Using Educational Research Methods to Evaluate the Effectiveness of Management Development Program Intervention

Hamid Khan
Ball State University

In the Harvard Business Review, Peter Drucker (1991, p.78) wrote about the importance of continuous learning and management development in strengthening managerial effectiveness: "Continuous learning must accompany productivity gains. ... Training is only the beginning of learning. Indeed, as the Japanese can teach us, ... the greatest benefit of training comes not from learning something new but from doing better what we already do well."

As Peter Drucker (1991) suggests, the management development function is at the forefront of helping organizations that are experimenting with new ways of doing business. Organizations call upon management development to invoke changes in managers by conceptualizing a particular type of intervention and by validating the effectiveness of such intervention for better organizational communication and effective behaviors.

> Leaders of continuous learning organizations recognize that management development is vital to their own success and the success of the enterprise. The scope of management development is broadening to encompass the tasks of changing and reinforcing a firm's organizational structure. Training objectives include improving group effectiveness, re-invigorating burned-out managers, ensuring maximum [optimal] use of [appropriate]* technology, and developing high potential managers. (Chmura, Henton, and Melville, 1987, p.17)*[emphasis added to clarify the research objective]

> It will be inaccurate to claim that functionalism and technical rationality, which have served as our guides for so long, have been superseded. Nonetheless the alternative approaches represented by reflective practice and critical theory have a logic and appeal that are attractive to the entrepreneurs as well as the social activists in CPE. (Novak, 1992, p.63)

Leadership training efforts within organizations are widespread but not highly researched, and focus on the productivity of the trained managers. Within these limited purviews, there has not been much research into the most efficacious ways of training leaders-managers. This statistical research provides a means of evaluating program effectiveness that are available to planners and educators using various criteria of effectiveness to define the relationships and intercorelation of importance of managerial skills, competence of managerial skills, managerial background variables, learning style inventory, and leadership style inventory.

The Research Questions

This research examined management education from a quality assurance perspective, paying attention to measurable ends of such education. The purpose of this research was to evaluate the effectiveness of the Purdue University Engineering/Management Program (EMP) as the managers were impacted by the program. Evaluation criteria established from the stated objectives of the program (taken from the brochure), were used as bases for measuring knowledge, skills and attitudinal change.

This evaluation study attempted to measure those changes that occurred in the knowledge skills and attitudes, from before to after participation in the Purdue University Engineering/ Management Program.

Further research questions of the study were:

1. How well did the program experiences meet the 'needs' of the managers? Evidence used to answer this question was gathered using a follow up questionnaire.
2. What were the impacts of these experiences on attending managers and on their corporations?

The impact of the training on the managers and their organization was analyzed. The impact was assessed using Kirkpatrick's (1987) four levels of evaluation of the training program for effectiveness consisting of (1) Reaction (2) Learning (3) Behavior and (4) Impact or Results.

1. Reaction: Reaction is a measure of how well the participant liked the training program with respect to its content and delivery. Reacting to a training program with happiness does not guarantee that learning has taken place.

2. Learning: This is the next level of measure of effectiveness of the training program. But this learning change does not always produce behavioral change in the participants.

3. Behavior: This is the next level of effectiveness of the program. Effective evaluation should be geared toward determining change in behavior of the managers. This change can be measured in terms of change in scores of decision making and leadership styles. This behavioral change is attributable to the program.

4. Impact or Results: This is the final level of measure of effectiveness of the training program that demonstrates how, after the dissipation effect, the residual change is permanent. This measurement was done after about three to four months of the program as a post study. This is, in another sense, the impact of manager's training on his behavior and the effect of that changed behavior in his organization.

An effective management development program evaluation and review technique must be strategically designed to be all inclusive with respect to assessing reaction, learning, behavior and results accruing due to the program. This program evaluation and review technique used the following instruments for the four stage evaluation process.

Measure of Reaction: (a) Course and instructor evaluation completed at the conclusion of the program (b) Qualitative and descriptive responses to some open ended questions. and (c) Composite program evaluation

Measure of Learning: Learning was measured by Kolb (1981) Learning Skills Inventory of Pre, Post, and Comparison

Measure of Behavior: Change in perceptions by Knudson (1989) instrument of importance and competence of management skills Pre, Post, and Comaparison.

Measure of Results: (a) Hersey and Blanchard (1994) change in leadership adaptability index measured at Pre, Post and comparison (b) Measure of effectiveness by using a 3-month post survey after the manager returns back to the realities of job situations. The difference between the Pre and three month post is the real impact of the training program.

