WEILL CORNELL MEDICAL COLLEGE QATAR

INTRODUCTION TO CURRICULUM DEVELOPMENT

David E. Kern, MD, MPH
Gerardo Guiter, MD
Dora Judit Stadler, MD
Deema Al-Sheikhly, MRes

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Disclosures

Dr. Kern is an editor and author of the book:

- Kern DE, Thomas PA, Hughes MT, eds. Curriculum Development for Medical Education: A Six-Step Approach. 2nd ed. Baltimore (MD): Johns Hopkins University Press; 2009.

and receive royalties from the publisher, Johns Hopkins University Press.

GOALS OF WORKSHOP

By the end of the workshop, participants will be able to:

- Describe the six steps of curriculum development

- Apply these principles to enhance their work in educational program development

- Describe why curriculum development is both a form of scholarship and a public trust

- Identify additional resources for curriculum development

CURRICULUM: DEFINITION

A planned educational experience

CURRICULUM DEVELOPMENT: UNDERLYING ASSUMPTIONS

- Educational programs have goals or aims, whether articulated or not

- Medical educators have professional and ethical obligations to meet the needs of their learners, patients and society

- Medical educators should be held accountable for the outcomes of their interventions

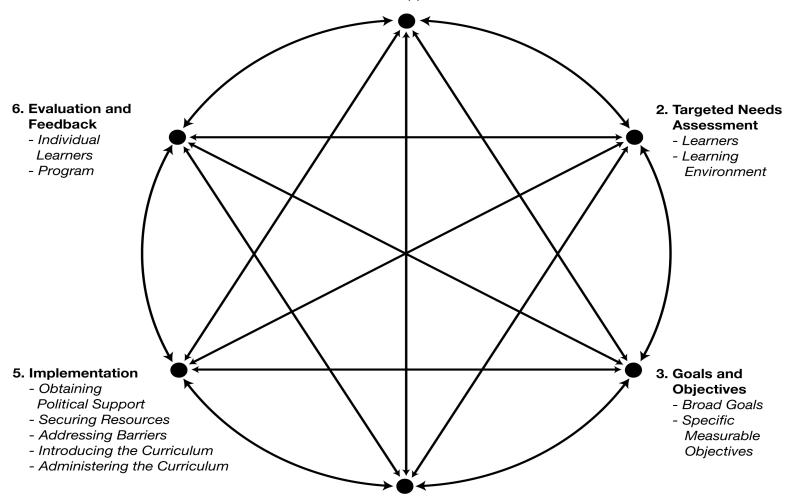- A logical, systematic approach to CD will help achieve these goals

Rudolf Virchow

"Medical instruction does not exist to provide individuals with an opportunity of learning how to make a living, but in order to make possible the protection of the health of the public."

CURRICULUM DEVELOPMENT OVERVIEW

6 Steps

1. Problem Identification and General Needs Assessment
- *Health Care Problem*
- *Current Approach*
- *Ideal Approach*

2. Targeted Needs Assessment
- *Learners*
- *Learning Environment*

3. Goals and Objectives
- *Broad Goals*
- *Specific Measurable Objectives*

4. Educational Strategies
- *Content*
- *Method*

5. Implementation
- *Obtaining Political Support*
- *Securing Resources*
- *Addressing Barriers*
- *Introducing the Curriculum*
- *Administering the Curriculum*

6. Evaluation and Feedback
- *Individual Learners*
- *Program*

STEP 1:
PROBLEM IDENTIFICATION AND
GENERAL NEEDS ASSESSMENT

… building the foundation for meaningful objectives

PROBLEM IDENTIFICATION & GENERAL NEEDS ASSESSMENT: WHY?

- Builds a rationale for your curriculum

- Grounds it in patient and societal needs

- Focuses a curriculum's goals and objectives

- Which in turn focus the educational and evaluation strategies

- Prevents duplication of effort

- Makes you an expert and a scholar

STEP 1:
PROBLEM IDENTIFICATION

- Identify and Characterize the Health Care Problem That Will Be Addressed by the Curriculum

Whom Does the Problem Affect?

- Patients
- Society
- Health Care Professionals
- Trainees

What Does the Problem Affect?

- Clinical Outcomes
- Quality of Life
- Quality of Health Care
- Use of Health Care and Other Resources
- Medical and Non-medical Costs
- Patient and Provider Satisfaction
- Work and Productivity
- Societal Function

Example: Problem Identification

"We need a curriculum in communication skills for our residents"

becomes: "Why is it important for residents to be effective communicators?"

