AACP CURRICULAR CHANGE SUMMIT SUPPLEMENT

Assessment to Transform Competency-based Curricula

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The objective of this paper was to apply Kotter's 8 steps to transforming organizations as a framework for the role of assessment in competency-based curricular reform. Two analyses were conducted including (1) environmental scan of literature about assessment in curricular reform and (2) qualitative analyses of data from a college of pharmacy which instituted curricular reform. These assessment-focused data sources were interpreted in view of Kotter's 8 steps. Creating a sense of urgency, forming a powerful guiding coalition, creating a vision and creating short-term wins were the 4 steps most evident in the literature. In the case study, creating a sense of urgency, forming a powerful guiding coalition, creating short-term wins, consolidating improvements, and producing additional change were most important. The case study also indicated that (a) the history or climate of the institution in dealing with change, and (b) involving individuals with specific expertise as part of the leadership group were also important. Recommendations (PREPARE) were developed. Assessment is an enabling and valuable element in each stage of curricular transformation when guided by Kotter's model.

INTRODUCTION

The education of health care practitioners including pharmacists exists within a complex and constantly changing healthcare environment. External and internal pressures on colleges/schools of pharmacy reinforce the need to consider how we teach student pharmacists. Such reports as Standards 2007 and CAPE 2004, along with the dynamics of public accountability, economic turbulence, and unsafe medication practices, are provoking serious revisions in expectations for the performance of pharmacists for the next 40 years.¹⁻³

Perhaps the most direct pressure for assessment to inform curricular change derives from Standards 2007, with curricular requirements such as introductory pharmacy practice experiences (IPPEs) and student portfolios and assurance of the achievement of student-learning and organizational outcomes. Ensuring achievement of student-learning outcomes requires continuous plans and processes that describe the outcomes, gather assessment data, and use these data to inform changes, ie, assessment that "closes the loop." These trends and changes in pharmacy

education parallel those of higher education in general. The assessment movement in higher education began in the mid 1980s with a series of reports that asked the public and institutions to examine student learning. In 1988, Secretary of Education William Bennett required all federally approved accreditation organizations to include evidence of outcomes in their standards.⁴ Over the next 20 years, the number of colleges and universities engaged in campus-wide assessment continued to grow. A history of the assessment movement is presented by Ewell and the context of assessment in pharmacy education has been reviewed by Abate et al and Anderson et al.⁵⁻⁹

As faculty members, we believe that student learning is a primary goal of pharmacy education. Yet, how do we know that learning is taking place? How do we know if curricular changes have been successful? Just as we require evidence for clinical decisions or data to confirm/disconfirm research hypotheses, assessment data helps determine whether educational objectives have been met. In this context, assessment can be defined as "the systematic collection, review, and use of information about educational programs for the purpose of improving student learning and development."⁴ Two important elements in this definition are (1) assessment focused on improving student outcomes, and (2) assessment used to gather information about educational programs. This

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paper focuses on the assessment of programs or curricula and student learning outcomes. Figure 1 depicts a framework showing how course and program assessments are both necessary to inform the achievement of student-learning outcomes, and that evaluation of these data reflects a continuous improvement process.

In addition to improving curricula, assessment can also be used to fulfill demands for accountability by providing external stakeholders or accrediting bodies with information for decision-making purposes. Assessment for accountability purposes often causes faculty members a great deal of angst, given a perception that assessment is something that is done to faculty members or that assessment data will somehow be used against faculty members. By contrast, the intent of this paper is to describe how assessment has been and can be used by faculty members to improve programs and student learning, and to show external stakeholders the value of our programs.

External pressures and internal interpretation of assessment data may lead to curricular changes. Curricular change can take many forms, and for most attentive faculty members, is an ongoing process of incremental revision to

courses and even programs. Typically program-level curricular revision is prompted by a systematic analysis and interpretation of data, formally and informally collected. More broadly based transformational change is contemplated when faculty members, practitioners, and administrators sense that incremental change will no longer accommodate the more substantial content or procedural differences presented by a rapidly changing context and environment. At that point, educators and practitioners consider creating new logic for curricula and programs, such as outcomes-based assessment. This paper is based on the proposition that the situation in pharmacy education has reached a “tipping” point where incremental change no longer suffices, and there is a need to evaluate curricular assumptions from new perspectives. The scope and content of programs may need substantial revision as well as pedagogy that is consistent with the development of new competencies and skills. As a consequence, many courses are likely to need modification; faculty members may be seeking new teaching methods; colleges may need new kinds of space and seek partnerships with other segments of the medical education and partner communities.

Figure 1. Framework for curricular change and assessment. Reprinted from Kelley KA, McAuley JW, Wallace LJ, Frank SG. Curricular mapping: process and product. *Am J Pharm Educ.* 2008;72(5):Article 100.

The type of curricular transformation that appears imminent is of a scope and nature that requires the level of planning and management usually associated with major organizational change.

Productive, well-orchestrated change efforts allow organizations to adapt to shifting conditions and position themselves for a better future. Kotter described a framework which identified 8 stages fundamental to the success of organizations undergoing significant change (Table 1).¹⁰ The article, "Leading Change: Why Transformation Efforts Fail", was the result of 15 years of organizational analysis. Kotter followed this article with "Leading Change," which describes the 8-stage change framework in more detail.¹¹ Colleges and schools of pharmacy display many characteristics similar to the organizations described in Kotter's work when undertaking significant curricular reform.

Not all curricular reform/transformation flourishes and not all attempts to incorporate new assessment methods are successful. Mistakes are made, resulting in delays, wasted resources, less than hoped for results, burnout, and frustration. Common errors include, for example, allowing too much complacency, under-communicating the vision, permitting obstacles to block the new vision, failing to create short-term wins, and neglecting to anchor changes firmly in organization culture.¹¹ Kotter's framework can guide organizations to create processes where assessment of student-learning outcomes can transform and then continuously improve our curricula and ultimately our graduates.