Summary

The effectiveness of the evaluation of the Purdue University Engineering/Management workshop rests on the four levels of the incremental benefits which accrued to the participants due to their learning experiences. The results of the analyses of the data are summarized from data collected.

At the time of pretest there was a huge difference in the mean scores of almost all importance items compared to competence items. The attending managers were saying, "I have arrived to learn -- I am receptive to learning, I will apply what I learn on my job, because I believe I do not possess competence in the important skills that I must have. So here I am! Change me, give me those techniques which will change my behavior and I will learn to manage my people and my business better."

From the pretest of importance-competence comparison paired samples out of forty-two skills compared, almost all are significant, except working with corporate board / governing board. This means that the managers don't get the opportunity to work with the highest level decision makers and that they rated the importance as minimal as their competence in that skill.

Immediately after the workshop, when the posttest was administered, the perceptions were different. There was no significant difference in importance and competence in the following seven skills (sixteen percent)-- the remaining thirty-five (eighty-four percent) were significant, which demonstrates the program effectiveness.

The program effect in managerial 'importance of skills' was analyzed by the significance of pretest perceptions of attending managers and the comparison group. Thirteen of the forty-two importance of skills were significant between participants and the comparison group, meaning thereby that almost thirty-one percent of the perceptions of importance of skills between the participants and the comparison group are not alike, whereas sixty-nine percent are alike. For competence, this percentage was twenty-five percent not alike, and seventy-five percent alike.

In the case of 'comparison group' of managers in terms of their perceived "importance vs. competence" of managerial skills, significant differences did not exist in fourteen skills areas (thirty-three percent). In the remaining twenty-eight skills (sixty-seven percent) there was significant differences in the perception of comparison group in terms of importance and competence. This attitudinal orientation of the attending managers gives credence to the program.

Pretest and posttest of participant group revealed that about twenty-one of the forty-two importance of skills category were considered to be significant which indicates gain in knowledge (fifty-percent). The change in perception is due to the program effect because the posttest was given immediately after the program's conclusion.

Pretest and posttest of participant group for the competence in skills revealed thirty-six of the of the forty-two were significant (about eighty-percent). This change in perception is due to the program effect as the participant saw huge gain in the in terms of their heightened awareness, imaginations and relevance to job due to the program intervention.

Leadership Styles

Chi Square test in the contingency table shows the percentage breakdown of four groups of classifications of primary leadership styles. This test asks the question; Overall, is there an association of primary leadership style and group membership?

At the time of pretest the following classification of participants emerged:

Style	**Participant** Pretest	**Participant** Follow-up	**Comparison** Pretest	**Faculty/Trainer** Pretest
Telling	24	0	6	0
Selling	18	16	22	5
Participating	9	16	21	6
Delegating	26	45	6	0
Total	78	77	54	11

Table 1: Hersey and Blanchard's Leadership Styles Distribution

The table above shows that there is a very good match between the distributions of styles in participants and the comparison group. The contingency table revealed that there is significant differences in the expected values and obtained values within the cells. Trainers are mostly selling and participating and they are in control of the educational process. This difference in "potential" of trainers to learners transformed some of the learners in their perceived leadership style from telling/selling to participating/delegating. This movement was significant.

The table below shows Kolb's Learning Style distributions of participants compared with comparison group. There was migration from one style quadrant to the others as evidenced but this was not significant. The three month post results suggest that the proportion of participants as divergers (11 of 32) is conspicuously high which means that they valued creativity, generation of alternatives, recognition of broad and general problems along with broad company interests,

due to important concepts learned as a result of intervention.

Learning Styles				
Style	**Participant** Pretest	**Participant** 3mo-post	**Comparison** Pretest	**Faculty** Pretest
Diverger	17	11	10	6
Assimilator	27	7	15	1
Converger	21	7	21	2
Accommodator	12	7	8	2
Total	77	32	54	11

Table 2: Kolb Learning Styles Inventory Showing Distributions

Conclusions

In summary the program achieved the following results in regard to participants:

1. It created a constancy of purpose for personal and professional development. Many participants wrote that they will attend future programs. Krannert's Executive Education department also strives for continuous improvement of their program and services.

2. Quality of the management development program is the philosophy of the University that percolates down to the bottom through Krannert Graduate School of Management, Krannert Executive Education Program, Graduate School of Engineering, Continuing Engineering Education, the program planners and the faculty. These program stakeholders have a philosophy that "we must believe in quality as we once believed in progress."

3. The sixteen member program faculty is continuously engaged in improving the process with a firm belief that, "Quality comes not from inspection but from improvement of the process. The old way: Inspect bad quality out. The new way: Build good quality in."

