Dean's Dashboard User Guide

Module 1: Planning and Implementing a Dean's Dashboard

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Authors: Rebecca Bailey, Jehu Iputo, David Potenziani, Jason Pickering, Carl Leitner

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INTRODUCTION TO THE DEAN'S DASHBOARD

Every day, school leaders—such as presidents, principals, deans, directors, and department heads—must make critical decisions about the operations and management of their institutions. Sometimes those decisions are based on information and data. Other times they are based on educated guesses, because necessary data are not available or are too complex to quickly analyze. Computerized education dashboards can help to manage and make comprehensible the large amounts of data that school leaders must use to make decisions.

Dashboards extract information from different management information systems—such as finance, admissions, personnel, and infrastructure management systems—and display it in simple data visualization objects, such as charts and graphs. By translating complicated statistical analysis into clear visual representations, a dashboard empowers school leaders to define and measure key performance indicators in order to systematically track progress toward a school's strategic goals. As high-level trends in school statistics are aggregated and visually highlighted, school leaders are able to see and quickly respond to evolving needs.

Similar to the dashboard of an automobile with its speedometer, odometer, and fuel gauge, the Dean's Dashboard is meant to measure progress and chart trends, indicating either improvement over time or need for strategic action. The dashboard visually displays progress and trends at the chosen level of a department, school, faculty, or other larger group. Charts, graphs, maps, and other information objects can be easily customized to adjust to changing circumstances as well as address potential "what if" questions that often arise when managing an educational institution. For example, school managers can revise thresholds and targets to encourage further progress after achieving an initial goal; add or remove key performance indicators and goals as the institution's educational mission evolves; and modify the way trends are analyzed by, for example, disaggregating groups by age or gender or program (see Figure 1).

Figure 1: Examples of Metrics that Can Be Tracked by the Dean's Dashboard

Trends over time: A school's goal is to increase annual enrollment numbers. The dashboard charts the number of students newly enrolled each semester.

Comparisons between groups: A university aims to track the professional identity of enrolled students to understand how many of what groups are entering its programs. This figure looks at changes in enrollment (shown by the width of the color bands). Nursing students remained stable, but middle-level health workers and medical students increased in 2015.

Comparisons within groups: A school can track enrollments to see if they are aligning with its strategic goals. In this case, a school seeking to increase non-nursing students can track that over time—both within and across groups.
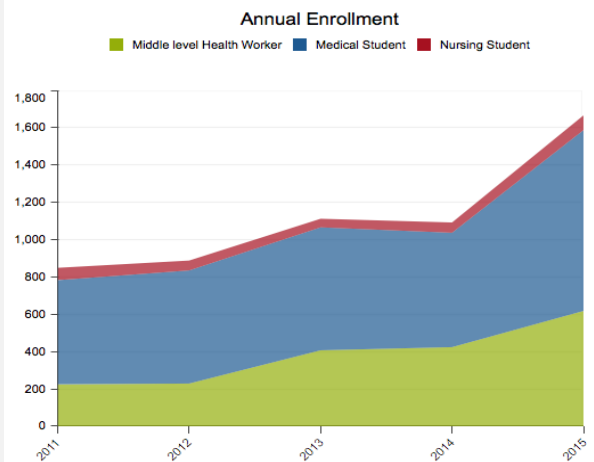
Dashboards are not meant to track single individuals or transactions. Rather, they consolidate and aggregate information collected through other management information systems. These include data systems used for finance and accounting, facilities and estate management, student information management, student records, learning management, student assessment, human resources management, alumni management, or any type of business management software.

Most data systems are amenable to some level of ad hoc reporting and dashboard capability. On their own, for example, separate financial systems used for budgeting or facilities systems that track the age of furniture and computers each provide a view of the situation from their own perspective. Combining these data in a comprehensive dashboard allows school leaders to understand the financial implications of aging computers requiring replacement in the context of the annual budget. Approaches that integrate different systems into an all-encompassing dashboard application thus offer significant management and strategic benefits (Center for Digital Education 2011).

How to Use this Guide

This document offers guidance on the adoption, preparation, and use of the Dean's Dashboard as based on the DHIS 2 software. It is a guide and not a recipe: it is meant to offer general explanations and advice in thinking through the adoption of the Dean's Dashboard. It begins by assessing the use of dashboards for management decision-making and performance measurement, followed by a discussion of the institutional and technical readiness for developing the data to place in a dashboard and its context for use. Because the Dean's Dashboard is meant as a management assistance platform, the guide offers an orientation to key performance indicators to help potential adopters understand the types of information that can be fruitfully used in the context of strategic and routine management efforts. To facilitate understanding, a number of examples are offered to explain the potential indicators in concrete terms. While these examples may or may not relate to a potential adopting school and should be viewed as methods to understand the range of functions of the dashboard rather than a definitive or even suggestive list of indicators. The guide includes a set of questions to assess organizational readiness, to make sure an institution has the resources and information needed for successful implementation. Finally, the guide offers a step-by-step case study of an institution that created a set of indicators, to demonstrate best practices in approaching the use of the Dean's Dashboard. While the manual was inspired by the experience with the pilot schools, its specific steps will probably vary from those of an adopting school. It is a thoughtful exercise to help prepare an adopting school to address its own situation.

