THE UNIVERSITY OF NEW MEXICO ◆ HEALTH SCIENCES CENTER
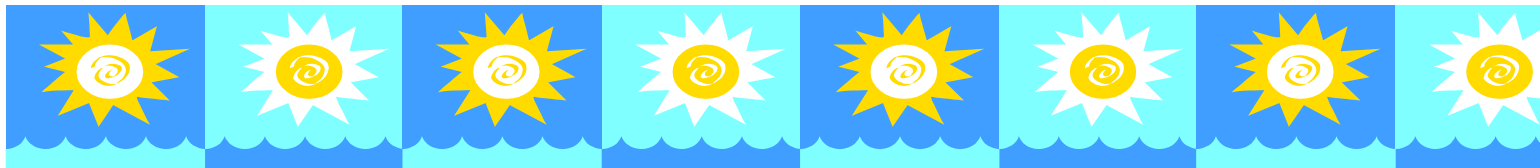# SCHOOL OF MEDICINE

Developing the Skills of Physicians as Educators in Academic Medicine
BUILDING A CME-APPROVED FACULTY DEVELOPMENT PROGRAM
USING A LOGIC MODEL TO IDENTIFY DESIRED OUTCOMES &
KIRKPATRICK'S LEVELS OF EVIDENCE TO MEASURE THEM

Ellen Cosgrove, MD; Deana Richter, MA; Craig Timm, MD; Bronwyn Wilson, MD

Objectives – As a result of this workshop, participants should be able to:
- Describe the elements of a logic model
- Use a logic model template to map out a program and identify desired outcomes
- Describe how a logic model and Kirkpatrick's four levels can be combined to form a framework for identifying and measuring program outcomes
- Use Kirkpatrick's Four Levels to identify program outcome measures
- Identify and access resources and materials for future reference

Key References:

Armstrong EG (2007). An Outcomes Approach to Evaluate Professional Development Programmes for Medical Educators. *Annual Academy of Medicine* 36(8): 619-621.

Kirkpatrick KL, Kirkpatrick JK (2007). *Implementing the Four Levels: A Practical Guide for Effective Evaluation of Training Programs*. San Francisco, CA: Berrett-Koehler Publishing, Inc.

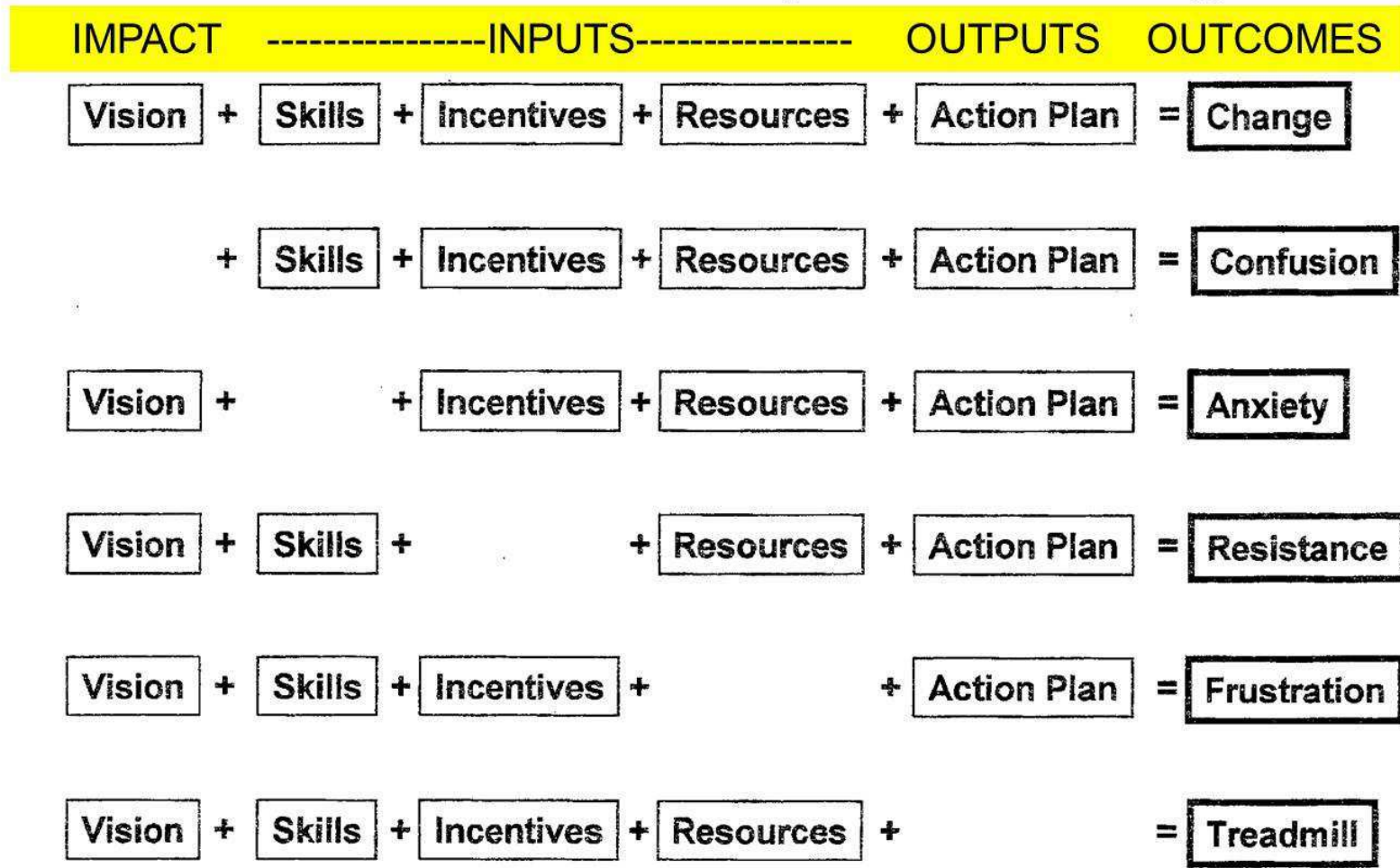Knowlton LW & Phillips CC (2009). *The Logic Model Guidebook: Better Strategies for Great Results.* Los Angeles, CA: Sage.

