**The Council on Linkages Between Academia and Public Health Practice**

## Helping to Improve and Measure the Impact of Public Health Training

**March 29, 2011**

The Council on Linkages Between Academia and Public Health Practice aims to assist the field to improve and measure the impact of public health training. A short literature search was conducted using the following keywords: training, learning, continuing education, instructional design, impact, knowledge transfer, evaluation, public health workforce and Kirkpatrick. Captured below are common factors or elements found in the referenced abstracts.

1. Assess training needs of potential trainees prior to training (Reference: 1 & 15)

2. Identify training goals or competency outcome before training event (Reference: 1, 2, 3, 5, 10 & 15)

3. Incorporate adult learning theory (Reference: 1, 2, 6 & 10)
   - Fully engage adults in learning process
   - Consider influence of pre-training motivation
   - Perceive immediate relevance to job
   - Motivate adult learner to transfer knowledge to their job
   - Vary learning experiences
   - Appreciate and maximize previous life experiences of learner
   - Learning goal or outcome is clear

4. Consider contextual factors effecting skills transfer (Reference: 1, 6 & 13)
   - Opportunities for practice and learner feedback during the training
   - Similarity between the training setting and the job setting
   - Opportunities to apply the training on-the-job
   - Consider internal organizational environment (peers, supervisor, organizational policies and culture) and external environment

5. Levels of evaluation - Kirkpatrick[1] (Reference: 4, 7, 8, 9, 10, 11, 12, 13 & 15)
   - Reaction
     - Measures training participant reactions (e.g., length of training, teacher and training format, relevance to job, overall experience/satisfaction with training)
   - Learning
     - Measures extent that participants will change attitudes, improve knowledge, or increase skill as a result of the training

[1] Kirkpatrick's four levels build upon one another. If participants are satisfied with the training then they are more likely to learn. If participants learn then they may change their behavior by using the new skills on the job. If new skills are used on the job there is a better chance of demonstrated results or impact to the organization.

- Behavior
    - Measures extent change in behavior has occurred or will occur because participant attended training program
- Results – outcomes – impact
    - Measures extent to which outcomes are attributable to or *influenced by* the training

6. Measurement methods: quantitative and qualitative (Reference: 1, 3, 4, 10, 11 & 15)
    - Surveys (paper, electronic, phone)
    - Direct observation of skill application
    - Pre/post test
    - Post event questionnaire
    - Key informant interviews (phone, in-person)
    - Organizational data (performance evaluations, return on investment data)

## *Referenced Abstracts*

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**1. A Public Health Training Center Experience: Professional Continuing Education at Schools of Public Health (Potter, M., et al.)**

Journal of Public Health Management & Practice, July/August 2008
Volume 14 #4; Pages E10 - E16
Paper copy available

Abstract

The Public Health Training Center (PHTC) national program was first established at accredited schools of public health in 2000. The PHTC program used the US Health Resources and Services Administration's grants to build workforce development programs, attracting schools as training providers and the workforce as training clients. This article is a reflection on the experience of two schools, whose partnership supported one of the PHTCs, for the purpose of opening a conversation about the future of continuing education throughout schools and degree programs of public health. This partnership, the Pennsylvania & Ohio Public Health Training Center (POPHTC), concentrated its funding on more intensive training of public healthcare workers through a relatively narrow inventory of courses that were delivered typically in-person rather than by distance-learning technologies. This approach responded to the assessed needs and preferences of the POPHTC's workforce population. POPHTC's experience may not be typical among the PHTCs nationally, but the collective experience of all PHTCs is instructive to schools of public health as they work to meet an increasing demand for continuing education from the public health workforce.

