FROM THEORY TO PRACTICE AND BACK AGAIN: IS CURRICULAR REFORM A MOVING TARGET?

Johanna Shapiro, Ph.D., Michael Prislin, M.D., Brian Andrews, M.D., Ph.D., Alberto Manetta, M.D. (authorship and order of authorship not established)

INTRODUCTION. Most marksmen agree that a moving target is more difficult to hit than a stationary one. Like a moving target, the process of curricular reform is not static, but constantly evolving and changing. This quality is what gives the process of reform its relevance and utility, but it also makes curricular redesign and implementation infinitely more complex. On the other hand, as the satirist Ashley Brilliant once wrote, "To be sure of hitting the target, shoot first and whatever you hit, call it the target." The most useful curricular reform share something in common with the flexibility of this approach as well.

EDUCATIONAL THEORY AND VISION AS THE BASIS FOR CURRICULAR REFORM. In order for curricular reform to be successfully implemented, it must be grounded in a clearly articulated vision and preferably draw on identifiable educational theories or concepts. Student and faculty dissatisfaction or critical LCME reviews, while troubling, do not provide a sufficient basis to initiate and maintain a major reform effort. With only these negative factors as an impetus, reform efforts become torn in too many directions, too subject to constant revisions based on the

most vocal protesters. Without an overarching vision and theory, educational reform efforts are doomed to be piecemeal, often running the risk of contradicting change initiatives implemented at other levels of the curriculum. Further, the existing academic culture must be willing to reevaluate individual teaching and curricular development efforts in light of this newly identified or clarified vision and theory.

The process of change must start with a vision, for example, the purpose of medical education at this institution is... (*Mike, might consider putting material here from Mission statement)*. Vision must then be supported by the adoption of an educational theory that outlines pedagogical approaches to achieve this vision. For curricular change to succeed, there must be widespread buy-in throughout the institution in terms of both vision and theory.

THE SCIENTIFIC PARADIGM: Successful curricular reform can make use of the classic scientific paradigm. Theory is used to derive specific interventional hypotheses: ie., student-centered learning will improve student morale; problem-based learning will increase student retention of knowledge. Then the empirical testing of hypotheses can occur, through the introduction of curricular change and, of critical importance, evaluation of these changes. Finally, based on observation and experience, the interventions are modified, and at times so is the theory.

UCI - A CASE IN POINT: Overall student dissatisfaction at UCI was both significant and longstanding. Data from 1989 indicated that among MSIs, 0% were "very

satisfied" with the curriculum, while 38% were either not at all or only slightly satisfied. Among MSIIs, no quantifiable data were available, but student dissatisfaction was pervasive. In 1992, despite piecemeal efforts at change, significant dissatisfaction in the first year hovered around 27%, while in the second year it was 39%. Issues of concern to students included excessive lecture hours; teaching that focused on researcher interests and often lacked clinical relevance; redundancy and lack of coordination of teaching material across courses; lack of integration of content knowledge; lack of skill development in problem-solving, clinical and reasoning, and a concomitant reliance on test-taking and rote memorization; rigid separation of preclinical and clinical years; and intense dissatisfaction with most of the social science or "orphan" courses such as behavioral science, human sexuality, ethics, nutrition, epidemiology, biostatistics, toxicology; as well as with topics such as cross-cultural medicine, geriatrics, and medical economics.

The school's negative LCME review in 1992 served as a catalyst for change. Preliminary steps included the appointment of a Senior Associate Dean of Medical Education, the first time in this school's history that such a position had existed; and the appointment of a Blue Ribbon Committee involving a wide spectrum of faculty to examine and make recommendations about all aspects of the curriculum (courses, faculty development, finances etc.). The Blue Ribbon process, which took one year to complete, was characterized by widespread involvement of stakeholders, (faculty, students, and administration) decisions by group consensus, and exposure to formal pedagogical theories and teaching methods.

EDUCATIONAL THEORIES/CONCEPTS UTILIZED IN OUR CURRICULAR REFORM PROCESS: UCI primarily drew on three overlapping educational theories and concepts: problem-based learning, student-centered learning, and integrated learning. All of these approaches emphasize the development of clinical reasoning and problem-solving; self-directed, independent investigation and learning skills; have an interdisciplinary emphasis; and use a case-, organ-, or systems-based approach.