W.W. Kellogg Foundation (updated 1/2004). *Logic Model for Program Evaluation*. Battle Creed, MI: W.K. Kellogg Foundation. http://www.wkkf.org/Pubs/Tools/Evaluation/Pub3669.pdf

1ˢᵗ INTERNATIONAL CONFERENCE ON
FACULTY DEVELOPMENT IN THE HEALTH PROFESSIONS
May 2011, Toronto, Canada

Why Use a Logic Model?

Pitfalls of Complex Change

IMPACT ---------------INPUTS--------------- OUTPUTS OUTCOMES

Vision + Skills + Incentives + Resources + Action Plan = Change

+ Skills + Incentives + Resources + Action Plan = Confusion

Vision + + Incentives + Resources + Action Plan = Anxiety

Vision + Skills + + Resources + Action Plan = Resistance

Vision + Skills + Incentives + + Action Plan = Frustration

Vision + Skills + Incentives + Resources + = Treadmill

Getting Started with Logic Models:
A Visual Path from Actions to Results
"Modeling begins with results & quality models are evidence-based."

Logic Models are **both a tool and a strategic process** for the non-profit sector and funding agencies to use to define the effectiveness of programs by making outcomes explicit and intentional in program planning.

Why Use a Logic Model?

- Enhances :   Clarity of thinking, Stakeholder buy-in and shared understanding, Chances of program success

- Allows for :   Overview of a program's strengths and weaknesses, Adaptation for changing circumstances, Ongoing revision

- Creates: Visual prompt for systematic thinking, Structure & organization, Rationale for investment

Models begin with results
Evaluation questions form the foundation for program design and planning.
- Where do we want to end up? *(Outputs & Outcomes)*
- How do we get there? *(Resources & Activities)*

Essential Features of Program Logic Models:
Defined Time frame, Detailed, Many elements, Targets + specified intended results

Basic Program Logic Model

Planned Work --Results

Have ------------Do------------Get   Results-------------------------------Changes

Resources → Activities → Outputs → Outcomes: Short-, Medium-, Long-Term → Impact

Testing Model Quality: SMART & FIT

SMART: **S**pecific, **M**easurable, **A**ction-oriented, **R**ealistic, **T**imed
FIT: **F**requency of Occurrence, **I**ntensity of effort, **T**arget audience

University of New Mexico School of Medicine, Workshop "Developing the Skills of Physicians as Educators in Academic Medicine: Building a CME-Approved Faculty Development Program Using a Logic Model to Identify Desired Outcomes & Kirkpatrick's Levels of Evidence to Measure Them," Toronto 2011

