Written Communication and Quantitative Reasoning Competency: from BS to MPH program

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Assessment – Fall 2018

- **Written communication competency**
- **Quantitative reasoning competency**
- Critical thinking competency
- Oral communication competency
- Information literacy competency

Assessment Methods – Courses

Competency	Courses	*Sections/Division level
Written communication	PH3140: Health Care Delivery System	2 sections; undergrad lower division
	PH4360: Introduction to Health Communication	2 sections; undergrad higher division
	PH5110: Social & Behavioral Sciences	1 section; graduate level
Quantitative reasoning	PH3130: Data Analysis for Public Health	2 sections; undergrad lower division
	PH4160: Research Analysis and Technical Writing for Public Health	2 sections; undergrad higher division
	PH5120: Biostatistics	1 section; graduate level

Note: *Sections were volunteered by instructors;
All the MPH courses were only provided one section in Fall 2018.

Assessment Methods – Assignments

Competency	Courses	Assignments
Written communication	PH3140 (2 sections; undergrad) PH4360 (2 sections, undergrad) PH5110 (1 section, grad)	Term Paper Term Paper Term Paper
Quantitative reasoning	PH3130 (2 sections; undergrad) PH4160 (2 sections; undergrad) PH5120 (1 section; grad)	Term Paper Term Paper Exam

Assessment Methods – Sampling

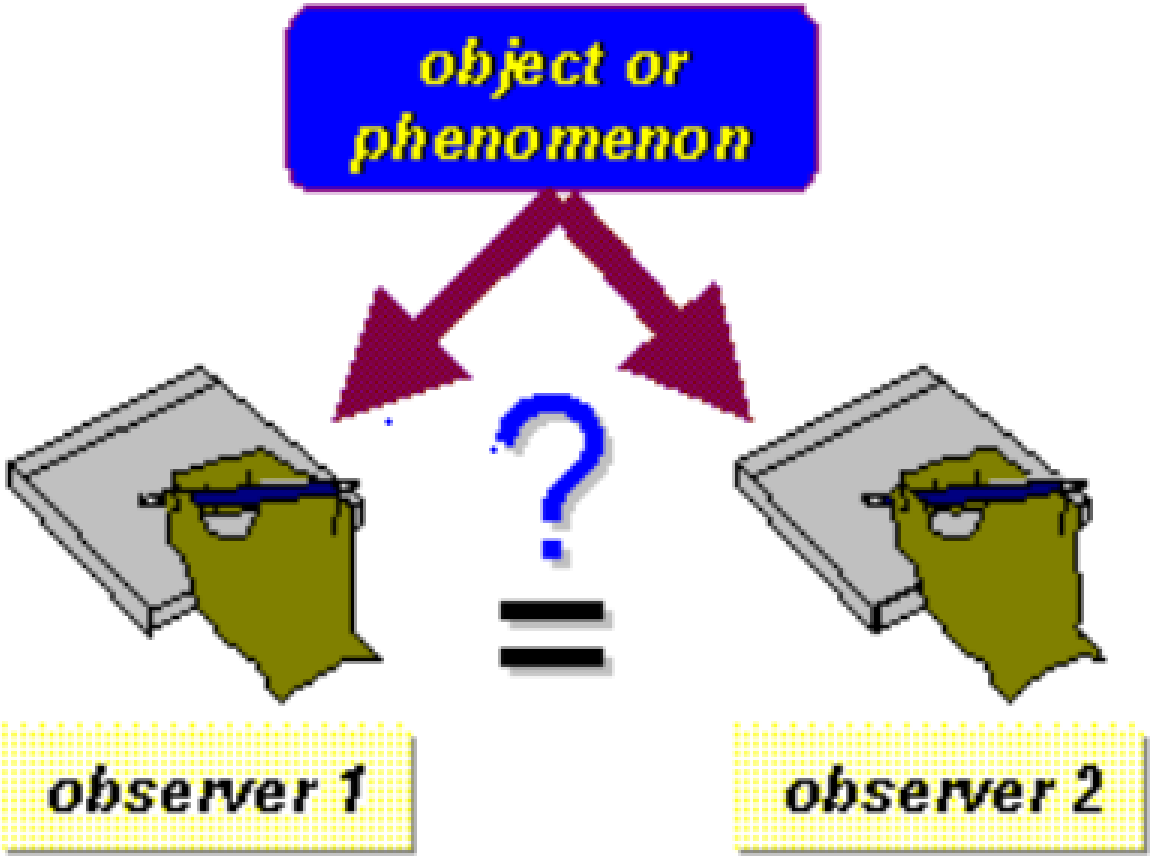
Competency	Courses	Assignments	*Sampling
Written communication	**PH3140 (2 sections; undergrad)**	**Term Paper**	**5 papers (random)**
	PH4360 (2 sections, undergrad)	**Term Paper**	**5 papers (random)**
	PH5110 (1 section, grad)	**Term Paper**	**5 papers (random)**
Quantitative reasoning	**PH3130 (2 sections; undergrad)**	**Term Paper**	**5 papers (random)**
	PH4160 (2 sections; undergrad)	**Term Paper**	**5 papers (random)**
	PH5120 (1 section; grad)	**Exam**	**Whole 1 section**

Note: *Systematic random sampling method was used to choose the 5 papers from each course. Some courses had individual term paper while some had group term paper.

