NCHEMS News

From the President

Dennis Jones
NCHEMS President

NCHEMS is deeply engaged in higher education policy discussions in several states and on the fringes of similar discussions in many others. In almost every instance, the circumstances facing institutions and state higher education agencies are the same:

- The expectations of policy-makers and employers regarding the services to be provided by institutions of higher education continue to escalate. In some states the issues revolve around access and student success, in others around workforce and economic development. Regardless of the specifics, the demand for "more" is nearly universal.

- State resources are not forth-coming—at least in amounts that reflect the growth in expectations. There are many who see this as a short-term aberration and have adopted a "this, too, shall pass" attitude. I, for one, can't get that optimistic. While things will get better, I believe that long-term structural deficits, exploding costs of Medicaid, and other factors will preclude a return to the good old days of three or four years ago.

- There is a backlash against rapidly rising tuition rates. While the reasons behind sticker price increases are understandable, it has become politically popular to blame higher education decision-makers for all the fiscal ills facing the enterprise.

Once again, higher education is being asked to do more with less—in short, to become more productive. While the "p" word is anathema to many in higher education, productivity is an issue that can't—and shouldn't—be avoided. The knee-jerk response to calls for productivity increases is to raise the specter of diminished quality. To be sure, if the way we do business doesn't change, reduced expenditures can easily lead to the erosion of quality. However, there are plenty of examples of reengineering the ways that functions, both academic and administrative, are performed that have led to productivity increases without a diminution of quality.

In almost all cases, this improvement in productivity has come through the imaginative uses of technology that have allowed the most costly institutional resources—people—to be utilized more effectively. The work of Carol Twigg and the institutions that participated in the Pew-supported Program in Course Redesign provides ample evidence that the well-considered use of technology can lead to both savings and high quality education. Effective use of technology is neither a panacea nor easy, but it is a *partial* answer to the productivity dilemma. Unfortunately, in too many cases it has been touted as *the* answer. This overreaching has not been helpful; it has allowed critics to point to failure in achieving overstated promises as a basis for condemning the basic premises, regardless of how well implemented.

The big lesson in all of this is that real productivity gains are not accomplished by working harder and faster using the same aproaches that have been employed in the past. They are accomplished by developing new approaches to some of the core businesses of the enterprise.

In this newsletter we devote the major article to providing more information about what we've learned about successful efforts to do business differently. I hope you find it useful.

E-Learning: Myths and Lessons

Over the past eight years, NCHEMS has worked on numerous projects involving various aspects of e-learning. Among these are the:

- Technology Costing Methodology project with the Western Cooperative for Educational Telecommunications (WCET).

- Assessment of learning outcomes resulting from large-course redesign projects under the auspices of the Center for Academic Transformation at RPI.

- Evaluation of many FIPSE Learning Anytime Anyplace Partnership (LAAP) grants including:

  – The Great Plains Interactive Distance Education Alliance

  – WCET's Online Student Services grant

  – The Oregon University System and the Oregon Network for Education

  – American Academy of Liberal Education's project to develop "modality-blind" accreditation standards for liberal learning

We have also worked with universities and systems including the Oregon State University Extended Campus, the Ohio Learning Network, Western Governors University, and the University of Phoenix on the development and evaluation of technology-based instructional approaches. In this issue of the newsletter, we'd like to step back from these projects to reflect on what we've learned about e-learning in general over the past few years.

To begin with, while NCHEMS strongly advocates e-learning used appropriately, we've learned that e-learning is:

- Frequently over-hyped and seen by many people as a "silver bullet" to solve almost every current educational problem.

- Vilified by many others.

- Frequently used symbolically as a "boogie-monster" to stir up irrational fears of the unknown that lead people to blame it for a host of ills often unrelated to the realities of e-learning in practice.

- Hard to do well because it requires serious integrated attention to pedagogy, assessment, course content and quality assurance.

E-learning won't solve all of the problems of higher education, economic development, or the world; but we believe that it is a useful avenue when used thoughtfully and appropriately.

Some lessons that we think we've learned in these projects include the following:

1. Match Expectations to Timeline

When NCHEMS worked with WCET on the initial design for Western Governors University (WGU) in the late 1990s, rhetoric quickly outstripped day-to-day operations. Views at the time either pronounced it a failure or shrilly proclaimed it the end of higher education as we knew it. Now, eight years later, WGU is a regionally-accredited institution and has an enrollment of 2,500 students that is growing by some 200 each month. WGU maintains the original vision of WCET and NCHEMS to deliver competency-based degree programs that certify learning acquired through online learning opportunities from third-party providers. Has WGU taken over higher education? Certainly not. But it has put pressure on existing institutions to reconsider what they do and how they do it. By its very existence here and now, WGU is a success. It happened. But it did not happen overnight and overblown short-term claims—both

positive and negative—reflected neither the shape of the institution that emerged nor its impacts.

