



Interdisciplinary research: definition and competencies

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Interdisciplinary Research*

- Any **study or group of studies** undertaken by scholars from **two or more distinct scientific disciplines**.
- The research is based upon a conceptual model that
 - **links or integrates theoretical frameworks** from those disciplines,
 - uses study design and **methodology** that is **not limited to any one field**, and
 - requires the **use of perspectives and skills** of the involved disciplines **throughout multiple phases** of the research process

Definition by contrast

	Participants/ discipline	Problem definition	Research Style	Presentation of Findings
Multi- discipli nary	Two or more disciplines	Same question but different paradigm OR different but related questions	'parallel play'	Separate publications by participants from each discipline
Inter- discipli nary	Two or more distinct academic fields	Described/defined in language of at least 2 fields, using multiple models or intersecting models	Drawn from more than one, with multiple data sources and varying analysis of same data	Shared publications, with language intelligible to all involved fields
Trans- discipli nary	Two or more distinct academic fields	Stated in new language or theory that is broader than any one discipline	Combined approaches	Shared publications, probably using at least some new language developed for translation across traditional lines

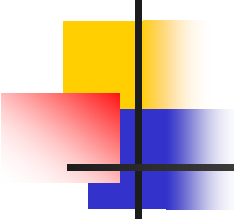
What TIRAR and CIRAR expect

- to equip a cadre of pre-doctoral and postdoctoral scholars with the interdisciplinary tools and training that are critical to address the broad issue of antimicrobial resistance because
 - infectious diseases remain a major cause of morbidity and mortality,
 - traditional treatments for common infections are no longer effective because of antimicrobial resistance
 - current training strategies provide outstanding depth in specialized research areas, but yield scholars whose view is focused on individual aspects of the antimicrobial resistance problem.



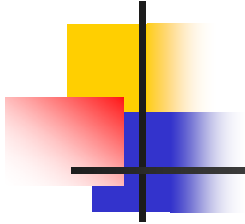
We assess training using competency

- an individual measure of *applied skills and knowledge that enable people to perform work*.
- consists of
 - action verb (observable or measurable performance of a worker)
 - content (subject matter, type of performance, specific task)
 - context (limitations or conditions of work environment).



Can be used in either education or workplace

- Workplace competencies
 - complex, akin to KSAs of job classifications.
 - series of embedded tasks
 - demonstrated over long periods of time.
 - require contextual measurement.
 - allow for a range of indicators to measure competence.
- 'Conducts interdisciplinary research on antimicrobial resistance'



- Instructional competencies
 - building blocks of learning
 - structured learning activities.
 - require sequencing from beginning to higher
 - determine the measurement indicators.
 - require measurement in the short term
- Stay tuned - -



Specifying the needed competencies

- Identified 21 candidate competencies (literature/experts)
- Recruited 30 Delphi panel members (range of expertise and perspective)
- 2 Delphi rounds with feedback
- 3 new nominations/4 eliminated
- Biggest challenge
 - Differentiating center capacity from individual competency



The scholar trained with an emphasis on interdisciplinary research can

- Conduct research
 - 6 specifics
- Communicate
 - 7 specifics
- Interact with others
 - 4 specifics



Conduct Research

- **Use** theories and methods of multiple disciplines in developing integrated theoretical and research frameworks.
- **Integrate** concepts and methods from multiple disciplines in designing interdisciplinary research protocols.
- **Investigate** hypotheses through interdisciplinary research.



Conduct research (2)

- **Draft** funding proposals for interdisciplinary research programs in partnership with scholars from other disciplines.
- **Disseminate** interdisciplinary research results both within and outside his or her discipline.
- **Author** publications with scholars from other disciplines.



Communicate

- **Advocate** interdisciplinary research in developing initiatives within a substantive area of study.
- **Express** respect for the perspectives of other disciplines.
- **Read** journals outside of his or her discipline.
- **Communicate** regularly with scholars from multiple disciplines.



Communicate (2)

