



Effective Education Leading To Behavior Change

Nanci Mayer-Mihalski and Marc J. DeLuca

May 2009

Abstract

According to the medical literature, traditional medical education is effective in the transfer of knowledge and skills, yet is inadequate in changing behavior.

Research into the adult learning and medical literature identified effective techniques that lead to behavior change. A combination of interactive tactics such as problem-based learning and simulation, along with reinforcement strategies such as “commitment to change” instruments and follow-up reminders, must be incorporated into the design of educational programs in order to successfully change the behavior of the learner.

Finally, any effective education campaign must include performance metrics to assess actual behavior change.

Background

Traditional medical education programs are effective for the transfer of knowledge, skills, and attitudes, yet ineffective in changing physician behavior.

Physicians report spending about 50 hours per year in continuing medical education activities. These activities are geared toward improving and optimizing patient outcomes. There is an underlying belief associated with CME activities that health care professionals will improve how they practice, which will in turn improve patient outcomes. Despite this belief, many studies have demonstrated a lack of effect from formal CME (*Davis, 1999*).

From these and other reports in the literature, it is becoming clear that formal CME programs with little interaction improve knowledge and skills but do not change behavior. Yet, the majority of CME-accredited programs continue to be didactic lectures whether live or via the Internet. A major paradigm shift in CME programming to a more interactive approach is needed.

Methods

- Conducted extensive review of both adult learning and medical literature
- Met with key opinion leaders in both areas
- Compiled key findings
- Formulated principles

Key Findings

1. Traditional CME in the form of didactic lectures may improve knowledge, skills, and attitudes, but not performance.
 - Interactive interventions that are more impactful in changing outcomes include:
 - Case discussions
 - Practice simulations
 - Roundtable discussions

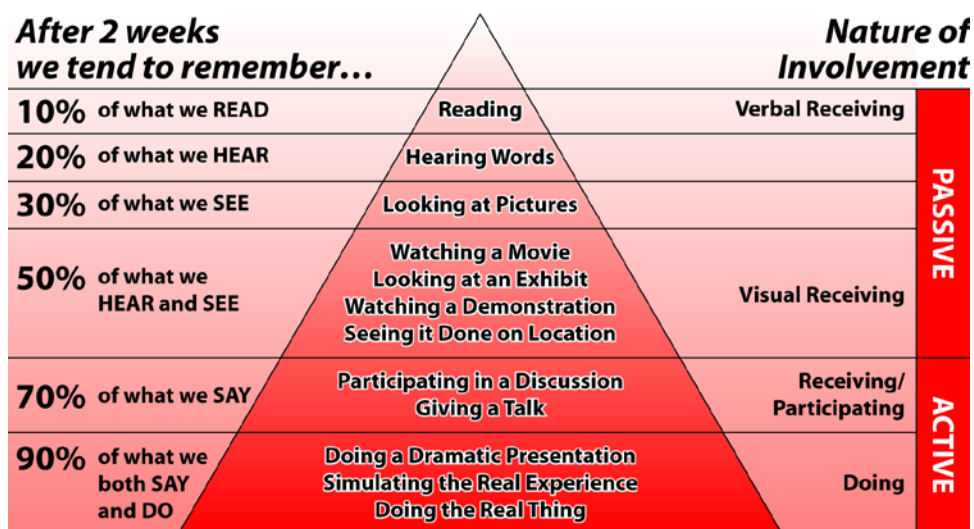
- Interactive presentations
 - Sequenced sessions
 - Enabling materials
- (Davis, JAMA, September 1, 1999)

2. Behavioral change is a dynamic process resulting from effective design and implementation of education.
 - Elements of an effective learning design are:
 - Curriculum – clear plan for presenting required information
 - Enablers – tools that enable the learner to use the knowledge in their personal situations
 - Application – learners are shown how to use the knowledge
 - Media – information is presented in a variety of ways that address diverse learning styles

(Davis, JAMA, September 1, 1999)
 - Elements of effective implementation are based on adult learning principles that:
 - Include varied learning methods (multiple interventions)
 - Guide participants through the learning process (facilitate vs. instruct)
 - Provide a comfortable learning environment
 - Stimulate the cognitive (intellectual), psychomotor (skills), and affective (emotional) behaviors

(Zemke, Training, September 2002)
3. Active involvement - The act of doing versus passive participation results in a 90% retention rate two weeks post program. Whereas, passive participation - simply reading information - results in a 10% retention rate two weeks post program.

Cone of Learning (Edgar Dale)



Edgar Dale, *Audio-Visual Methods in Technology*, Holt, Rinehart and Winston.

