
Towards a Common Data Set for Online Program Management

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Abstract

Administrators of distance learning courses and programs are faced with various data needs related to a range of issues; from enrollment tracking to faculty development to cost and revenue analysis. This paper will explore a proposed common data set for online program administrators and strategies for implementation. The framework offered for building a dataset necessary for online and distance education programming is built around three essential questions; how many, how much, and when?

Introduction

Online education has become an integral part of higher education in the US (Seaman & Seaman, 2017) and globally (Gaebel, et al., 2013; Mukherjee, 2018). The administration of online programs at institutions of higher education has grown into its own administrative area, with requisite needs for qualified staff, standards of practice, and data needs for intelligent decision making (Piña, 2008a; Piña, 2008b; Legon & Garrett, 2017). There is great variation across institutions in how data is collected and reported, and more specifically, little agreement as to what data is needed to effectively manage and direct online programs. This presentation and paper offer a framework for considering which data is needed, collected, and ultimately used in decision making processes for online and distance education programs.

Ask a simple question...

Soon after starting my current position as Director of Distance Education at USC Upstate in 2015, I was faced with a simple question by one of my colleagues; how many online courses did we have? I did not know the answer to that question of the moment, but more surprising was the difficulty in answering the question at all. Upstate is a mid-sized senior regional campus of the University of South Carolina system, with an enrollment of around 6,000 students. Several programs had moved to fully, or majority online status in years prior to my arrival with additional courses taught online or in blended modality across the campus. There was no enterprise level dashboard, and access to the student information system (SIS) and database was only given after a lengthy (and appropriate for security) "hunt and seek" exercise. Seeking out an answer to that question led me on a journey through data management systems, both internal and external to our institution, policies that were inconsistent and byzantine, and ultimately to the need to build a simple dashboard for data that would be 1) real-time and consistent, 2) easily understood, and 3) useful in answering the most basic questions for someone in my position.

A Quest in the Kingdom of Data

The administration of online distance learning, as it has developed now over two decades, requires data (Piña, A., et al, 2018). The use of data has been part of higher education management, in one

form or another, for quite some time, tracking with the growth of a “culture of management” in both public and private commercial institutions (Keller, 1983). People in distance learning or online program administration are awash in services and suggestions for how, what, and when to infuse data into their experiences. We daily encounter discussions of “big data” and “data analytics” and trust that somehow all that is truly useful to our respective roles in Distance Education/Learning Online (DE/DL/OL) administration. But before a more thorough discussion of data- as used in distance learning- is presented, a brief review of what we mean by “data” is required to create a common understanding and starting point.

The fields of semiotics and informatics are most useful in helping define, in the most fundamental sense, what is meant by “data.” Data, according to a semiotic definition, are signs (or symbols) that represent something in a particular context. What that context is, and how we use that to derive meaning from the data, are critically important, perhaps more important than the data itself (Beynon-Davies, 2011). It is also good to differentiate data from information. This distinction is also critically important as we are awash in data, as it is being generated and streamed automatically through numerous systems, but our ability to derive meaning and information from the data in decision making lags the pure generation of data. Understanding data, and what it represents, in service of fostering greater efficiencies and improving the quality of what we do, is also terribly important. The goal of developing a relatively standard dashboard for DE/DL/OL administration is twofold; 1) identifying which data are appropriate and obtainable and 2) identifying which processes need data to inform continuously improving or continuously self-regulating systems.

The Inclusive Data Family

If we take the broader view of data outlined above, then we can look across a much wider landscape of signs and symbols than the basic (and more narrow) collection of numeric data typically understood to be the only universe in which we can play the game of management. Numeric data is indeed very important to our work. We have need to quantify just about everything that goes along with the distance learning administration territory, but the signs and symbols available to us along our path include much more than counts, averages, percentages, and statistical description or inference.

Qualitative methodology, while fully embraced across numerous fields, lags in the overall management culture in higher education (Paulson, 2016). Qualitative methodology is still seen to have less valid outcomes than purely quantitative methods (Noble & Smith, 2015). Although more examples of portfolio assessment (as one example), which promote the use of artifactual evidence along with numeric data, are seen in assessment processes at large institutions, “data” is still largely thought of as synonymous with numbers. Data, however, as considered above, can be more broadly defined as the “signs and symbols” resulting from all our activities and processes through which we engage learners in that large social process of education. That suddenly paints a rather large and complex picture for us. Documents, media recordings (video and audio), live presentation and performance, artwork, 3D construction. The following is a brief list of non-numeric types of data that can be utilized for planning, management, and evaluative purposes in distance learning administration (*but rarely is*):

Visual image data: artifact evidence from online courses including screen capture (with personal ID information redacted or blurred), interviews, live video capture of presentations or student interactions (with appropriate ID security).

Audio data: podcast recording, audio notes, field/environmental recording, interviews.

Document artifact data: forms, internal process documents, memos, reports.