- What is the impact on the process of care?
- What is the impact on clinical outcomes?
- What is the impact on malpractice?
- What is the impact on utilization and costs?
- What is the impact on patient and physician satisfaction?

Example: Problem Identification

"We need a curriculum in professionalism for our residents"

becomes: "What is professionalism, and why is it important for our residents to behave professionally?"

� What are the critical, evidenced-based or agreed upon components of professionalism?
▮ How do physicians' professional behavior impact on patients (satisfaction, clinical care outcomes), functioning of the health care team, and society?

GENERAL NEEDS ASSESSMENT

- What is **currently being done** about the problem?
  - By patients?
  - By practitioners?
  - By medical educators?
  - By society at large?

GENERAL NEEDS ASSESSMENT

- What is the **ideal approach** to the problem?
  - By patients?
  - By practitioners?
  - By medical educators?
  - By society at large?

GENERAL NEEDS ASSESSMENT

General Needs Assessment =

Ideal Approach - Current Approach

Example: Communication Skills

(Kern DE et.al. Residency training in interviewing skills and the psychosocial domain of medical practice. J Gen Intern Med 1989; 4:421-431.)

- CS critical to diagnosis, patient education, trust, patient satisfaction, clinical decision-making

- CS related to patient outcomes: satisfaction, compliance, clinical outcomes such as diabetes control, malpractice

- Physicians are "hypo-competent"

- Physician education often ignored or deficient at medical student and resident level

- Examples of effective education exist

- Effective education uses: effective educational methodologies which includes ≥ 2 experiential methods, same specialty role models, and reinforcement

Example: Musculoskeletal Medicine

(Houston TK et. al. A primary care musculoskeletal clinic for residents: success and sustainability. J Gen Intern Med 2004;19:524-529.

- MS disorders common and major cause of disability
- Patients desire quick access
- Training increases PMD confidence and ↓ referrals
- FCIM, ACGME, COGME recommend training in physical examination, diagnosis, and management of common MS disorders (including joint aspiration and injection, when appropriate)
- Preferred training modality is supervised clinical practice in settings similar to those in which the trainees will eventually practice, i.e. in primary care settings with trained preceptors possessing the desired expertise.

Example: Smoking Cessation (1)

▌ "Medical advice and pharmacotherapy are effective interventions in clinical practice to help patients stop smoking (1,2).

▌ Although primary care physicians can play a key role in promoting smoking cessation to their patients who smoke (3), they miss many opportunities to advise smokers (4-7), mainly because they lack skills in counseling about smoking cessation (8).

▌ Residency training in ambulatory care is an ideal setting in which to learn the attitudes and skills of preventive medicine, including smoking cessation (9)."

Example: Smoking Cessation (2)

- "Training programs in smoking cessation improves the frequency and quality of smoking cessation interventions administered by physicians (10-17). . .

- Most training programs mainly use didactic teaching rather than such potentially effective methods as active learning of practical skills (20,21). .

- A few training programs based on active learning methods effectively improve counseling skills, self-efficacy, and attitudes (22-25), but their effect on rates of smoking cessation remains unknown. . ."

STEP 2:
TARGETED NEEDS ASSESSMENT

…refining the foundation

TARGETED NEEDS ASSESSMENT: DEFINITION

- A needs assessment of one's
  - Targeted learners
  - Targeted learning environment

IMPORTANCE

- Identifies the specific needs and preferences of targeted learners and other stakeholders, which may be different from learners and stakeholders in general.

- Assesses the environment (including the hidden and informal curriculum) which will likely influence behavioral / performance outcomes.

- Permits tailoring the educational intervention to specific needs.

- Increases efficiency, prevents duplication.

- Builds relationship with stakeholders.

- Aligns strategy with resources.

INFORMATION ABOUT TARGETED LEARNERS

- Previous training & experience

- Already planned training & experience

- Existing proficiencies: knowledge / attitudes / skills

- Current performance / behaviors

- Perceived deficiencies and learning needs

- Preferences

INFORMATION ABOUT TARGETED ENVIRONMENT

- Related existing curricula

- Hidden / informal curriculum

- Specific enabling and reinforcing factors / barriers

- Resources

- Stakeholders

- Politics / factors related to institutional administration, policy and procedure

EXAMPLE:
MUSCULOSKELETAL CURRICULUM

Methods for Collecting Information:

- Review of existing training

- Senior resident exit interview

- Focus group of residents at noon conference

- Survey of current residents

EXAMPLE: MUSCULOSKELETAL CURRICULUM

Findings:

- Wrong case mix in Rheumatology and Orthopedics

- Low self-rated proficiency

- Low levels of training and clinical experience

- Strong desire for training

- Preferred educational method was "direct supervision of patient care by primary care practitioners with expertise in MS medicine".

