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A Conceptual IT Training Model for Motivations to Learn and Transfer, and Organizational Performance

Albert Leung

Dept of Computing & Decision Sciences, Lingnan University, Tuen Mun, Hong Kong, leungcka@ln.edu.hk

ABSTRACT

In this paper, an integrated model for IT training is built, which is unique in mainly three aspects. Firstly, IT training is considered in an organizational context which contains organizational factors affecting training reaction, motivations to learn and transfer, and organizational performance, so the organizational influences on IT training are truly reflected. Secondly, within the model, the well applied technology acceptance model (TAM) is used to explain the relationship between trainee's reaction and motivations to learn and transfer, thus trainee's reaction is treated as a primary training outcome instead of merely an intervening variable. Thirdly, the model represents an integrated effort of IT training research incorporating factors in all aspects, i.e. individual characteristics, organizational factors, motivational elements, and training outcomes. The integrated model can potentially serve as a guideline for training planning and execution, it also provide a foundation for more profound research in the future. Particularly, a longitudinal study is proposed to thoroughly examine, validate, and refine this IT training model.

INTRODUCTION

Traditional training research has been investigating factors in terms of training program design, content and implementation (Noe, 1986). In recent years, training research has been shifting to trainees and workplace, such as trainee's characteristics (e.g. Tracey et al., 2001), training motivation (e.g. Mathieu et al., 1992), and work environment (e.g. Tracey et al., 2001). Indeed, the main component of training is trainee, so it is essential to examine how these factors would affect trainee's ability to learn and transfer the acquired knowledge, skills, attitude and behavior to the workplace for better job performance.

In view of IT training research, since technology training becomes increasingly important in today's technology-intensive business environment, it also exerts pressure on people involved in the training process to ensure that the training program will accomplish a company's business objectives. Thus, how technology training can effectively improve user performance and, ultimately, to help meet organizational goals, has become a very important research topic today. In this regard, this paper intends to investigate how organizational factors affect IT training and transfer by considering training in an organizational context. Such research has been particularly lacking in IT training, so related findings would provide invaluable insight on how organizations should prepare training towards achieving their goals.

In addition, there is also strong need to assess and determine the role played by trainee's reactions towards IT training. Trainee's reaction which was once regarded as one of the most important training outcomes in management training, has been found less influential on trainee's learning performance and training transfer to job in many management training studies, and was even dropped from the list of training outcomes by some researchers. By contrast, in Information Systems research, users' reactions toward technology such as users' satisfactory level, perceived ease of use, and perceived usefulness, have played determinant

roles in technology acceptance, as indicated in the well-known and well-applied technology acceptance model (TAM). Therefore, there is strong reason to believe that trainee's reaction should have different effect on trainee's learning and transfer, and should be treated very differently in IT training. Specifically, the role of trainee's reaction in IT training need to be further examined based on TAM. Findings in this regard will have strong implication on how trainee's reaction should be treated and handled for better training effectiveness in both IT training practices and research.

Lastly, this paper intends to build an integrated model for IT training effectiveness. So far, there has been little such integrated effort in technology training research. Most of the research was conducted investigating the effects of just a few influential factors in a piece-meal fashion on IT training effectiveness. By contrast, investigating the effects of all these factors in an integrated manner will provide new insights in both IT training practices and research. Particularly, the mutual relationships between individual factors toward better training outcomes will contribute significantly to effective training planning and execution. In the following sections, research backgrounds are given in each of the above mentioned three aspects, i.e. Organizational Factors and Performance, Trainee's Reaction, and the Integrated Model, followed by reviews and discussions. Finally, conclusions are made at the end of this paper with a number of propositions for future research.

Organizational Factors and Performance

At the organizational level, many organizational factors were studied in management training research, such as supervisory support (e.g. Tracey et al., 1995), reward/appraisal (e.g. Tracey et al., 2001), peer support (e.g. Tannenbaum and Yukl, 1992; Xiao, 1996), choice of training/training assignment (e.g. Brown, 2001), pre-training briefing (e.g. Werner et al., 1994), opportunity of applying learned skills to task on job (e.g. Ford and Weissbein, 1997), organizational culture/climate (e.g. Tracey et al., 1995), and post-training intervention (e.g. Werner et al., 1994). However, whether these factors would have similar impacts on IT training effectiveness is still relatively unknown, since there has been little research in this aspect. Moreover, one of the major challenges in training research is to measure organizational improvement through training, which can be indicated by productivity gains, customer satisfaction, cost savings, employee morale, and profitability (Tannenbaum and Woods, 1992). It is the ultimate objective and the most wanted training outcome in an organization, in which individual improvement through training is the direct contributing factor toward organizational performance. On the other hand, the performance can also be influenced by many other factors that are completely outside the realm of training, such as equipment, material supplies, and economy. It would be difficult to isolate the effect of training from other influences when measuring the effect of training toward improvement in organizational performance.

