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

John Symms, PI, Jane Hopp, co-PI, Charles Byler, Organizing Committee Chair, Kathleen Coutley, Project Coordinator

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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?
<table>
<thead>
<tr>
<th>School</th>
<th>Team Compositions</th>
<th>Interests</th>
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M = mathematics
CS = computer science
NS = other natural science
BU = business, accounting, economics, information systems
ED = education
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

AC = across curriculum
GE = general education
CE = certificate
M = Major/Minor/Certificate
G = Graduate
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 interest 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 prototype projects.