This project uses Kotter's framework to analyze the role of assessment in curricular reform by analyzing the literature and 1 case study to generate recommendations about how to use assessment in transforming college/school of pharmacy curricula. In this paper, the terms *outcomes-based curricular reform*, *competency-based assessment*, *outcomes assessment*, and *curricular assessment* are

used interchangeably to refer to the large-scale curricular reforms that incorporate an outcomes-based evaluation.

Two analyses were conducted to inform the recommendations: (1) a scan of the literature about the use of assessment in curricular reform, and (2) a qualitative analyses of interview data from faculty members in a college of pharmacy who had instituted curricular reform.

First, after describing the search strategies, each step of the Kotter model is described along with the findings from the literature that illustrate its application. Each of the 8 steps is discussed in turn, but the process is rarely linear. Second, an analysis of the experience of 1 college with curriculum reform is presented. Third, within Kotter's framework, the role of assessment in curricular reform for pharmacy education is outlined. These analyses provide insight into strategies that colleges/schools of pharmacy can implement to use assessment in transforming curricula and form the basis for recommendations.

The following assumptions were made during these analyses. Developing competency-based statements of student outcomes, and systematically utilizing student or institutional assessment data, represent new approaches, and therefore significant change in the process of curricular reform for colleges/schools of pharmacy. Most faculty members and administrators are unfamiliar with the details of curricular assessment, therefore the process entails a familiarization stage and considerable training. Substantial or transformative curricular reform challenges assumptions and existing teaching strategies and is likely to be disruptive. Transforming curricula is a resource-intensive and lengthy process.

LITERATURE SCAN

Scans of the literature were conducted in health science education, education, and engineering education to

Table 1. Kotter's 8 Steps to Transforming an Organization

Steps	Number of Reviewed Articles With Focus
1. Establish a sense of urgency via examination of market realities and opportunities.	9
2. Form a powerful guiding coalition with sufficient power to lead change.	11
3. Create a vision with strategies to achieve the vision.	13
4. Communicate the vision in every vehicle and teach new behaviors by example.	5
5. Empower others to act on the vision, with a focus on changing systems (including information technology and data management) or structures that undermine the vision.	7
6. Plan for and create short-term wins and provide reward for these visible improvements.	9
7. Consolidate improvements, produce additional change, and reinvigorate the process with new projects or change agents.	7
8. Institutionalize new approaches with explicit connections between new behaviors and successes, and develop pleaders to carry on.	7

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identify articles that included models, theory, or empirical evidence related to assessment in curricular reform. Four successive ERIC searches were undertaken, each using somewhat different terms: (1) total quality management, continuous quality improvement, higher education, curriculum, professional education, engineering education, medical education, accreditation, assessment, and curriculum-based assessment (54 articles); (2) curriculum change, curriculum reform, assessment, higher education, medical education, nursing education, and engineering education as search terms (49 articles); (3) curriculum research, program evaluation, instructional effectiveness, medical education, nursing education, engineering education, pharmaceutical education, higher education, and professional education (23 articles); and (4) curriculum evaluation, higher education, medical education, and professional education (18 articles). A PubMed search including curriculum/*standards, organizational innovation, program development/*methods, program evaluation/*methods, education medical undergraduate/*organization & administration/standards, curriculum reform and educational assessment produced 35 articles. Two authors independently reviewed the collection of 179 articles and abstracts and together selected the articles to include for analyses. Ultimately, 38 articles were retrieved for further analyses (list available upon request).

Kotter's 8 steps to transform an organization provided the analytic framework. After developing a detailed article review template, all 5 authors were assigned articles for review. Each provided ratings as well as comments about how Kotter's steps were exemplified in the article and the possibility of application to curricular reform in pharmacy. Ratings were collated so that each of the 8 steps was considered for the 38 articles (Table 1).

1. Establish a sense of urgency. Reforming curricula requires college-wide involvement in a multi-step process over many years. Kotter states that success in such an endeavor will be determined, in part, upon the sense of urgency that is created for this change.¹¹ Complacency can squelch the efforts of highly energetic and well meaning individuals seeking to reform curricula. As described by Kotter, complacency can result from: (1) absence of a major and visible crisis; (2) human nature's capacity for denial, especially if people are busy and/or stressed; (3) kill-the-messenger-of-bad-news and/or a low confrontation culture; and (4) lack of timely, specific performance feedback from external sources.¹¹ Strategies to increase urgency may include sharing the experiences of dissatisfied or ill-prepared students, using consultants to ensure more honest, focused discussion of problematic issues, and circulating straightforward, direct communication about difficulties.

Nine articles provided insights into this step.¹²⁻²⁰ Whether it was called needs assessment,¹² need for change,¹³ or sense of urgency, these articles clearly identified source(s) and/or processes that created urgency for changing curricula. Assessment data were specifically mentioned as a source to create urgency. For example, internal reviews,^{12,14-16} survey data of students or new graduates,^{12,16} and survey data from faculty members^{12,15,16} were all used to justify curricular reform. Other influences that added to the sense of urgency were new accreditation standards^{12,17,18} and availability of grants.^{19,20} For faculty members, increasing demands for clinical services and/or grant funding were important stimuli to identify better ways to deliver curricula.²⁰ General social trends such as economics constraints and changes in healthcare delivery were also mentioned, eg, a renewal of the social contract with the public to prepare better practitioners who can adapt quickly to change.¹⁹ Sponsoring faculty members and students to visit leading schools spawned urgency by highlighting new opportunities and potentially encouraging a competitive spirit.¹⁵

