

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

**Bell & Howell Information and Learning
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA**

UMI[®]
800-521-0600

**Evaluation of the Project Management
Training Course @ IMS Health Canada**

Yael Haviva Nisan

A Thesis

in

The Department

of

Education

**Presented in Partial Fulfillment of the Requirements
For the Degree of Master of Arts
Concordia University
Montreal, Quebec, Canada**

August 1999

© Yael H. Nisan, 1999



**National Library
of Canada**

**Acquisitions and
Bibliographic Services**

395 Wellington Street
Ottawa ON K1A 0N4
Canada

**Bibliothèque nationale
du Canada**

**Acquisitions et
services bibliographiques**

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file Votre référence

Our file Notre référence

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-43600-4

Canada

ABSTRACT

Evaluation of the Project Management Training Course @ IMS Health Canada

Yael Haviva Nisan

The purpose of the present thesis was to carry out an evaluation of the Project Management training course at IMS Health Canada (Intercontinental Medical Statistics). The evaluation methodology was based on Kirkpatrick's Four-Level Evaluation model (1975). It involved measuring participants' reactions to the training course (Level I), learning gains from the training (Level II) and behavior change, regarding the degree to which participants applied what they learned to their job performance (Level III). Evaluation data were gathered from all past participants in the training using a survey form, interviews, and a focus group, as well as through interviews with their supervisors and the training instructor.

Participants, supervisors and the training instructor found the training to be very basic in nature. It provided participants with a necessary project management methodology and terminology, which assisted them in defining, and to a lesser extent, planning projects. Data revealed that the Project Management course should include future instruction on how to implement IMS-type projects and use a Project Management (PM) software, in order to enable participants to carry out projects and manage project contingencies effectively.

ACKNOWLEDGMENTS

I wish to thank Dr. Heidi Schnackenberg for her invaluable insight, advice and support.

Appreciation is extended to Dr. Dennis Dicks and Dr. Steven Shaw for their constructive feedback.

Special thanks to Mr. David Wells, as his dedicated teaching and interest in my work has encouraged me throughout my studies.

Many thanks to Dorothy Lalonde, Vice President of Human Resources, Alvaro Mestre, Vice President of Information Technology and Kevin McVetty, Director of Project Management at IMS for their input in the design and development of the evaluation instruments.

Thank you to Patricia Thomas, Tracy Hannah, and Lynn Gee for their help in the collection of the evaluation data.

Appreciation is extended to those who participated in the evaluation process.

I dedicate this work to my family.

TABLE OF CONTENTS

LIST OF TABLES	vii
LIST OF FIGURES	viii
Chapter	Page
I. INTRODUCTION	1
Project Management Training	20
II. METHOD	26
Participants	26
Materials	26
Procedures	29
Criteria Measures	33
Data Analysis	35
III. RESULTS	36
Participant Surveys	36
Participant Interviews	64
Participant Focus Group	76
Supervisor Interviews	84
Instructor Interview	90
IV. DISCUSSION	94
Current Evaluation Limitations	104

	REFERENCES	108
	APPENDICES	113
A	PARTICIPANT SURVEY	113
B	PARTICIPANT INTERVIEW QUESTIONS	123
C	SUPERVISOR INTERVIEW QUESTIONS	125
D	INSTRUCTOR INTERVIEW QUESTIONS	127
E	PARTICIPANT FOCUS GROUP QUESTIONS	130

LIST OF TABLES

Table		Page
1	Major Approaches to Program Evaluation	6
2	Kirkpatrick's Evaluation Model	12
3	Kirkpatrick's Model vs. Phillip's Model	18
4	Data Collection Procedures	31
5	Project Timeline	32
6	Reaction Scores: Percentages, Means and Standard Deviations	37
7	Learning Scores: Percentages, Means and Standard Deviations	40
8	Application Scores: Percentages, Means and Standard Deviations	46
9	Participant Surveys: Replies to open-ended Questions	51
10	Participant Interviews	65
11	Participant Focus Group	77
12	Supervisor Interviews	85

LIST OF FIGURES

Figure		Page
1	The logic of training	2
2	The training process	3
3	The hierarchical & alternative evaluation model	16
4	Conceptual evaluation model	17
5	Project life cycle	22
6	Percentages of Replies: Reaction Questions	38
7	Percentages of Replies: Learning Questions	43
8	Percentages of Replies: Application Questions	49

CHAPTER I

INTRODUCTION

Changes in the organization environment – the global, knowledge-based economy, the information explosion, the advances in technology, the changes in the workforce, and the evolving organizational architecture, all have resulted in pressure on training departments to justify their costs in terms of improvement in individual and organizational performance (Brown, 1998). These factors have resulted in the demand for training evaluation that focuses on participants' performance achievements and the return on investment (ROI) on training expenditures for organizations as a whole.