In this regard, Holton III (1996) proposed three measurement factors, i.e. link to organizational goals (ability), expected utility or payoff

(motivation), and external factors (environment). Training programs that are not linked to organizational mission, goals, and strategy are unlikely to produce results that are valued by the organization even with positive learning and individual performance improvement (Swanson, 1994). Thus, greater linkage to organizational goals would tend to produce training programs that promote training transfer (Holton III, 1996). Moreover, job and career utilities on training motivation of individuals, expected utility or payoff of the learned skills may also influence organizational results from an organizational perspective. Organizations would not engage in training unless the expected utility or payoff warrants investment of the resources.

Overall, there is less research in training assessment at organizational level, because training measurement is very complex and difficult. In particular, effort to measure the improvements in various performances may require a longitudinal study, and also need participations of trainees, their supervisors/peers, and top management to obtain objective assessments in an organization. Very often, organizational constraints may limit the opportunities for gathering data at this level. Nonetheless, research findings in this regard would provide invaluable insights in better alignment of IT training with organizational goals, and therefore should be more encouraged.

TRAINEE'S REACTION

Trainee's reaction to a training program can be represented by three main components, i.e. expectation, desire, and perception, in which desire weights the discrepancy between expectation and perception (Tannenbaum et al., 1991). It can play an important role in building interest and attention, and enhancing motivation to transfer (Patrick, 1992). It was treated as one of the training outcomes by Kirkpatrick (1994), because satisfaction with one's learning experience is regarded as a measure of performance, and received more attention from training practitioners. However, Mathieu et al. (1992) found that reaction mainly functioned as a moderator of the relationship between training motivation and learning. Furthermore, it was found not directly related to learning (e.g. Warr and Bunce, 1995; Alliger et al., 1997), and subsequently dropped from the list of training outcomes by Holton III (1996).

By contrast, reaction is often used as a direct outcome in IT/IS acceptance research. For example, in early studies, user satisfaction was found influential on the utilization of IT at workplace (Powers and Dickson, 1973; Swanson, 1974). In recent years, research of IT acceptance and adoption has been mainly using the Technology Acceptance Model (TAM) (Davis, 1989) to investigate and explain IT usage, in which user's perceived ease of use and perceived usefulness were the two determinants of user acceptance and future adoption of IT (e.g. Davis et al., 1989; Lee et al., 1995; Venkatesh, 2000). Thus, in IT training, it would be quite reasonable to regard trainee's reactions as a direct training outcome instead of just a moderating factor. For example, in (Amoako-Gyampah and Salam, 2004), training was found influential on both perceived usefulness and ease of use, which were directly used to predict behavioral intention to use the technology. Surprisingly, little research has been conducted systematically examining how the two variables affect IT training effectiveness and vice versa. Similarly, trainee's reaction needs also be examined about its role in IT training.

THE INTEGRATED IT TRAINING MODEL

There is an apparent trend of taking an integrated view of the factors and training process that will affect the effectiveness of the training transfer to the job. Particularly, in management training research, comprehensive training models were developed showing the causal relationships among all the influential factors and the training outcomes (e.g. Noe, 1986; Mumford et al., 1988; Mathieu et al., 1992). Such integrated model will show not only the effect of individual factors on training, but also the mutual relationships among these factors toward better training outcomes. Thus, an integrated model for IT training, which incorporates factors in all aspects affecting training outcomes,

is essential for systematic training planning and research. However, there has been little such integrated effort in technology training research. Most of the research was conducted investigating the effects of just a few influential factors in a piece-meal fashion on IT training effectiveness.

Towards such endeavor, an integrated IT training model is constructed for such purpose in this paper, as shown in Figure 1. The model incorporates factors in four aspects, i.e. individual characteristics, organizational factors, motivational elements, and training outcomes. Individual characteristics are trainee's age, educational background, work experience, perceived utility, perceived accountability, locus of control, self-efficacy, career planning, and organizational commitment; whereas organizational factors may include trainee's workplace support (peers and supervisors), job incentives, training assignment, pre-training briefing, and continuous learning culture in a company. The influences of these factors can be measured against potentially four levels of training outcomes, i.e. trainee's reaction, learning performance, training transfer, and organizational results. Many of these factors were identified and investigated in management training research. Some were also studied in IT training research, such as trainee's self-efficacy/computer self-efficacy, work experience/computer related ability and experience, social norms, and organization climate.

In the model, the primary hypothesized relationships are indicated by thick arrows between the influential factors and the four levels of training outcomes, i.e. training reaction, learning, training transfer, and organizational results, whereas the secondary relationships are indicated by lighter arrows. Based on the previous review, trainee's reaction is established as one of the four training outcomes through IT training. In terms of organizational performance, the three factors, i.e. expected utility/ROI, linkage of training to organizational goals, and external events, are adopted from the Holton III's model (1996), in which they have impacts not only on the organizational results but also on the motivation to transfer and certain organizational factors.