THE EXAMPLE OF PATIENT-DOCTOR II: The overall purpose of this 316 hour required course was to design a major interdisciplinary initiative as part of the preclinical curriculum that would teach students how to combine a psychosocial analysis of various dimensions of patient care (ie., emotional, behavioral, sexual, cultural, epidemiological, economic etc.) with the standard formal approach to history taking, physical exam and differential diagnosis. By the end of the course, medical students were expected to be able to integrate a variety of knowledge bases and skills in a comprehensive, biopsychosocial approach to patient care. The goals were to encourage curricular applications of innovative educational theories and methodologies, such as PBL; to stimulate integration and coordination of disparate bodies of biomedical and psychosocial knowledge by breaking down rigid departmental barriers and promoting faculty cooperation; to produce student-centered rather than faculty-centered teaching, moving away from reliance on large lecture format to small group discussions; and

finally, to emphasize intellectual skills of knowledge synthesis, clinical reasoning, and clinical problem-solving.

OTHER CURRICULAR CHANGES: The entire Patient-Doctor series, aimed at providing vertical integration of the curriculum; the molecular genetics course (?); horizontal coordination among first and second year courses (ie., Path and Pharm). *(Mike, needs elaboration)*

DID CHANGE WORK?: Overall, curricular change was evaluated as a success. Overall student satisfaction improved dramatically. Further, because of various innovations such as Dean's hour conferences in which students could register academic concerns directly with the dean, and the adoption of e-mail for the entire student body so that students could communicate easily and frequently with faculty responsible for teaching, students clearly assumed both more responsibility for and more involvement with their educational process. In the PDII course, overall instruction and course content in the small courses improved when compared to their previous freestanding state, with the notable exceptions of clinical medicine and epi/biostat.

PROBLEMS WITH THE CHANGE PROCESS: There were numerous administrative, logistical, and instrumental problems associated with curricular change. For example, small learning groups meant identifying and coordinating more faculty. Use of surrogate and standardized patients meant additional training and scheduling. A

serious approach to ongoing evaluation of students, faculty, and courses meant a proliferation of paper work moving throughout the system.

Yet the primary challenges were not administrative, but interpersonal as defined by the FIRO scale used to predict team compatability. The FIRO scale identifies three dimensions essential for successfully accomplishing systemic/organizational change: 1) Inclusion 2) Control 3) Openness. In all of these areas, we encountered significant difficulties.

In terms of inclusion, despite efforts to involve large segments of the faculty, the process of curricular was continually challenged by a sense among some faculty of being excluded, or having change "imposed" on them by a small group of "insiders." Faculty feared they, and their areas of expertise, as well as their familiar teaching approaches, were being marginalized and sidelined. A major oversight was the underrepresentation of students on committees with various aspects of curricular reform, with the result that students did not have an adequate investment in the innovations being implemented.

Both faculty and students frequently appeared to feel out of control of the change process. Faculty in particular responded by clinging more tightly to what control they had, and were often reluctant to relinquish control even in the interests of cooperation and coordination with other faculty. Departments in particular felt threatened by a perceived, and to some degree real, loss of control over the content of the curriculum. As a result, an abundance of territoriality and turf issues emerged. Faculty engaged in predictable power struggles to protect "empires."

It was not only faculty who felt they were losing control of their professional identity. Students as well experienced considerable anxiety and uncertainty regarding their new, less passive role in the educational process. Finally, the fact that an institutional shift occurred from "top-down" to more conjoint decision-making, while generally welcomed, made for an often cumbersome and inefficient decisional process.

Professional openness refers to a climate of comfort, respect, and trust. In general, one of the impetuses for change was to shift our institution from a closed system to a more open system. However, at times it was difficult to overcome historical postures of suspicion, insecurity, and conflict among faculty, administrators, and students. Successful curricular change depended on creating a safe environment where stakeholders could express their opinions, disagree, and still ultimately reach consensus.