"Evaluation is a discipline inquiry to gather facts and other evidence that allow an evaluator to make assertions about the quality, effectiveness or value of a program, a set of materials or some other object of the evaluation in order to support decision making" (Cummings, 1998). Discipline inquiry means that an evaluator must bring objective, quality evidence to the inquiry and draw conclusions that lead to judgment of quality, effectiveness and value.

Argyris (1990) defines "single loop learning" as learning that leads to changes in action to correct or improve a process or situation. "Double loop learning" questions the definition of the problem itself and the underlying values, norms, and assumptions that sustain the status quo. According to Argyris (1990), evaluation can contribute to double loop learning about the underlying values,

norms, and assumptions that drive strategies and actions, as well as learning about how to correct and improve practices and reengineer processes.

Training evaluation is a process involving definition of success criteria and the collection and analysis of information to judge training success, followed by recommendations for improvement (Moor & Seidner, 1998). Such recommendations can reach beyond the training activity itself to affect change and direct organizational improvement.

Training is intended to have an impact. Thus, it is important for the training evaluator to understand what "training impact" means to the stakeholders. The popular notion of training impact holds that training is, above all, an instrument for improving employee as well as organizational performance and effectiveness. Note that the emphasis is on performance, not simply on gains in competencies. This is what Brinkerhoff (1987) has called the "fundamental logic of training". (See Figure 1 for an illustration of Brinkerhoff's model.)

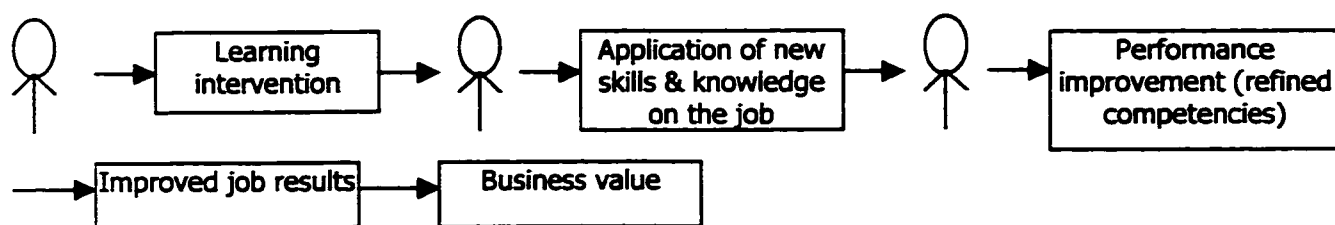


Figure 1. The logic of training (Brinkerhoff, 1987)

According to Brinkerhoff (1987), training is only one of the several means to performance improvement and business results. Evaluation cannot prove that training was beneficial unless it shows that the training solution fits the

performance needs, and that the training produces effective and efficient contributions to the performance goals. This "requires a systematic view of training as a process, not as an event" (Brinkerhoff, 1987). (See Figure 2.)

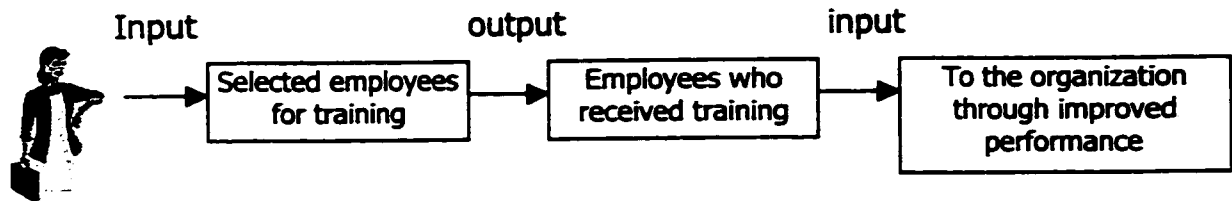


Figure 2. The training process

Brinkerhoff (1987) recommends pursuing impact evaluation as a quality management process. This implies evaluating the impact of training on learning and performance through the use of impact evaluation strategies. Such strategies include:

