

PYRAMIDS AND PARADIGMS: DEVELOPING TRANSNATIONAL TRAINING

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BACKGROUND AND OBJECTIVES

In 2000, the CDC/NIOSH consultant at the Pan American Health Organization office in Mexico presented a course on the conduct of workplace evaluations to two different audiences: physicians in their second year of an occupational medicine residency program and newly hired workplace inspectors with varying years of experience in diverse specialties (e.g., chemical engineering, medicine, nursing, social work, economics, and law). Despite an emphasis on practical problem solving and the use of interactive and participatory methods, participants had difficulty with a number of key concepts, such as the public health approach (vis-à-vis focus on the individual patient in the medical model), the concept of causal chains of events (vis-à-vis focus on immediate causes), and multifactoral approaches (vis-à-vis specialty-based). This presentation describes the approaches and solutions developed to overcome learning obstacles encountered during the implementation of the course. A separate presentation, Evaluation and solution of workers' health problems: Critical analysis in practice, describes the course design and content.¹

CHALLENGES

Early in the course, participants challenged the consultant. "Why do we need this course?" "What is the course teaching us that is different from the scientific method we already know?" At times, course administrators and instructors expressed similar concerns. Although obvious differences related to country, language, and culture existed between the consultant and participants, other differences in perspective and underlying assumptions arose throughout the course.

Other factors, such as training, knowledge, and experience, contributed to differences in perspectives. Resident physicians, who knew the scientific method, lacked practical experience in its application. They also lacked training and knowledge about the principles, goals, and practices of public health. Most of the workplace inspectors had an occupational health perspective, but many were not occupational safety and health professionals. Very few participants had professional experience with multidisciplinary problem solving. Although three of the four course instructors were occupational health professionals, only one had workplace experience. The occupational medicine course instructors had clinical, but not workplace, experience.

APPROACHES

Evaluation and problem-solving methods of the course (i.e., its content) served as the primary model for addressing training obstacles. Problem identification involved ongoing dialogue with course administrators and instructors about the sources of participants' concerns. These discussions revealed

that we held an incorrect belief that we shared perspectives and underlying assumptions. Thus, simple differences (e.g., definitions of terms) presented barriers. Complex differences (e.g., paradigms about medicine vis-à-vis public health, interdisciplinary issues, and societal precepts) presented even greater obstacles. Almost every step of the course had to be deconstructed and critically analyzed. "What do you mean when you say . . . ?" "What do you think when I say . . . ?" "Why do you do [something taken for granted and not generally questioned]?"

Deconstructing differences required examining all bases—scientific, logical, or other—of previously unstated and often unexamined assumptions. Opening minds to new concepts meant searching for participant-relevant examples, illustrations, or paradigms to demonstrate concepts. Convincing participants to accept a concept involved clarifying its logic, justifying the need for its acceptance, and allowing dialogue about areas of misunderstanding or concern. Role playing permitted the expression of perspectives other than one's own, thus creating opportunities to understand and accept differences of opinion and to seek new options for solving problems.

RESULTS

The first breakthrough occurred with the use of a powerful culturally-relevant symbol, the Mexican Pyramid of the Sun, to illustrate the construct of knowledge (Figure 1). The base of the pyramid represents basic knowledge and universally accepted concepts. Subsequent levels represent knowledge gained through education or experience, easily understandable sources of differences in perspective. Knowledge at these levels is widely, but not universally, shared. The narrower upper levels represent specialized knowledge (e.g., academic disciplines). The quest for new knowledge sits atop the pyramid, closest to the sun, which represents the reality that we do not fully understand. Acceptance of the knowledge pyramid validated sources of difference and permitted value-free acknowledgment of differences in perspective.