Note – this is consistent with the “see one, do one, teach one” learning method used in physician medical training programs.

4. In order to achieve behavior change, effective learning methodologies must be incorporated into the program design. These methodologies include:

- Blended learning
- Problem-based learning
- Simulation

Blended learning

- Improves performance by 30%
- Includes a mix of:
 - CD-Rom video streaming
 - Virtual classrooms
 - Voicemail, email, and conference calls
 - Online text animation
 - Traditional classroom training
- Used widely in current corporate settings
(Thomson Job Impact Study, February 2002)

Problem-based learning

- Effective teaching methodology used in medical school curriculum for over 30 years
 - Case studies used in both medical and business schools
 - Medical teaching rounds
- Places the learner in active role as problem solver
- Provides interactive format for learning
(Zeitzi, Allergy and Asthma Proc., September-October 1999)

Simulation

- Form of active learning used in high-risk industries to produce positive outcomes in the training process
 - Air traffic control
 - Department of Defense
 - Federal Highway Administration
 - Nuclear Regulatory Commission
- Immediate feedback in simulations motivates the learner to transfer the skills taught
- Validated as a method to measure quality of patient care by physicians
(Peabody, JAMA, 2000)

5. Reinforcement strategies are various interventions that can be used to enhance the learning effectiveness and establish appropriate behavior.

Effective reinforcement strategies that influence physician behavior include:

- Academic detailing (outreach visits) by key opinion leaders
- Audit and feedback (summary of clinical performance)
 - Clinical vignettes or written case simulations

- Commitment to change instruments (physicians commit to making a change immediately following the program and are then followed up at specific intervals)
- Communities of practice (informal self-selected individuals with shared expertise)
- Use of local opinion leaders
- Patient mediated interventions (educational materials, counseling sessions, etc.)
- Reminders (manual or computerized)

(Mazmanian, JCEH, 1999; Smith, CHEST, August 2000; Oxman, 1995; Karen Mann, CME Congress, 2004)

6. Performance metrics must be incorporated into all learning interventions.

The most well known model of learning evaluation is the Kirkpatrick model. Components of this model include:

- A pre- and post-test to assess knowledge and skills acquired
- An action plan or commitment to change instrument that allows the learner to reflect on what was learned and how to apply it
- Action plans are widely used in corporate training programs
- Commitment to change instruments currently undergoing a resurgence of interest among health professionals
- Follow-up surveys sent at various intervals post-learning event to determine extent of behavioral change

(Todesco, 1997)

Conclusions

These six key findings define effective education which, interestingly, is intrinsic to the current medical teaching rounds model. These findings provide a framework for designing effective educational programs which can ultimately change behavior.

Summary

Considerable work has been completed in medical communications to identify new means of effective education. A framework for effective education for health care providers has been developed which emulates the successful methods used in medical teaching rounds. This can be accomplished by using interactive problem-based learning and through the use of simulation with case-based scenarios. In addition, reinforcement strategies and performance metrics should accompany any intervention. Thus, effective education should result in establishing appropriate behaviors.

References

- Davis D, et al. Impact of Formal Continuing Medical Education: Do Conferences, Workshops, Rounds, and Other Traditional Continuing Education Activities Change Physician Behavior on Health Care Outcomes? JAMA. 1999;282(9):867-874.*
- Mann, K. Plenary Session. CME Congress, 2004.*
- Mazmanian PE and PM Mazmanian. Commitment to Change: Theoretical Foundations, Methods, and Outcomes. J Contin Educ Health Prof. 1999;19:200-207.*
- Oxman AD, et al. No Magic Bullets: A Systematic Review of 102 Trials of Interventions to Improve Professional Practice. CMAJ. 1995;153(10):1423-1431.*
- Peabody JW, et al. Comparison of Vignettes, Standardized Patients, and Chart Abstraction: A Prospective Validation Study of 3 Methods for Measuring Quality. JAMA. 2000;283(13):1715-1722.*
- Smith WR. Evidence for the Effectiveness of Techniques to Change Physician Behavior. CHEST. 2000;118:8S-17S Thomson. February, 2002. Thomson Job Impact Study: The Next Generation of Corporate Learning.*
- Todesco A. September 1997. From Training Evaluation to Outcome Assessment: What Trends and Best Practices Tell Us. The Research Center. <http://learnnet.gc.ca>.*
- Zeitz HJ. Problem Based Learning: Development of a New Strategy for Effective Continuing Medical Education. Allergy and Asthma Proc. 1999;20(5):317-321.*
- Zemke R. September 2002. Who Needs Learning Theory Anyway? Training. p. 85, 87-88.*