- Identifying the customers of the training program and determining their needs and expectations in regards to the training program;
- Translating the needs into quality products and service specifications (e.g. knowledge and skill specifications that need to be taught in the training to achieve learning and on-the-job performance goals), and
- Using the specifications for the training design and production process.

Posavac and Carey (1992) propose a number of different approaches to evaluation in order to guide planning and implementation. They believe evaluators should analyze and adopt multiple approaches that are useful for their specific needs. The evaluators' goals should be to help stakeholders find the discrepancies between the programs outcomes and the needs and expectations of its target population. This will show where the program needs to be improved.

The main evaluation approaches posited by Posavac and Carey (1992) are summarized as follows:

The Traditional Model is based on evaluators' informal impressionistic self-evaluation. Such evaluations tend to serve subjective needs and do not challenge the program director and staff. This approach does not control for self-bias and subjective evaluation.

The Social Science Research Model uses social science research methods to evaluate programs and to determine their success. Following this method, two groups are randomly selected - one receives the training and the other serves as a control group. After the administration of the program, the group members are observed and/or questioned on the appropriate dependent variable. Statistical tests are then used to determine the degree of difference between the means of the two groups. According to the Social Science Research Model reported by Posavac and Carey (1992), if the difference is statistically significant the program is considered successful. However, in this context if there are no significant differences, it does not imply that the program failed, but merely that the evaluator cannot conclude that the means are significantly different. This approach introduces a degree of rigor and objectivity to program evaluation, but has the potential for misuse in certain settings. It is important to note that a simple statistical significance does not imply that there is a significant difference between means. Other factors such as sample size, level of significance, directionality and effect size must be considered.

Goal Based Evaluation emphasizes the evaluators' role in stating the programs' goals and objectives clearly, and then measuring the degree to which they are achieved after the program is completed. This approach may cause evaluators to focus solely on the goals and neglect to examine why the program succeeds or fails.

Goal Free Evaluation suggests that evaluators do not know the stated goals of the program so they do not focus on information that may support them. Evaluators study the program, the staff, the clients, the setting, and the records, to identify which factors had an impact on the program. Later, the program staff evaluates whether these findings are compatible with the program's goals. This model may cause the evaluator to lose focus on what he/she is evaluating.

Black Box Evaluation advocates the examination of the program's outputs, without considering its internal operations. This approach is useful when examining manufactured objects, but not for examining social and/or educational programs for which the evaluation is expected to lead to program improvement.

Fiscal Evaluation compares the financial investment needed for a program, with the return on that investment (ROI). This approach is useful only when a change caused by a program can be measured in terms of its effect on the amount of money earned by the organization.

The Accountability Model ensures that sufficient funding is provided to run a program for its intended target population. Although the evaluator seeks to

make the program more effective, the primary mission is to assure that there are enough resources to support it.

The Expert Opinion Model advocates having experts examine the program and rendering judgment about its quality. This approach is especially useful when the entity being evaluated is large, complex, and unique, and when it is difficult to produce a set of numbers indicating the quality of a program.

The Naturalistic Model is a qualitative evaluation that seeks to render rich information about the program's effectiveness. The evaluator collects data about the program and its stakeholders with no preconceived ideas about them, and then writes a lengthy report describing them.

Greene (1994) offers a descriptive categorization of four major paradigms for program evaluation:

Table 1

Major Approaches to Program Evaluation (Greene, 1994)

Philosophical framework	Ideological framework/key value promoted	Key audiences	Preferred methods	Typical evaluation questions
Postpositivism	System theory/efficiency, accountability, theoretical causal knowledge.	High-level policy and decision makers.	Quantitative: experiments and quasi-experiments, systems analysis, causal modeling, cost-benefit analysis.	Are desired outcomes attained and attributable to the program? Is this program the most efficient alternative?

