

The Key Components of a Numeracy Infusion Course for Higher Education (NICHE):  
Using Best Practices to Train Faculty

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**Abstract**

Faculty at the City University of New York (CUNY) have developed a Numeracy Infusion Course for Higher Education (NICHE) that teaches best practices for effective Quantitative Reasoning (QR) instruction to faculty in a wide range of disciplines. NICHE is a predominantly online course that consists of 8 separate units: (1) QR and Making Numbers Meaningful; (2) QR Learning Outcomes; (3) The Brain, Cognition and QR; (4) QR and Writing; (5) Discovery Methods; (6) Representations of Data; (7) QR Assessment; and (8) QR Stereotypes and Culture. This paper describes the key components of NICHE and shows how the same strategies recognized as effective methods for teaching QR can be employed in training faculty as QR instructors. Course activities, interactive discussions, and faculty-developed instructional materials are also presented.

For additional information, please visit our website ([www.teachqr.com](http://www.teachqr.com)) or email Esther Wilder ([ewilder@gc.cuny.edu](mailto:ewilder@gc.cuny.edu)).

**Table 1:** Sociodemographic Characteristics of CUNY Students, 2012

	Minor-ity <sup>1</sup>	Fe-male	Low inc. <sup>2</sup>	First gen. <sup>3</sup>	Prov. care <sup>4</sup>	Work 21+ <sup>5</sup>	SAT rdng. <sup>6</sup>	SAT math <sup>7</sup>
Senior colleges	43	60	50	41	59	22	—	—
Baruch	25	49	46	41	53	18	570	640
Brooklyn City	39	61	53	46	67	22	535	565
Hunter	54	53	53	36	55	16	505	560
John Jay	31	69	43	35	60	19	570	580
Lehman	60	57	49	42	60	30	465	475
Queens	78	69	52	49	63	22	500	510
York	26	60	44	36	55	23	535	570
Comp. colls.	69	66	57	48	67	26	438	465
M. Evers	56	54	53	42	57	23	—	—
NYC Tech.	96	73	65	59	71	25	—	—
Staten Island	66	45	60	45	50	19	—	—
Comm. colls.	26	57	38	35	58	27	490	515
Bronx	67	57	65	51	58	20	—	—
Hostos	94	58	74	59	60	32	—	—
Kingsboro.	93	67	80	55	62	19	—	—
LaGuardia	50	55	61	44	61	18	—	—
Manhattan	62	58	64	50	57	23	—	—
Guttman	73	58	63	52	54	19	—	—
Queensboro.	81	52	—	—	—	—	—	—
Total, CUNY	53	58	67	45	59	21	—	—

Sources: City University of New York (2013), Grove (2013).

<sup>1</sup> Includes American Indian, Alaska Native, Black (not of Hispanic origin), and Hispanic.

<sup>2</sup> Percentage with household incomes of less than \$30,000.

<sup>3</sup> Percentage in the first generation of their family to attend college.

<sup>4</sup> Percentage providing care to another person; refers only to full-time students.

<sup>5</sup> Percentage working for pay 21 or more hours per week; refers only to full-time students.

<sup>6</sup> Estimated median SAT critical reading score. The SAT is required only of incoming first-year students. At some CUNY senior colleges, the majority of students are transfer students.

<sup>7</sup> Estimated median SAT math score.

**Table 2:** “Effective QR Instruction is Highly Valued at My College”

	Community College	Senior College	Total
Strongly Agree	57%	0%	21%
Somewhat Agree	43%	42%	42%
Neither agree nor disagree	0%	50%	32%
Somewhat Disagree	0%	8%	5%
Strongly Disagree	0%	0%	0%
N	7	12	19

Source: In-person NICHE survey using anonymous clickers, June 2013.

**Table 3:** Efforts to Infuse QR into Course Instruction, by Comfort in Teaching QR

Scale of Comfort <sup>2</sup>	Effort to infuse QR <sup>1</sup>			Total
	1–2	3–4	5–6	
1	57%	0%	21%	40%
2	43%	42%	42%	25%
3	0%	50%	32%	15%
4	0%	8%	5%	10%
5	0%	0%	0%	10%
N	12 (60%)	7 (35%)	1 (5%)	20

Source: Pre-NICHE online questionnaire, June 2013.

<sup>1</sup>Effort to Infuse QR question asked: *On a scale of 1 (very concerted effort) to 7 (no effort), how would you rate the extent of your effort(s) to infuse quantitative reasoning into your course instruction?*

<sup>2</sup>Scale of Comfort questioned asked: *On a scale of 1 (very comfortable) to 7 (very uncomfortable), how would you rate your comfort in teaching QR?*

Note: No scores were above 5 on the comfort scale and no scores were above 6 in the “Effort to Infuse QR” scale.

**Table 4:** NICHE Faculty QR Learning Goals

Foundational skill or skill set	Fields(s)	Data collect-ion	Tables and/or graphs	Calcula-tion	Explan-ation	Appli-cation	Infer. & deci-sion	Com-muni-cation	Ap-pre-ciation
Absolute vs. relative #	math, soc			2	2	2	2		1
Area and volume	Bio		1	1	1		1		
Bivariate analysis	Soc		1		1		1		
Central tendency & dispersion	math, soc		1	2	2	2	2		
Conditional probability	math, econ		1	2	2	2	2	1	
Correlation	Math			1	1	1	1		
Data analysis	Afr stud, bio, math	2	2	1	2	3	2	3	2
Graphical reps.	math, psych		2	1	2	2	2		
Location/proximity	Bio			1	1				
Percentages/ratios	math, poli sci			2	2	1	2	1	
Research/sampling	Psych			1	1	1		1	
Total		2	8	14	17	14	15	6	3

Source: NICHE 2013. Note: This table does not include information from 2 of the 3 faculty who ultimately withdrew from NICHE.