SUCCESSFUL STRATEGIES FOR FACILITATING PROFESSIONAL TRUST AND COLLABORATION: Effective strategies promoted inclusion rather than exclusion. Although time-consuming and inefficient, a faculty process of nested concentric committees and subcommittees was successful in involving large numbers of faculty, and especially faculty who had heretofore been excluded from any leadership role on the campus. Conjoint decision-making, problem-solving, and consensus-building, while again often onerous, was more effective than relying on unilateral decisions imposed from the top down. Whenever possible, "local" control (ie., at the course level) generated the best and most useful suggestions, while the committee process helped to integrate and

coordinate these decisions across the entire curriculum. Finally, it was important to attempt a large-sclae buy-in to shared goals and vision, and to create bridges among various disciplines and specialties.

Ideas: Survey on Curricular Reform

1. Title of Respondent (highest degree): M.D. Ph.D. Other _____

2. Has your medical school undergone a significant curricular reform process in the last five years? YES NO
   If NO, you do not need to complete the rest of this form, but we would still appreciate your returning it in the enclosed envelope.
   If YES, please continue with the survey.

3. During what time period did the major thrust of curricular reform occur at your institution? Dates: _____

4. What was the motivation for curricular change? (list in order of importance; 1 = most important, __ = least important)
   _____ Student dissatisfaction
   _____ Poor LCME review
   _____ Faculty dissatisfaction
   _____ Administrative dissatisfaction (i.e., Chairs, Deans, Chancellor/President)
   _____ Positive desire to introduce new teaching strategies
   _____ Other (please specify): _____

5. What was the nature of student dissatisfaction (check all that apply)
   _____ None or little
   _____ Excessive lecture hours
   _____ Faculty-centered lectures (i.e., lectures centered on faculty research)
   _____ Irrelevant subject matter
   _____ Redundancy and lack of coordination across courses
   _____ Lack of integration of content knowledge
   _____ Lack of skill development in problem-solving, clinical reasoning
   _____ Excessive emphasis on test-taking, rote memorization
   _____ Rigid separation of clinical and preclinical years
   _____ Criticism of social science and "orphan" courses (i.e., ethics, nutrition, human sexuality, epidemiology, biostatistics, toxicology, behavioral science)
   _____ Other (please specify): _____

6. Does your school have an Associate Dean of Medical Education or equivalent position?
   YES NO

7. If yes, in what year was this position created?_____

8. Who was involved in the curricular reform process?
   _____ Initiative primarily from Dean of Medical Education
   _____ Included mostly narrow group of faculty
   _____ Included broad spectrum of faculty
   _____ Included primarily faculty with historical decision-making power at institution
   _____ Included both historical leaders & faculty new to decision-making process
   _____ Included balance of faculty, students, & administrators

_____ Other model: (please describe)

9. How were important decisions made?
_____ By majority vote
_____ Consensus
_____ Administrative mandate
_____ Combination of all three
_____ Other: (please describe)

10. What educational theories (if any) were used as the basis for curricular change?
_____ None
_____ Problem-based learning
_____ Student-centered learning
_____ Integrated learning
_____ Other: _____

11. What curricular changes were recommended at your institution? (check as many as apply)
_____ Development of new courses: Please list and describe briefly

_____
_____
_____
_____

_____ Increase in small group teaching
_____ Introduction of problem-based methods
_____ Introduction of student-centered approaches
_____ More independent learning
_____ More evidence-based learning
_____ Increase in information management skills
_____ Increase in emphasis on clinical reasoning, problem-solving
_____ More involvement of full-time faculty in teaching
_____ More effort to show relevance of basic science knowledge to clinical clerkships
_____ More efforts to coordinate basic science and other preclinical courses
_____ More interdisciplinary instruction
_____ Systems-based approach
_____ Organ-based approach
_____ Other (please specify): _____

12. Double-check (above, #10) those changes that were actually implemented

13. What were the major successes of curricular reform?
_____ New courses
_____ Improved courses
_____ Increased integration of subject matter
_____ More involvement of faculty in educational process
_____ More involvement of students in educational process
_____ Increased student satisfaction
_____ Increased faculty satisfaction
_____ Greater perceived relevance of curriculum

_____ Increased student fund of knowledge
_____ Improved clinical performance during 3rd & 4th years
_____ Improved clinical reasoning & problem-solving
_____ Increased interaction among faculty from different disciplines
_____ Other (please specify): _____