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**2. Outcome-Based Workforce Development and Education in Public Health (Koo, D., et al)**

Annual Review of Public Health
Vol. 31: 253-269 (April 2010)
Paper copy available

Abstract

The broad scope of the public health mission leads to an increasingly diverse workforce. Given the range of feeder disciplines and the reality that much of the workforce does not have formal training in public health science and practice, a pressing need exists for training and education

throughout the workforce. Just as we in public health take a rigorous approach to our science, so too should we take a rigorous, evidence-driven approach to workforce development. In this review, we recommend a framework for workforce education in public health, integrating three critical conceptual approaches: (a) adult learning theory; (b) competency-based education; and (c) the expanded Dreyfus model in public health, an addition to the Dreyfus model of professional skills progression. We illustrate the application of this framework in practice, using the field of applied epidemiology. This framework provides a context for designing and developing high-quality, outcome-based workforce development efforts and evaluating their impact, with implications for academic and public health practice efforts to educate the public health workforce.

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**3. Does leadership training make a difference? The CDC/UC Public Health Leadership Institute: 1991-1999 (Woltring C., et al)**

J Public Health Manag. Pract. 2003 Mar-Apr; 9 (2):103-22

Paper copy available

Abstract

Public health leadership development programs have proliferated since the release of the Institute of Medicine's call for strengthened public health leadership. Little has been documented, however, about the impact of these programs. This article presents results of an eight-year retrospective evaluation of the Centers for Disease Control and Prevention/University of California Public Health Leadership Institute, the nation's first year-long leadership development program serving senior public health leaders. Results show that this program has had a positive impact on participants' leadership effectiveness at the personal, organizational, and community levels as well as on the field of public health.

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**4. Introducing Quality Improvement Methods into Local Public Health Departments: Structured Evaluation of a Statewide Pilot Project (Riley, W., et al)**

Article: http://findarticles.com/p/articles/mi_m4149/is_5_44/ai_n39295375/

Research and Educational Trust, Health Services Research

Volume 44, Issue 5, p2, pages 1863–1879, October 2009

Principal Findings. The participants reported (1) high levels of satisfaction with the training sessions, (2) increased perception of the relevance of the QI techniques, (3) increased perceived knowledge of all specific QI methods and techniques, (4) increased confidence in applying QI techniques on future projects, (5) increased intention to apply techniques on future QI projects, and (6) high perceived success of, and satisfaction with, the projects. Finally, preliminary outcomes data show moderate to large improvements in quality and/or efficiency for six out of eight projects.

Conclusions: QI methods and techniques can be successfully implemented in local public health agencies on a statewide basis using the collaborative model through distance training and expert facilitation. This unique training can improve both core and support processes and lead to favorable staff reactions, increased knowledge, and improved health outcomes. The program can be further improved and deployed and holds great promise to facilitate the successful dissemination of proven QI methods throughout local public health departments.

**5. Evaluability Assessment to Improve Public Health Policies, Programs, and Practices (Levion, L., et al)**

Article:
http://www.annualreviews.org/eprint/3gapif4I2Mnmg6RfSDFX/full/10.1146/annurev.publhealth.012809.103625
Annual Review of Public Health
Vol. 31: 213-233 (April 2010)

Abstract

Evaluability assessment, also commonly known as exploratory evaluation, has assisted the field of public health to improve programs and to develop a pragmatic, practice-based research agenda. Evaluability assessment was originally developed as a low-cost pre-evaluation activity to prepare better for conventional evaluations of programs, practices, and some policies. For public health programs, however, it serves several other important purposes: (a) giving program staff rapid, constructive feedback about program operations; (b) assisting the core public health planning and assurance functions by helping to develop realistic objectives and providing low-cost, rapid feedback on implementation; (c) navigating federal performance measurement requirements; (d) translating research into practice by examining the feasibility, acceptability, and adaptation of evidence-based practices in new settings and populations; and (e) translating practice into research by identifying promising new approaches to achieve public health goals.