However, IT training is quite different from management training, which requires mastering of hands-on IT skills. Factors such as trainee's age, educational background, career planning/job involvement/organizational commitment, perceived accountability, training assignment and pre-training briefing, which have been extensively studied in management training research, may or may not have similar influences on IT training. Furthermore, there are some IT related characteristics such as trainee's IT playfulness and innovativeness, which may play significant role in training, and should be considered in IT training research. These factors have been largely omitted in the past training research, but were included in the integrated model. Overall, the model needs to be thoroughly examined, refined, and validated in preferably a longitudinal empirical study. Yet still, the existing model can not only provide insights and new directions toward research in IT training, but also be used in training practices for better training planning, motivation, transfer, and ultimately organizational results.

Figure 1. An Integrated Model for IT Training Motivation and Transfer

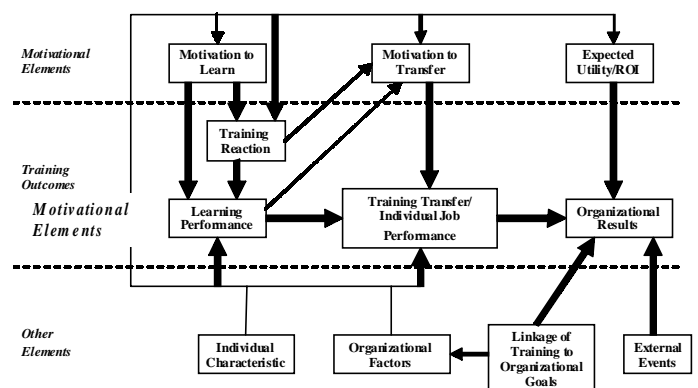


Table 1. Measures and Variables of Some of the Factors in the Integrated Model

Factor	Motivational Elements		Training Outcomes				Other Elements	
	Motivation to Learn	Motivation to Transfer	Training Reaction	Learning Performance	Training Transfer/ Job Performance	Organizational Results	Individual Characteristics	Organizational Factors
Measures	No surrogate s are available. Detailed measures can be found in (Noe, 1986)	<ul style="list-style-type: none"> - Intention To Transfer - User Acceptance 	<ul style="list-style-type: none"> - Fulfillment - Satisfaction - Perceived Ease of Use - Perceived Usefulness 	<ul style="list-style-type: none"> - Skill Test - Written Test 	<ul style="list-style-type: none"> - Self Evaluation - Peer Evaluation - Supervisor Evaluation 	<ul style="list-style-type: none"> - Improvements in - Sales - Productivity - Efficiency - Effectiveness 	<ul style="list-style-type: none"> - Age - Education - IT Experience/ Ability - IT Anxiety - IT Attitude - IT Playfulness - IT Inventiveness - IT self-efficacy - Job involvement - Organizational Commitment - Career Planning 	<ul style="list-style-type: none"> - Continuous Learning Culture - Job Incentives for Training (Rewards) - Training Assignment - Pre-training Briefing - Supervisor/ Peer support - Work Design

Details of the model in terms of the constructs and measures of each factor are shown in Table 1. The two major sets of factors, i.e. individual characteristics and organizational factors also exert influences on the two intermediate dependent factors, i.e. motivation to learn and motivation to transfer. Many of these constructs and measures have been produced and subsequently validated in other research, and they can certainly be borrowed to conduct further research on IT training.

CONCLUSION

The conceptual model built in this paper shows relationships between the major influential factors and the four training outcomes. It is an integrated effort aiming to make IT training more effective and beneficial to organizations. Overall, the model made three major contributions toward IT training research and practice. Firstly, it adopted the technology acceptance model (TAM) in investigating training reaction and motivation to transfer: the two of the four training outcomes in the conceptual model built. TAM was mainly used in IS/IT acceptance research, but has not been so often adopted in IT training research. By introducing TAM into training context, training reaction emerged as the primary training outcome instead of merely as an intervening factor affecting IT training. Such a change brings practical insight into IT training program design, motivation, and evaluation in terms of perceived ease of use and perceived usefulness of IT leading to training transfer. Secondly, the model considers IT training in an organizational context recognizing that organizational factors are also major contributors toward training success. Most of the IT training and acceptance research has been mainly investigating the influences of individual characteristics on training transfer and technology acceptance. However, organizational factors do exert significant influences on IT training outcomes as they did in other training programs. Therefore, they should receive sufficient attention in both research and practice in IT training.