14 Since the introduction of curricular changes, has overall student performance on USMLE Part I:

a) DECLINED b) STAYED THE SAME c)IMPROVED

A. Please list areas with improved scores:

1._____
2._____
3._____
4._____
5._____

B. Please list areas with poorer scores:

1._____
2._____
3._____
4._____
5._____

15 Since the introduction of curricular changes, has overall student performance on USLME Part II:

a) DECLINED b) STAYED THE SAME c)IMPROVED

A. Please list areas with improved scores:

1._____
2._____
3._____
4._____
5._____

B. Please list areas with poorer scores:

1._____
2._____
3._____
4._____
5._____

16 Since the introduction of curricular changes, has student performance in the General Medicine Clerkship:

Overall Grade: a) DECLINED b) STAYED THE SAME c) IMPROVED
Written/Shelf Exam: a) DECLINED b) STAYED THE SAME c) IMPROVED

17. Since the introduction of curricular changes, has student performance in the Family Medicine or Primary Care Clerkship:

Overall Grade a) DECLINED b) STAYED THE SAME c) IMPROVED
Written/Shelf Exam: a) DECLINED b) STAYED THE SAME c) IMPROVED

18. Since the introduction of curricular changes, has student performance in the Pediatrics Clerkship:
Overall Grade: a) DECLINED b) STAYED THE SAME c) IMPROVED
Written/Shelf Exam: a) DECLINED b) STAYED THE SAME c) IMPROVED

19. Since the introduction of curricular reform, have there been any other quantifiable changes in student performance: YES NO If yes, please enumerate these below:

20. What were major problems with curricular reform?
(Rank order, 1 = most serious problem)

_____ Logistical and administrative
_____ Problems translating theory into praxis
_____ Difficulty getting faculty to adapt to more student-centered teaching styles
_____ Difficulty getting students to accept lack of standardization in PBL approach
_____ Difficulty getting faculty to relinquish control over curricular time
_____ Difficulty getting students to accept more active roles as learners
_____ Lack of trust among faculty, administration, & students
_____ Disagreement over how to define a proper knowledge base
_____ Disagreement over how to achieve fair and uniform evaluation of students
_____ Lack of cooperation of faculty
_____ Other (please specify): _____

21 Please estimate below the time and cost involved in designing and implementing curricular reform at your institution:
Number of faculty involved in reform process: _____
Number of administrators involved in reform process: _____
Number of staff involved in reform process: _____
Number of hours spent on committees, in planning sessions etc.: _____
Number of additional faculty hired to implement curricular reform: _____
Number of teaching hours added to the standard curriculum to implement curricular reform: _____
Estimated total additional cost to your medical school to implement curricular reform:
Faculty (additional time or new hires): _____
Staff (additional time or new hires): _____
Materials, supplies: _____
Other costs: _____

22. Does curricular reform continue to be an ongoing process at your institution?

1	2	3	4	5
YES, very much so	YES, to some degree	YES, a little bit	Barely	Not at all

23. As a result of curricular reform efforts, would you say,

a. Professional trust and collaboration among faculty
increased decreased stayed the same

b. Relations between faculty and administration

improved deteriorated stayed the same

c. Relations between faculty and students

improved deteriorated stayed the same

d. Relations between students and administration

improved deteriorated stayed the same

e. Shared decision-making

increased decreased stayed the same

f. Faculty leadership

increased decreased stayed the same

g. Student input

increased decreased stayed the same

h. Faculty sense of shared educational vision and goals

was enhanced was diminished stayed the same

Dr. Shapiro -

From Dr Pristin

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Curriculum Reform Study
Basic Sciences Course
Director's Questionnaire

1. Please circle the name of your course.

A) Anatomy	B) Biochemistry	C) Physiology
D) Microbiology	E) Histology	F) Neurosciences
G) Genetics	H) Pathology	I) Pharmacology
J) Intro to Med Yr. I	K) Intro to Med Yr. II	L) Beh Sci Year I
M) Beh Sci Year II	N) Other (*Please specify*) _____	

Indicate current course hours _____hrs.

2. Did curriculum reform at your institution alter the time allocated for your course?

No change ☐ Increase ☐ Decrease ☐

How much time? _____hrs.