Assessment Methods – Rubric

- **Cal State LA Written Communication and Critical Thinking Assessment Rubric (Fall 2018)**
- **Cal State LA Quantitative Reasoning Rubric (Fall 2018)**

Assessment Methods – Review Process



Assessment Results - Quantitative

Competency	Courses	Assignments	Inter-rater reliability	Results
Written communication	PH3140 (2 sections; undergrad) PH4360 (2 sections, undergrad) PH5110 (1 section, grad)	Term Paper Term Paper Term Paper	64.4%	Mean (SD) Mean (SD) Mean (SD)
Quantitative reasoning	PH3130 (2 sections; undergrad) PH4160 (2 sections; undergrad) PH5120 (1 section; grad)	Term Paper Term Paper Exam	29.6%	Mean (SD) Mean (SD) Mean (SD)

Assessment Results - Quantitative

Written communication competency

Courses	Analysis (Content)	Use of Information	Organization	Tone / Style	Student Position	Conventions	Total (out of 24)
PH3140	2.8(±0.4216)	2.7(±0.4830)	3 (±0)	3 (±0.4714)	2.5(±0.5270)	2.7(±0.4830)	**16.7(±1.4944)**
PH4360	2.8(±0.4216)	2.7(±0.4830)	3 (±0)	2.9 (±0.3162)	2.6(±0.5164)	2.8(±0.4216)	**16.9(±1.1001)**
PH5110	3.3(±0.4830)	3.1(±0.3162)	2.7 (±0.4830)	2.7 (±0.4830)	3.1(±0.3162)	2.8(±0.4216)	**17.1(±0.9487)**

Assessment Results – Qualitative

Written communication competency

- **Overall, the written competencies were between approaching and proficient levels, and there is no statistically significant difference between the different level courses (p=.1641).**
  - Students were able to follow the instructions closely;
  - Central message of the papers were generally clear and supported by proper evidence; mater-level students were more likely to use a variety of evidence and examples to support their statements.
  - The organizations of the papers were logical; however, some paragraphs were not well organized (PH4360, PH5110).
  - Appropriate vocabulary were used; sentence structure needs to be improved;
  - Some grammar, spelling, punctuation, and formatting errors; citations were not format accurately

Assessment Results - Quantitative

Quantitative Reasoning competency

Courses	Interpretation	Representation	Calculation	Application/ Analysis	Assumptions	Communication	Total (out of 24)
PH3130	1.8(±0.4216)	1.3(±0.4830)	1.9 (±0.7379)	1.8 (±0.6325)	1.5(±0.5270)	2.3(±0.6749)	**10.6 (±2.9136)**
PH4160	1.9(±0.6009)	1.7(±0.7071)	1.6 (±0.5270)	1.9 (±0.6009)	1.6(±0.5270)	2.1(±0.6009)	**10.8 (±1.8559)**
PH5120	3	3	3	3	2	3	**17**

Note: One of the raters has trouble to use the standard rubric to grade exam assignment in PH5120 course. The grades presented for PH5120 is only from one rater.

Assessment Results – Qualitative

Quantitative Reasoning competency

- **Overall, the quantitative competencies across the undergrad-level courses were between Not and Approaching Proficient levels; and there is no significant difference between the courses.**
  - Provided somewhat accurate explanations of mathematical information but with errors
  - Completed conversion of information but resulting mathematical portrayal is inappropriate or inaccurate
  - Calculations attempted are either unsuccessful or represent only a portion of the calculations required to comprehensively solve the problem.
  - chose correct statistical tests, analyze data, and interpret it; but limited at imitation level;
  - Somewhat explicitly describes assumptions without clearly explaining measurements/analysis methods
  - Uses quantitative information, but does not effectively connect it to the argument or purpose of the work.

Assessment Results – Qualitative

Quantitative Reasoning competency

- **Overall, the quantitative competencies at grad-level course was between Approaching and Proficient levels.**
  - Rater has trouble to use the rubric to assess the exam outcome (e.g., representation, application, assumption, and communication)
  - Majority of the students answered the questions correctly, which may be an encouraging sign
  - Concern: If questions were very similar to questions students worked through in class in advance of the exam, then less can be concluded about levels of students' proficiency.

