Using Data Driven Decision Making in Higher Education: A Pilot Case Study with Implications for Technology Policy

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Abstract – In today's American system of education, large amounts of data are being collected at every level, kindergarten through college (K-20). In years past, this data were simply collected and used for basic accounting, or reporting purposes as opposed to driving important decisions to facilitate meaningful change. While this scenario has changed dramatically in the K-12 education sector, postsecondary education is still playing "catch-up," in many ways, in terms of navigating the intricacies of data-driven decision making. This pilot case study of data-driven decision making in a selected College of Education reflects the results of the implementation of data-driven decision making strategies in response to the re-accreditation process. Using a convenience sample and a semi-structured interview protocol, the researcher recommends a hybrid technology policy model as most effective in terms of using technology to monitoring and make data-driven decisions regarding student performance. Future research will be conducted to determine the extent to which the pilot case study results can be generalized to other higher education settings.

Purpose

The purpose of this pilot case study was to determine how data-driven decision making is being implemented in a selected U.S. Colleges of Education. In addition, this case study was conducted to determine if and how the data collected at the College level links with the K-12 education sector, and to what extent; as well as to determine what infrastructure improvements are needed. Finally, the researcher sought to assess the attitudes of college level administrators in terms of the concepts of centralized vs. decentralized data-driven decision making infrastructure design and utility, their related experiences and characterization as well as their perception of the extent to which they are able to influence College/Unit level data-driven decision making? The research questions were as follows:

1. What types of data are typically collected at the College of Education/Unit level to make data-driven decisions in the U.S.?
2. In what categories do these data-driven decisions generally fall?
3. How is data collected at the college level in the selected U.S. College of Education used to make data-driven decisions?
4. How is data-driven decision making being implemented in U.S. Colleges of Education?
5. How does the data collected in U.S. Colleges of Education and used for purposes of data-driven decision making link with U.S. K-12 education?
6. What improvements need to be made in terms of data-driven decision making infrastructures U.S. K-20 systems?
7. What do U.S. College of Education level administrators think about the concepts of centralized vs. decentralized data-driven decision making infrastructures in terms of their design and utility? Related experiences? Characterization?
8. What influence do U.S. College of Education Administrators have with regard to data-driven decision making?

Significance

It is well documented that educational leaders who engage in data driven decision making at the K-12 levels of education position themselves not only to be able to respond responsibly to accountability requirements, but also to reap the benefits of the more efficient use of resources (McClintock & Snider, 2008). Fewer empirical studies to date have been reported in terms of the experiences with data-driven decision making at the postsecondary levels of education. And, despite a few domestic and international best practice examples, higher education still finds itself, at

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best, trying to navigate through the intricacies of data-driven decision making (Briggs, 2006).

Literature Review

Within the context of K-12 education, one aspect of data driven decision making is characterized by the ability to create change based on feedback from standardized testing (Grigg et al., 2005). This standardized testing component, though also evident at the postsecondary level in the form of GREs, LSATs, GMATs, etc. is very seldom used to create change based on student performance results perhaps with the exception of some basic skills competency examinations. According to Bernhardt (1998), Holcomb (1999), Johnson (2002) & Love (2002), student achievement data is the paramount driving force behind data-driven decision making at the K-12 level. Such measures can consist of attendance rates and drop-out rates, as well as standardized test scores.

In the realm of U.S. higher education, however, data-driven decision making is a relatively new term. Only since the early 1980s has it gained in emphasis at the postsecondary level. The latter is particularly true relative to assessment. "Assessment" comprises a set of systematic methods for collecting valid and reliable evidence of what students know and can do at various stages in their academic careers. Those who need to determine accountability need this information to drive their decision-making (Ewell, 2006). In higher education, however, even today assessment results are rarely discussed in the related literature in terms of their use in the decision making process (Bers, 2008) in any depth. Adding to the challenges of assessment for purposes of decision making at the postsecondary level is the lack of faculty enthusiasm not to mention overall student discontent with assessment. More recently, the issue of assessment appears to be resurfacing, with technology at its center.

Despite an awareness of the importance of technology in being able to engage in data driven decision making, however, many problems exist in terms of viable infrasstructures to support data driven decision making. Collaboration across sector is particularly an issue (Means, 2000, 2001; Wedman, 2001).

Specifically, Nicaise & Barnes (1996) and Perkins (1992) note that technology is not being used to its full potential in the decision making processes of education. Hutchings & Shulman (1999) also note that the use of information (data) generated for increased learning should be an area of focus. But, data-driven decision making is minimally supported by faculty and staff (Lazerson, Wagener, & Shumanis, 2000).

In enacting a data-driven decision making system, it is extremely important to discern exactly where this data is being stored and how this data is being used, if at all. According to Voorhees (2008), an institution that has a storehouse of organized and central data is best suited to engage in data-driven decision making (Voorhees, 2008). However, what about specific academic colleges/units? The predominance of information held by centralized institutional research offices is very generalized by nature, and used to generate reports for a multitude of external stakeholders. What about discipline specific information that is needed to influence major change at the college/unit level?