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UNDERSTANDING THE ELEMENTS OF A LOGIC MODEL

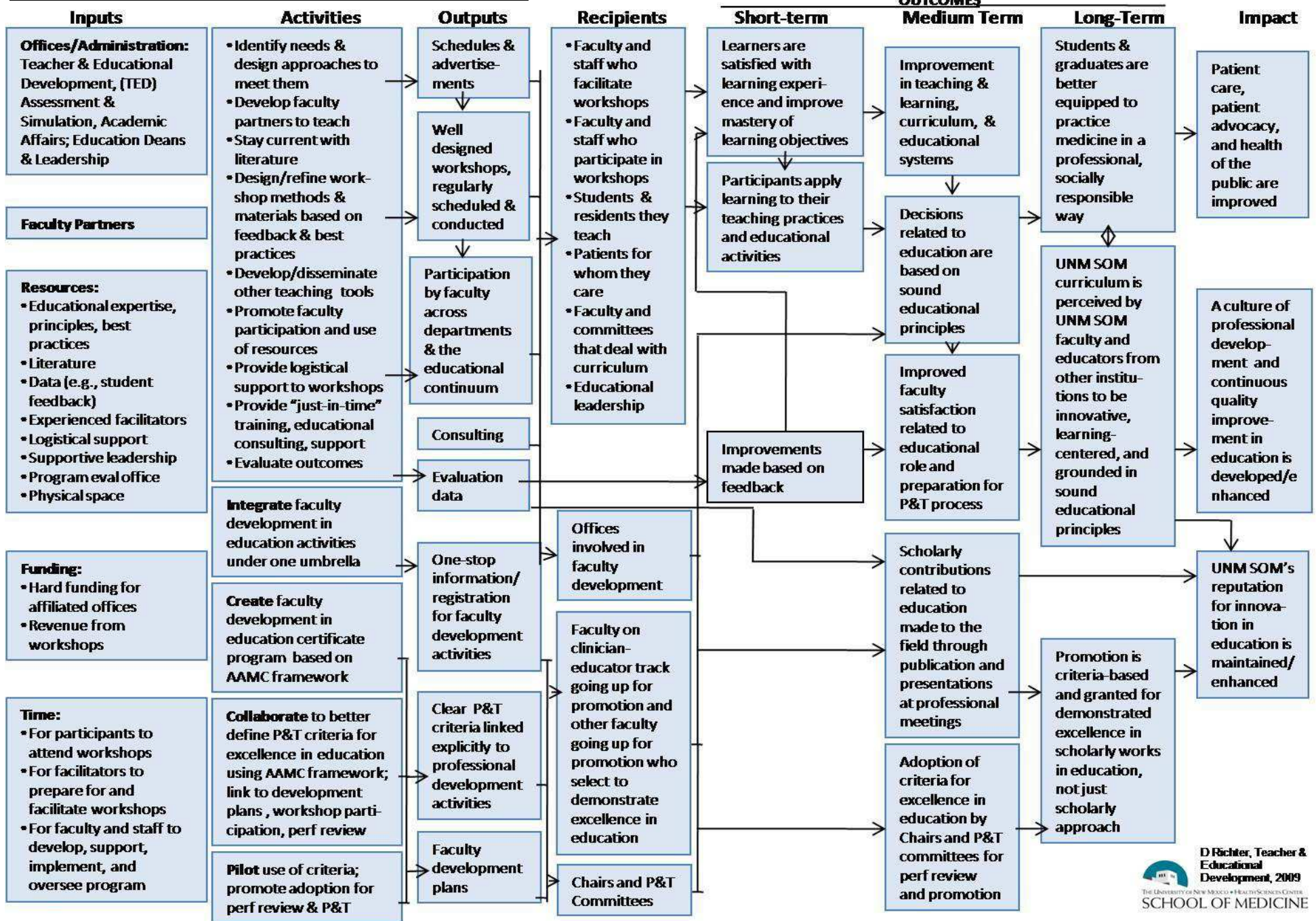For each of the following examples, identify the element of a logic model it illustrates.