2. Form a powerful guiding coalition. Guiding coalitions must be powerful in terms of titles, information, expertise, credibility, leadership, and relationships.¹¹ While many curricular task forces may be laden with innovators, those passionate for change, and often, volunteers, the membership of guiding coalitions must be constructed to position the reform initiative for success. Three key considerations in the forming of powerful guiding coalitions to lead change were: (1) having strong leadership from dean,^{13,15,17,20-22} and senior administrators such as department chairs;^{10,20,21} (2) using small groups of innovators,^{13,17,19,20,22,23} and (3) incorporating early the leaders or voices of opposition.^{13,23}

Strong leadership is necessary to support curricular transformation and associated assessment activities. Specifically, participatory leadership is mentioned as congruent with higher education because it focuses on respect and engagement, and seeks to create shared responsibility for actions and outcomes.¹⁹ Deans or senior administration provided vision, motivation, and resources.^{20,21} Alternatively, weak leadership slowed down or impeded change.²⁰

Small groups of innovators committed to reform, innovation, and the common good²⁰ were central to success, whether they were termed taskforces,¹⁷ deliberative groups,²² or functioned under some other name. Among the members were individuals with power and influence in the organization.¹³ The inclusion of assessment coordinators, institutional researchers, as well as faculty, was particularly effective in leading changes in curricula, and they were also critical to reporting the progress of changes and impacts leading to short-term wins (step 6: short-term

wins).^{14,21} Another necessary element was the incorporation of individual faculty members and department/division chair voices.^{12,15}

Finally, assessment-based transformational curricular change has detractors and opponents.^{13,23} Slow recognition of these voices or a failure to incorporate powerful individuals or factions into the process only leads to later confrontation.²³ Resistance arises from faculty because of personal and professional uncertainty.²³ Giving faculty sufficient opportunity to disagree as things move ahead can be positive, improving communication (step 4: communicate the vision), and the subsequent outcome.¹⁵

To construct this team optimally, judgment is required to ensure that the membership has the requisite information, expertise, credibility, position power, leadership, and relationships to truly lead the reform effort. In general, this group will operate outside the normal hierarchy, typically as an appointed taskforce. The group begins its efforts by developing a shared assessment of the problems with the current educational system and opportunities given a school's particular environment and mission. Trust and communication are often developed through 1 or more offsite retreats.

3. Create a vision with strategies to achieve it. At the beginning of the process, and in continuing communication, the leader or leadership group conveyed what the curriculum would look like at the end of the process.^{14,15,18-20,23,24} In failed transformations, there is often a plethora of plans, goals, phases, and timelines for the curricular reform process, but little vision to inspire the broader organization toward implementation. An effective vision is imaginable, desirable, feasible, focused, flexible, and communicable.¹¹ In fact, it should be possible to articulate a vision in 5 minutes or less and obtain a response that signifies both understanding and interest.⁸ Without this vision, there may be significant disagreement over particular reform strategies, in addition to confusion over direction, and problems with motivation.

If curriculum development and revision are viewed as an ongoing process, with data for process and impact evaluations, then assessment is central to curriculum reform.²⁴ Extensive literature reviews, an environmental scan, and internally collected data were useful in forming a vision for a new curriculum,²⁵ which provides a clear and flexible plan that can be implemented with senior administration's organizational and administrative structure, and appropriate resources.^{21,23}

Once the vision is established, specific strategies for curriculum reform may be developed. Less evident are strategies to implement the vision than the importance of having a clear vision. Literature suggests that smaller schools are able to take on broader innovations, while

larger schools need to narrow the scope of their innovations.^{13,21} The literature yielded several descriptions of assessment strategies in curricular reform, including implementation of specific goals arising from a self study,¹⁵ and creation of a feedback loop as implementation occurred, to monitor its progress.²⁶ Specifically, Desmarchais described a clear 17-step process to guide formative curricular evaluation cycles.¹⁸ Soundarajan described a Course Group Report, used to gather information from course instructors about data collected and subsequent changes made to courses.²⁷

4. Communicate the vision. Curricular reform requires the efforts of faculty members, preceptors, and students. To be successful, they may make short-term sacrifices, such as participating in working groups, double-teaching, and piloting new initiatives. Communication is critical to mobilizing the organization. While only 5 articles^{13,15,21-23} provided insight and assistance with this step of transformational change, there was general agreement among them. Any plan or innovation must be widely communicated via numerous forums and in different settings so that faculty members, staff members, students, and others prepare for and accept innovation.^{13,15,21,23}

A wide array of communication channels were used to communicate with faculty and staff members, students, alumni, and others, including retreats,²³ committee meetings,^{15,21-23} newsletters,^{15,22} informational rollouts and open forums,^{15,21,22,23} as well as individual meetings,²² and reference lists.²² Faculty surveys¹⁵ and subsequent data dissemination with customization to audiences²¹ was also used. As mentioned in step 2 (guiding coalition), communication with powerful individuals or factions with negative viewpoints is critical in moving change forward.^{15,23} Simplicity, use of multiple forums, and repetition are key elements in effective communication of a vision.¹¹

Leadership by example is also a critical mechanism of nonverbal communication. As stated by Bland, "the leader must model enthusiasm and commitment."¹³ The behavior of the guiding coalition must be consistent with the vision or it undermines all other communication. In addition, the leaders of curricular reform must provide opportunities for 2-way communication, which assists in addressing seeming inconsistencies that may undermine the initiative.¹¹

Often the most powerful communication is a metaphor, analogy, or example. From the literature, one of the most powerful examples used to communicate the need for change in a medical curriculum was a demonstration to department chairs. Students who had just completed a traditional course were hand-picked by department chairs and given a case with a problem to solve using

the information from that course. Students could recite pertinent information, but they lacked the ability to apply the information. This demonstration captured the department chairs' attention, and they recognized that the curriculum had to change.²³