3. Did curricular reform result in a change in your course format? Yes ☐ No ☐

If yes, please indicate whether:

	Increased	Decreased	Remained the Same
A) Lectures	☐	☐	☐
B) Small Group Discussions	☐	☐	☐
C) Laboratory Experiences	☐	☐	☐
D) Laboratory Demonstrations	☐	☐	☐
E) Clinical Correlates	☐	☐	☐

4. Did curricular reform result in the implementation of new teaching methodologies in your course? Yes ☐ No ☐

If yes, please indicate which changes have occurred.

A. Implementation of Problem Based Learning ☐
B. Implementation of Computer Assisted Learning ☐
C. Other (*please specify*): _____

_____

_____

5. **Has curricular reform at your institution resulted in the integration of your course with another course or courses?** Yes ☐ No ☐

   If yes, please specify which course/courses_____

   _____

   _____

6. **Has curricular reform resulted in synchronization of material presented in your course with material presented in other courses?** Yes ☐ No ☐

   If yes, please specify which courses_____

   _____

   _____

7. **In your opinion, has curricular reform had an impact on your course?**

   Beneficial ☐ Detrimental ☐ No Impact ☐

   A) How have you measured changes in student performance? ***(Circle ALL that apply)***

   1) USMLE
   2) National Board Shelf Exam
   3) Other Written Exam
   4) Oral Exam
   5) Independent Study Project Paper
   6) Other *(please specify):* _____

      _____

9. **Please estimate the number of hours committed by yourself and members of your department to:**

   A) Curricular Reform Deliberations _____ hrs.
   B) Reform related Curricular Development _____ hrs.
   C) Reform related Curricular Implementation _____ hrs.

10. **Please identify your academic rank**

    Assistant Professor ☐ Associate Professor ☐ Professor ☐

    and tenure status

    Non Tenure Track ☐ Tenured Eligible ☐ Tenured ☐

11. **If you wish to receive a copy of survey results please provide your e-mail address and/or fax number.** E-mail:_____ Fax:_____

Curriculum Reform Study
Clinical Clerkship Director's
Questionnaire

1. **Please circle the name of your clerkship.**

   A) Medicine B) Surgery C) Pediatrics
   D) Ob/Gyn E) Psychiatry F) Family Medicine
   G) Other *(Please specify)*_____

2. **Has curriculum reform changed the amount of time available for your clerkship?**

   Increase ☐ Decrease ☐ No Change ☐

   How much time? _____

3. **Has curriculum reform altered the structure of your clerkship to:**

	No Change	Increase	Decrease
A) Inpatient Experiences	☐	☐	☐
B) Ambulatory Experiences	☐	☐	☐
C) Didactic Instruction	☐	☐	☐
D) Independent Study/Projects	☐	☐	☐
E) Clinical Skills Assessment	☐	☐	☐
F) Written Examination	☐	☐	☐
G) Computer Assisted Learning	☐	☐	☐
H) Clinical Simulations	☐	☐	☐
I) Clinical Simulations using Standardized Patients	☐	☐	☐

4. **Has curriculum reform resulted in the integration of your clerkship with another clerkship?**

   Yes ☐ No ☐

   If yes, please specify the other clerkship and briefly describe the nature of the integration. _____
   _____
   _____
   _____

5. **Has curricular reform had, in your opinion, an impact on your clerkship?**

   No Impact ☐ Beneficial ☐ Detrimental ☐

6. **How has the impact of curriculum reform with respect to student performance on your clerkship been measured?**

   A. USMLE ☐
   B. National Board Shelf Exam ☐
   C. Other Written Exam ☐
   D. Oral Exam ☐
   E. OSCE ☐
   F. Other *(Please specify)* _____

   _____

7. **Please estimate the number of hours committed by yourself and other faculty members in your department to**

   A. Deliberations regarding curricular reform _____ hrs.
   B. Development of reform related curriculum _____ hrs.
   C. Implementation of reform related curriculum _____ hrs.

8. **Please identify your faculty rank**

   Assistant Professor ☐ Associate Professor ☐ Professor ☐

   and your tenure status

   Tenured Faculty ☐ Tenure Track Faculty ☐ Non-Tenure Track Faculty ☐

9. **If you wish to receive a copy of survey results please provide your E-mail address and/or your Fax number.** E-mail _____ Fax # _____