EXAMPLE: MUSCULOSKELETAL CURRICULUM

Response:

- Development of workshops and syllabus materials on diagnosis and management for the musculoskeletal disorders commonly presenting to primary care practices.

- Institution of a new primary care musculoskeletal clinic supervised by Internal Medicine preceptors with a special interest in musculoskeletal medicine, to which other primary care practitioners referred patients for diagnosis and injection.

Houston TK, Connors RL, Cutler N, Nidiry MA.A primary care musculoskeletal clinic for residents: success and sustainability. J Gen Intern Med. 2004 May;19(5 Pt 2):524-9.

At the conclusion of Steps 1 & 2:

- You have a strong argument for the need for your curriculum.
- Set the stage for generalizability and dissemination of your curriculum.
- Understand the particular needs of your targeted learners and institution(s)
- Identified potential resources and support.
- Have the introduction and elements of a discussion for a manuscript
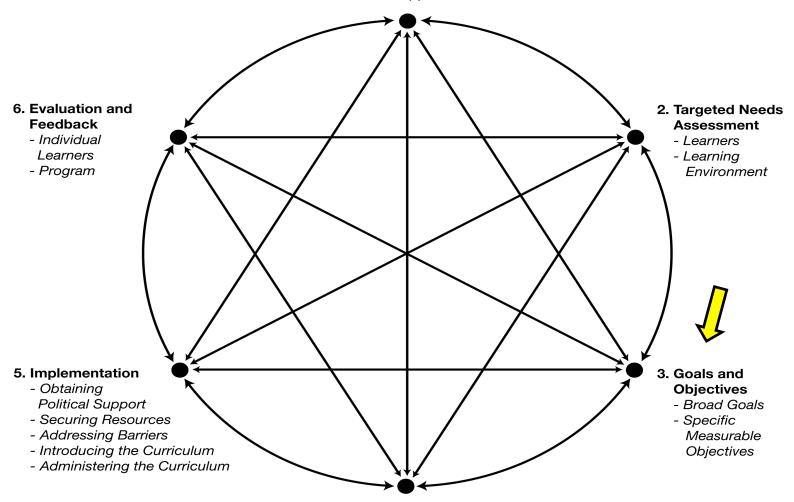- You are now the expert!

QUESTIONS?

STEP 3:
GOALS & OBJECTIVES

…the reason for teaching

1. Problem Identification and General Needs Assessment
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GOALS

- *Goals* are <u>broad educational objectives</u>, the general ends toward which an effort is directed. They are usually not measurable as written.

- <u>Example</u>: The purpose of the musculoskeletal curriculum is to prepare residents to evaluate and manage musculoskeletal conditions commonly seen in General Internal Medicine practice.

OBJECTIVES

- *Objectives* are <u>specific</u> & <u>measurable</u>.

- <u>Examples</u>: By the end of the curriculum, residents will demonstrate their ability to:
    - Correctly label shoulder anatomy on a diagram.
    - List the 4 most common causes of shoulder pain.
    - Perform an appropriate physical examination of the shoulder.
    - Diagnose the 4 most common causes of shoulder pain, based on history and physical examination.
    - Appropriately manage these 4 conditions.
    - Appropriately perform subacromial and intra-articular injections.

GOALS VS. OBJECTIVES

- <u>Goals</u>: visionary, lofty, expansive
  - set boundaries to clarify what will and will not be taught

- <u>Objectives</u>: precise, measurable
  - defines the content - what will be taught

IMPORTANCE OF OBJECTIVES

- Help prioritize
- Direct content
- Identify learning methods (congruity)
- Enable and direct evaluation
- Permit clear communication to learners, faculty, and other stakeholders
- Required by ACGME/ LCME

TYPES OF OBJECTIVES

▮ Learner Objectives

cognitive
affective
psychomotor (skill vs behavior)

▮ Process Objectives

curriculum implementation measures

▮ Patient / Healthcare Outcome Objectives

effects beyond immediate learner objectives, e.g. patient outcomes, career choice

LEVELS OF OBJECTIVES

- Individual Learner
- Aggregate or Program

HOW TO WRITE OBJECTIVES

1. <u>Who</u>
2. <u>will do</u>
3. <u>how much</u> / <u>how well</u>
4. <u>of what</u>
5. <u>by when</u>?