Examples:
_____ 1. Improved mastery of learning objectives
_____ 2. Supportive leadership
_____ 3. Time for participants to attend workshops
_____ 4. Chairs and Promotion & Tenure Committees
_____ 5. Well-designed workshops, regularly scheduled and conducted
_____ 6. Learners that faculty teach & patients for whom they care
_____ 7. Promote faculty participation and use of resources
_____ 8. Improved teaching and learning

Elements of a Logic Model:
A. Inputs (Resources)
B. Outputs(Use of Resources) – Activities/Products
C. Outputs (Use of Resources) – Recipients/Stakeholders
D. Outcomes (Results) – Short-, Medium-, or Long-Term
E. Impact (Broad Purpose)

LOGIC MODEL: TEACHER & EDUCATIONAL DEVELOPMENT

Inputs	Activities	Outputs	Recipients	OUTCOMES			Impact
				Short-term	Medium Term	Long-Term	

Inputs

Offices/Administration: Teacher & Educational Development, (TED) Assessment & Simulation, Academic Affairs; Education Deans & Leadership

Faculty Partners

Resources:
- Educational expertise, principles, best practices
- Literature
- Data (e.g., student feedback)
- Experienced facilitators
- Logistical support
- Supportive leadership
- Program eval office
- Physical space

Funding:
- Hard funding for affiliated offices
- Revenue from workshops

Time:
- For participants to attend workshops
- For facilitators to prepare for and facilitate workshops
- For faculty and staff to develop, support, implement, and oversee program

Activities

- Identify needs & design approaches to meet them
- Develop faculty partners to teach
- Stay current with literature
- Design/refine workshop methods & materials based on feedback & best practices
- Develop/disseminate other teaching tools
- Promote faculty participation and use of resources
- Provide logistical support to workshops
- Provide "just-in-time" training, educational consulting, support
- Evaluate outcomes

Integrate faculty development in education activities under one umbrella

Create faculty development in education certificate program based on AAMC framework

Collaborate to better define P&T criteria for excellence in education using AAMC framework; link to development plans, workshop participation, perf review

Pilot use of criteria; promote adoption for perf review & P&T

Outputs

- Schedules & advertisements
- Well designed workshops, regularly scheduled & conducted
- Participation by faculty across departments & the educational continuum
- Consulting
- Evaluation data
- One-stop information/registration for faculty development activities
- Clear P&T criteria linked explicitly to professional development activities
- Faculty development plans

Recipients

- Faculty and staff who facilitate workshops
- Faculty and staff who participate in workshops
- Students & residents they teach
- Patients for whom they care
- Faculty and committees that deal with curriculum
- Educational leadership
- Offices involved in faculty development
- Faculty on clinician-educator track going up for promotion and other faculty going up for promotion who select to demonstrate excellence in education
- Chairs and P&T Committees

Short-term

- Learners are satisfied with learning experience and improve mastery of learning objectives
- Participants apply learning to their teaching practices and educational activities
- Improvements made based on feedback

Medium Term

- Improvement in teaching & learning, curriculum, & educational systems
- Decisions related to education are based on sound educational principles
- Improved faculty satisfaction related to educational role and preparation for P&T process
- Scholarly contributions related to education made to the field through publication and presentations at professional meetings
- Adoption of criteria for excellence in education by Chairs and P&T committees for perf review and promotion

Long-Term

- Students & graduates are better equipped to practice medicine in a professional, socially responsible way
- UNM SOM curriculum is perceived by UNM SOM faculty and educators from other institutions to be innovative, learning-centered, and grounded in sound educational principles
- Promotion is criteria-based and granted for demonstrated excellence in scholarly works in education, not just scholarly approach

Impact

- Patient care, patient advocacy, and health of the public are improved
- A culture of professional development and continuous quality improvement in education is developed/enhanced
- UNM SOM's reputation for innovation in education is maintained/enhanced

D Richter, Teacher & Educational Development, 2009

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SCHOOL OF MEDICINE

LEVELS OF EVALUATION DATA
FOR ORGANIZATIONAL TRAINING WITH EXAMPLE MEASURES
Model from DL Kirkpatrick & JD Kirkpatrick (2007), *Implementing the Four Levels*. **San Francisco, CA: Berrett-Koehler Publishers**

Reaction – intellectual and emotional response
Quantitative and qualitative data based on participants' perceptions

Learning – changes in attitudes, improved knowledge, increased skill
Attitude surveys
Knowledge questions
Performance exams
Retro pre-post survey on perceived mastery of objectives

Behavior – doing something differently as a result of training; requires desire, know-how, right climate, reward/reinforcement
Commitment to change (participant action plan at end of workshop)
Survey of participant, his/her supervisor, students at a specified time after the intervention
Observation of actual performance
Demonstration of how training is modified in response to feedback

Results – outcomes which are related to of all of the above
Aggregated improvements
Cost savings
Changes in protocols
Revised curriculum which integrates learning principles addressed in workshop
Improved student evaluations
Improved student performance
Teaching awards
Education-related professional presentations, publications
Participant involvement in educational activities
Faculty retention rates for clinician-educators

UNDERSTANDING KIRKPATRICK'S FOUR LEVELS OF EVALUATION

For each of the following examples, identify the level of Kirkpatrick's framework it illustrates.