2. E-Learning Is Not Easy

Institutions and organizations that do e-learning well put a lot of thought into initial design and spend a lot of time anticipating downstream consequences and building feedback loops to determine whether anticipated consequences are unfolding. Take, for instance, the example of the Great Plains Interactive Distance Education Alliance (GP-IDEA)—an alliance that shares online master's degree programs in the Human Sciences (www.gpidea.org). Under its auspices, ten institutions—Colorado State University, Iowa State University, Kansas State University, Michigan State University, Montana State University, North Dakota State University, Oklahoma State University, South Dakota State University, Texas Tech University and the University of Nebraska—have agreed to:

   a) Offer shared master's degrees at a commonly agreed-upon charge per credit hour for each program, and

   b) Share the resulting revenue based on an agreement that 75% will go to the teaching institution, 12.5% will go to the home institution, and the remaining 12.5% will go to the Alliance.

      This particular allocation formula seems straightforward—perhaps easy—but coming to it required three years of iterative consultation by deans and faculty in the Human Sciences, Graduate Deans, Deans of Continuing Education, Finance Officers, and Registrars.

Some people may look at this effort and conclude that it might have been achieved more efficiently. But others look at it and recognize, "Wow, this diverse group of academics with different interests from different institutions actually set their minds to accomplish something new, and it worked." GP-IDEA today still has much work to do to demonstrate that these arrangements can work in the long term. But again, its architects persisted in pursuing their original ideal, and it happened.

3. E-Learning Doesn't Mean Easy Money

Many organizations and institutions originally entered into e-learning because they thought it might be an easy way to make money. After a few years, most have floundered and found that the old adage, "if it sounds too good to be true, it probably is" still holds. E-learning, in itself, cannot shorten needed operational processes to redesign instructional delivery; nor, at least initially, can it save money. Findings from the Technology Costing Methodology (TCM) Project undertaken by NCHEMS and WCET (www.wcet.info/projects/tcm) suggest that it usually costs more up-front to develop effective e-learning environments, but considerable cost savings are possible over time. Similarly, the Center for Academic Transformation's projects—which sought to decrease the cost per student while enhancing learning effectiveness for high-enrollment first-year courses by redesigning them from the bottom up to incorporate both technology and appropriate changes in course design and pedagogy—decisively demonstrated that substantial ongoing cost savings were possible after the initial investments in conversion are made (see www.rpi.edu/center for more information).

4. You Can't Short-Circuit Quality

E-learning is decidedly not a shortcut for curriculum development. Again, how much up-front investment is required is partly a matter of perception. Some people say that developing e-learning curricula takes much longer than the traditional approach. And, on the face of it, this is usually true. But we've found that one of the major reasons behind this increased time investment is that faculty members work closely with each other and with instructional designers to carefully consider anew virtually every aspect of their courses. This scrutiny is much more in-depth than traditional courses tend to receive, and the results are apparent. E-learning courses that have undergone this scrutiny have rigorous assessment methods in place, include more diagnostic measures that are helpful to both students and faculty and embody more opportunities for personal (though not necessarily face-to-face!) interaction between faculty members and students.

5. Integrate E-Learning with Mainstream Academic Infrastructures

Unfortunately, responsibility for the development and maintenance of e-learning at many institutions often remains separate from regular academic organizational

structures based on deans and departments. In part, this is because e-learning has grown up as an "auxiliary enterprise" in parallel with existing historical structures. In part it is because of fear, and the resulting imperative to isolate innovation. Fear on the part of traditional departments of losing "share" to e-learning, fear on the part of established faculty of having to learn new teaching techniques, and general fear of "The Other" on the part of many institutional constituencies for whom any change is a threat often combine to isolate e-learning initiatives to the fringes of the academic organizational structure. As a result, administrative oversight, student services, and sometimes departmental or disciplinary structures are duplicated for e-learning. Much of this has come about naturally because of how e-learning initially developed on many campuses, starting with distance education, continuing education, or executive education—enterprises that are usually undertaken as auxiliary enterprises at most colleges and universities. But at many campuses now, e-learning enrollments match traditional enrollments and are often comprised of *on-campus* instead of physically-distant students. Under these circumstances, e-learning must be fully integrated with mainstream academic structures. Though apparent, our experiences suggests that the need for integration will raise concerns on both sides: traditional academics will continue to think for some time that e-learning lacks rigor, while e-learning proponents will continue to worry that innovation will lose its edge in the face of the inertia of the system. Concerns on both sides are valid and must be addressed. For example, many formal and informal conversations have occurred as Oregon State University works toward integrating its Extended Campus with academic departments by implementing revenue sharing and streamlining the course development process used by faculty and a team of instructional production technicians. And the effort to put student services "beyond the administrative core," such as academic advising online, required clear understandings between personnel who provided those services on-campus and in-person and personnel who provided them to students at a distance. Other institutions also have been working on this integration in a similar fashion.