Philosophical framework	Ideological framework/key value promoted	Key audiences	Preferred methods	Typical evaluation questions
Pragmatism	Management/ Practicality, quality control, utility.	Mid-level program managers, administrators, and other decision-makers.	Eclectic, mixed: structured and unstructured surveys, Questionnaires, interviews, observations.	Which parts of the program work well and which need improvement? How effective is the program with respect to the organization's goals? With respect to beneficiaries' needs?
Interpretivism	Pluralism/ Understanding, diversity, solidarity.	Program directors, staff and beneficiaries.	Qualitative: case studies, interviews, observations, document review.	How do various stakeholders experience the program?
Critical normative science	Emancipation/ Empowerment, social change.	Program beneficiaries, their communities, other "powerless" groups.	Participatory: stakeholders participation in varied structured and unstructured, quantitative and qualitative designs and methods; historical analysis, social criticism.	In what ways are the premises, goals or activities of the program serving to maintain power and resources inequities in the society?

The first framework (Postpositivism) represents the historical dominant tradition to program evaluation. The essential questions in this framework are oriented around the macro policy issues of program effectiveness and efficiency.

Greene sees the second framework (Pragmatism) largely as a response to the failure of experimental science to provide decision-makers with useful information as to the value of the program. It aims at providing decision-makers and managers with information that matches their practical needs.

Interpretivism, the third framework, promotes a pluralistic value orientation and relies heavily on qualitative methods. This approach seeks to enhance contextualized understanding of the program. The Critical approach represents the more normative turn in social science. It seeks to illustrate the historical, structural and value basis of social phenomena and influence political and social change.

While the various evaluation models and paradigms above serve a variety of purposes, currently one of the most widely utilized evaluation model in the field of corporate training is based on the work of Donald Kirkpatrick. The four evaluation steps he proposed in a series of articles in *The Journal of the American Society for Training and Development* in 1959 came to be known as Kirkpatrick's Four Levels of Evaluation (Kirkpatrick, 1975). Over the years this work has become the de facto model for evaluating corporate training and is divided into four "Levels" for assessing program effectiveness.

Level I of the Kirkpatrick Model is Reaction. As the word implies, evaluation at this level measures how those who participate in the program react to its various aspects, i.e. how they feel about it. This level is often measured with attitude questionnaires that are distributed immediately after most training

classes. They measure one thing: the participants' perceptions (reactions, feelings) of the training program. Participants might be asked how well they liked the instructor's presentation techniques, the program design, content and how completely the topics were covered, how valuable they perceived each module of the program, or the relevance of the program content to their specific job. They might also be asked how they plan to use their new skills back on the job. If the training program fails to satisfy their needs, a determination should be made as to whether it is the fault of the program design or delivery.

According to Kirkpatrick (1996), it is important to measure participants' reaction in an organized fashion using questions that can be tabulated and quantified, and written comment sheets designed to obtain the desired reaction. In addition, this is important because management often makes decisions about training based on participants' comments.

This level I of the model is not a measure of any learning that took place during the training. Nor is it an indication of the training's return on investment as it does not measure what new skills participants have acquired or if what they have learned will transfer back to their working environments. This has caused some evaluators to downplay its value. However, the interest, attention and motivation of the participants are critical to the success of any training program. People learn better when they react positively to the learning environment (Kirkpatrick, 1996). The more favorable the reactions to a program, the more likely trainees are to pay attention and learn the principles, facts and techniques

discussed.

Level II of the Kirkpatrick Model assesses Learning gains. This can be defined as the extent to which participants change attitudes, improve knowledge, and increase skills as a result of attending a training program. It addresses the question: did participants learn anything? what principles, facts, techniques and/or skills were understood and absorbed by the participants (Kirkpatrick, 1996)? The learning evaluation requires post-testing to ascertain what knowledge and skills were learned during the training. If this is not feasible, other evaluation tools and techniques may be implemented. The post-testing should be combined with pre-testing, so that the evaluator can differentiate between what participants already knew prior to training and what they actually learned during the training program. If possible, Kirkpatrick recommends using a control group. All tests must cover the entire course material.

Measuring the learning that takes place in a training program is important in order to validate the learning objectives. However, though it might indicate whether a program's instructional methods are effective or ineffective, it will not prove if the newly acquired knowledge and skills will be used in the working environment.