5. Empower others to act on the vision. Communicating the vision for the role of assessment within curricular reform is not sufficient. While the vision may be attractive, real, or imagined barriers will block progress. Obstacles may include a lack of needed skills, structures that make it difficult for faculty and staff to act, lack of alignment of support systems with the vision, and individuals that are undercutting the reform efforts.¹¹ Early on, no college or school has the ability to remove all obstacles, but the big obstacles must be identified and removed.¹⁰

Seven articles mentioned the notion of developing broad support for change and/or strategies for empowering faculty members, staff members, and students.^{13,15,17,19-22} To provide the necessary training, Mennin acknowledged that faculty development via workshops, visits by outside experts, and presentations may be viewed as a means of empowerment.²⁰ Providing incentives and rewards to faculty members for their development were key in the face of increasing clinical or research demands, yet it was often piecemeal and department-dependent.²⁰

Empowering others to act also appeared to be predicated upon a climate of respect and cooperation.¹³ In particular, broad internal participation in designing, implementing, and evaluating student assessment efforts was seen as fostering a positive assessment climate.²¹ Other specific strategies to gain broad support included addressing negative attitudes (also steps 2 and 4),^{12,19} focusing on quality and improvement of education rather than quantity,¹⁹ emphasizing science of the new curriculum,¹⁹ and emphasizing assessment for the purpose of institutional improvement over internal and external accountability.²¹

Peterson and Einarson specifically address the reward structures that may be influencing action and assert that "the predominant stance among scholars is that student assessment *results* should not be tied to faculty performance evaluation" (emphasis ours).²¹ However, rewarding *participation* in assessment efforts could be included as performance criteria in evaluation for tenure, promotion, and post-tenure review. In addition, incentives, such as release time, office assignments, stipends, travel perks, public recognition, and clerical support could be considered.²¹

Empowerment may also be facilitated by aligning support systems with the vision. In particular, Peterson and Einarson assert that institutions must address resources allocated to support assessment activities.²¹ They

suggest that "consistent and adequate fiscal, physical and staff resources" need to be committed to: (1) establishing and maintaining an assessment office, (2) developing, implementing, analyzing, and responding to specific student assessment measures, and (3) supporting assessment related professional development opportunities for administrators, and faculty and staff members.

6. Plan for and create short-term wins. Establishing a culture of assessment to support continual curricular reform will take time. Kotter suggests that sustaining change efforts requires compelling evidence of progress within 12-24 months.¹⁰ Short-term wins must be actively demonstrated through clear performance improvements. While there may be complaints about being held accountable for producing short-term wins, the pressure to produce these wins forces detailed analytical thinking that can help refine the vision.¹⁰

Nine articles had some focus on identifying short-term wins during curricular reform.^{13-15,19,20,26,28-30} Starting small with pilot projects was deemed effective by several authors. As an example, improvement in student performance on national examinations was confirmed after curricular changes started with 2 pilot projects.¹⁵ In another report, selected faculty members participated in faculty development by attending a liberal arts college where student learning outcomes and their assessment was the focus. These faculty members recognized that they could not change the entire management curriculum, so they focused on a specific skill that stakeholders indicated was lacking, and determined how it could be incorporated more systematically into the curriculum. They initiated change in the management curricula with 3 faculty members in a specific class (not every faculty and not every class), who were willing to change their course to focus on writing skills. A shared rubric to assess students' writing performance was developed, and this change was viewed by faculty as a short-term win.²⁸

Short-term wins were best exemplified by explicit gathering of assessment data. The content analysis of 1 curriculum was a short-term win, as that analysis called for further action via recommendations.²⁹ In 1 example, stakeholders were asked for recommendations, and these data were used to make changes. Importantly, the changes were communicated back to stakeholders.³⁰ In another example, about midway through a curriculum revision, external visits and student feedback were positive and identified some needed improvements.¹⁴

The definition of short-term wins depends on organizational context; a "win" in one organization may not be a win in another. One article offered an example of a short term attainable goal, namely the implementation of a computer network to support community-based faculty

members and collaboration with other regional academic medical centers, resulting in valued partnerships and also fostered permanent future changes.¹⁹ Similarly, the development of more open communication among all participants was viewed as a key win in 1 organization (also step 4 communicate the vision).²⁰ Recognizing participation in curriculum reform via public opportunities was also considered a short-term win for those involved because of the recognition of new efforts (also step 5 empower others).¹³

Short-term wins boost the credibility of the change effort by demonstrating progress. The collected evidence is crucial in addressing the concerns of reluctant participants and responding to naysayers. Short term wins also reward change agents with positive feedback, keep management on board, and build momentum.¹¹

7. Consolidate improvements and produce additional change. After a salient “win,” it can be tempting to declare victory; however, successful transformation requires successive changes over many years. Without continued effort, initial progress can regress. Until changes penetrate the organization’s culture, which can take 5 to 10 years, new initiatives are fragile.¹⁰ Sustained focus and increased effort are key.