4. The Krannert Executive Education Program has been able to get return participants from many fortune 500 companies as a "single supplier and a long-term relationship of trust in management development." The program involves the participants in their development.

5. Quality has been built in at the design stage of the program and faculty and administrative teamwork of the program is excellent as evidenced by composite program evaluation. Everyone associated with the program, faculty, administrator, deans, secretaries, and the graduate students-- all subscribe to constant improvement.

6. The program has succeeded in instituting effective training from the perspectives of the customer (participants and their companies). Managers learn important concepts of management from teachers, colleagues and peers by group discussions of live case studies. These cases are often taken to the parent companies for implementations. The participants often form network of mutual interest to take advantage of retraining. So the program is continually training and retraining the participants.

7. The program did institute leadership in managers as evident in the movement of group styles from before to after the program. Leadership development is the responsibility of the manager himself or herself, but it is the job of the program faculty to let the participants discover barriers to their development. This has happened in numerous case studies of actual company problems, where participants together strategically solved the problems.

8. The program emphasized innovation and creativity that eventually drives out fear in company settings, by being a proactive manager rather than a reactive or fearful follower. Various forms of techniques were used for team play to eliminate fear of hazy messy management situations. Participants developed confidence in their management.

9. Program broke down self imposed barriers to managers' participation. So much of teamwork was emphasized in the program that participants could feel the impact of synergy in teaming, which they were devoid of in their own organizations.

10. Participants got the benefits of training which makes them more competitive and effective for their managerial functions. Many will institute a vigorous program of education and training for their subordinates for acquiring new knowledge and new skills in the companies they work for.

11. The program was run effectively with a view to "take action to accomplish transformation." Every module of the program effectively emphasized this concept: plan, do, check, and act. Managers left the program with a heightened desire to plan, do, check and act for the "continual improvement of methods and procedures." This intervention emphasized on taking action to accomplish the transformation in their own companies.

Recommendations

Even though the program is very successful from the above points of view, some recommendations are made from the observations of data, analysis and participant feedback.

1. The use of instruments of evaluations should be given to the participants well ahead of time and the companies must participate in the evaluation of the program.

2. The 3-month post survey response was relatively small even though participants were requested to respond at least three times. The program organizers must personally be responsible for collecting this data as a condition of participation at registration, if evaluation has to be done in a continuous way.

3. In order to achieve "quality in" as above in item 3. the faculty must make a case study of representing companies with company participation of real-life real company cases for real solutions and participant development.

4. In order to measure impact of training for synergy, the long term follow-up of behavioral change must be determined with the HRD of the participating company by asking the LEAD-

other instruments to be filled by the participating managers.

5. With a view to instituting vigorous program of company wide training and retraining after the managers return to their company, the same program must be run with the help of the program faculty in their company, so it achieves an economy of scale. Otherwise the training function will become a burden by itself and eventually perish.

REFERENCES

Drucker, P. (1991).The new productivity challenge, Harvard Business Review, 69(6), 69-79.

Chmura T.J., Henton D.C., & Melville J.G. (1987). Corporate education and training: Investing in a competitive future. Report No.. 753, Palo Alto: SRI international.

Novak. J.C. (1992) Active learning in continuing professional education: The challenge of leadership. In P.J. Edelson (Ed.), New Directions for Adult and Continuing Education: Rethinking leadership in adult and continuing education. 56, 63-80. San Francisco: Jossey Bass.

Kirkpatrick, D. (1979). Techniques for evaluating training programs. Training and Development Journal, 33(6), 78-92.

Kirkpatrick, D.L. (1975). Techniques for evaluating training programs. in D.L. Kirkpatrick (Ed.), Evaluating Training Programs. Madison: American Society for Training & Development.

Hersey, P. (1994). The situational leader, New York: Warner Books Printing.

Knudson, M.J. (1989). Leadership development for the middle managers of higher education: Harvard's management development program., ED.D. Dissertation, Harvard University.

Kolb, D.A. (1976). Management and learning processes. California Management Review, 18 (3), 21-31.

Kolb, D.A. (1981). Learning styles and disciplinary differences. In A.W. Chickering and Associates (ed.), The Modern American College, San Francisco: Jossey Bass, Inc.

HAMID KHAN

Hamid Khan is an Assistant Professor of Industry and Technology at Ball State University. He holds BS degree in Mechanical Engineering, MS degree in Industrial and Management Systems Engineering; MBA degree in Management Strategy, and Doctorate in Education. Dr. Khan is a Registered Professional Engineer with extensive management experience. He has rendered numerous services to the engineering profession through the offices of ASEE, ASME, ASQC, IEEE, SAE and SME.