Digital Platform

Since digital dashboards are commonplace today, the developers of the Dean's Dashboard decided to adopt an existing platform that could be used by an academic institution. They sought an open source, reconfigurable, and sustainable application that could combine information from multiple data sources as well as have a rich set of information visualization features. The District Health Information System version 2 (DHIS 2) fit these requirements.

DHIS 2 was developed to capture and graphically display information on key performance indicators for health programs and service delivery at the health facility, district, and national levels. The software is a mature, powerful, and user-friendly system that adheres to best practices in software development and implementation and is endorsed by WHO (Belay and Lippevald 2013). Its origins go back to 1996 using Microsoft technologies; in 2008, it was completely rewritten to be open source using Java for its current version. The system was developed by the Health Information Systems Program (HISP), a global network

established, managed, and coordinated by the Department of Informatics at the University of Oslo. It is being implemented in more than 40 countries, with PEPFAR, the Global Fund, and the Norwegian Agency for Development Cooperation (Norad) collaborating with HISP to expand and strengthen its use. Years of development and implementation have created a large community of DHIS 2 experts who can provide ongoing technical support to its users. There are also regular DHIS 2 academies for users who wish to expand their competency in the use of DHIS 2 software to meet their needs.

As the design of DHIS 2 has little that is specific to the health context, it demonstrated good potential for adaptation to other uses. Thus, this set of manuals is designed to guide users in utilizing the existing DHIS 2 software to address the graphical reporting needs within their schools.

Setting Targets

Setting targets helps an institution to focus its time, effort, and resources on attaining its strategic objectives. Targets help stakeholders stay aware of what is expected from them and form the basis for evaluation. It is advisable to formulate targets that are specific, measurable, achievable, realistic, and time framed (SMART). For example, a SMART target could be: *To improve the student retention rate by 20% in 2 years*.

## ORGANIZATIONAL AND TECHNICAL READINESS

Three areas intersect for institutions considering implementing the Dean's Dashboard. Together, financial, human, and material resources provide the necessary institutional means for successful implementation and use. The degree of their combination and overlap can provide insight into an institution's ability to use the dashboard effectively. *Human resources* include not just the technical staff needed but also leadership support for the endeavor. The leadership can devote *financial resources* needed to develop or access the *material resources*, especially in the form of data needed to inform key performance indicators. All of these are most useful in the context of a strategic plan and its ongoing measurement and evaluation. These areas form the backdrop and context for considering use of the dashboard.

Organizations interested in using the Dean's Dashboard should assess two types of readiness: organizational and technical. To derive the most benefit from the tool, both types should be considered.

Organizational readiness relates to the role the dashboard will play in the strategic path the institution is following. Two questions may help to determine this type of readiness:

1. Does the institution have clear objectives for the Dean's Dashboard?

2. Is there a clear message that needs to be communicated by the dashboard; if so, what is the message and to whom is it directed?

The audience of the message could be students, academics, institutional administrators, government funding and/or regulatory agencies, and the community at large. The message or messages could pertain to student enrollment data, student
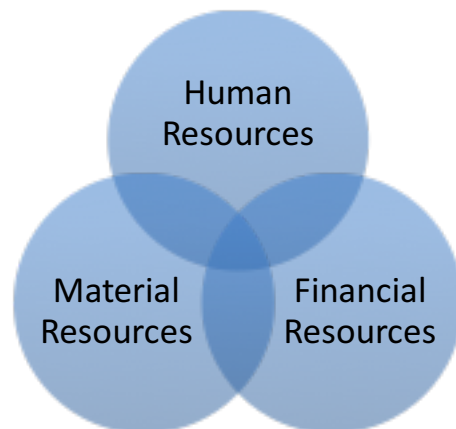
performance metrics, academic staff profiles, teaching workloads, infrastructure capacity and utilization, research inputs and outputs, and others. Often, such questions are part of the planning or execution of a strategic plan and offer opportunities to use the dashboard to highlight progress as well as inform decision-makers about information they need.

Technical readiness involves both data and technologies. One series of questions comes into play when considering data:

- Does the institution have the required data and/or a system and infrastructure for the collection of those data?

- In what form are the data (i.e., electronic or paper)?

- How accessible are the data; are there legal, ethical, or administrative constraints to the data's easy access and flow?

There are a variety of data management systems on the market, including instructional data systems (such as a student information management system or a learning management system); administrative and operational data systems (such as enterprise resource planning, fiscal management, or grants management); and integrated data systems that combine student data with operational and administrative data (integrated tertiary software).