To summarize, as we have worked at the overlap of online-learning, technology, and traditional academic structures, we've learned that ambivalent perceptions of the efficacy of e-learning are right. Some people love it; some people hate it. Used appropriately, with forethought, with consideration of downstream consequences, and integrated into the existing academic infrastructure in a manner that gives it legitimacy without losing its litheness, e-learning is a necessary and critical aspect of the next generation of higher education. But undertaken too quickly, and without investment and forethought, it can turn out to be everything that its critics are afraid it might be.

Marianne Boeke

NCHEMS is pleased to announce that Marianne Boeke has joined the staff as Research Associate.

Prior to working at NCHEMS, Marianne worked at WICHE/WCET as a staff associate for five years. Marianne worked primarily on the FIPSE-funded project, Technology Costing Methodology (TCM), the EduTools Project, and the MERLOT Project. She performed on-site training with the TCM Handbook and presented at regional and national conferences on technology costs in higher education. Marianne developed competency-based curriculum and assisted with academic affairs at the Western Governors University (WGU) and also worked at the College of Education at the University of Denver in the areas of student services and academic management.

Marianne is currently working on her Ph.D. in higher education from the University of Denver and holds a master's degree from The American University and a bachelor's degree from San Jose State University. Her areas of specialization and interest include technology and costing issues in higher education, academic management, qualitative research, and policy analysis.

MetaData* for Institutional Information Architecture and Data Warehouses

Charles R. Thomas, NCHEMS Senior Consultant

A recent survey showed that over 95% of large universities and over three-fourths of all the responding institutions have a data warehouse effort in production, under development, or planned (*Data Warehouse Efforts and MetaData Foundations*, a summary of a March 2004 survey to be published in 2004 by EDUCAUSE). The same survey revealed that less than half of these institutions have a formal institutional data dictionary in place or planned. These results are surprising, since all of the industry publications concerning data warehouse efforts indicate that establishing organization-wide consistent definitions for data elements is one of the first and most important tasks in constructing a data warehouse.

Data Dictionary as an Asset. Even for institutions not considering a data warehouse, an institutional data dictionary is an important administrative asset. The problem is that many administrators assume this is a technical problem to be addressed by their information technology department. At the same time, the information technology staff is barely able to keep up with the technology required to keep the administrative systems in production. They seldom have the time or resources to create and maintain detailed documentation of those systems in a form readable by non-technical administrators.

ERP Systems. Some top administrators assume that their new Enterprise Resource Planning (ERP) system includes a data dictionary. While most proprietary ERP systems do include some capability for documentation of some data elements, most require the institution to supply the detailed definitions, and then they are available only on the specific display screens in the middle of the application software. For institutions with legacy administrative software, the information technology department usually has technical documentation of institutional files. In most cases no plain language, non-technical description of data elements, codes, categories, and descriptions exists in any format that is readily available or published for access by the institutional community. One of the problems cited by IT professionals is the lack of reasonably priced software for creating and maintaining the institutional data dictionary. This situation can now be remedied with a new resource available from NCHEMS.

Data Dictionary. The recently released second edition of the *CHESS Data Definitions for Colleges and Universities* provides a valuable resource to assist institutions in developing their formal institutional data dictionary. It supplies a Microsoft Access database of standard and example definitions for over 750 data elements commonly maintained in college and university administrative systems in six major administrative areas: alumni, courses, facilities, finance, human resources, and student. The data definitions refer to over 120 common Excel Tables of codes, categories, and descriptions. Standards are used where available, and examples crafted from the data dictionaries of several colleges and universities are provided where no standard could be found.

Taxonomy of Activities. In addition to the data definitions and tables, an example *Taxonomy of College and University Activities* is included. This example *Taxonomy* is an annotated list of over 700 activities typical to colleges and universities, and can be cross-referenced to the institutional data elements required for the activity. The activities are indexed by a departmental code for the institutional unit responsible for each activity. This code is initially a copy of the IPEDS (Institutional Postsecondary Education Data System) coding structure. The *MetaData Administrator* software provides the capability to maintain and publish the institution's *Taxonomy* on the institutional Intranet along with the *Data Dictionary*.

The process of creating the institutional information architecture (a *Taxonomy of Activities* and a *Data Dictionary*) can be as valuable as the result. When this process involves all of the appropriate administrative departments and representatives of the academic units, institutions typically discover duplicative information maintenance efforts in different departments. In many cases these "shadow" systems have evolved at different times; and, in the absence of any published institutional standards, they developed different codes for the same data elements. When the developers of these "shadow" systems depart without leaving documentation, the central IT department is usually asked to either maintain the system and/or to integrate it into the institution's central administrative systems. It is unlikely that "shadow" systems will disappear; but if a central official institutional data dictionary is published and available, at least the coding will be compatible with the institution's central databases.