Towards a Data Dashboard; Categories and Utilization

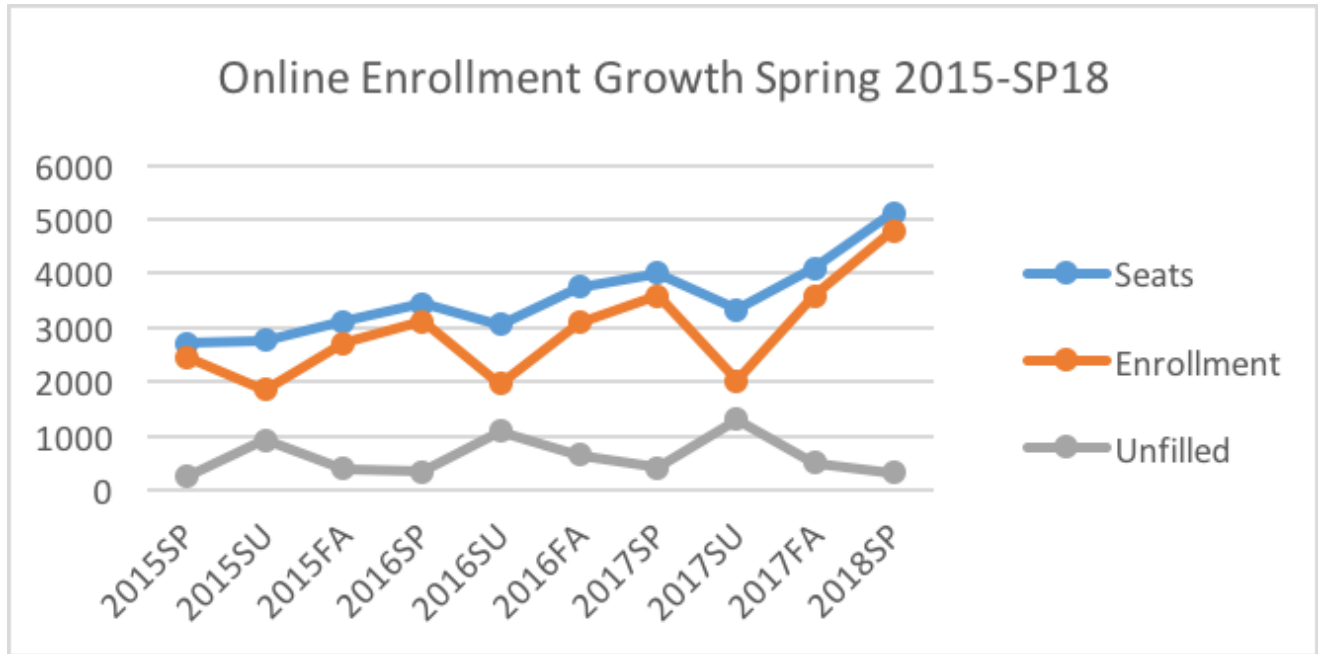
In the following list, I have paired the most basic data/information categories with one or more essential questions and a brief discussion of how and when this type of data may be used. Whatever the technology or organizational structure used, the categories below lend themselves directly to the

primary tasks of the Online and Distance Education administrator.

Enrollment Management – *How many students do we have online?*

As I related at the beginning of this paper, the search for an answer to this particular question grew into a fuller exploration of data surrounding the need to understand past, current, and future processes of distance and online education at my institution.

Figure 1. An example of a quickly generated data table from a spreadsheet, auto-reported from the system database. (Data source: USC Upstate Information Technology & Data Services).



The data chart above offers a quick look at overall enrollment trends over a few years. The accompanying analysis of this particular example revealed that summer programs were largely under-enrolled for the 3 reported periods. Discussions related to this helped refine the strategy for online course offerings.

Course Management – *How many courses are being run online? In which departments? How many in each program?*

Getting an accurate count of how many courses are being run at the institution through the online environment can be more difficult than it might seem. Coding, or tagging of courses as online in the student information system can be confounded by inconsistent definitions of what “online” is, including “hybrid or blended” courses, including online courses in fully online programs only or combined with the whole population of courses using online modality during any particular semester or academic period.

Figure 2. An example of course count and enrollment data, auto-generated. (Data source: USC Upstate Information Technology & Data Services).

Summary by Period and Section

Period	Section Indicator	Section Count	Section % of Period	Enrollment Count	Enrollment % of Period
Fall 2017	Hybrid	34	2.11%	678	2.71%
Fall 2017	Non-Online	1,385	86.02%	20,690	82.59%
Fall 2017	Palmetto College	50	3.11%	829	3.31%
Fall 2017	Web 100% Online	141	8.76%	2,854	11.39%
Fall 2017 - Summary		1610		25,051	
Spring 2018	Hybrid	51	3.30%	1,013	4.19%
Spring 2018	Non-Online	1,273	82.39%	18,516	76.51%
Spring 2018	Palmetto College	52	3.37%	949	3.92%
Spring 2018	Web 100% Online	169	10.94%	3,722	15.38%
Spring 2018 - Summary		1545		24,200	
Summer 2018	Hybrid	12	3.54%	0	
Summer 2018	Non-Online	159	46.90%	0	
Summer 2018	Palmetto College	31	9.14%	0	
Summer 2018	Web 100% Online	137	40.41%	0	
Summer 2018 - Summary		339		0	
Overall - Total		3494		49,251	

Faculty and Course Development – *Who has been trained, at what level and how much compensation or recognition have they received and in what forms? Which faculty have received certification or external training?*

Most DE/DL/OL programs involve training faculty to varying degrees (Thomas-Evans & Pomper, 2015). The DE/DL/OL administrator often is either responsible for training and support of online teaching faculty, or partners with other units on campus (learning/instructional technology support or centers for teaching excellence and faculty support). Whatever organizational structure, data related to training experience is critical to collect, organize and utilize in effectively managing costs, quality, and improvement (Purcell, Scott & Mixon-Brookshire, 2017). Faculty self-review and feedback on teaching processes as well as training or faculty development events, provide potential data for qualitative analysis.