Level III of the model measures participant Behavior. This level is defined as the extent to which a change in behavior has occurred because the participants attended the training program. It is commonly referred to as "transfer of training" (Kirkpatrick, 1996). It determines if a behavior change has

occurred by answering the question: do people use/apply their newly acquired knowledge and skills on the job? According to Kirkpatrick (1996a), for a change in behavior to occur, four conditions are necessary:

1. the person must have a desire to change;
2. the person must know what to do and how to make a change;
3. the person must work in the right work climate, and
4. the person must be rewarded for changing.

This level of evaluation involves testing participants' capabilities to perform/apply learned knowledge and skills on the job. Level III evaluations can be performed formally (testing) or informally (observation, surveys, interviews, and/or focus groups).

It is important to measure behavior because the primary purpose of training is to improve performance by changing behavior. New learning is of no value to an organization unless the participants actually use the new knowledge and skills in their work activities. Since Level III measurements must take place after participants have returned to their jobs, the actual assessments will typically utilize someone directly involved with the learner, such as a supervisor. Although it takes a greater effort to collect this data than it does to collect data during training, its value is important to the training department and organization. Behavioral data provide insight into the transfer of learning from the classroom to the work environment, and the barriers encountered when attempting to implement the new techniques learned in the program into the

work place.

Level IV of the model assesses final Results incurred from training. It measures the training effectiveness, and answers the questions of: what impact has the training achieved and is it working and yielding value for the organization? This broad category is concerned with the impact of the program on the wider organizational community. These impacts can incorporate monetary, efficiency, morale and teamwork changes, etc. In a Level IV evaluation, the evaluator expands his/her thinking beyond the impact on the participants who participated in the training program and begins to ask what happens to the organization as a result of the training efforts.

Collecting, organizing and analyzing Level IV information can be difficult, time-consuming and more costly than the other three levels, but the results are often worthwhile when viewed in the full context of its value to the organization.

Table 2 summarizes Kirkpatrick's Evaluation Model:

Table 2

Kirkpatrick's Evaluation Model

Evaluation level	Purpose	Data collection instruments
Level I – Reaction	Obtain participants' input on the training course content, approach, instruction, and outcome of the instruction.	Survey form, Interview, Focus group.
Level II – Learning	Measure the amount of learning. I.e. What participants can do	Pre - & post-test, Survey form, Interview, Focus group.

Evaluation level	Purpose	Data collection instruments
Level III – Behavior	Measure the learning that has been transferred to the job, the change in the behavior as a result of training. I.e. What participants do do.	Observation, Survey form, Interview, Focus group, Pre - & post-test.
Level IV – Results	Measure the course results, impact on the organization.	Survey form, Interview, Focus group, Documents.

As we move through the model from Level I to Level IV, the evaluation process becomes more difficult, time-consuming and expensive, although it provides information that is of increasingly significant value (Kirkpatrick, 1996). Perhaps the most frequently used measurement is Level I because it is the easiest to implement. However, it provides the least valuable data. Measuring results that affect the organization is more difficult and is conducted less frequently, yet yields the most valuable information - whether or not the organization is receiving a return on its training investment. According to Kirkpatrick (1996), it is important to understand all four levels, and that there are no easy answers for knowing how to measure results. Each level should be used to provide a cross set of data for measuring training programs.

Brown (1998) states that evaluators must respond to the new requirements of the organization by implementing all these concepts and evaluating them at multiple levels. The data from Kirkpatrick's Level I is still needed to get feedback on the participants' perceptions of the experience. These data can directly give information for improvement and focus on satisfying the

most visible customer. However, Kirkpatrick's Level III evaluation, which measures the performance of the participant, is important to both participants and their organization. It tells them not only if the training was effective, but also if the training provided an appropriate response to the business problem being addressed.

Kirkpatrick's Level II evaluation (Learning) has probably become less important in today's organizational environment. In the organizational context, learning usually means application of skills and on-the-job performance. When new software is to be learned, it means that employees need to use it. Employees are expected to do something with the knowledge acquired in training.