HOW TO WRITE OBJECTIVES

By the end of the gynecology curriculum (BY WHEN), each IM resident (WHO) will have demonstrated (WILL DO), at least once (HOW MUCH), the appropriate technique (HOW WELL), as defined on a check sheet, for obtaining a Pap smear and cervical cultures (OF WHAT).

HOW TO WRITE OBJECTIVES

- Achieve balance between specificity and readability

- Have someone else read them and explain them to you

- Have a manageable number of objectives

HIERACHY OF OBJECTIVES

- Patient / healthcare outcome >

- Behavioral >

- Skill >

- Attitudes / higher order cognitive >

- Knowledge

Those lower in the hierarchy may be enabling for those higher.

EXAMPLE: PROFESSIONALISM

▌ Poor: Residents will be able to obtain informed consent.

▌ Better: By the end of PGY-2, residents will routinely obtain informed consent that includes the following critical elements:

- ▎ natural course without treatment
- ▎ alternative treatments
- ▎ risks and benefits of the alternative treatments
- ▎ assessment of patient understanding
- ▎ sensitivity to patient needs and preferences
- ▎ answering of patient questions

EXAMPLE: Communication Skills

- Cognitive Objective: By the end of the rotation, residents will be able to list the critical components of effective patient education: assessing patients' knowledge, beliefs, needs; tailoring education to needs; giving information clearly and effectively; checking patients' comprehension and agreement.

- Affective Objective: By the end of the rotation, residents will rate highly (compared to other roles) the physician's role to effectively educate patients.

- Psychomotor Objective: By the end of the rotation, residents will have demonstrated their proficiency in the above patient education skills.

  By the end of residency, patient surveys will reveal the implementation of these skills in practice.

EXAMPLE: Communication Skills

▌ Process Objective: By the end of the rotation, each resident will have reviewed 3 videotapes of their actual patient interactions with their colleagues and a facilitator.

▌ Outcome Objective: Two months after the end of the rotation, patients of trained residents will be more satisfied with their physicians and be more compliant with their prescribed medication regimen than patients of untrained residents.

REMEMBER

- Goals provide overall direction
- A manageable number of objectives should
    - interpret the goals
    - focus and prioritize curricular components

Caveats

- Most curricula encompass more than the sum of their written objectives
- Objectives can be written to encourage creativity, flexibility, and nonspecified learning relevant to curricular goals

QUESTIONS?

SMALL GROUP:
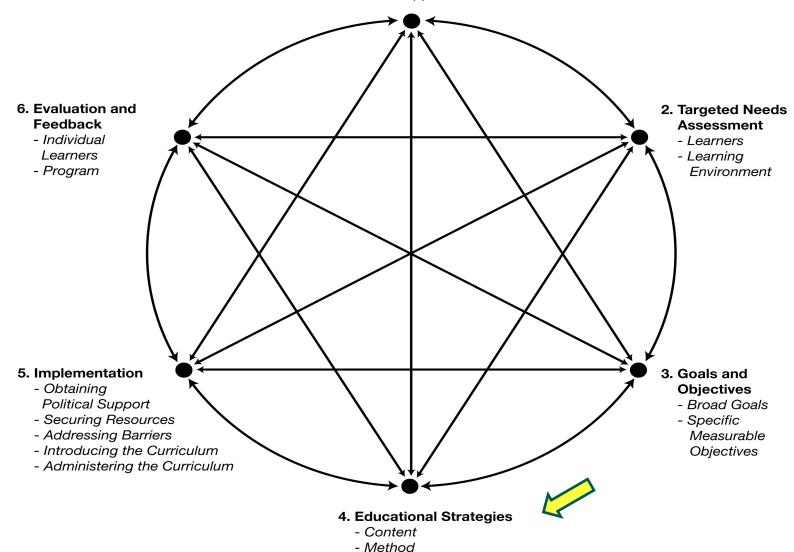
STEP 1: PROBLEM ID & GNA

STEP 3: GOALS & OBJECTIVES

QUESTIONS?

STEP 4:
EDUCATIONAL STRATEGIES

… accomplishing educational objectives

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STEP 4: EDUCATIONAL STRATEGIES

- Content of the Curriculum

- Educational Methods

EDUCATIONAL METHODS

Education is not the filling of a pail, but the lighting of a fire.

William Butler Yeats

Adult Learning Theory 101

Adult learners..