For the instructors, the use of symbols and analogy immediately elucidated concepts they had not previously understood. With these new training tools and new understanding, they were better equipped to instruct the course. Within a few weeks, participants demonstrated better grasp of the concepts and new enthusiasm for their work. In the classroom and at the worksite, they began practicing and even advocating the evaluation and problem-solving methods taught by the course. Their earlier focus had been on the individual worker and specific hazardous agents, which limited their recommendations to worker training and personal protective equipment. The multidisciplinary and multisystem approach allowed them to recognize other contributors to worker health problems (e.g., work conditions and work organization), thus increasing their options for solving problems.

Another breakthrough occurred after participants aggressively demonstrated their new expertise in a meeting with safety and health personnel at a worksite. Participants felt, but did not understand, the ensuing tension. In a classroom simulation of a meeting between occupational health consultants and the worksite's medical director, safety manager, health and safety staff, personnel manager, and worker

representative, participants recreated the scenario of conflict they had just experienced. During the discussion following this role-playing activity, they offered suggestions for improving communication. Because they personally developed the principles of communication from their own experience, the lesson was powerful. This session effectively replaced a later-scheduled session on communication.

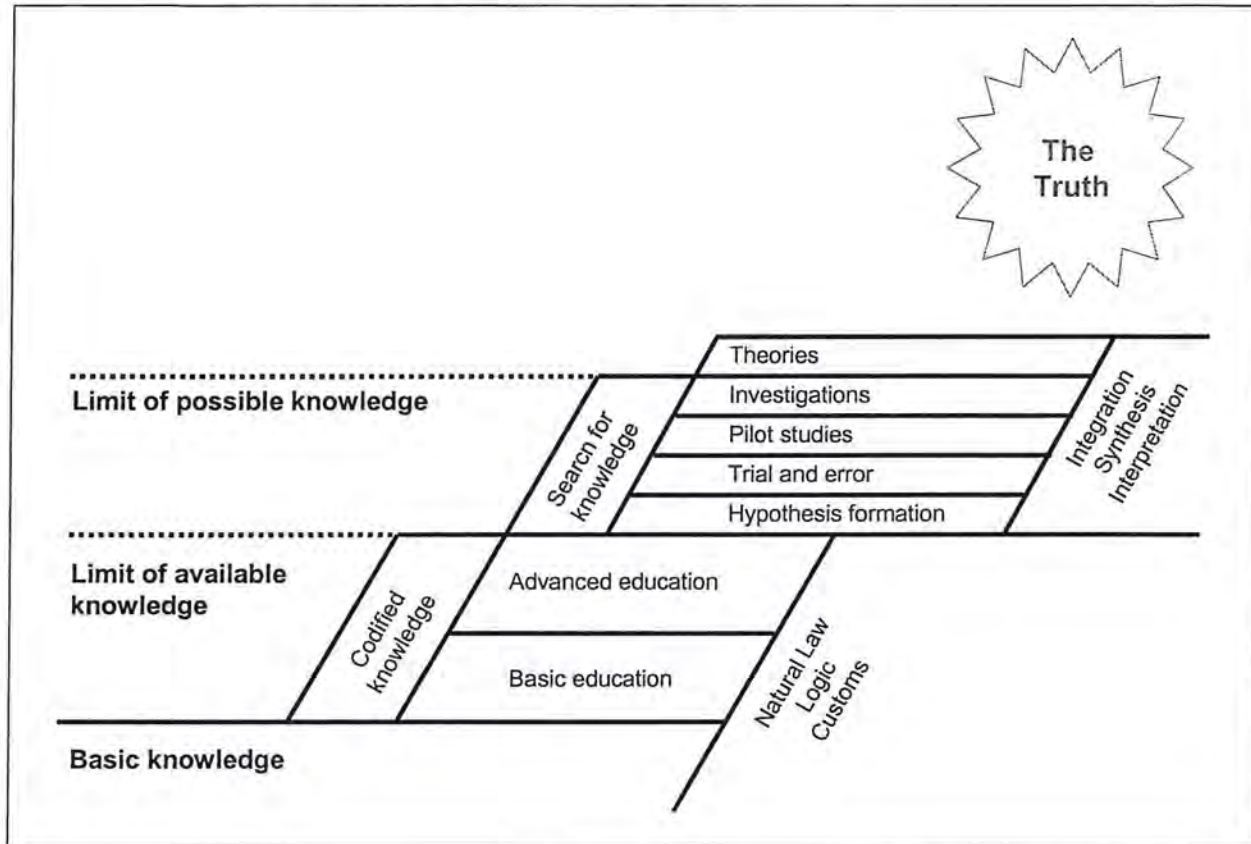
CONCLUDING COMMENTS

The dramatic change from initial skepticism to adoption of the core concepts of the course suggests that the approach used in the course effectively overcame training obstacles. Although the methods were based on the course content, the development of new tools and activities arose out of the need to address participants' and instructors' questions and concerns. This resulted in a dynamic approach that included continuous dialogue between the consultant and the instructors and ongoing deconstruction of perspectives and assumptions on the part of both the consultant and the participants. The willingness of the instructors to adapt to new training methods as well as to accept new concepts, the creativity of the consultants² to meet new challenges, and the ability of the consultant to recognize opportunities for change contributed to the success of this dynamic approach.

REFERENCES

1. Kawamoto M. Evaluation and solution of workers' health problems: Critical analysis in practice [poster presentation]. XVII World Congress on Safety and Health at Work, Orlando, Florida, September 2005.