Organizational structure and human resources were used to support and produce more change in the 7 articles that informed this step. Administrative restructuring provided continued viability for program revisions,^{17,19} as did changes in organizational policy related to teaching loads, and rewarding participation in curricular change for salary increases and promotion and tenure (also step 5: empower others).^{15,17,24}

Faculty development, another strategy, assisted in gaining new teaching skills necessary for maintaining curricula changes.^{13,20,22} Student development may also be required to help instill independent learning.¹⁵ Bringing in new people helped to move change forward, as new hires embodied new teaching strategies or values.¹³ Finally, leaders with diverse skills were identified and nurtured to help sustain changes over time.²⁰

This stage is characterized by more change, not less. The guiding coalition uses the short-term win(s) to tackle bigger curricular projects. In addition, rather than sending consultants home, more help is brought in. Promotions and faculty development become a focus to help with all the change. A growing number of faculty members lead individual change initiatives, while senior administrators sustain urgency and help maintain clarity of purpose.¹¹

8. Institutionalize new approaches. With time and effort, a new curricular-assessment model becomes “business as usual” supported by new individuals, faculty members, and organizational norms. Two factors are im-

portant in anchoring the changes in the college/school culture. First, faculty members and students must be shown repeatedly how the new approach has helped to improve performance. Second, the next generation of leadership must personify the new approach.¹⁰

Leadership and assessment data were critical in institutionalizing new approaches. Leaders used administrative authority to create structural changes that supported innovations in curricula.¹⁴ Another type of leadership mentioned was based upon a “core of faculty” who would continue innovation when administrative personnel changed.¹⁵

Implementing a successful feedback loop for assessment was important.²⁷ In one report, student self-assessments regarding preparation to enter practice was highest in the country following significant curricular reform, and these positive data helped sustain change.¹⁴ For new programs, developing evidence regarding the impact of curricular changes on student learning outcomes may be difficult to determine until future graduates are in practice.³¹

Connecting new behaviors among faculty members, staff members, and students with the organization’s success was critical.¹³ When everyone understands that the goal is monitoring of student learning outcomes by way of the curriculum map and assessment data, then discussion of corresponding decisions about curriculum become logical. Yet, flexibility in the implementation of reformed curricula is required for sustainability, particularly when assessment data suggest necessary changes.¹⁴ This step in organizational change is likely among the most difficult, as it requires the establishment of new behavioral norms for faculty members, staff members, and students, which takes time.

THE EXPERIENCE OF ONE COLLEGE-QUALITATIVE ANALYSIS

Two of the authors analyzed faculty involvement in curricular change at a college of pharmacy using Kotter’s framework. The study was designed to examine the dynamics of faculty involvement in major curricular reform, their motivations, perspective on purpose, and impacts on faculty work and productivity. Thirteen individuals serving on 2 college standing committees central to curricular change, were interviewed over a 6-month period beginning in September 2005: 9 faculty members and 4 administrators (including the dean), faculty at all ranks, serving at the institution from 2 to 20 years. Interviews were semi-structured around a 20-question interview guide, and lasted between 60 to 90 minutes. The 2 investigators were present at all interviews, which were tape-recorded with permission. A thematic analysis focusing on the dynamics

of faculty involvement in curricular reform and the preparation of a manuscript are underway at this time. Data pertinent to this paper have been drawn from 12 of the 20 interview questions. In spring 2009, the college and its faculty continue to engage in curricular assessment and reform efforts, which have transformed the logic and sequence of its PharmD curriculum.

Results

A research-intensive college of pharmacy had been 3 years into a transformational curricular reform effort (shift from BS Pharmacy to PharmD) when 2 investigators noticed that faculty members appeared to have been involved substantially and continuously for many years in an activity that typically goes unrewarded in research university contexts. While there is notable congruence with Kotter's steps, other considerations appear to have affected the sustainability of the effort in this institution.

1. Establish a sense of urgency. Two interview questions related to this point: The first question was, "Without the accreditation mandate, how much of this curriculum reform would have been attempted?" According to respondents, accreditation played a significant role in prompting the broad-based curricular change, and their comments revealed a nuanced view. Most indicated that the change would likely have occurred even without the mandate from the accreditation process: "It reflects where the profession wants to be . . . training a professional who wants to take on more responsibility." However, they also commented that "if it were not mandated, it could have been a very difficult road." Or it "would have happened, but much later." The change would more likely have been incremental, "evolutionary," or far more limited in its scope. "Accreditation tipped the balance" was the way one person phrased it. "Nobody got serious until the accrediting body said it would no longer accredit programs that did not change."

The second question was, "In your view, how important was this curricular change?" All 13 respondents used words like "essential," "very important," "vital," "HUGE," "terribly important" to characterize the value of the curricular change. Others said: "It will save the profession," or is "vital to the future of the profession," These comments give more credence to the notion that accreditation "tipped the balance," and created the necessary urgency.

2. Form a powerful guiding coalition. The composition of the participants, comments about personal commitment to the change (see step 4: communicate the vision), and the roles of college committees, pertain directly to this point. Study participants were all members of 2 standing committees in the college that dealt with

curricular matters and which were given responsibility for guiding the change. While many expressed some confusion about apparently overlapping committee responsibilities, the legitimacy of the committees did not appear to be in question when participants were asked about the role and importance of the committees during the change process. The committees clearly created a focal point. Committee membership represented about one quarter of the faculty.

3. Create a vision with strategies to achieve it. Responses to questions about the role of the 2 standing committees suggest that the creation of a vision may have been more of an evolutionary process than a clearly articulated target or endpoint. This college was in the vanguard nationally of those attempting to use outcomes assessment as a primary tool accessing the specifics of the curricular changes. In an initial round of curricular revision prior to using outcomes assessment, participants said the committees handed the framework "back" to the academic divisions who tended to rearrange existing course material in a typical effort some characterized as "protecting turf." Only after the first and second rounds of assessment data became available were faculty members able to frame the discussion in different terms and see how particular elements, such as clinical competence, might need to be addressed through more far-reaching restructuring. One faculty member with an administrative role said: "I think it would have been useful to have competency statements when we started, but it was not possible at that time."