On the technology side of readiness, more questions come into play:

- Does the institution have the infrastructure to house the dashboard locally?

- Should the institution use a cloud-based implementation of the dashboard?

- Does the institution have the human resources to administer, service, support, and maintain the infrastructure for the dashboard?

- Finally, does the institution have budget resources for the dashboard?

While open source and free to use, the Dean's Dashboard does require technology resources to install and use as well as human resources to support the system.

KEY PERFORMANCE INDICATORS

Performance metrics, also known as key performance indicators (KPIs), are measurements or combinations of measurements that indicate the status of a school's instructional and administrative functions. They can be compared to a predetermined benchmark or target or can serve as a simple notification. KPIs will vary based on an institution's strategic goals and end user information needs. In higher education institutions, the general aim of an indicator system is to analyze the institution's performance or, in other words, its strengths and weaknesses. Performance also means the institution's ability to attain its goals.

Two prerequisites must be in place for any KPI system to succeed:

1. A functioning information system

2. Clearly-defined goals and objectives at the institutional or program levels.

As a first prerequisite, a functioning information system should reliably contain the basic information needed to develop the indicators. Therefore, a KPI system is actually not the first step but rather the end result of a functioning information system that can make good use of data and communicate the data clearly. The second prerequisite is a policy or strategic plan that is sufficiently explicit and clear, providing a foundation upon which a KPI system can be constructed. A strategy or plan can facilitate the construction of the institution's indicator system. In other words, a school should clearly define its goals and objectives in key performance areas—such as students, faculty, infrastructure, financing, and alumni—to guide the development of KPIs that measure performance in those areas.

All the indicators should be analyzed in light of the institution's strategic plan or its goals and objectives. The reason is that, in addition to presenting a clear, basic, and relevant description, a set of indicators should measure events and the progress of various activities that are of interest to stakeholders and administrators of educational institutions. A step-by-step best practices guide is described in [Best Practices in Planning and Implementing a Dean's Dashboard: Step-by-Step Guide].

Examples of Key Performance Indicators

KPIs in the Dean's Dashboard can cover an infinite variety of issues, but for the sake of illustration, three areas are the focus here: education, research, and management capacity (see exemplar information visualizations in Figures 2 and 3). In this case, it is important to have information on enrollments by discipline, enrollment trends over time, graduates by program and degree level, and success rates and dropouts by program or discipline. If the development of a new academic program is part of the strategic plan, special attention must be paid to that program. Efforts must also be made to obtain data on the occupational situation of former students. With regard to academic staff, information should be obtained on their status, qualifications, and experience. It is also important to know the sources of funding and ascertain whether trends in funding are in line with the strategic plan—for example, the development of resources generated by the institution (Martin and Sauvageot 2011).

**Figure 2: Education KPI: Licensure Exam Pass Rate at One College Compared to All Other Colleges in the State**
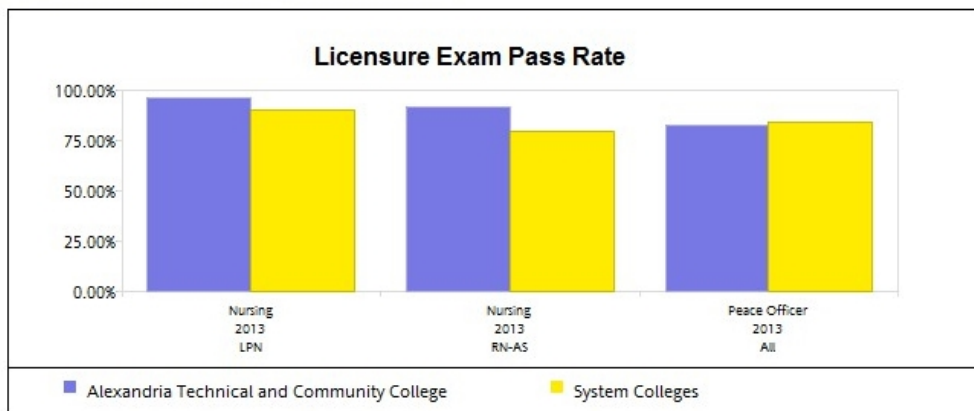
Source: Minnesota State Colleges and Universities Accountability Dashboard (http://www.mnscu.edu/board/accountability/index.html)

Figure 3: Management KPI: Dollar Value of Backlogged (Deferred) Maintenance on the Facility Over Time
Source: Minnesota State Colleges and Universities Accountability Dashboard