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**6. What predicts skill transfer? An exploratory study of goal orientation, training self-efficacy and organizational supports (Chiaburu, D., et al)**

International Journal of Training and Development
Volume 9, Issue 2, pages 110–123, June 2005

Results from a study examining the predictors of skill transfer from an instructional to a work environment are presented. Prior research indicates that skill transfer is a function of both individual and contextual factors. A total of 186 employees from a work organization were surveyed on individual dimensions (goal orientation, training self-efficacy) and contextual factors (supervisor and peer support). Pre-training motivation was proposed as proximal training outcome and further connected to the distal outcome, skill transfer. Analyses with structural equation modeling using EQS indicate that individual dimensions, such as mastery-approach goal orientation and training self-efficacy, are related to pre-training motivation. Also, contextual factors, such as peer support, predicted both pre-training motivation and skill transfer, while supervisor support was unrelated to either pre-training motivation or skill transfer. Pre-training motivation, in turn, was related to skill transfer. Implications for theory and practice are discussed.

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**7. E-Learning Takes the Lead: An Empirical Investigation of Learner Differences in Online and Classroom Delivery (Iverson, K., et al)**

Performance Improvement Quarterly
Volume 18, Issue 4, pages 5–18, December 2005

Abstract

Outcomes and mediators of differences in online and traditional course delivery were tested with a sample of 112 graduate students who completed an introductory course in training and development. Specifically, the individual learner characteristics of self-efficacy, motivation, goal orientation, and meta-cognition and their effects on success through online delivery were examined. The study also addressed three outcomes: trainees' reactions to that program, their learning, and subsequent planned changes in job behavior. The findings indicate that online learners have significantly more positive reaction levels of enjoyment and utility and significantly stronger intent to transfer their learning. Online students find the coursework more difficult, but

there was no significant difference in learning based on delivery mode. Implications for both managers and educators involved in online learning are discussed.

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**8. Kirkpatrick and Beyond: A Review of Models of Training Evaluation (Tamkin, P., et al)**

Information Analyses, 2002-10-00

Abstract

Many organizations are not satisfied that their methods of evaluating training are rigorous or extensive enough to answer questions of value to them. Complaints about Kirkpatrick's popular four-step model (1959) of training evaluation are that each level is assumed to be associated with the previous and next levels and that the model is too simple and fails to take account of the intervening variables affecting learning and transfer. Others have developed models that purport to resolve difficulties and might be thought of as Kirkpatrick "progeny." They take much inherent in the original model and extend it at the front end, by including training design/needs analysis, or at the back end, by evaluating societal outcomes. The "progeny" are Hamblin's five-level approach (1974); Kaufman et. al's Organizational Elements Model (1995); Indiana University approach described by Molenda et al. (1996); the Carousel of Development from the Industrial Society (2000); the Five-Level Return on Investment Framework by Phillips, and Holton (1994, 1995); and the KPMT model described by Kearns and Miller (1997). Models unrelated to Kirkpatrick have a different approach to how training evaluation might occur and include the following: responsive evaluation by Pulley (1994); context evaluation described by Newby (1992); and evaluative enquiry described by Preskill and Torres (1999). An underlying model of learning recognizes the intervening factors affecting the chain of impact from a developmental process to individual learning, changed behavior, and resulting organizational or social impact. The evaluation should be cognizant of variables that affect evaluating at these four levels: reaction, learning, behavioral change, and organizational results.

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**9. The Impact of Practical Relevance on Training Transfer: Evidence from a Service Quality Training Program for German Bank Clerks (Liebermann, S., et al)**

International Journal of Training and Development, v12 n2 p74-86 Jun 2008

Peer-Reviewed: Yes

Abstract

The management literature provides a variety of recommendations as to how workers' customer orientation might be improved, including through training. Crucial factors in the process of transferring the contents of service quality training programs to practice, however, have not yet been sufficiently analyzed. This study proposes and tests a model of transfer motivation and training transfer via structural equation modeling, validating Baldwin and Ford's framework and Kirkpatrick's levels of evaluation. Following the recommendation of Alliger et al., the present study analyses the relationship between Kirkpatrick's levels of evaluation, paying attention to the specificity of the measures at each level. The survey collects data from 213 German bank employees who attended a training program aimed at improving service quality. As hypothesized, the perceived practical relevance of the training was found to exert a strong influence on the reaction of the participants and had a substantial total effect on the motivation to transfer and on actual transfer. Subject to the limitations of the research methodology employed here, it is concluded that trainee satisfaction needs to be conceptually distinguished from perceived practical relevance and that the latter is the main driving force for transfer motivation and transfer.

