulated clinical environments. SPs can also be used to give feedback and evaluate student performance." (ASPE, 2011)

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Task Trainer	**A physical model that simulates a subset of physiologic function to include normal and abnormal anatomy** (Passiment, Sacks, & Huang, 2011); **Such models which provide just the key elements of the task or skill being learned** (CISL, 2011)
	Synonymous with/Includes: Plastic IV Arm, Airway Management Head, Urinary catheter trainer, Pelvic examination trainer; Virtual reality endoscopic devices
	Note(s): "Part-task Trainers in plastic or other forms cannot fully replicate performing the task on real patients, but they do allow learners to acquire the basic steps of the procedures and some of the basic skills needed to then be taught the fine art of doing the procedures under supervision on actual human beings" (CISL, 2011)
Ultrasound	**Ultrasound is used by faculty and students for therapeutic purposes and /or to create Images using high-frequency sound waves to identify and examine organs and structures such as the heart; blood vessels; kidneys; liver; and, during pregnancy, fetus(es) (adapted from http://www.nlm.nih.gov/research/umls/).**
Virtual Patient	**An interactive computer simulation of real-life clinical scenarios for the purpose of medical training, education, or assessment** (Smothers, Azan, & Ellaway, 2010)
	Does not include: Educational Technology; Virtual/Computerized Lab
Virtual Reality	**A virtual environment which allows the participant to experience a sense of presence in an immersive, computer-generated, three-dimensional, interactive environment** [adapted from MeSH for "virtual reality exposure therapy"]
Virtual/ Computerized Laboratory	**A practical learning environment in which technology- and computer-based simulations allow learners to engage in computer-assisted instruction while being able to ask and answer questions and also engage in discussion of content** (Cooke, Irby, & O'Brien, 2010a); **also, to learn through experience by performing medical tasks, especially high-risk ones, in a safe environment** (Uniformed Services University, 2011)
	Synonymous with/Includes: Computer Assisted Instruction; Biochemistry; Microbiology; Molecular biology; Cell biology; Tissue culture laboratory; Pathology; Organic Chemistry; Physical Chemistry
	Does not include: Educational Technology
Wet Laboratory	**Facilities outfitted with specialized equipment* and bench space or adjustable, flexible desktop space for working with solutions or biological materials** ("C.1 Wet Laboratories," 2006; Stanford University School of Medicine, 2007; WBDG Staff, 2010) *Often includes sinks, chemical fume hoods, biosafety cabinets, and piped services such as deionized or RO water, lab cold and hot water, lab waste/vents, carbon dioxide, vacuum, compressed air, eyewash, safety showers, natural gas, telephone, LAN, and power ("C.1 Wet Laboratories," 2006)
	Synonymous with/Includes:/Biochemistry; Cell Biology; Histology Slides; Microbiology; Molecular Biology; Tissue Culture Laboratory; Organic Chemistry; Pathology; Physical Chemistry; Preserved Specimens (not Cadavers, Prosected Specimens, or Plastinated Specimens)
	Note(s): Frequently used for instruction and/or research in Biochemistry; Molecular biology; Cell biology; Tissue culture laboratory; Pathology; Organic Chemistry; Physical Chemistry ("C.1 Wet Laboratories," 2006) "[T]raditional molecular and cell biology...must be facilitated by high-quality wet lab space with benches and standard, small scale, support space (including desks that are computer-friendly because even for molecular biology experimentation you need a computer). As long as people work with model organisms, cell culture, and molecular biology, this arrangement forms the basis of biomedical insights that are obtained by experimentation" (Stanford University School of Medicine, 2007 p. 58).
Written or Visual Media (or Digital Equivalent)	**Reference materials produced or selected by faculty to augment course teaching and learning**
	Synonymous with/Includes: Handouts; Fiction or non-fiction Books; Poetry; Professional Journal Articles; Textbooks; Syllabi

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