Deferred Maintenance

(http://www.mnscu.edu/board/accountability/index.html)
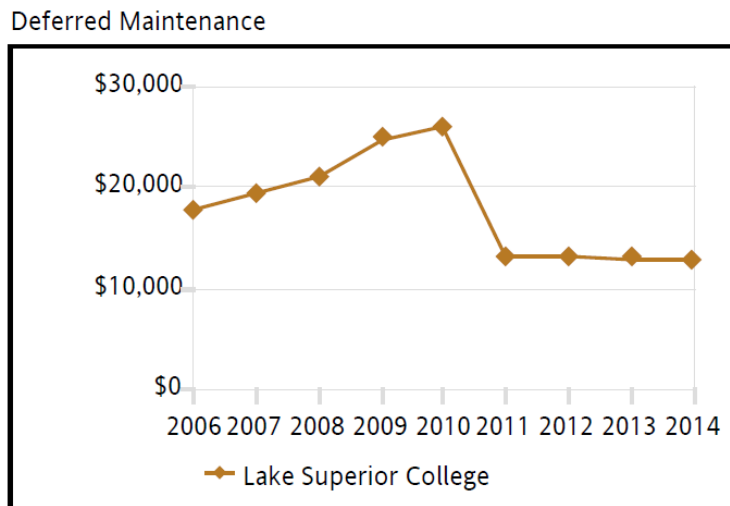
Educational indicators can be grouped into three categories: input indicators; those indicators that are procedural and reflect the context of the institution offering the educational experience; and output indicators. Below are some examples of indicators, but bear in mind that every organization will develop KPIs based on its unique needs and goals.

Input Indicators

Input indicators are leading indicators that indicate events at the beginning of a process, such as enrollment.

Examples

Applications (head counts) per program in the school/faculty/college:

- Number applied by gender, race, urban/rural, socioeconomic status
- Number and proportion of admission offers accepted and denied by gender, race, urban/rural, socioeconomic status.

Enrollment (head counts) per program in the school/faculty/college:

- By level of study (i.e., diploma, bachelor's, postgraduate diploma, master's, doctorate)
- By gender
- By race (in cases where race is a relevant issue)
- By urban/rural divide
- By socioeconomic status (i.e., by either income or expenditure quintiles)
- By presence or absence of a financial aid offer.

Contextual/Procedural Indicators

Contextual and procedural indicators monitor key resources and processes required to deliver learner-centered, competency-based curricula. They can include measures related to governance and strategic planning, marketing and external relations, student throughput, personnel, infrastructure, and the procurement and management of equipment and materials.

Examples

Student performance indicators (including comparison of demographic and geographic groups):

- Grades, tests
- Course repeat rate
- Year repeat rate
- Attrition rate
- Retention rate
- Academic probation rate (i.e., the proportion falling below a specific grade point average)
- Extended probation rate (i.e., the proportion falling below a specific grade point average for more than one term)
- Financial aid (i.e., the proportion receiving financial aid)
- Academic counselling (i.e., the proportion receiving academic counselling)
- Notification of at-risk students (including grades, demographics, evidence of engagement such as log-ins to school websites, participation in events, and online interaction)
- Notification of important course registration information (e.g., empty and full sections, scheduling).

Staffing and personnel indicators:

- Head count of staff (by category: academic or administrative; by employment status: permanent or temporary; by gender; by race; by age group)
- Proportion of permanent to temporary academic staff
- Established academic posts (occupied and vacant) by academic rank
- Established administrative posts (occupied and vacant) by rank
- Academic staff qualifications by academic rank
- FTE (full-time-equivalent) student-to-staff ratio per discipline; per department; and per program
- Staffing at clinical practice sites (i.e., the ratio of students to supervisor)
- Human resources statistics (e.g., raises, monthly payroll, status of top recruits, tenure information, employee performance, or performance evaluations).

Infrastructure indicators:

- Student accommodations (capacity and occupancy) by gender

- Staff offices (capacity and occupancy)

- Lecture rooms (capacity and utilization)

- Tutorial and seminar rooms (capacity and utilization)

- Clinical laboratory space (capacity and utilization)

- Simulation/skills labs (capacity and utilization)

- Clinical facility teaching sites (capacity and occupancy)

- Community teaching sites' student accommodations (capacity and occupancy)

- Usage statistics for media and library resources, campus documents, and other content

- Resource utilization (e.g., staff, rooms, buildings, energy, lighting, paper, print toner, equipment, information technology resources, and parking permits)

- Information technology usage statistics (e.g., network and application performance, system efficiency, heavy users of resources, equipment lifecycle, and security and identification issues)

- Student health services statistics, including illness tracking by location

- Notification of safety issues, emergencies, or infrastructure problems.