Activities to "Close the loop"

- **Assessment committee meeting and discussion**
- **Unofficial and official discussions with instructors in the Dept.**
- **Student focus group interview (coming up)**

Suggestions for future improvement

Solutions/suggestions for individual course instructors:

- Create transparent instructions and provide samples
- Develop pre-writing assignment (e.g., milestone, outline, brainstorm)
- Assign frequent low-stake assignment, and provide constructive feedback
- Incorporate assignments in courses where students perform a critical assessment and develop key takeaways
- Encourage students to use the writing center and other assistant services on- and off-campus

Suggestions for future improvement

Solutions/suggestions for the whole course:

- Identify course leader and standardize SLOs and syllabus for each course
- Create signature assignments to make grading against standardized rubrics and comprising across different-level courses easier;
- Periodical communicate between instructors for troubleshooting and brainstorming solutions;
- Create an online folder of resources relevant to each course;

Suggestions for future improvement

Solutions/suggestions for the department:

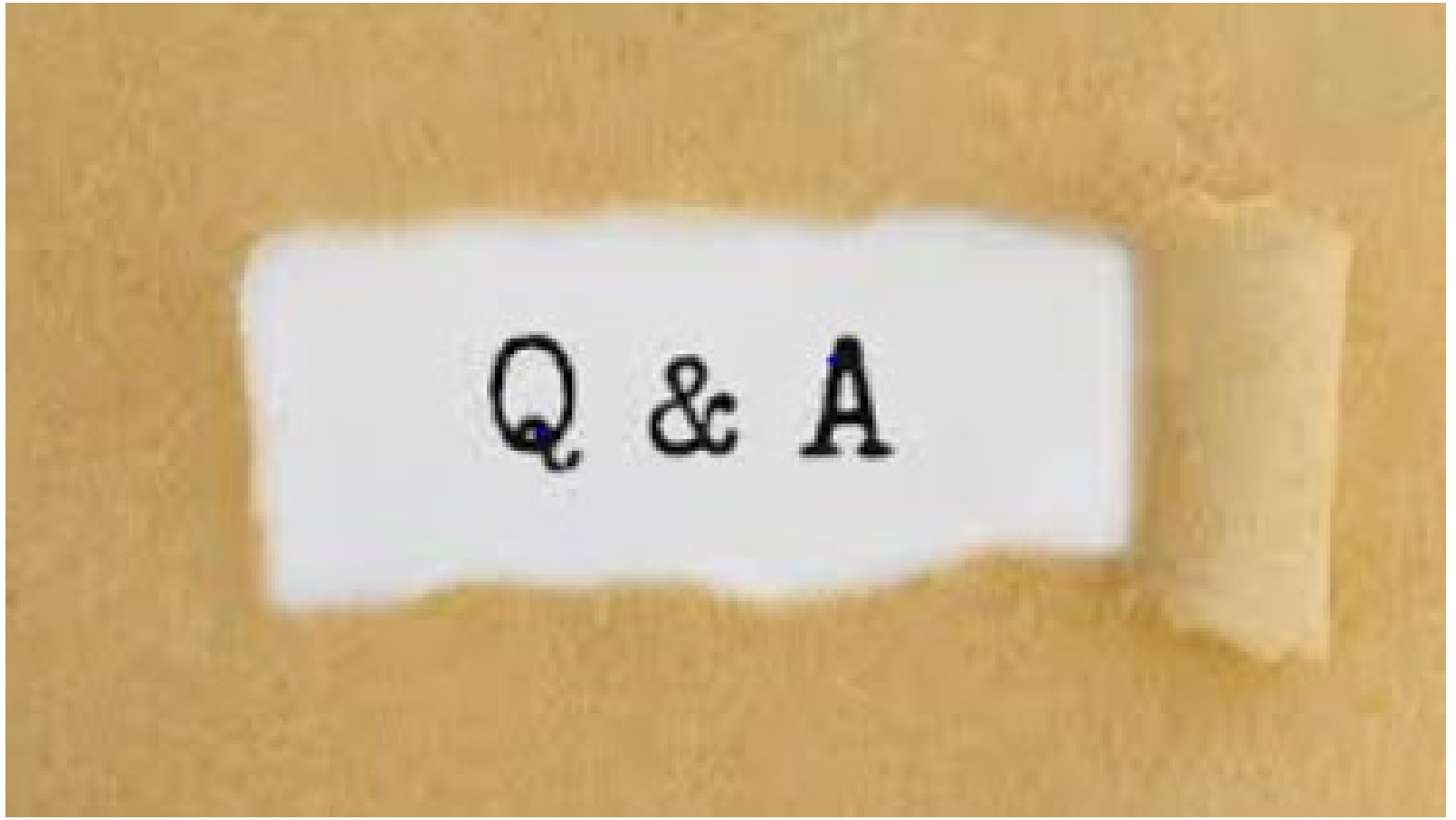
- Train faculty, especially assessment committee members, to use the standard rubrics
- Provide TAs and limit class size in writing/math heavy courses
- Require more writing and math prerequisites before entering major
- Develop disciplinary-specific writing course, or writing boot camp/seminar/workshop
- Develop a repository of writing resources and a list of best practices of interventions that have proven successful in our classes

Experience to share

- **Establish an assessment committee**
- **Identify reliable and collaborative faculty**
- **Communicate with faculty effectively: email, face-to-face, etc.**
- **Estimate time for assessment: don't be too optimistic!**
- **Establish assessment pattern**

  e.g., Fall semester for training and assignment collection,

  Spring semester for analysis, report and sharing
- **More practice, more fluency!**


Q & A