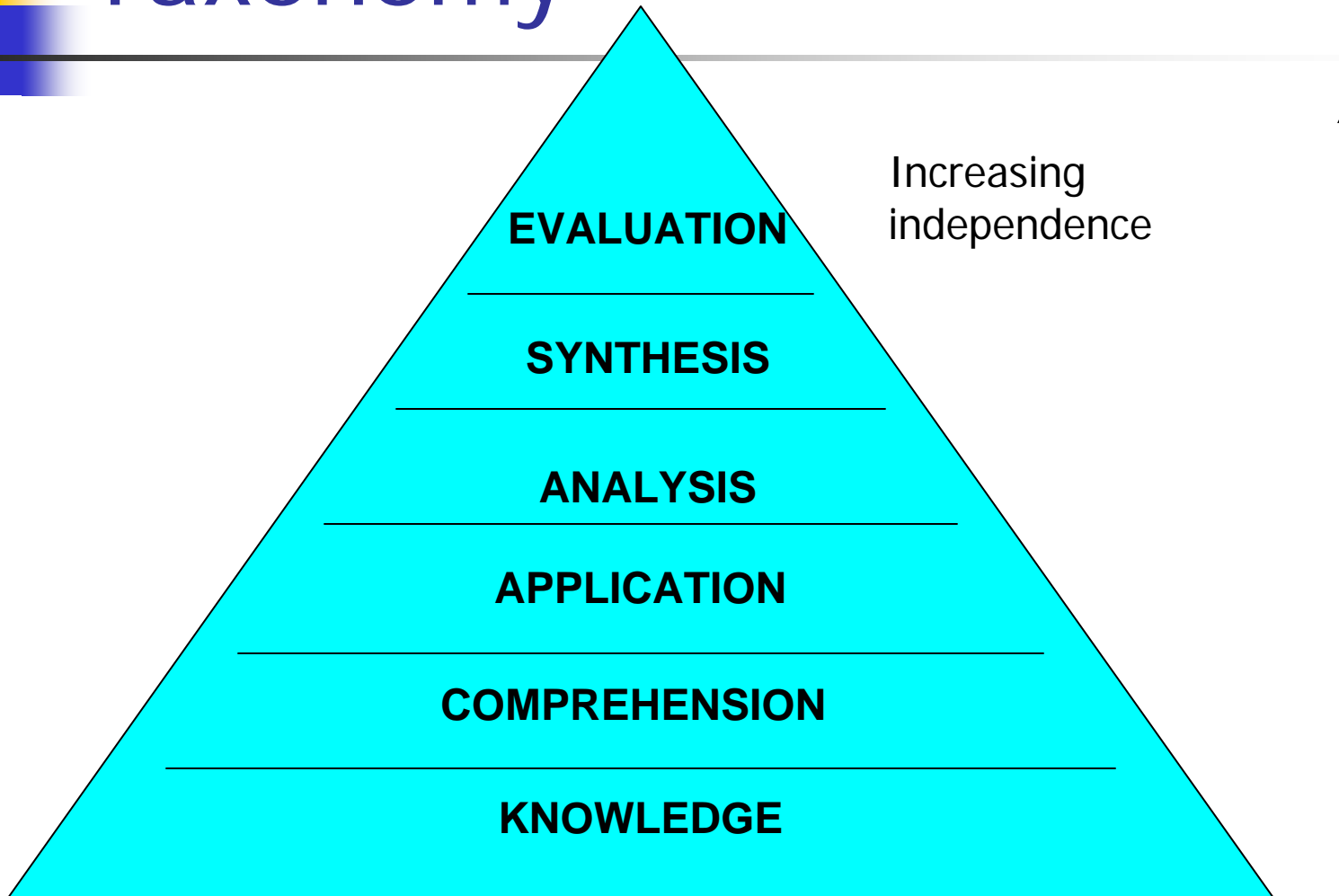
- **Share** research from his or her discipline in language meaningful to an interdisciplinary team.
- **Modify** his or her own work or research agenda as a result of interactions with colleagues from fields other than his or her own.
- **Present** interdisciplinary research at venues representing more than one discipline.



Interact with Others

- **Engage** colleagues from other disciplines to gain their perspectives on research problems.
- **Interact** in training exercises with scholars from other disciplines.
- **Attend** scholarly presentations by members of other disciplines.
- **Collaborate** respectfully and equitably with scholars from other disciplines to develop interdisciplinary research frameworks.

Competency Verbs: Bloom's Taxonomy





Applying Bloom's Taxonomy

Knowledge: name, list, arrange, relate, specify, enumerate, define, recall, label, cite, repeat, copy, order, record

Comprehension: describe, iterate, recognize, summarize, **explain**, **discuss**, locate, input, **translate**, paraphrase, itemize

Application: practice, calculate, compute, sketch, illustrate, interview, operate, simulate, **demonstrate**, apply, schedule, utilize, relate, diversify



We primarily focus on the top of the triangle

Analysis: test, differentiate, scrutinize, **investigate**, interpret, compare, contrast, discriminate, distinguish, **question**, manipulate, dissect, estimate, **measure**

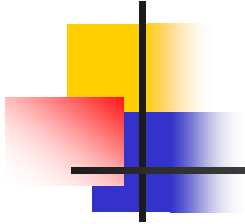
Synthesis: compose, construct, predict, reason, **hypothesize**, **design**, formulate, manage, develop, assemble, propose, theorize, invent, attribute, simplify

Evaluation: judge, **assess**, **recommend**, determine, **criticize**, **argue**, defend, estimate, appraise, justify, **feedback**, review



Fall 2008

- First offering of seminar specifically designed to build these competencies



Center for Interdisciplinary Research on Antimicrobial Resistance

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