Financial indicators:

- Institutional unit income by source—government grants, tuition, third stream (e.g., research grants)

- Status of pledges, tele-fundraising, funding proposals, and campaigns, as well as alumni giving by school, department, or career field

- Institutional unit expenditure by category (e.g., personnel costs, student costs, materials and equipment costs, and infrastructure costs)

- Cost of training a graduate by program (e.g., medicine, nursing, pharmacy)

- Sources of financial tuition support to the students (e.g., parents/family, scholarships, bursary, loans)

- Tuition payment rates (for schools that charge tuition)

- Departmental/business area expenses and revenue compared to forecast

- General ledger (accounts payable and receivable)

- Purchasing information (e.g., status of purchase orders and notification of inventory problems)

- Research information (e.g., status of grants and awards, or budget tracking).

Output Indicators

Output indicators are typically lagging behind a process, such as the number of enrolled students that complete a program and graduate.

Examples
Teaching output indicators (for each program of study per qualification level):

- Course success rate (i.e., the percentage of students who pass a given course)
- Graduation rates
    - On-time graduation rate (i.e., the proportion who graduated within the recommended number of years for the program)
    - Cohort graduation rate (i.e., the proportion who graduated, among an input cohort)
    - Final year graduation rate (i.e., among those who entered, the final year the proportion who graduated)
- Throughput rates (i.e., the number of students of a specific cohort who graduated either within the minimum time, or up to two years beyond the minimum time, to the number of students in the baseline enrolments of that cohort)
- Number and types of degrees awarded, and number of students enrolling but not receiving degrees
- Certification rate (i.e., among the students who graduate, the proportion who pass the certifying or licensing exam on the first attempt).

Research output indicators:

- Total annual publications by type (i.e., journals, books, and conference proceedings per program)
- Total research publications per permanent member of academic staff
- Total number of research publications per permanent academic staff member with a doctorate as the highest qualification.

Outcome indicators:

- Progression rates (e.g., general/specialized practice, primary care/specialty training)
- Employability rates
- Type and location of practice (e.g., public/private, urban/rural)
- Students entering graduate school or the workforce upon graduation from college; student career choices by degree.

Assessing Organizational Readiness

Answering the following questions can help institutions understand their level of readiness to initiate the Dean's Dashboard program. It may be helpful to have a colleague review the responses or to answer the questions with a larger group (e.g., senior leaders).

1. Has the institution clearly defined the need that is driving it to consider implementing the Dean's Dashboard?

    - An organization is more likely to be ready to undertake a Dean's Dashboard initiative when it has objective information to support the need for improving specific areas.

2. Does the institution have clear objectives for the Dean's Dashboard?

   - Is there a clear message that needs to be communicated by the dashboard? What is the message, and to whom is the message directed? The audience could include students, academics, institutional administrators, government funding and/or regulatory agencies, and the community at large. The message could have to do with student enrolment data, student performance metrics, academic staff profiles, teaching workloads, infrastructure capacity and utilization, research inputs and outputs, and others.

3. Does the institution have the required data and/or a system and infrastructure for the collection of that data? In what form are the data stored (i.e., electronic or paper)? How accessible are the data? Are there legal, ethical, or administrative constraints to the easy flow of data?

   - These questions highlight procedural issues related to data acquisition, storage, and access. While there are a number of types of software for data management in the educational sector, as mentioned above, they often contain parts of the data needed by purpose—such as financial, physical plant, or human resources data. Combining data across such sources is often a very useful step in providing information for decision-makers but requires that the institution assess its ability to conduct relevant queries and construct meaningful reports to use in the dashboard.

4. Who in the organization uses information to guide decision-making and process improvement?

   - The Dean's Dashboard is an information system that offers visual reports on a number of indicators important to an institution. Understanding who can use that information, whether one individual or a team of persons, can affect how successful it can be for addressing a given situation.

5. Is now the right time to implement an information tool such as the Dean's Dashboard? (In other words, does implementation of the dashboard risk competing with other major changes currently being made at the institution?)

   - If the organization is currently experiencing many changes, it may not be the ideal moment to begin implementing the Dean's Dashboard initiative. Attempting to manage multiple change efforts at one time may degrade an institution's ability and employees' willingness to implement and sustain the Dean's Dashboard effort. The program may be viewed as a distraction rather than a solution.

6. Will the institution's leaders support the effort required to implement and sustain the Dean's Dashboard initiative?

   - It is essential that the leaders of the institution actively support and champion the Dean's Dashboard. Leaders need to understand the requirements of the program, including understanding that identification of indicators is an iterative process spanning several weeks and requiring technical preparation and training of system users, as well as regular meetings to reinforce concepts and skills. Leaders also need to be willing to provide the personnel, time, and resources required to successfully implement and sustain the program.

7. Will the institution provide sufficient staff with the necessary skills and time to administer, service, and support the use of the Dean's Dashboard?

    - It is important to find individuals with the right mix of characteristics, both technical and business, to serve as users to increase the success of the Dean's Dashboard initiative. Institutional leaders can designate the facilitators of the Dashboard.