2. Jennifer Ann Cooper Tory de Ley of the Universidad Nacional Autónoma de México Faculty of Economics contributed to the development of the training methods, tools, and activities used in the course.

Figure 1. The knowledge pyramid: A logical and scientific conceptual framework in the form of a culturally-relevant paradigm



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BACKGROUND AND OBJECTIVES: In 2000, the Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health consultant at the Pan American Health Organization office in Mexico presented a course on the conduct of workplace evaluations to two audiences: (1) young physicians in an occupational medicine training program and (2) newly hired workplace inspectors with varying years of experience in diverse specialties. Despite the use of participatory training methods, participants had difficulty understanding public health (*vis-à-vis* individual) approaches, causal chains (*vis-à-vis* immediate causes) of events, and multifactorial (*vis-à-vis* specialty-based) approaches. This presentation describes the approaches and solutions used to overcome learning obstacles encountered in the presentation of the course.

APPROACH: The methods of the course, "Evaluation and Solution of Worker's Health Problems: Critical Analysis in Practice," served as the approach to address learning obstacles. Ongoing dialogue with course administrators revealed an incorrect belief that underlying assumptions were shared. Thus, simple differences (e.g., definitions of terms) became obstacles. Complex differences (e.g., paradigms) became greater obstacles. To make paradigms transparent, assumptions had to be deconstructed and differences critically analyzed. To facilitate change, paradigm-relevant justifications had to be developed.

RESULTS: A powerful paradigm-relevant symbol, the Mexican Pyramid of the Sun, successfully illustrated concepts about knowledge bases and quests for new knowledge. As course methods and content evolved with the introduction of paradigm-relevant models, tools, and activities, participants began creating and analyzing multidimensional, multidisciplinary models, and began recommending alternative strategies for evaluating and solving workers' health problems. They no longer focused only on individual workers.

CONCLUSIONS: The participants' adoption of changes promoted by the course suggest that dialogue with course administrators, deconstructing assumptions, critical analyses of differences, and paradigm relevancy are critical for addressing obstacles to transnational and multidisciplinary training.

Kawamoto MM [2005]. Pyramids and paradigms: Developing transnational training. XVIIth World Congress on Safety and Health at Work, September 18-22, 2005, Orlando, Florida. Itasca, IL: Congress Secretariat, National Safety Council, 2005 September. CD publication.

NN:

Administrative Code: HCC52

CAN No.: 59278688