Examples:
_____ 1. Changes in educational systems based on sound educational principles
_____ 2. Pre- and post-test of knowledge
_____ 3. Post-workshop evaluation
_____ 4. One-month follow-up describing changes in actual practice

Elements of a Logic Model:
A. Reaction (Satisfaction)
B. Learning (Knowledge, Skills, Attitudes)
C. Behavior (Transfer of Learning to Work)
D. Results (Return on Expectations)

POTENTIAL EVALUATION MEASURES FOR DESIRED OUTCOMES OF A FACULTY DEVELOPMENT PROGRAM

Desired Outcomes	CHAIN OF EVIDENCE			
	Reaction (Satisfaction)	Learning (KSAs)	Behavior (Transfer)	Results (Return on Expectations)
Short-term Outcomes (Immediate Result of Activities)				
Participants are satisfied with experience	Post-workshop evaluation			Participant attendance to other workshops
Participants improve mastery of learning objectives		Retro pre- & post-rating of perceived mastery of objectives; pre-post test	Pre & post-training observation of skills embodied in learning objectives	
Participants apply learning to their teaching practices and educational activities			Participant plan of action in post-workshop evaluation; follow-up behavior questionnaire	New/revised curriculum and/or teaching practices based on workshop guidelines
Improvements in faculty development made based on participant feedback	Comparison of pre- and post-revision workshop evaluation		Workshop revision based on feedback	
Medium-Term Outcomes				
Improvement in teaching		One-month self-perception follow-up	Pre- & post-training observation of teaching	Tracking student attendance; student evaluations of teaching pre- & post-development of faculty; teaching awards
Improvement in student learning		Student perception of learning pre- and post-development of faculty		Student grades pre- and post- development of faculty
Improvement in curriculum	Block evaluations across time			Results of classroom action research
Improvement in educational systems	User satisfaction survey			Check improved efficiency through pre- & post time and cost comparison
Decisions related to education are based on sound educational principles			Monitor references to literature & rationales for decisions in curriculum committee	
Improved faculty satisfaction related to educational role & preparation for P&T	Faculty survey comparing results to baseline data		Increased faculty participation in educational activities	Improved faculty retention rates
Scholarly contributions related to education made to the field through publication and presentations at professional meetings	Survey of interest in presenting, publishing on educational scholarship			Number of abstracts, presentations at professional meetings, publications
Adoption of criteria for excellence in education by Chairs and P&T committees for performance review and promotion	Survey of faculty attitudes of criteria for excellence in education adopted for P&T	Survey of faculty understanding of criteria for excellence in education adopted for P&T		Survey of P&T criteria used in each department as an indicator of standardization across the institution; review of P&T criteria to check for link between professional development and P&T
Long-Term Outcomes				
Students and graduates are better equipped to practice medicine in a professional, socially responsible way	Student post-graduate survey across years		Program Directors' rating of UNM SOM graduate preparation/performance across years	
UNM SOM curriculum is innovative, learning-centered, and grounded in sound educational principles	Faculty survey		Requests to use copyright materials; number of hits on faculty development website	Visitors to the institution; invitations to visit, present, consult at other institutions;
Promotion is criteria-based and granted for demonstrated excellence in scholarly works in education, not just scholarly approach		Survey of faculty understanding of educational scholarship	Investigation of P&T for evidence that faculty perform & document educational scholarship and are better prepared for P&T; consistent P&T criteria are used	Survey on perceptions of fairness of the P&T process across the institution
Impact				
Patient care is improved	Patient surveys			CQI indicators of patient care improve
Advocacy is increased/improved			Tracking medical student/faculty involvement in advocacy activities	Track outcomes of medical student/ faculty involvement in advocacy activities
Health of the public is improved				
A culture of continuous quality improvement in education is developed/enhanced				Culture audit
A culture of professional development is developed/enhanced	Survey of faculty attitudes re value of prof development			Culture audit
UNM SOM's reputation for innovation in education is maintained/enhanced				Track visitors; invitations to present, consult at other institutions; international recognitions for education