8. Will the institution allow time for personnel to attend technical training?

    - While the Dean's Dashboard will be designed by participating institutions, some direct staff training is required. The full training element of the program includes up to 40 hours of classroom learning; however, an institution may decide to provide training on only one segment (e.g., a specific indicator or set of related indicators) that may require one hour. To preclude disruptions and scheduling problems and to maximize learning, participants should be excused from all duties while attending class.
    - Resources to support Dean's Dashboard administrators and users include: a step-by-step user's manual; an expert community and user support group; and training opportunities.

9. Does the institution have the infrastructure to house the dashboard locally? Does the institution have the resources to house the dashboard in the cloud?

    - In terms of infrastructure needed, two options exist—in the cloud or local to the institution. Small institutions may prefer to pay for a cloud-based implementation (that is, to access and use the software entirely online) as purchasing and maintaining servers may be prohibitive. Institutions with strong information and communication technology (ICT) units may prefer to install the software locally in their data centers. Configuring and implementing the system is not overly complex, but support will be essential to new users.

10. Does the institution have a budget for the dashboard?

    - While open source software is free to use, it requires staff time and computational resources to set it up and maintain its use. Moreover, the institution will also need one or more individuals who work with its data to develop the visualization reports in the dashboard. All these functions take time and cost money, so budgeting the resources needed is a prudent step in adopting the Dean's Dashboard.

The Dean's Dashboard Implementation Team

A successful implementation of the Dean's Dashboard requires a multidisciplinary effort to address the issues of data and information development as well as the technical implementation of the software and the engagement with school stakeholders. Including people fulfilling the following roles is recommended:

1. *School administrator:* responsible for collaborating with school leaders and stakeholders to define and design the key performance indicators to be developed and tracked in the dashboard, including identifying valid and reliable sources of data

2. *Informatics consultant:* responsible for maintaining the Dean's Dashboard, building the organizational structure within the program, and creating graphical objects and data entry screens

3. *Data entrant:* responsible for routinely transferring or entering data to create and update the dashboard charts, graphs and other visual objects; s/he will work with the various educational programs to identify the data needed.

4. *Project manager:* responsible for the implementation of the Dashboard and the development of visualized information to be placed within it.

Some of these roles, such as informatics personnel, may require more than one individual to meet its needs. Conversely, some highly skilled individuals may be able to perform more than one of these roles.

BEST PRACTICES IN PLANNING AND IMPLEMENTING A DEAN'S DASHBOARD: STEP-BY-STEP GUIDE

The following is an adaptation from the United Nations Educational, Scientific and Cultural Organization (UNESCO) publication entitled, *Constructing an indicator system or scorecard for higher education: A practical guide* (Martin and Sauvageot 2011).

Ten steps are required in developing a list of indicators or scorecard:

1. Identify or define objectives

2. Create a list of policy issues based on the objectives

3. Develop a list of indicators

4. List the data required to calculate the indicators

5. Locate the data sources available

6. Calculate the indicators

7. Verify the results

8. Analyze the indicators

9. Select the final indicators for the system

10. Select the layout of the indicator system.

From the very beginning of the process, a project manager should be designated. He or she will develop a list of the most relevant indicators for use and will oversee the various human or material resources put in place or mobilized for the project. The project manager should have solid experience in statistics, a sound capacity for analysis of the education system or institution as a whole, and the ability to run this type of project from its conception to final publication. Such an effort should be integrated into existing organizational structures for institutional sustainability. Since the indicators provide a means of monitoring progress toward the goals of the institution's strategy, building the list of indicators should be the topic of high-level discussion among all the departments or sections involved.

Therefore, it is often very useful to establish a management or steering committee comprising representatives from each of the departments or sections concerned. The committee can be composed of people not only from the leadership of the institution, but also from component units of the

university, school, or department, to bring in expertise in administration, finances, physical plant, academic programs, and other relevant areas.

Once this committee has defined the main themes and objectives to measure, a working group, comprising a small number of experts and led by the project manager, should execute the work.

To summarize, two groups are needed: a management or steering committee and a working group that will implement the project. This organizational structure, traditionally used in project management and operations, is indispensable. Deadlines should be clearly established on a strict schedule that governs the working group's development of the indicators and the management committee's policy validation process.

After two or three management committee meetings, the definitive list of indicators that will appear in the dashboard should be finalized. Only major unforeseen problems such as unavailability of data should interfere with the management committee's validation of the list. After validation, the management committee gets involved again in the final discussion about the dashboard before its release (this subject will be covered below). To ensure that the indicator system will last over the long term, it is paramount to involve the groups concerned.

After the first edition is published, work should begin on preparing the second, which is absolutely essential for the project's continued success. If indicator system production stops after the first edition, the project may falter and fail. Since it is the staff of established departments and sections who will be producing the document, they should be fully associated with the project structure, which should disappear as production of the indicator system is incorporated into their regular work. All of this should be clearly specified in advance.