4. Communicate the vision. Kotter's framework provides an interesting perspective on communicating the vision. In addition to comments about using communication channels, there is an emphasis on "teaching new behaviors by the example of the guiding coalition."¹⁰ In this college, the 13 study participants represented almost one quarter of the faculty, and their participation on the 2 standing committees clearly provided behavioral evidence of their commitment to the vision. When asked directly about their commitment, 10 of the 13 replied, "I am very committed" in so many words. The other 3 used slightly softer language, saying the objectives were important, or that they felt part of a team effort. Their continued involvement over several years in a process they later described as "laborious" provided unequivocal behavioral evidence to colleagues of the value they placed on the vision.

5. Empower others to act on the vision. The 2 standing committees clearly played a central role in guiding the change. In addition, responses to another question suggest that the "character" of faculty within academic institutions impacts change dynamics. Participants were asked, "What factors made it possible for you to engage

the way you did?" Five people indicated that the role was part of their jobs, and that the dean or others expected them to do it. The 8 others offered comments like these: "I just decided to do it and allocated time to do it." "My commitment to students." "There something about me that's different than some faculty. "I value teaching and education." "I'm willing to invest time and effort." Generally, success in a faculty role depends upon a certain degree of independence of thought and action. While that independence could undermine a change effort, in this instance, these individuals used their independence to support the effort.

There were, however, serious obstacles to participation. Among the most often mentioned were responsibilities to teach graduate students and to write the grants that supported graduate students. Participants discussed the tension and costs that resulted from trying to give research grant proposals priority while allocating significant time to committee work. Ironically, as one person said, "now that we have information, we need to revise the course and that takes time and energy."

6. Plan for and create short-term wins. As a tool, outcomes assessment produces information that is useful to individual faculty members. In the short run, several participants noted "... the students are satisfied and we have the validation that we're on the right track." We also heard comments like these: "One, we talk to each other. Two, you discover what's happening. ... A sense of enhanced collegiality." Several others discussed how they used the results to help revise their own courses, and 2 more mentioned that the process demonstrated to students that their inputs were valued.

7. Consolidate improvements and produce additional change. This question was not asked directly. However, a director of assessment was hired as a full-time staff member devoted to assessment during the period of the interviews, and major curricular restructuring occurred. For example, clinical experience, which had been limited to 400 hours in the third year of a student's program, now begins in the first year, and is carried throughout the program, involving a total of more than 1700 hours. Competency statements were substantially augmented and revised, and 1 round of formal curricular mapping was completed. The maps and other outcomes assessment data were used as the foundation of another round of curricular revisions. By the spring of 2009, the college and its faculty have successfully engaged in continuous and annual outcomes assessment since the previous self-study for accreditation in 2004. Therefore, combined with the change from the BS to PharmD, this college, its faculty, administrators, and students have sustained this effort for approximately 8 years.

8. Institutionalize new approaches. Connecting new behaviors to success has been the most important element of this stage. The majority of comments indicated powerful impacts at the individual faculty member level. Comments about changes at the program level were more mixed. Within the curriculum, people gave many examples. As 1 person stated, "... [course A and course B] are key areas. I knew we weren't doing this well in training. It was a no-brainer that we knew. But accreditation forced the faculty to make room for that to happen and the opportunity to carve out 3 credits for a course to be offered." "At the course level, for [this division], the fact that the surveys show disconnects between [2 subject areas] ... we've taken that seriously and gotten people together to talk about it." "... we made changes to actual courses based on what we found." "I didn't think strategically early in the process. ... we need to create continuity for the students."

Beyond Kotter's framework. Two elements of the curricular change process that seemed fundamental to participants about outcomes assessment and curricular change efforts were not addressed through Kotter's framework and bear mentioning here.

First, both literally, and in the perceptions of study participants, this college had been involved with curricular change for more than 20 years. Some respondents indicated that an inclination toward leadership in curricular change could be identified as long as 100 years ago. Bland et al identified the history of change in the organization as one of the key success factors in their survey of the literature on change in medical schools.¹³ Whether it is called culture, climate, or a predilection toward change, an underlying attitude that change is a natural and acceptable aspect of life for the teaching faculty creates a context where change is more likely to be sustainable and successful.

Second, the value of outcomes assessment as a tool for curricular change and the complexity of it were both subjects of comment. Several comments typify the way participants viewed the value of outcomes assessment: "Overall it's positive. A big 'gap' assessment." "It makes people think about what we do." "It strengthened the self-study."

These same individuals offered different types of responses to a general question "How do you view the outcomes assessment process?" Many of their words attest to the complexity and difficulty of the concepts and process. "If I were asked to do it without [name of assessment director], I wouldn't know where to start." "Lot of hard work." "Phew, painful...trying to reach consensus in a diverse college regarding outcomes is painful" "I can see how some faculty might be nervous or feel threatened that this might shine a light on what they are doing and

that might not be favorable.” “It’s a laborious process, layered on whatever else you’re doing.”

Reviewing the data from this study using Kotter’s framework underscores the importance of many of the stages: creating a sense of urgency, forming a powerful guiding coalition, the importance of short-term wins, the process of consolidating improvements, and producing additional change. It also draws attention to 2 other elements which may be particularly salient in the context of curricular change involving so complex a process as outcomes assessment: (a) the relationship between the potential for success and the climate of the institution or its history of dealing with change, and (b) the criticality of involving individuals with specific expertise as part of the leadership group.

Appendix 1 summarizes the relationship between specific assessment-related processes and the stages of Kotter’s model. The table also incorporates findings from the scan of the literature and the case study. Kotter’s model offers an opportunity to observe the points where assessment might be most useful and how it can further strengthen this planned change process. At each step, assessment activities can make a substantial contribution, illustrated in the table with specific activities and processes.

RECOMMENDATIONS

Research and experience show that major curricular transformation is a long, iterative process involving many stages of detailed review and evaluation. While Kotter’s model helps understand the role and timing of assessment activities, it does not fully address the complex aspects of curricular transformation. This section provides recommendations from a slightly broader perspective on curricular transformation, taking into account the different perspectives of stakeholders who view curricular reform and assessment through their own lenses. Thus, it is essential to provide general as well as specific recommendations.