Thirdly, the integrated IT training model subsequently built represents a major step toward a comprehensive modeling of IT training incorporating all the essential influential elements such as individual characteristics and organizational factors. It would be the ultimate goal of both training practices and research to understand and fully utilize these influences in maximizing the IT training effectiveness. For further research, as mentioned earlier, longitudinal studies would be necessary to observe the actual effects and examine the projected relationships in the integrated model in several intervals, i.e. before, right after, and a certain period after the training. For certain training programmes, longer duration training courses would be preferred, as trainees would have time to try out or even apply the learned knowledge, skills, or attitude to their job. Furthermore, the training outcomes in terms of learner performance and transfer can be sufficiently evaluated toward the end or right after the training program.

REFERENCES

- Alliger, G.M., Tannenbaum, S.I., Bennett, Jr., W., Traver, H. and Shotland, A., A meta-analysis of the relations among training criteria, *Personnel Psychology*, 50(2), 1997, 341-358.
- Amoako-Gyampah, K. and Salam, A.F., An extension of the technology acceptance model in an ERP implementation environment, *Information & Management*, 41, 2004, 731-745.
- Brown, K.G., Using computers to deliver training: Which employees learn and why? *Personnel Psychology*, 54(2), 2001, 271-296.
- Davis, F.D., Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 1989, pp. 319-339.
- Davis, F.D., Bagozzi, R.P. and Warshaw, P.R., User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 1989, 982-1003.
- Ford, J.K. and Weissbein, D.A., Transfer of training: An update review and analysis. *Performance Improvement Quarterly*, 10, 1997, pp. 22-41.
- Holton III, E.F., The flawed four-level evaluation model. *Human Resource Development Quarterly*, 7(1), 1996, pp. 5-21.
- Kirkpatrick, D.L, *Evaluating training programs: The four levels*. New York: McGraw-Hill, 1994.
- Lee, S.M., Kim, Y.R. and Lee, J., An empirical study of the relationships among end-user information systems acceptance, training, and effectiveness. *Journal of Management Information Systems*, 12(2), 1995, pp. 189-202.
- Mathieu, J.E., Tannenbaum, S.I. and Salas, E., Influences of individual and situational characteristics on measures of training effectiveness. *Academy of Management Journal*, 35(4), 1992, 828-847.
- Mumford, M., Weeks, J., Harding, F. and Fleishman E., Relations between student characteristics, course content, and training outcomes: An integrative modeling effort. *Journal of Applied Psychology*, 73, 1988, 443-456.
- Noe, R.A., Trainees' attributes and attitudes: Neglected influences on training effectiveness. *Academy of Management Review*, 11, 1986, 736-749.
- Patrick, J., *Training Research and Practice*. San Diego, CA: Academic Press, 1992.
- Powers, R.F. and Dickson, G.W., MIS project management: Myths, opinions, and Reality. *California Management Review*, 15(3), 1973, pp. 147-156.
- Swanson, R.A., *Analysis for Improving Performance*. San Francisco: Berrett-Koehler, 1994.
- Swanson, E.B., Management Information Systems: Appreciation and Involvement. *Management Science*, 21(2), 1974, 178-188.
- Tannenbaum, S., Mathieu J., Salas, E. and Cannon-Bowers, J., Meeting trainees' expectations: The influence of training fulfillment on the

- development of commitment, self-efficacy, and motivation. *Journal of Applied Psychology*, 76(6), 1991, 759-769.
- Tannenbaum, S. and Woods, S.B., Determining a strategy for evaluating training: Operating within organizational constraints. *Human Resources Planning Journal*, 15, 1992, pp. 63-82.
- Tannenbaum, S. and Yukl, G. Training and development in work organizations. *Annual Review of Psychology*, 43, 1992, 399-441.
- Tracey, J.B., Hinkin, T.R., Tannenbaum, S., and Mathieu, J.E., The influence of individual characteristics and the work environment on varying levels of training outcomes. *Human Resource Development Quarterly*, 12(1), 2001, 5-23.
- Tracey, J.B., Tannenbaum, S.I. and Kavanagh, M.J., Applying trained skills on the job: the importance of the work environment. *Journal of Applied Psychology*, 80(2), 1995, 239-252.
- Venkatesh, V., Determinants of perceived ease of use: Integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, 11(4), 2000, pp. 342-365.
- Warr, P. and Bunce, D., Trainee characteristics and the outcomes of open learning, *Personnel Psychology*, 48(2), 1995, 347-375.
- Werner, J.M., O'Leary-Kelly, A.M., Baldwin, T.T. and Wexley, K.N., Augmenting behavior modeling training: Testing the effects of pre- and posttraing interventions. *Human Resource Development Quarterly*, 5, 1994, pp. 169-183.
- Xiao, J., The relationship between organizational factors and the transfer of training in the electronics industry in Shenzhen, China, *Human Resource Development Quarterly*, 7(1), 1996, 55- 73.

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