Once the indicators have been defined and the necessary organizational structures created, the actual work can begin. Figure 4 is an example of a combined organizational structure and workflow chart of the production of an indicator system.

Figure 4: Example of Organizational Structure and Workflow
(Adapted from Martin and Sauvageot 2011)
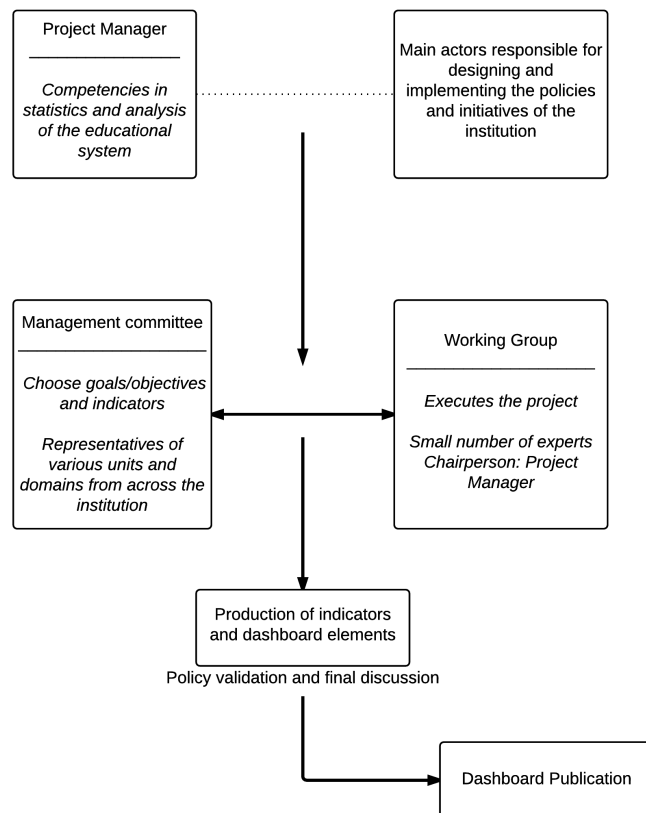
Case Study

The following example from the fictitious National University Faculty of Health Sciences outlines the steps the school took to define and validate indicators.

Step 1. Convene meeting of the Dean's Dashboard committee

- Objective: To develop dashboard items

- Decision: Use the dashboard to monitor the implementation of the faculty's strategic plan

Step 2. Review the strategic plan and identify initial key performance areas

- Major goal identified: Scale up the production of health professionals

- Example of a key performance area: Graduation rates across various programs

Step 3. Identify indicators to track in a key performance area

- Annual enrollment head counts for undergraduate and postgraduate courses in Nursing, Medicine and Surgery, Medical Sciences, Medical Clinical Practice, and Science in Health Promotion

- Annual graduation head counts for undergraduate and postgraduate courses in Nursing, Medicine and Surgery, Medical Sciences, Medical Clinical Practice, and Science in Health Promotion

Step 4. Identify sources for the required data

- The undergraduate enrollment data were obtainable from the University Bureau of Planning and Institutional Research. They were also obtainable from the heads of the schools of Medicine, Nursing, and Allied Health Sciences.

- The postgraduate enrollment data were obtainable from the heads of the five programs carrying out postgraduate training: Biochemistry, Physiology, Microbiology, Chemical Pathology, and Nursing.

- The enrollment data for the clinical registrar (residency) training were obtainable from the postgraduate office and from the coordinators of registrar training in district hospitals.

- The annual graduation data were obtainable from the University Examinations office. The data were also obtainable from the office of the administrator of the Faculty of Health Sciences.

Step 5. Collect the required data
Task-specific persons collected the required data (over a four-week period) from the identified sources:

- University Bureau of Planning and Institutional Research

- University Examinations office

- Heads of schools in the Faculty

- Heads of departments in the Faculty

- Coordinators of clinical registrar training at the training hospitals

- Office of the administrator of the Faculty of Health Sciences.

Step 6. Collate collected data

The dashboard project manager collated all the data collected. With the help of two task force members, they tabulated and aggregated the data into overall annual enrollment and graduation head counts for each of the five years from 2011–2015 (see Tables 1 and 2).

Table 1: Enrollment by Degree Program

	Years				
Program	**2011**	**2012**	**2013**	**2014**	**2015**
Nursing	263	253	265	234	230
Medicine and Surgery	520	520	545	534	603
Medical Sciences	34	50	51	48	52
Medical Clinical Practice	78	84	97	85	108
Science in Health Promotion	197	174	130	92	87

Table 2: Graduates by Degree Program

Program	2011	2012	2013	2014	2015
Nursing		230	254	215	219
Medicine and Surgery		421	447	491	513
Medical Sciences		49	49	46	50
Medical Clinical Practice		82	95	83	107
Science in Health Promotion		167	124	90	86

Step 7. Review final data

The National University Faculty of Health Sciences dashboard team reconvened to:

- Review the collected primary data

- Review the aggregated data (see Table 3)

- Approve the coding of the aggregated data

- Approve the graphic presentation of the aggregated data.