AACP should continue its role of providing resources to support colleges and schools of pharmacy in transforming curricula. The Curricular Summit, Institutes, Curriculum Quality Surveys, and Pharmacy Education Assessment Services (PEAS) are all important in developing faculty members, assisting with measurement, and prompting innovation. ACPE can provide a sufficiently flexible interpretation of Standards 2007 so that innovation by colleges and schools can be achieved. Their recognition of pilot projects and well planned but lengthy timelines to achieve transformation to competency-based and assessment-driven curricula is required.

The following additional audiences are included in the specific recommendations: Academic health science center or university administration, assessment-focused

administrators in colleges of pharmacy, pharmacy educators including experiential faculty and student pharmacists. The recommendations from these analyses can be summarized using the acronym: PREPARE.

P = Prepare the process. Curricular reform of any type is a detailed, continuous, and iterative process. For faculty members who consider themselves educators, it touches upon one of the most sensitive aspects of self-image. It is time-consuming. Five to 10 years of careful data collection, curricular modification, and assessment will be necessary to achieve effective results. Initiating an outcomes-based curricular reform will take faculty and the institution down a new learning-curve. Careful planning to identify and prepare for each step have benefits. Having a clear sense of the characteristics of the results is fundamental to developing strategies and adjusting them when the process appears to go off course. Therein lies the critical importance of crafting and articulating a vision.

R = Recruit teams. Responsibility for leading the effort begins with the administration, but the long-term involvement of leadership from every teaching unit is required. A group of people need to be identified and recruited who can take a broad view of the curriculum while being sufficiently familiar with the details of department teaching. Conversations and discussions about the stimulus for and potential value of a curricular reform are essential at this stage, with existing curriculum, strategies, and program committees considered, bringing the added benefit of long-standing legitimacy within the organization. However, the timeframe and detailed work that will be required during the early years of the reform should be discussed with each committee member to assess potential impacts on other responsibilities. It may be appropriate to consider committee “rotations” at the outset to maintain continuity and modulate the impact on any single individual. Identifying and engaging the individuals who will be part of this guiding coalition is a second critical step. Staff support for the committees, including graduate students or others who can assist with data collection or analysis, will be essential.

E = Establish Expertise. Assessment-based curricular reform involves data collection and detailed analysis of current program and course offerings within an outcomes-based conceptual framework. Reform needs must be developed and articulated by the college. Instruments for data collection must be selected or developed. Specific expertise is required to guide the effort and sustain it. An individual with this expertise should be appointed to a named administrative role at full or half-time assignment. Time should be set aside for team/committee members to attend conferences, visit other institutions

experienced with assessment-based efforts, and engage in the lengthy conversations essential to developing the conceptual framework and outcomes statements at the core of the assessment effort. They, too, need to develop more detailed expertise related to assessment, the change process, and other dimensions of curricular reform. Building a broad base of assessment expertise might be conceived as a series of educational events which first involve a small group and then successively broader groups of faculty members within the college.

P2 = Produce useful results. In any long-term undertaking, particularly one which may involve completely unfamiliar methodology, participants need to see useful results in the short-run. An initial round of data analysis may offer faculty members the first insights into the match between desired outcomes and current offerings, of student satisfaction with the curriculum, and/or their perceptions of achievements. If this information were made available to faculty members in forms allowing them to translate results into course modifications, they would experience the process as useful. As value and credibility for the process builds, it is easier to sustain and broaden the involvement required to achieve long-term results. Broad-based engagement and empowerment tend to be achieved when organizational members, eg, the faculty understand the vision and the steps that lead to its achievement, and can see the value of their efforts.

A = Accentuate progress. Few busy people can foresee and think effectively about activity more than 2 or 3 years in advance. Having put time and effort into, perhaps, uncomfortable and lengthy conversations with colleagues about their teaching, faculty members need to feel that there has been progress in the reform. The leadership group or curricular reform team needs to communicate examples of midstream achievements and change so that others can not only value them, but emulate them. Some institutions might want to consider starting the reform effort with a "pilot" study addressing some segment of the curriculum or college. That choice depends to a large degree on the institution's experience or history with previous curricular change. If previous efforts have been particularly contentious or if there has been a particularly visible example of a major reform that failed, a pilot program might be advisable. Results from the pilot effort should be made available to larger college audiences so that progress is visible and the process is accessible to those who may question the value of broadening the effort to the "rest" of the college. Visible short-term wins help sustain momentum and encourage skeptics to reconsider.

R2 = Review. Monitor, review, recalibrate, adjust, and communicate. Few organizational change efforts of any scale proceed without troublesome "glitches,"

whether the implementation of new technology like a course management system or accreditation standards. Data collection instruments should be reviewed to assure that they are measuring the intended elements (eg, check for validity). The data collection and analysis process should be reviewed to ascertain whether continued use in the present form is manageable (eg, check for survey fatigue among participants). Committee assignments, staffing, and circumstances of individuals should be reviewed to assure the activity essential to sustaining the reform is in place.

E2 = Evaluate. The core leadership team should gather at least annually to consider the hard questions: "To what degree is the assessment-based transformation achieving the intended results? If not, why not? What indicators are needed to get the answer to that question? Examination results? Accreditation preparation and results? And if so, how can the change be sustained over the long haul? What unintended results are we seeing as byproducts? And how do we address them? Should committee structures be modified? How does the new curriculum affect faculty hiring priorities?" Curricular reform is an arduous task; however, it should evolve from a major, watershed transformational effort into a more continuous improvement model. The goal is to create the momentum, expertise, and commitment that will enable the college to recognize indications that more substantial change may be required in the future. In assessment terms, the goal is to develop a mental habit among administrators and faculty members, a culture that perceives the activities associated with the elements of the assessment loop as "business as usual."