- Interested in **concepts & principles**
- Like to **solve problems**, not learn facts
- Want to **use** what they've learned soon after learning it
- Learning is best at their **own pace**
- Motivation increases when they set **own learning objectives**
- Like to know how they're doing: crave **feedback**

EDUCATIONAL METHODS: GENERAL GUIDELINES

- Maintain **congruence** between objectives and methods

- Use **multiple** educational methods

- Choose educational methods that are **feasible**

- Remember that **assessment can drive learning** ("internalization of assessment criteria")

Educational Methods for Achieving Cognitive Objectives

- Reading

- Lecture

- Audio-visual Materials

- Discussion

- Programmed Learning

Educational Methods for Achieving Affective Objectives

- Exposure (readings, discussions, experiences)

- Facilitation of openness, introspection, & reflection

- Role models

Educational Methods for Achieving Psychomotor Objectives

- Skill Objectives
    - Supervised clinical experience
    - Simulations
    - Audio or visual review of skills

- Behavioral Objectives
    - Removal of *barriers* to performance
    - Provision of *resources* that facilitate performance
    - Provision of *reinforcements* for performance

EXAMPLE: Musculoskeletal

- **By the end of the curriculum, residents will be able to perform subacromial and intra-articular corticosteroid injections of the shoulder, using proper technique.**
  - Didactic discussion, with demonstration
  - Supervised practice with simulated models
  - Supervised practice with real patients in a specially designed musculoskeletal clinic

EXAMPLE: INFORMED CONSENT

- By the end of PGY-2, residents will routinely obtain informed consent that includes the previously listed critical elements:
  - Didactic / handout on components of informed consent, and relevant information on 10 most common procedures.
  - Demonstration by role model physicians.
  - Supervised practice, with explicit reflection and feedback.
  - Feedback of patient survey information and nurse evaluations.
  - Faculty and nurse development that addresses the informal and hidden curriculum.
  - General and procedure specific forms that enable informed consent.

NEW CHALLENGES

What are the educational methods that will foster the attainment of the ACGME competencies?

- Professionalism

- Practice-based learning and improvement

- Systems-based practice

- Interprofessionalism

- Professional Identity Formation

True teaching is not an accumulation of knowledge;

it is an awakening of consciousness which goes through successive stages.

from a temple wall

inside an Egyptian pyramid

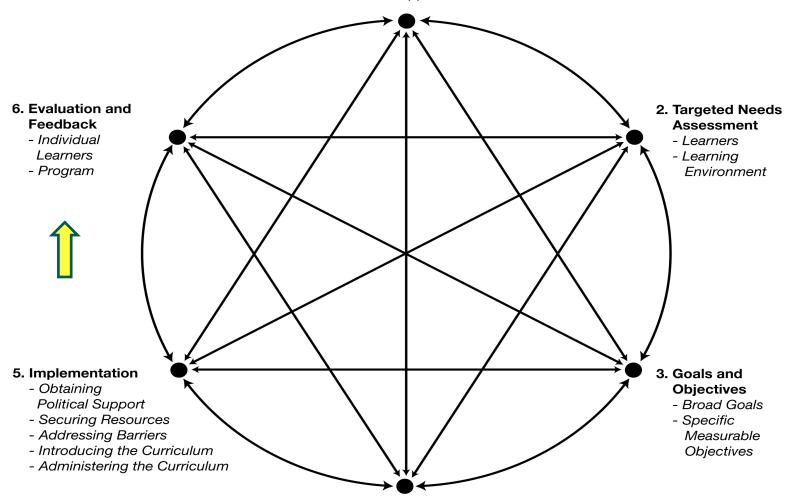**Education is what survives when what has been learned has been forgotten.**

-B.F. Skinner

STEP 6: EVALUATION AND FEEDBACK

…assessing the achievement of objectives and stimulating continuous improvement

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EVALUATION AND FEEDBACK: WHY?

- To determine if goals and objectives met
- To provide information for improvement
- To assess individual achievement
- To satisfy external requirements (e.g., ACGME)
- To document accomplishments of curriculum developers
- To maintain and garner support
- To serve as a basis for presentations/ publications

THE 10 TASKS OF EVALUATION

I. Identify Users

II. Identify Uses

III. Identify Resources

IV. Identify Evaluation Questions*

V. Choose Evaluation Designs*

VI. Choose Measurement Methods* and Construct Instruments

VII. Address Ethical Concerns

VIII. Collect Data

IX. Analyze Data

X. Report Results

IV. IDENTIFY EVALUATION QUESTIONS

- Ensure that some evaluation questions are <u>congruent</u> with curricular objectives.

- Include some evaluation questions that do not relate to specific curricular objectives. (program evaluation).

- Include some that are open-ended in nature.