MetaData Administrator **Software.** This new edition of the *CHESS Data Definitions* includes the *MetaData Administrator*—free-license, web-based software. This software can be used by institutions to create and maintain an institutional data dictionary in an Access database. It also includes the capability to publish the institutional data dictionary in a "read-only" format on the institution's Intranet. The *MetaData Administrator* software can also be tailored with institutional logos and school colors. These features enable the system to be up and running and looking like an internal effort almost out of the box. In addition, all of the source code is provided, so institutions can add unique features at any time.

Institutional Information Architecture. The *MetaData Administrator* software provides an easy-to-use tool for building the institution's information architecture, but it should be recognized that serious thought must be given to establishing the appropriate forum for discussing data definition issues. Colleges and universities typically have many committees, and most have one or more advisory committees concerned with technology. In many cases, the committee members are not exactly sure whom they advise or what happens to their advice when given. Further, many of these committees are advisory directly to the information technology director, essentially bypassing senior administration.

Policy and Advisory Structure. NCHEMS usually suggests a "policy and advisory" structure that includes a "Technology Policy Council" of all vice presidents to receive advice from the advisory

committees. Once advice is given and the Policy Council approves a specific policy, all implementation activities should occur in the line organization, since committees seldom do an adequate job of managing implementation activities. The appropriate forum for addressing information architecture issues is an "Administrative Systems Advisory Committee" (ASAC). The use of the term "systems" in the committee name is preferable to "computing" or "technology," since the **system** usually involves a wider range of activities than just computing and sometimes several offices are involved in the process. Most data elements start on a piece of paper or on a display screen and end up on a report or another display screen, and there are usually quite a few processes on both ends of the "computing" part. It is important to have all of the major administrative units permanently represented on the ASAC, but the other levels of the administrative hierarchy should also be represented by rotating members. For example, one or two college deans and one or two academic departments should represent those levels of administration. Specific issues may be raised by the ASAC, and the Policy Council may assign others for investigation. In either case, the ASAC should be able to reduce advice for the Policy Council to one or two pages for their action. The work of the policy and advisory structure is an ongoing effort, since administrative procedures and the data that support them are constantly changing. The MetaData Administrator provides the tool to keep track of these activities and to make the dynamic information architecture available to the institutional community on the Intranet.

Demonstration and Details. Details on the second edition of the *CHESS Data Definitions for Colleges and Universities* and a demonstration of the *MetaData Administrator* software can be seen on the NCHEMS website at www.nchems.org—just click on the CHESS Data Definitions link. A sample database is available there with a "read-only" version of the *MetaData Administrator* software. Full system documentation is also available on the website by clicking on the "Documentation" link within the *MetaData Administrator* demonstration.

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* MetaData is information about data. It includes at a minimum: 1) identification information; 2) definition information; 3) uses (activities) information; 4) source information; 5) field values, categories and descriptions; and 6) linking information.

CHESS Data Definitions for Colleges and Universities

Second Edition 2004

The package contains:

A CD jewel case with an insert that includes an *Introduction* to the product, the *License Agreement*, the *Limited Warranty*, and a request for comments on the product.

The CD contains:

A Documentation folder with the *DD2 Installation Instructions* and *DD2 Documentation* for the *CHESS MetaData Administrator* software.

A Microsoft Access file (*dd2.mdb*) that contains the *CHESS Data Definitions* and the *CHESS Taxonomy* plus necessary Access *Forms* and several *Reports*.

The Microsoft *Excel Tables* of codes, categories, and definitions.

Various other folders that contain the *CHESS MetaData Administrator* free-license software.

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The CHESS Data Definitions CD is intended to help administrators responsible for assuring that data from different institutional systems is uniformly defined and can be integrated across these systems. It provides a starting point for colleges and universities designing or modifying the institution's information architecture and databases. It is a resource that allows institutions to efficiently review and revise their data systems, understanding at the same time how these databases will support external data collection efforts. The CHESS tool is particularly valuable in data warehouse efforts, and will help establish and maintain the integrity and inter-operability of institutional data in client/server and distributed database environments.

This second edition replaces the first edition published in 1996. It also includes the third edition of the CHESS Taxonomy of College and University Activities. Also included is the first release of the CHESS MetaData Administrator, which is web browser-based free-license software for the creation, maintenance, and Intranet publication of the institutional data dictionary and taxonomy of activities, thereby providing accessible support to all institutional users.

Charles R. Thomas, NCHEMS Senior Consultant and CHESS President, is the author of the CHESS Data Definitions.

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