Digital Science and Data Analytic Learning Environments at Small Liberal Arts Institutions

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Driving Questions / Purpose

The primary goal of the workshop is to form a consortium of small liberal arts colleges that work to support expansion of usage of and development of NGDLE's for teaching data science and data analytics. The consortium will address four research questions: (1) How will NGDLE's prepare students for employment that requires DSA? (2) How will the design of DSA NGDLE's account for the variability of learners? (3) How will NGDLE's be assessed to measure student DSA competency? (4) How will a national consortium for digital learning at small liberal arts institutions form and function to sustain and expand the workshop outcomes?

| | Team Compositions | | | | | | | | | | | | | | | Interests | | | |
School	M	CS	NS	BU	ED	SS	DS	AH	IT	NG	HS	DE	AS	DH		AC	GE	M	G
Carroll University (Wisconsin)	1	1		2						1						X	X	X	X
Drury University (Missouri)	1		1	1		2										X		X	
Emmanuel College (Massachusetts)	1	1				1				1		1						X	
Franklin University (Ohio)	1									2		1	1			X	X	X	X
Hiram College (Ohio)	1	1		1	1				1							X	X	X	
LaGrange College (Georgia)				2		1			1			1						X	
Merrimack College (Massachusetts)		1		1					1	1		1				X	X	X	X
Pacific Lutheran University (Washington)				3			1		1								X	X	
Presbyterian College (South Carolina)	1			2		1	1											X	
Ripon College (Wisconsin)	1							1	1			1		1				X	
Seattle Pacific (Washington)	1	1	1											2			X	X	
	8	5	2	12	1	5	2	1	5	5	0	5	1	3		5	6	11	3

M = mathematics		AC = across curriculum
CS = computer science		GE = general education
NS = other natural science		CE = certificate
BU = business, accounting, economics, information systems	M = Major/Minor/Certificate
ED = education		G = Graduate
SS = other social sciences	
DS = data science, analytics	
AH = arts & humanities	
IT = IT specialist	
NG = NGDLE's or academic technology	
HS = health science	
DE = dean or provost	
AS = assessment director	
DH = digital humanities, digital librarian, other librarian	

Participants

Process

- Internal and external advisory committees did semester long plan for workshop facilitated by a global management consulting firm (Silver Rock Consulting)

- Five presentations: one each on data science, team science and learning science, two on NGDLE's (one on open source resources and one on IBM offerings, e.g., Watson)

- Based on interest (major/minor or gen ed), institutional team members were randomly assigned into one of 8 teams

- Teams worked on content areas after each talk, building consortium buy-in and common goals

- Individuals volunteered to commit to one of six consortium goals at end

Findings

- Based on institutional applications (44 total), data science and data analytics are of interest to but there is need to develop expertise at small liberal arts institutions

- Similarly NGDLE's and team science are of interst to but there is need to develop expertise at small liberal arts institutions

- Team science can help inform how the consortium functions

- A consortium can assist small colleges in expanding the needed expertise

Principles

- Need to expand universal design knowledge

- Need to expand consortium to include partners with more NGDLE and data science expertise

- Need to utilize team science to kick start continued consortium work

Surprises & Tensions

- Some participants were forced to be there

- Continuing work after the workshop is the greatest challenge

- Team science became the unifying theme in the workshop

Recommendations

- Immediate: Second facilitated workshop in August 2019 consisting of 20 consortium individuals representing 11 IHE, industry, and content experts. Workshop goals: 1) Assemble clear and concise narrative for consortium initiative, 2) Establish cadence for ongoing status reporting and progress checkpoints, 3) Identify innovative prototype projects and workstream group outcomes to be implemented over next 3 years, 4) Annual consortium meeting focused on workstream group outcomes and prototype projects.
- Near-term: 1) Implement innovative prototype projects and workstream group outcomes over next 3 years, 2) Funded consortium.
- Longer term: Expand consortium members and protype projects.