- <u>Prioritize</u> and select key evaluation questions, based upon user needs and feasibility.

EXAMPLE: COMMUNICATION SKILLS

- Do residents' communication skills improve following training? Are they superior to those of untrained residents?
- How do residents rate the curriculum and its various components?
- What are its strengths?
- How can it be improved?

V. CHOOSE EVALUATION DESIGNS

- Choose an evaluation design <u>congruent</u> with the evaluation question.

- Choose an evaluation design that is <u>feasible</u> in terms of resources.

V. COMMON EVALUATION DESIGNS

- Posttest Only $X ---- O$

- Pretest Posttest $O_1 ---- X ---- O_2$

- Control Group $E (O_1 ---) X ---- O_2$
$$(R)$$
$$C (O_1 ---) ------- O_2$$

X = intervention

O = observation

E = Experimental

C = Control

R = Randomized

CONGRUITY *EXAMPLE:* COMMUNICATION SKILLS

▌ Do residents' communication skills improve following training?

$$O_1 ---- X ---- O_2$$

▌ Are they superior to those of untrained residents?

$$R \quad \begin{array}{l} E \qquad X ---- O_2 \\ \\ C \qquad ------- O_2 \end{array}$$

CONGRUITY *EXAMPLE:* COMMUNICATION SKILLS

- How do residents rate the curriculum and its various components?

- What are its strengths?

- How can it be improved?

X ---- O

VI. <u>CHOOSE</u> MEASUREMENT METHODS AND CONSTRUCT INSTRUMENTS

- Choose measurement methods that are <u>congruent</u> with educational objective and/or evaluation question.

- Choose measurement methods that are <u>feasible</u> in terms of available resources.

VI: <u>Choose</u> Measurement Methods: Congruence

	Knowledge	Attitude	Skill/Performance
Learner	Oral exam Written exam/Q'aire ———————— Case discussion ———————— Global rating scales	Learner interview Questionnaire Self-evaluation ———————— Global rating scales	Direct observation Audio/video observation ———————— Record audit Outcomes of care Patient interview ———————— Self-evaluation Global rating scales
Program	Aggregated scores from above methods	Aggregated scores from above methods	Aggregated scores from above methods

EXAMPLE: MUSCULOSKELETAL

- **Can residents perform an appropriate physical examination of the shoulder? perform subacromial and intra-articular injections using proper technique?**
  - Observed physical examinations, preceptor checklists.
  - Observed shoulder injections, preceptor checklists.
  - OSCE's
- **Can residents appropriately diagnose and manage the 4 most common causes of shoulder pain?**
  - Closed and open-ended case-based test.
  - OSCE's
- **How do residents rate the curriculum and its various components? / What are its strengths? / How can it be improved?**
  - End-of-rotation questionnaire

EXAMPLE:
INFORMED CONSENT

- **Do residents know the essential components of informed consent?**
  - Written exam.
  - Demonstration of inclusion of components in observed patient interactions.
- **Are residents capable of obtaining informed consent that includes the essential components for the 5 most common procedures and for an unfamiliar procedure?**
  - Supervised observation and documentation, with rater using checklist; or
  - Rater evaluation of audio or videotaped patient interactions.
- **Do residents routinely include the essential component of informed consent in practice?**
  - Nurse survey form.
  - Patient survey form.

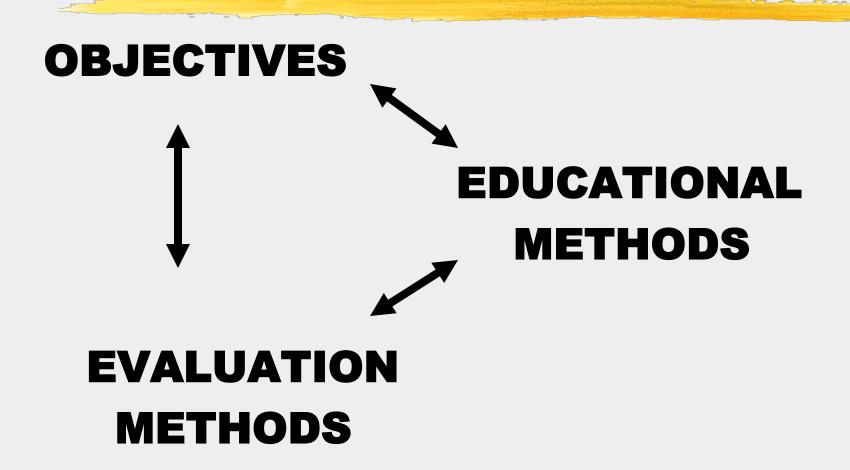# IDEAL EVALUATION STRATEGY

- multiple measurements

- multiple measurement methods

- multiple raters

When all results are similar, the findings are said to be *robust*, and one can be reasonably comfortable about their validity.