**10. Systematic performance improvement – refining the space between learning and results (Burrow, J., et al)**

Journal of Workplace Learning, 2003, Vol. 15 Issue: 1, pp.6 - 13

Abstract

Planned learning can be applied to a range of education and training interventions and events in an organization. Its value can be directly measured through observable performance improvement of trainees in job contexts following the planned learning highlighting transfer of learning. More specific and directly connected organizational metrics need to be identified. The connections should be both to the trainee performance and learning and to the broader organizational performance. Reports a redefinition of training evaluation resulting from the authors work with members of a global manufacturing training department. The effort was undertaken to create a process for the department to demonstrate the impact of planned learning on key organizational performance measures. The value-added from training was established when the direct relationships between training (planned learning) and systematic job performance improvements were observed that were drawn from and directly linked to broader organizational productivity and performance metrics. From those successful field experiences and the training evaluation literature, proposes a refinement within the traditional four-level evaluation process akin to a new level 3.5 – performance impact, to fit between Kirkpatrick's model of level 3 (behavior) and level 4 (results).

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**11. Evaluation and eLearning (Peak, D., et al)**

Online Submission, Turkish Online Journal of Distance Education

Pub Date: 2006

Article: http://eric.ed.gov/PDFS/ED494421.pdf

Abstract

In today's results-oriented, fast-moving business environment, it is critical for trainers to demonstrate the value of training to the organization: There is nothing inherently valuable about training. It is performance gains that training catalyzes that give it worth (Graber, 2000). This is why evaluations tied to business results are becoming commonplace. If you ask training professionals about measuring training, most will start talking about levels of evaluation, referring to Kirkpatrick's landmark evaluation model developed in 1959. Kirkpatrick's levels of evaluation have been the industry standard for nearly half a century. However, many professionals now believe that e-learning and a shift in emphasis toward performance improvement have changed the training business so that these levels are no longer completely relevant. The purpose of this paper is to discuss what similarities and differences exist between evaluating e-learning and traditional classroom instruction, how Kirkpatrick's evaluation levels are currently conducted, why conducting Kirkpatrick's Level 4 evaluation is so difficult to do, why e-learning evaluation has evolved to include return-on-investment (ROI) calculations, and whether other evaluation methods currently practiced are more relevant and useful.

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**12. Adaptation of Kirkpatrick's Four Level Model of Training Criteria to Assessment of Learning Outcomes and Program Evaluation in Higher Education (Praslova, L.)**

Educational Assessment, Evaluation and Accountability, v22, p215-225 Aug 2010

Peer-Reviewed: Yes

Abstract

Assessment of educational effectiveness provides vitally important feedback to Institutions of Higher Education. It also provides important information to external stakeholders, such as prospective students, parents, governmental and local regulatory entities, professional and regional accrediting organizations, and representatives of the workforce. However, selecting appropriate indicators of educational effectiveness of programs and institutions is a difficult task,

especially when criteria of effectiveness are not well defined. This article proposes a comprehensive and systematic approach to aligning criteria for educational effectiveness with specific indicators of achievement of these criteria by adapting a popular organizational training evaluation framework, the Kirkpatrick's four level model of training criteria (Kirkpatrick 1959; 1976; 1996), to assessment in Higher Education. The four level model consists of "reaction, learning, behavior" and "results" criteria. Adaptation of this model to Higher Education helps to clarify the criteria and create plans for assessment of educational outcomes in which specific instruments and indicators are linked to corresponding criteria. This provides a rich context for understanding the role of various indicators in the overall mosaic of assessment. It also provides Institutions of Higher Education rich and multilevel feedback regarding the effectiveness of their effort to serve their multiple stakeholders. The importance of such feedback is contextualized both in the reality of stakeholder pressures and in theoretical understanding of colleges and universities as open systems according to the systems theory (Katz and Kahn 1966). Although the focus of this article is on Higher Education, core principles and ideas will be applicable to different types and levels of educational programs.