According to Brown (1998), Kirkpatrick's Level III (Behavior) and Level IV (Results) along with Return On Investment (ROI) (which can be viewed as the ultimate impact, or an additional level of evaluation), are the levels upon which today's organizations have focused. However, most evaluators have done a poor job of measuring these types of results, by doing Level II evaluations, and utilizing tests or certifications as the measurements. Research data show that most evaluations are performed at Level I. In the American Society for Training and Development's benchmarking report (ASTD, 1996), it was reported that 92 percent of courses were evaluated at Level I. The percentages then decreased, 34 percent at Level II, 11 percent at Level III, and 2 percent at Level IV. In a survey reported by Linkage Incorporated, (AME Newsletter, 1996), the

differences are smaller. Only 42 percent of responding companies perform Level I evaluation, 43 percent Level II, 34 percent Level III, and 16 percent Level IV. It is evident that evaluation of any kind is not universally carried out, even though there is a need to justify training.

In a meta-analysis of previous training studies, Alliger and Janak (1989) examine the correlation among the four levels of training effectiveness. Traditionally, researchers and trainers assume that there is a hierarchical causal relationship among the four levels. However, Alliger and Janak found virtually no relationship between participants' reactions and the other levels, though slightly higher correlation among the other levels. Mathieu, Tennenbaum and Salas (1990) reported a significant relationship between learning and performance on the job following the training. They also found that trainee motivation was positively related to learning among individuals who had a positive reaction to the training.

Alliger and Janak (1989) propose an alternative model of causality among Kirkpatrick's four levels of evaluation (See Figure 3). Their model shows that reaction may not cause learning. However, among learning, behavior and results there are some causal links. Learning often relates to behavior since in some cases learning concepts or facts affects the behavior. Moreover, behaviors may cause results, and results are important to the maintenance of behaviors, since people tend to continue forms of behavior that are perceived as effective.

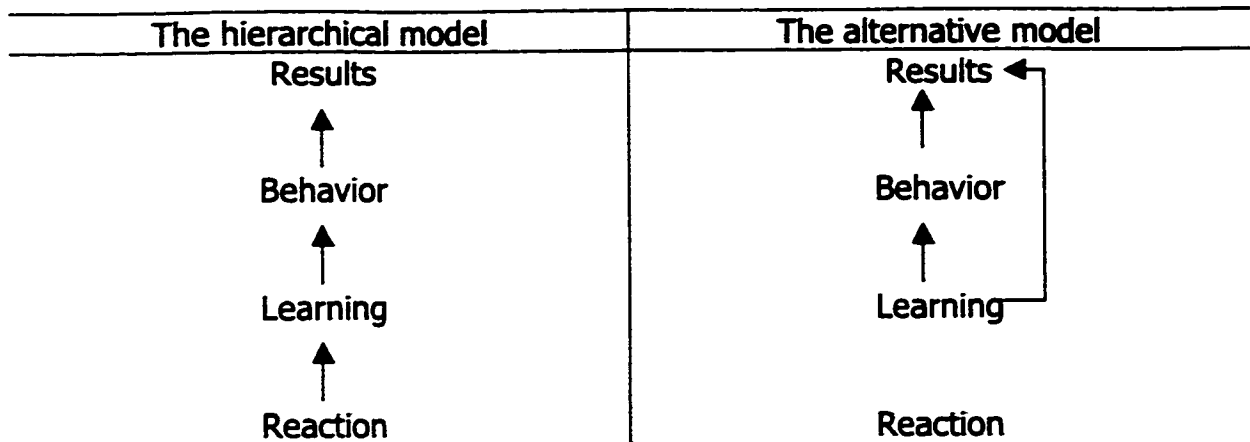


Figure 3. The hierarchical & alternative evaluation model (Alliger & Janak, 1989)

Tannenbaum and Yukl (1992) support Alliger and Janaks' (1989) claims that studies fail to support the direct causal relationship among the four evaluation levels offered by Kirkpatrick. In particular, participants' learning, though appearing to be a necessity, is not a sufficient prerequisite for their on-the-job behavior change. Furthermore, reactions to training do not appear to be directly related to the other criteria (Learning, Behavior and Results). In other words, to like the training program does not imply learning its content. Further research could examine whether participant reactions that focus on the utility or applicability of training are related to any of the other effectiveness criteria of Kirkpatrick.