Learner Analytics – *What does student performance (across one or multiple courses) look like and what data is available that can impact teaching effectiveness? How do faculty and administrators effectively use data to improve student learning outcomes?*

Of course we wish to know if our teaching, in general, is effective or not. This is a question that drives much of the assessment activity at an institution, but as many have noted, is often not pursued in an intelligent or coherent fashion (Seidel & Shavelson, 2007). Even so, student activity, while matriculating the various curricula we have set before them, leaves behind loads of data in the form of grade transcripts, engagement data, and more. Learner analytics, a current focus of the various commercial services vendors (they prefer the term “partners,” which is dubious), can be thought of as both a process of data collection and consumption at the local level in each individual course, or at a larger level where student performance data is collected and understood in the context of the whole institution. Engagement data, particular in the form of “breadcrumbs” when students click, view, touch or otherwise engage elements in online courses, is one source of data to be collected and analyzed. Strang (2017) notes the problems that some have had with using “big data” (gathered across multiple institutions or regions) to effectively impact decisions about teaching. In his mixed methods study, he further notes that learner analytics, coupling traditional quantitative data with qualitative

data can yield significant measures of effective course elements. Much of the research and discussion of data analytics and even “dashboards”, as related to DE/DL programs, centers around the role of data analytics applied to learning, or learner analytics (LA) (Roberts, Howell & Seaman, 2017). Faculty and academic leadership have a central interest in this data and its reporting. Sensitivity to the evaluative nature of student performance needs to be a caution, as it is easy to misconstrue academic performance data and faculty teaching effectiveness, although some would argue that is the point of learner analytics, at least when used in an operational sense. Learner analytics, while useful for overall program management and for some evaluation processes, are best utilized in reference to providing direct input in student learning through faculty student communication (Millecamp et al., 2018).

The Technology of Data Collection and Analysis: A Proposed Dashboard

The review of data types and purposes above suggests a proposed design for a dashboard model. A dashboard, in a simple explanation, is a visual data tool which facilitates the collection, display and interpretation of data for creating information. The term “dashboard” derives from and directly relates to the display features of a typical automobile, where the dashboard is arranged for primary view of the driver, takes input from multiple sources of data streams (electro-mechanical sensors distributed throughout the vehicle), and displays real-time data in symbolic form. These symbolic representations can be in the form of needles on a dial, digital numeric display, color coded lights, audible indicators, etc. They are all designed to collect data, display it in easy to interpret ways to provide meaningful information to the driver who uses that information to operate and control the system.

“Data dashboards” likewise have evolved to collect and display various types of data in ways that help inform users in the system. For our purposes, a data dashboard that collects and displays information for critical purposes in DE/DL/OL administration would have, at the minimum, the following features (by major category and sub-category):

- Live enrollment data for online courses
 - Enrollment trends across time
 - Online course enrollments grouped by program or department
- Online course counts
 - By academic term
 - By academic program
- Course and faculty development activity
 - Courses under development
 - Faculty lists with training levels, awards
- Learner analytics and performance
 - Grade comparisons, OL and non-OL courses and programs
 - Assessment performance indicators by program or academic unit
 - Graduation, retention, and completion rates

Like most processes in higher education, a variety of small to large companies have technology products and solutions to assist building custom dashboards. However, commonly available office productivity tools, such as Microsoft Excel™, offer very powerful tools to turn sheets and tables of data into forms and charts, which can be organized to display a dashboard of the data listed above. Software programs like QSR NVivo™, which help organize qualitative data for analysis and interpretation, also provide tools to visually display the data patterns and interpretations and can be integrated into a dashboard display.

Understanding Our Data Reality – Knowledge management and data-driven decisions

What we use data for is equally as important as identifying what it is and where it exists. Obviously a key recommendation here is to not focus on the simple (or complex) collection of data without considering how it will be analyzed, interpreted and ultimately utilized in making improvements to

individual courses and entire programs. Once the sources of data are clearly defined, a regular program of generating reports, planning and discussion exercises and sharing of the data with key stakeholders is an important part of the cycle. Raw data often has little meaning (or different, sometimes divergent meaning) to different end-users. Business and finance office staff might look at it one way, enrollment management staff will have different needs and interpretations, and academic administration will want to see still other groupings and analysis. Still, sharing basic data, captured through a dashboard and reported clearly, to a diverse audience can yield multiple and often rich interpretations, leading to equally rich analysis and suggestions for continuous improvement.

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