**Table 3: Example of Aggregated Data:
Percentages Graduating by Program and Year**

Program	Percentage Graduating			
	2012	**2013**	**2014**	**2015**
Nursing	91%	96%	92%	95%
Medicine and Surgery	81%	82%	92%	85%
Medical Sciences	98%	96%	96%	96%
Medical Clinical Practice	98%	98%	98%	99%
Science in Health Promotion	96%	95%	98%	99%

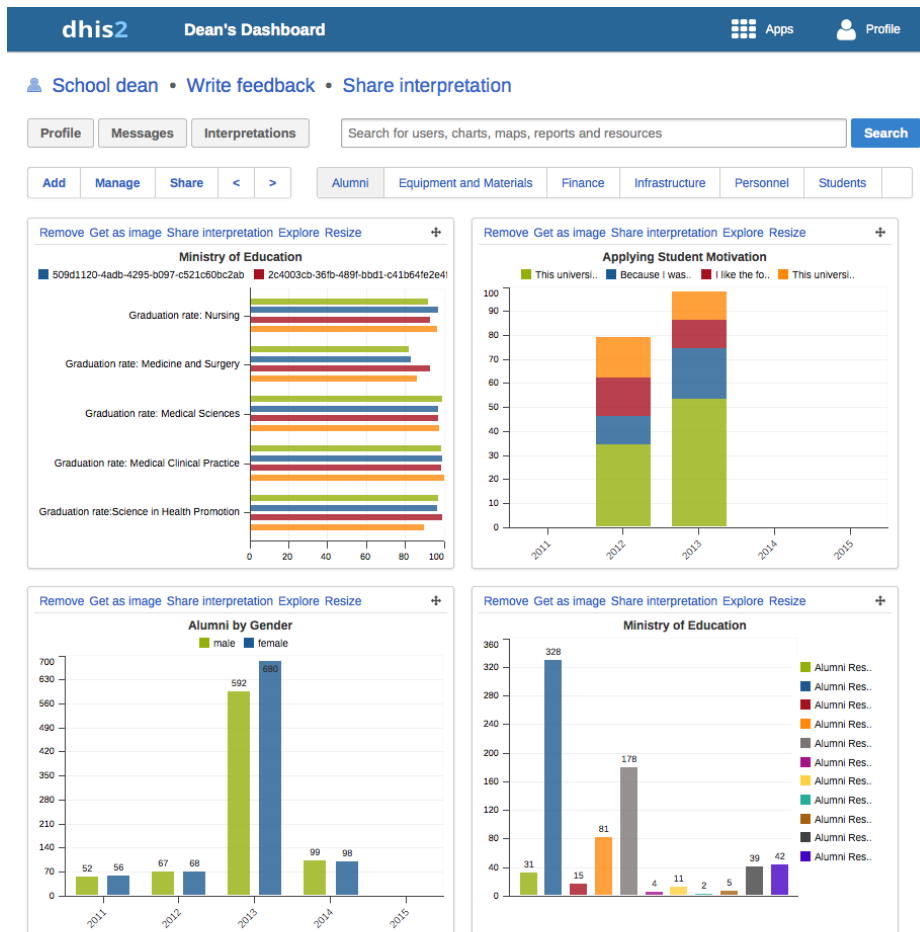## Step 8. Enter aggregated data on the DHIS 2 using the data entry "app" from the menu

Step 9. Create the data graphics using the DHIS 2 data visualizer apps (see Figure 5).

Figure 5: Example of Data Graphics—Annual Graduation Rates by Program
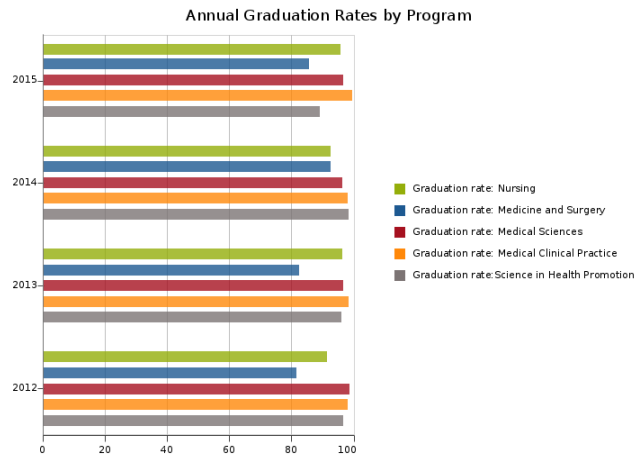
Step 10. Create the dashboard on the DHIS 2 using the dashboard app (see Figure 6).

Figure 6: Examples of Data Graphics on the Dashboard

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