HIERARCHY OF EVALUATION STRATEGIES

- *Outcomes measured*: patient/health care outcomes > behaviors > skills > knowledge or attitudes > satisfaction or perceptions

- *Measurement methods*: objective > subjective; more > less evidence of reliability and validity

- *More > less strong evaluation designs*: randomized controlled > controlled > before-after > post only; longer > shorter term follow-up after intervention
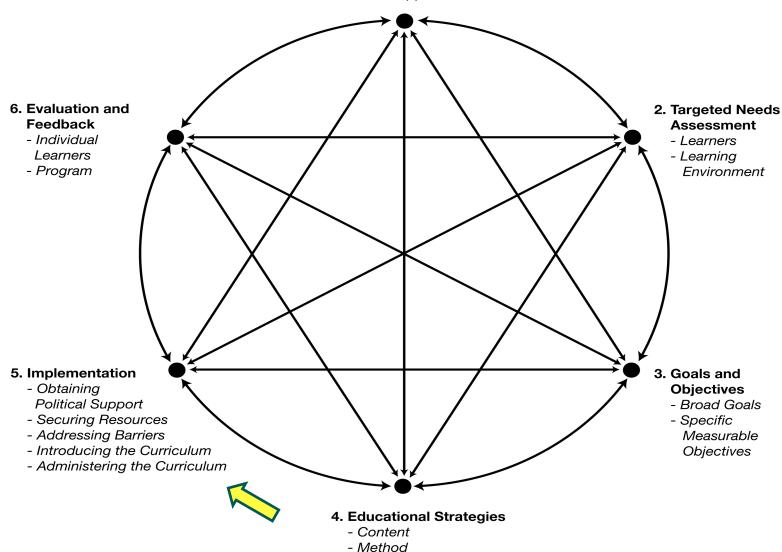
TAKE HOME MESSAGE

OBJECTIVES

EDUCATIONAL METHODS

EVALUATION METHODS

STEP 5: IMPLEMENTATION

…making the curriculum a reality
…converting a good plan into an
   accomplishment.

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STEP 5: IMPLEMENTATION

- Identify Resources

- Obtain Support (Institutional, External)

- Develop Administrative Mechanisms to Support the Curriculum

- Anticipate and Address Barriers

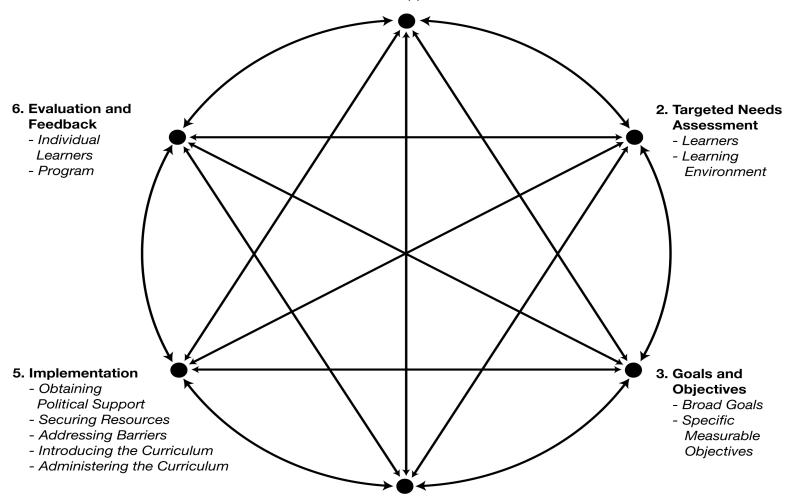- Have a Plan for Introducing the Curriculum

QUESTIONS?