Outcomes Report to the Office of Continuing Medical Education

For CME-Approved Faculty Development Program
DEVELOPING THE SKILLS OF PHYSICIANS AS EDUCATORS
IN ACADEMIC MEDICINE

Submitted by the UNM SOM Office of Teacher & Educational Development
Deana M. Richter, MA, Director

2009-2010 Academic Year

OVERVIEW

Teacher & Educational Development encourages, facilitates, and supports quality education at the UNM School of Medicine. Our vision is to foster the development of excellent curricula and highly skilled teachers and learners through scholarship, leadership, and innovation. The best evidence and research in education are applied toward achieving our ultimate goal of enhancing the health of the public.

The mission of Teacher & Educational Development is to play an integral role in the development of today's teachers and tomorrow's medical professionals by providing a comprehensive program of educational development and support to meet institutional needs for faculty and curriculum development, academic leadership and scholarship, and curriculum support.

A major element of our educational development activities is a series of core workshops that are approved for CME credit under the umbrella of this program. Our target population for these activities consists of the faculty and residents of the UNM School of Medicine who teach our students and residents. However, these workshops have an open enrollment and educators from the HSC, broader UNM community, and other institutions in the U.S. and world-wide also attend. People from all over the world have been coming to the UNM School of Medicine since the 1980s to learn about our curriculum and to participate in faculty development opportunities offered by the Office of Teacher & Educational Development, especially problem-based learning tutor training.

The following workshops are included in this program, addressing a variety of topics related to the AAMC Scholarship Consensus Conference framework denoted by the six major headings.

Teaching

> **Educational Theory Into Practice**
> How People Learn

Teaching Methods & Educational Technology

Problem-Based Learning Facilitation Education (Tutor Training)
Problem-Based Learning Case Development
The Art of Lecturing & Making Presentations
Using the Audience Response System to Create Interest and Improve Learning
PowerPoint 202: Taking the Next Step to Quality Presentations

Clinical Teaching

Who Says It Can't Be Done! Effective Teaching in the Outpatient Setting
How to Be a More Effective Inpatient Teacher
Teaching & Assessing Communication Skills in the Clinical Setting
Precepting a Small Group Clinical Practice Learning Experience
Helping Patients Move Toward Health & Lasting Behavior Change: Incorporating
    Motivational Interviewing into Brief Clinical Encounters & Clinical Teaching (4 modules)
Reflective Writing for Clinicians and Medical Educators

Teaching and Learning Using Simulation

Teaching in the BATCAVE: Effective Learning Through Medical Simulation
Developing a BATCAVE Course
The Use of Debriefing and Assessment in Medical Simulation Teaching
Writing Effective Scenarios for Medical Simulation-Based Teaching

Curriculum

Curriculum Development: Designing Learning that Lasts

Advising & Mentoring

Mentoring

Educational Leadership & Administration

Medical Education Scholars

Learner Assessment

Creating Test Items: The Nuts & Bolts
Focus on Multiple Choice Questions (MCQs)
Promoting Learning Through Formative Assessment
Constructive Feedback: Developing Skills and Overcoming Barriers

DESIRED AND ACTUAL OUTCOMES

While it is not possible to demonstrate a direct causal effect between our comprehensive faculty development program and all of our desired outcomes, particularly for the long-term and impact outcomes, we can build a chain of evidence using Kirkpatrick's Four Levels of outcomes. The table on the following pages provides outcome data for desired outcomes for the 2009-2010 reporting period using this framework.