Throughout the steps of the PREPARE process, there is 1 underlying dimension common to all, and that is the need for communication. Communication begins with conversations about how to prepare for a 5-10 year effort, continues with individual discussions about committee and leadership roles, and evolves into workshops and conferences to engage individuals in developing the expertise that is required for an assessment-based effort. Communication also extends into broad-based presentation of results so that the entire community can become fully involved with the process. Communication includes newsletters recognizing achievements, and it includes unappealing conversations with colleagues who may not welcome the news that their course requires major modification. Communication means developing an attitude that "information is good," and "disagreements" met in the process of developing new ideas "need not be disagreeable." Communication is the lifeblood of transformational change.

Incremental changes characterize most of the curricula change in colleges and schools of pharmacy over the

past 20-30 years, since the introduction of clinical pharmacy. The premise of this analysis is that a “tipping” point has been reached where transformational change is now required to meet the volume and speed of changes in our technology, healthcare system, pharmacotherapeutics, and even the psychology and cognitive sciences related to learning. This transformational change must be complemented with on-going, incremental changes based upon external and internal data generated via assessment. Assessment processes provide the data to feed the engine of curricular transformation. Such a transformation of the curriculum requires organizational changes consistent with those described by Kotter.

The PREPARE recommendations were developed by a group of 5 individuals who summarized and synthesized the literature and a live case using Kotter’s framework over a 3-month timeframe. Translation of the framework into “plans of action” for individual colleges of pharmacy belongs to those who best understand the missions and programs of their institutions. This White Paper is intended to provide input and insights for those who accept that important responsibility.

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Appendix 1. Examples of Curricular Reform and Assessment Activities for Kotter's 8 Stages. Kotter's 8 Stages reprinted with permission of Harvard Business Publishing, Watertown, MA. From: Kotter JP. Leading change: why transformation efforts fail. *Harvard Business Review*. 1995/2007. The tests of a leader: *Best of HBR*. 2007;1;96-103.

Phases	Curricular Reform Activities	Assessment Processes and Data
1. Establish a sense of urgency	<ul style="list-style-type: none"> ● Evaluate need to create alignment with Academic Health Center (AHC) and/or University initiatives ● Conduct school/college Strategic Planning ● Share curricular/student performance data/results with all stakeholders ● Visit leading schools in curricular transformation and innovation 	<ul style="list-style-type: none"> ● Conduct Accreditation Self Study Process ● Obtain input on quality of program from alumni, practitioners, faculty members and students via AACP Surveys ● Review results from NAPLEX and MPJE Exams and post-graduate training and residency ● Review results from curricular assessments and Mission Evaluation Plans ● Conduct stakeholder (ie, employer) needs assessments
2. Form a powerful guiding coalition	<ul style="list-style-type: none"> ● Commission task force on curriculum reform ● Recommission current committee or group of committees and broaden their objectives ● Involve opinion leaders and other influential constituents 	<ul style="list-style-type: none"> ● Ensure coalition has adequate positional power, expertise, credibility, and leadership. ● Develop expertise of guiding coalition via visiting schools, attending AACP Institute, and using PEAS (Pharmacy Education Assessment Services)
3. Create a vision with strategies to achieve it	<ul style="list-style-type: none"> ● Develop an Educational Philosophy ● Create a vision for a new curriculum (or a continually evolving curriculum) ● Outline a work plan 	<ul style="list-style-type: none"> ● Connect with institutional researchers ● Review focus group responses to preliminary vision ● Conduct feasibility analysis ● Implement goals or recommendations from self-study
4. Communicate the vision	<ul style="list-style-type: none"> ● Convey vision thru leaders, such as Dean or opinion leaders ● Ensure guiding coalition "Walks the talk" ● Conduct launch events/make announcements ● Produce emails, newsletter articles or an Annual Report ● Hold meetings and retreats ● Use examples, metaphors and analogies to described needed change 	<ul style="list-style-type: none"> ● Create feed-back mechanisms ● Gather information from faculty, student, preceptor, and alumni through surveys or focus groups about change progress and outcomes of curricular reform (ie, college specific questions on Curriculum Quality Surveys) ● Conduct focus groups of vision, giving opportunity for alternate opinions to be heard
5. Empower others to act on the vision	<ul style="list-style-type: none"> ● Reward innovations in curricular design ● Reward participation in curricular reform and assessment activities ● Provide incentives for faculty development/training in new teaching approaches 	<ul style="list-style-type: none"> ● Develop curriculum map ● Distribute results from assessment to appropriate stakeholders, if available ● Emphasize curricular improvement over external accountability
6. Plan for and create short-term wins	<ul style="list-style-type: none"> ● Inventory current activities ● Identify "low hanging fruit" ● Conduct pilot projects 	<ul style="list-style-type: none"> ● Examine results from curricular assessment to guide new initiatives ● Obtain stakeholder feedback and recommendations ● Obtain student feedback about implementation processes

7. Consolidate improvements and produce additional change	● Show stakeholders the impact of their suggestions (ie, how they influenced change)● Hire new faculty with educational values similar to reform● Change organizational structure for Assessment● Develop a “core of faculty” who continue innovation when administrative personnel leave● MORE faculty development and continued incentives	● Conduct workload analysis● Conduct needs assessments for learning● Continue to analyze assessment data to ensure continued implementation is working/on-track
8. Institutionalize new approaches	● Celebrate successes● Train new faculty, committee members, and students about changes	● Evaluate feedback mechanisms for trends/outcomes● Be flexible in implementation and review assessment data● Review results from Mission Evaluation Plans; NAPLEX and MPJE Exams, and curricular assessments
-