SMALL GROUP:

STEP 4: EDUCATIONAL STRATEGIES

STEP 6: EVALUATION & FEEDBACK

QUESTIONS?
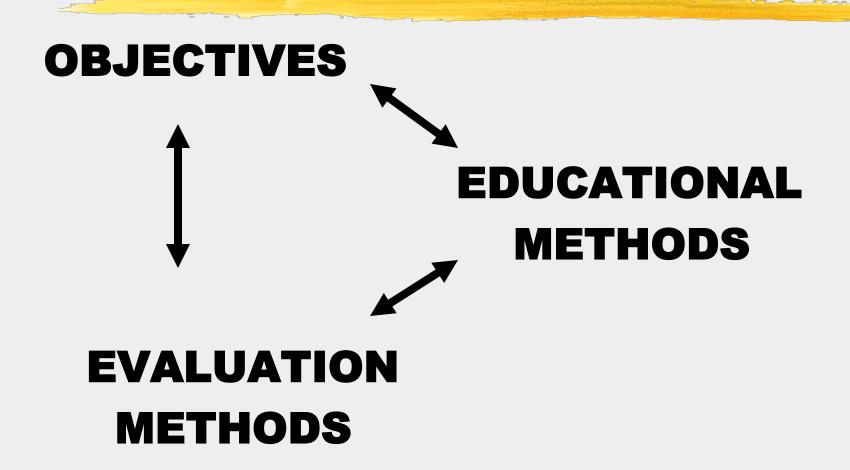
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TAKE HOME MESSAGE

OBJECTIVES

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EVALUATION METHODS

Is Curriculum Development Scholarship?

Glassick*
Criteria for Scholarship

1. Clear goals and aims

2. Adequate preparation

3. Appropriate methods

4. Significant results

5. Effective presentation / dissemination

6. Reflective critique

*Glassick CE, Huber MR, Maeroff GI. Scholarship Assessed: Evaluation of the Professoriate. 1997; San Francisco, CA: Jossey-Bass.

*Glassick CE. Boyer's expanded Definitions of scholarship, the standards for assessing scholarship, and the elusiveness of the scholarship of teaching. Acad. Med. 2000;75:877–880.

Is CD Scholarship

Scholarship	Curriculum Development
Clear Goals and Aims	Goals and Objectives
Adequate Preparation	Problem ID, GNA, TNA
Appropriate Methods	Educational Strategies
Significant results	Evaluation
Dissemination	?
Reflective critique	Evaluation

DISSEMINATION / PUBLICATION

Making it count twice.

DISSEMINATION: HOW

- Dissemination of the Curriculum to Multiple Locations
- Publication in Peer Reviewed Journals
- Electronic Publication
- Presentation
  - Local
  - Regional Professional Meetings
  - National and International Professional Meetings

DISSEMINATION: WHAT

- The Curriculum, or Part of the Curriculum

- Needs Assessment

- Educational Strategies

- Evaluation

RESOURCES

<u>Book</u>:

- Kern DE, Thomas PA, Hughes MT, eds. Curriculum Development for Medical Education: A Six-Step Approach. 2nd ed. Baltimore (MD): Johns Hopkins University Press; 2009.

RESOURCES

Chapters:

- Kern DE, Thomas PA. What do leaders need to know about curriculum planning? In Pangaro L, ed. *Leadership Careers in Medical Education*. Philadelphia: ACP Press, American College of Physicians; 2010. p. 101-127.

    Concise overview of educational program development and evaluation.

- Thomas PA, Kern DE. From curricular goals to instruction: choosing methods of instruction. In: Skeff KM, Stratos GA. Methods for teaching medicine. Philadelphia: ACP Press, American College of Physicians; 2010. p. 15-47.

    Chapter on choosing instructional methods that are aligned with educational needs and objectives.

RESOURCES

- Websites:
  - Kern DE, Branch WT, Green ML, et.al. Making it count twice: how to get curricular work published. SGIM Workshop, 2005.

    Search Google for Making It Count Twice SGIM Google or email dkern1@jhmi.edu for handout.
  - ACGME: http://www.acgme.org/
  - ACGME International: https://www.acgme-i.org/
  - AAMC/LCME: http://www.lcme.org/
  - WFME (World Federation for Medical Education): http://wfme.org/
  - Your professional organizations

RESOURCES

- Johns Hopkins Faculty Development Program:

    - Introduction to CD Concepts: ½-Day Workshop

    - Principles and Practice of CD: 2-day workshop

    - CD Practicum: mentorship for a project.

    - Longitudinal Program in CD: Wed AMs Sept-June

    - Under Development: Online Course

- Masters of Education in the Health Professions

LONGITUDINAL PROGRAM IN CURRICULUM DEVELOPMENT

- 10 Months
- Workshops on Each Curricular Step
- Sessions on Literature Searching, Survey Design, IRB, Searching for Funding, Simulation Center, Using Technology, Dissemination
- Mentored Project
- Individual Meetings with Facilitators, Written Feedback on Each Step
- Work-in-Progress Sessions
- Written Paper / Curriculum and Oral Presentation

THANK YOU!

Evaluation