Building Capacity for Analytics
with
Existing Staff
and
Agile Structures

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Private, residential, liberal arts college in Maine

About 1,800 undergraduates

7 staff in Institutional Research, Analytics & Consulting

Dimensionally modeled data warehouse

Collaborate extensively with IT

Inaugural year of data governance
“The function of institutional research connotes the institution-wide use of data and analytics, and not just the products of an office of institutional research.”
Doing Machine Learning Without Hiring (More) Data Scientists

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By Analysts Shubhangi Vashisth, Alexander Linden

Many data and analytics leaders face the same dilemma — without data scientists, venturing into machine learning and data science is tricky, but without any successful pilots, convincing the business to hire data scientists is tricky too. Here, we offer proven solutions to tackle this dilemma.
Analytics Program Ingredients

- Culture
- Champion
- Data
- Staff
Culture

Champion

Data

Staff
What knowledge, skills and attitudes are necessary for analytics staff?
Important Skills

• Analytical skills
• Ability to isolate clear question
• Data manipulation (e.g., SQL, R)
• Data visualization
• Statistical skills
• Machine learning

• Relationship-building skills
• Consulting skills (e.g., listen, apply)
• Presentation skills
• Knowledge of higher ed context
• Ethics
• Political savviness
Gartner’s characteristics of staff to “upskill”

• Curious and entrepreneurial

• Holistic attitude

• Mathematical affinity
  • Noisy data, lots of uncertainty; high dimensionality

• Good understanding of business and where ML can add value
How to **spot** potential?

How to **grow** potential?
Establish a “Community of Practice”
“Institutions establish and support networks of data users and consumers who share good practices and collectively advocate for the data, tools, and dissemination methods required to meet the institution’s needs.”
Bowdoin

“a community of people across campus who are striving to improve data quality and increase the use of analytics within their own units.

This is an open community so feel free to invite others.”
Designate individuals through data governance process
Bowdoin’s Roles and Responsibilities

Data Trustees
Data Trustees are senior college officials or their designees who have planning, policy-level and management responsibility for data within their functional areas. Data Trustees responsibilities include:
- Assigning
- Remainder
- Ensuring delegating
- Promoting

Data Stewards
Data Stewards are college officials having direct operational-level responsibility for the management of one or more types of data. Data Stewards are assigned by the Data Trustee and are generally associate deans, associate vice presidents, directors or managers. Data Steward responsibilities include:
- The application of this and related policies to the systems, data, and other information resources under their care or control
- Overseeing the establishment of data policies in their areas
- Understating
- Classifying
- Identifying
- In cases where Stewards manage

Data Consumers
Data Consumers are the individual college community members authorized to access and manage college data in order to perform assigned duties or in fulfillment of their college role. This access is granted solely for the conduct of college business.

Data Managers
Data Managers are college officials who are responsible for day-to-day operational data collection and management, overseeing the life cycle of a particular set of institutional data. They have the authority from the Data Steward and/or Data Trustee to grant internal access to data for their functional area. Data Managers are generally managers of data systems or senior data analysts within business departments.

Data Manager responsibilities include:
- Implementing the established data policies in their areas
- Developing data definitions and standards for data elements in their functional area
- Regularly striving to improve the way data is defined, produced, and used in their functional area
- Resolving data quality issues pertaining to data in their functional area
- Safeguarding data by ensuring appropriate access, following established authorization procedures, and maintaining physical and system security appropriate to the classification level of the data in their custody
- Following data handling and protection policies and procedures established by Data Stewards and Information Security
- Communicating and providing education on the required minimum safeguards for protected data to authorized data users
- Supporting access by providing appropriate documentation and training to data consumers
- Setting an example of data-related behavior for their department

https://www.bowdoin.edu/it/safe-computing/policies/data-classification.html
Leverage software implementations to catalyze change in staff roles

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Invest in high potential staff
Inspire and mentor hiring supervisors

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Create short-term, low risk opportunities

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Data Analyst Trainee

- 2 year term position
- Develop talent internally

Agile Analyst

- Temporary, part-time placement
- IRA&C staff contracted to functional departments
Summary:
Ways to Identify and Develop Talent

• Establish a “community of practice”
• Designate individuals via data governance process
• Leverage software implementations to catalyze change in staff roles
• Invest in high potential staff
• Inspire and mentor hiring supervisors
• Create short-term, low-risk opportunities
Three organizational structures
Consultant Model
Networked Model

(Swing and Ross, 2016) develops analytical talent across various departments with the need for some coordinating effort – formal or informal.

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Migratory Model

Photo by Phillippe Teuwen https://flic.kr/p/6sy3Xy
What model works for your institution?
“requires coaching and professional development of employees across the institution in a purposeful and intentional process that increases capacity for data-informed decisions to permeate the institution.”
Thank you

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