In a study reported by George et al. (2008) students at a small private liberal arts college in Alberta, Canada where asked to complete a five day time diary and 71-item questionnaire to access predictors of academic success. In this study, the findings yielded predictors of academic success beyond what was found in the current literature. What if the specific academic colleges/units, conducted a survey to assess predictors of academic success within their own unique subsystem? Or, better yet, used the data already being collected at the college/unit level to drive decisions regarding strategies that could be put in place to increase student learning? Current technology resources make the latter much more feasible than may have been the case in years past.

Centralized systems may not to be very effective for large academic units (Stocum & Rooney, 1997). In a related management practice, universities have experimented with decentralized fiscal management, i.e., responsibility center management (RCM). RCM allows units to have more of a say in their own unique planning and creates a greater sense of accountability for outcomes (Whalen, 1991). In addition, RCM provides individual units the flexibility to move funds around, as needed.

Methodology

A researcher developed semi-structured interview protocol was developed to examine how technology was used to make data-driven decisions within a selected college during the re-accreditation process at the college level and

what types of decisions were involved. The research questions were used as the basic framework in the development of the protocol. The semi-structured interview protocol was piloted in a 4-year public institution's College of Education not included in this study. Semi-structured interviews were held with the college's Director of Evaluation, the Director of Technology, the Director of Student Field Placements, and a department chair who had also served as the Chair of the college's re-accreditation process. A document analysis was also conducted of the selected College's of Technology Plan, as well relevant committee meeting minutes and other relevant documents, as appropriate.

Data Analysis

Qualitative methods were used to analyze the data collected. Relevant text and documents were content analyzed. Themes were created based on a triangulation of interview results, document analysis, and a review of the literature.

Findings

Findings reveal that at the selected pilot College of Education, an initiative has been taken to place data-driven decision making at the center of its comprehensive technology plan. This plan represent a collaboration of efforts among the University's (Central) Information Resources and Management Division (IRM) and the College of Education's (Decentralized) Educational Technology Support (ETS) team. A clearly defined objective of this technology plan was to facilitate the collection of data to make better and more-informed decisions, specifically regarding enrollment management within the college.

In this pilot study, it was also found that the impetus of its implementation of data-driven decision making infrastructure was its re-accreditation process or an external driver. More importantly, however, findings revealed that the selected institution's success is the integration of several data-bases accessible to college administrators at all times. With the integration of several data-bases, multiple sources of data can be accessed to generate a number of reports. Decentralized units are able to query the data they need on an "as needed" basis resulting in more informed decision making.

Summary/Conclusions/Recommendations

From this pilot study, one can draw several conclusions. First, the more databases available, the more information will be available that can be accessed by the user. Second, the balance between centralized and decentralized data-driven decision making is beneficial as it allows individual units to access exactly the information that they need to make meaningful change decisions. In addition, the extent to which data-driven decision making is a common topic and moved from being talked about to practice among both administrative staff and faculty is critical. It was also found that one of the primary ways data-driven decision making can be used is in the collection of student performance data to make sure that programs are producing quality products (e.g., teachers, educational leaders, etc.). Finally, based on the pilot study results, two key themes emerged relating to the use of technology in making data-driven decisions: (1) integrated systems of data-bases, and (2) commitment to data-driven decision making.

Integrated System of Data-Bases

This pilot study of a U.S. College of Education demonstrates the advantages of having access to a highly integrated system of data-bases. It was determined that such highly integrated systems create a very efficient balance between centralized and decentralized data-driven decision making practices.

Commitment to Data-Driven Decision Making

Many factors were determined to be present that could explain the pilot study college's commitment to data-driven decision making. In a state university system undergoing a drastic governance reorganization over the last five years and more recently in the midst of severe budget cuts, the pilot study College's system of universities are responsible for answering a growing number of calls for accountability. In fact, its most recent governance legislation was titled, K-20 Accountability.

Data-driven decision making represents both a tool and a method for generating solutions and responding to these calls. Particularly in the case of the pilot college, not only was it required to provide a high number of quality graduates in an identified state workforce shortage area, but, the pilot college served a large number of part-time students who worked as full-time professionals and thus was compelled to must make sure that it's course content was highly practitioner based; i.e., that its students could translate classroom experience to the workplace immediately.

Future studies should focus on the extent to which one is able to generalize the pilot study findings, and why organizations/entities are highly committed to data-driven decision making, while others may not be as far along. Factors such as governance structures, budgetary constraints, accreditation status, relationship with the local community and schools, and types of student enrollment are also factors that will need to be considered. Yet another question might be where the idea of data driven decision making typically gets its initial impetus first, i.e., as a result of the accreditation/re-accreditation process or system-wide calls for accountability. The results of this pilot study provide a baseline for such future research.

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