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**13. An Integral Approach to Evaluating Outcome Evaluation Training (Brown, R.)**
University Outreach Partnerships, Michigan State University, East Lansing, MI

Abstract

Public and private nonprofit organizations are increasing training efforts to build individual and organizational capacity to carry out and utilize outcome evaluation. Evaluators of training are challenged to find comprehensive evaluative frameworks. Traditional training evaluation tends to focus individual change, while organization-focused efforts tend to incorporate individual change as a necessary sub-component of the larger entity's change. Neither approach adequately incorporates a developmental context within the evaluative framework. This article presents an integral, developmental approach that links individual and collective attributes. The use of the framework is illustrated with examples from Check Points, an outcome evaluation training program of Michigan State University and United Way of Michigan. The article concludes with suggestions for improving training and evaluative efforts.

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**14. The Value of Evaluation (ASTD Press, 2009, 64 pgs.)**

Measuring the impact of learning continues to be one of the most challenging aspects of the learning function. ASTD's Value of Evaluation report explores the complex issue of learning evaluation, the techniques being used, barriers to effective implementation, and strategic use of learning metrics.

Companies employ myriad strategies to identify and quantify the results of training, but most are not satisfied with the evaluation efforts. Organizations are not giving up on successful measurement of the learning function, as they continue to explore ways to communicate and document the value of training and development they provide to employees. The data in this report can help many firms become more proficient in these areas.

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**15. Approaches to Evaluation of Training: Theory and Practice (Esery, D., et al)**
Article: http://www.ifets.info/journals/5_2/eseryel.html
Educational Technology & Society 5 (2) 2002
Syracuse University, Syracuse, New York USA

Abstract

There is an on-going debate in the field of evaluation about which approach is best to facilitate the processes involved. This article reviews current approaches to evaluation of training both in theory and in practice. Particular attention is paid to the complexities associated with evaluation practice and whether these are addressed in the theory. Furthermore, possible means of

expediting the performance of evaluations and expanding the range and precision of data collection using automated systems are discussed. Recommendations for further research are also discussed.

## Introduction

Evaluation is an integral part of most instructional design (ID) models. Evaluation tools and methodologies help determine the effectiveness of instructional interventions. Despite its importance, there is evidence that evaluations of training programs are often inconsistent or missing (Carnevale & Schulz, 1990; Holcomb, 1993; McMahon & Carter, 1990; Rossi et al., 1979). Possible explanations for inadequate evaluations include: insufficient budget allocated; insufficient time allocated; lack of expertise; blind trust in training solutions; or lack of methods and tools (see, for example, McEvoy & Buller, 1990).

Part of the explanation may be that the task of evaluation is complex in itself. Evaluating training interventions with regard to learning, transfer, and organizational impact involves a number of complexity factors. These complexity factors are associated with the dynamic and ongoing interactions of the various dimensions and attributes of organizational and training goals, trainees, training situations, and instructional technologies.

Evaluation goals involve multiple purposes at different levels. These purposes include evaluation of student learning, evaluation of instructional materials, transfer of training, return on investment, and so on. Attaining these multiple purposes may require the collaboration of different people in different parts of an organization. Furthermore, not all goals may be well-defined and some may change.

Different approaches to evaluation of training indicating how complexity factors associated with evaluation are addressed below. Furthermore, how technology can be used to support this process is suggested. In the following section, different approaches to evaluation and associated models are discussed. Next, recent studies concerning evaluation practice are presented. In the final section, opportunities for automated evaluation systems are discussed. The article concludes with recommendations for further research.