Desired Outcomes	CHAIN OF EVIDENCE			
	Reaction (Satisfaction)	Learning (KSAs)	Behavior (Transfer)	Results (Return on Expectations)
Short-term Outcomes (Immediate Result of Activities)				
Participants are satisfied with experience	**Post-workshop evaluation overall averages (1-5, 5=best):** Met objectives 4.6 Worthwhile 4.6			**Satisfied participants come back for more:** Many participants attended more than one workshop
Participants improve mastery of learning objectives		**Retro pre- & post-rating of perceived mastery of objectives (1-5, with 5 most proficient):** Overall average gain of 1.4 from pre- to post-		
Participants apply learning to their teaching practices and educational activities			**Participant plan of action described in post-workshop evaluation:** • Formulate SMART objectives • Increase interaction with learners • Develop cases • Better focus on goals & objectives • Decrease lecture, increase interaction • Plan for assessment • Teach content to colleagues • Avoid arguments and roll with resistance • Use the tool • Use more open-ended questions • Incorporate MI into every area of my professional life • Consider proper time and role for PowerPoint • Write more **Follow-up email inquiring about changes in behavior:** • Introduced new approaches • Started PowerPoint presentations with objectives • Spelled out objectives for students in Continuity Clinic • Created evaluation plan • Begin with the end in mind • Use Fink's taxonomy	
Improvements in faculty development made based on participant feedback				Continuously quality improvement of workshops based on feedback
Medium-Term Outcomes				
Improvement in teaching		**One-month self-perception follow-up:** • Has made me think of teaching process in a while new way		
Improvement in student learning				
Improvement in curriculum	**Block Evaluations:** • Positive evaluations from students on pilot of Health Equity curriculum			**New/revised curriculum and/or teaching practices based on workshop guidelines:** • Resident development rotation • Dual-role interpreters • Psychiatry resident seminar • Health Equity: Introduction to Public Health • Post-Discharge Planning and Interprofessional Home Visits in Internal Medicine Clerkship • Medical Respite/Street Outreach Selective in Comprehensive Ambulatory Care Rotation
Improvement in educational systems				
Decisions related to education are based on sound educational principles				Many Medical Education Scholars and participants in other TED workshops have become educational leaders at the SOM
Improved faculty satisfaction related to educational role & preparation for P&T				

University of New Mexico School of Medicine, Workshop "Developing the Skills of Physicians as Educators in Academic Medicine: Building a CME-Approved Faculty Development Program Using a Logic Model to Identify Desired Outcomes & Kirkpatrick's levels of Evidence to Measure Them," 2011, Toronto

Desired Outcomes	CHAIN OF EVIDENCE			
	Reaction (Satisfaction)	Learning (KSAs)	Behavior (Transfer)	Results (Return on Expectations)
Scholarly contributions related to education made to the field through publication and presentations at professional meetings				**Abstracts, presentations at professional meetings, and publications related to Curriculum Development Workshop, MES, and other faculty development efforts:** • Tools for Designing & Evaluating Programs Across the Continuum, AAMC • How the UNM SOM is Addressing Health Disparities, Canadian Conference on International Health • Educational Innovations in Addressing Healthcare Disparities, WGEA • Tools for Program Evaluation, WGEA • Introduction of TBL into a Traditional Lecture/PBL Course in Gross Anatomy, TBL Conference
Adoption of criteria for excellence in education by Chairs and P&T committees for performance review and promotion				Acceptance of criteria for demonstrating excellence in education in Internal Medicine (developed by Bronwyn Wilson, MD)
Long-Term Outcomes				
Students and graduates are better equipped to practice medicine in a professional, socially responsible way			Positive Program Directors' rating of UNM SOM graduate preparation/performance across years is reported by PEAR	
UNM SOM curriculum is perceived by UNM SOM faculty and educators from other institutions to be innovative, learning-centered, and grounded in sound educational principles			Numerous requests to utilize faculty development materials developed by Teacher & Educational Development	**Visitors to the institution to see how we do our curriculum and /or to participate in faculty development activities:** • 10 clinical educators for Kazakhstan • Prof from Universidade Federal de Rondonia in Brazil **Invitations to present internally:** • Using a Logic Model • Curriculum Development **Invited Internal Consultations:** • Health equity curriculum • PIM Diversity • Introduction to Public Health
Promotion is criteria-based & granted for demonstrated excellence in scholarly works in education, not just scholarly approach				
Impact				
Patient care is improved				
Advocacy is increased/improved				
Health of the public is improved				
A culture of continuous quality improvement in education is developed/enhanced				
A culture of professional development is developed/enhanced				
UNM SOM's reputation for innovation in education is maintained/enhanced				

University of New Mexico School of Medicine, Workshop "Developing the Skills of Physicians as Educators in Academic Medicine: Building a CME-Approved Faculty Development Program Using a Logic Model to Identify Desired Outcomes & Kirkpatrick's levels of Evidence to Measure Them," 2011, Toronto

WHAT WILL YOU DO?

What have you learned that you can apply to your own work back at your institution?

Brainstorm with a partner how you can apply the Logic Model and Kirkpatrick's framework.