Holton (1996) also critiques Kirkpatrick's four level model. He claims that the model is too simple, and that it is a taxonomy, a classification scheme rather than a model. Holton proposes his own conceptual evaluation model that measures participants' learning, individual performance and organizational

results. These are defined respectively as: “achievement of the learning outcomes...change in individual performance as a result of the learning being applied on the job, and results at the organizational level as a consequence of the change in individual performance” (Holton, 1996).

Holton’s model assumes that there are three primary influences on learning: participant reactions, motivation to learn and ability. Learning is expected to lead to individual performance change, only when the participant is motivated to transfer the behavior change, has the ability to do so, and the proper environmental conditions are present. This model is outlined in Figure 4.

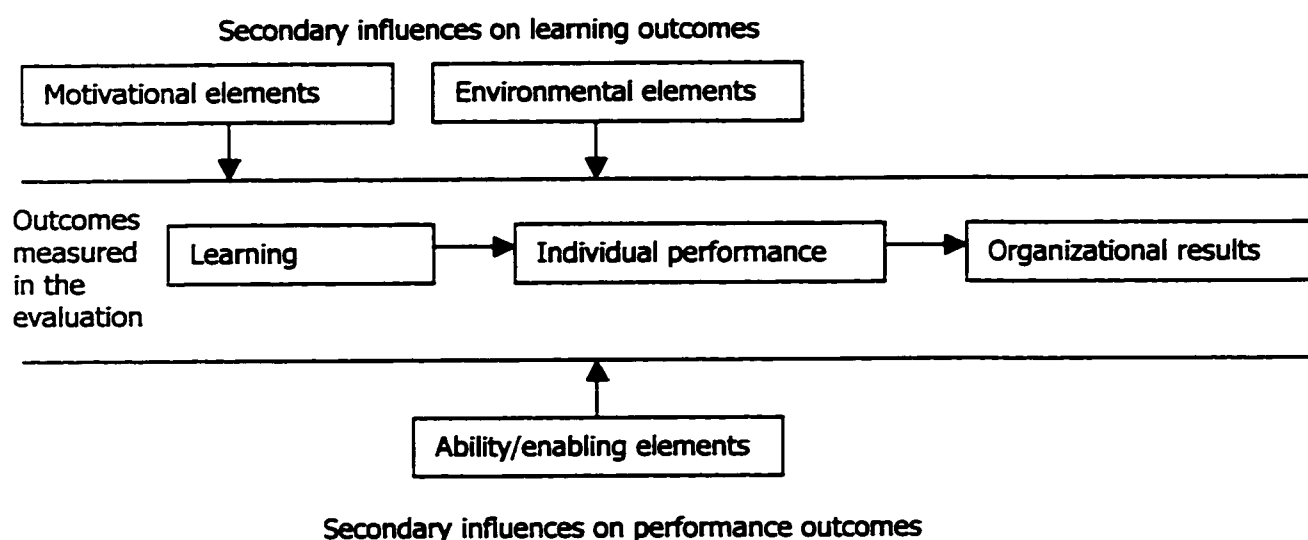


Figure 4. Conceptual evaluation model (Holton, 1998)

Phillips (1998) claims that evaluation must go beyond the four levels, and thus revised the Kirkpatrick evaluation model. Phillip’s primary change is in the addition of a fifth level, which focuses on measuring the program Return On Investment (ROI). The other four levels of the model are slightly modified to

“increase its likelihood of success” (Phillips, 1998). Table 3 illustrates the comparison between Kirkpatrick’s (1975) Levels and Phillip’s (1998) Levels.

Table 3

Kirkpatrick’s Model vs. Phillip’s Model

Kirkpatrick’s levels	Phillip’s levels
1. Reaction	1. Reaction and planned action
2. Learning	2. Learning
3. Behavior	3. Job application
4. Results	4. Business results
	5. Return On Investment (ROI)

Perez (1999) is a strong advocate of the notion that training is not the only factor affecting learning and behavior on the job following training. An individual’s degree of learning and performance may be affected by factors other than the training program. For example, participants may not have the authority and/or tools to perform on the job what they learned in training. There may be a problem with the organization’s management rather than the training program, which causes a lack of learning and/or knowledge application. Therefore, the evaluator must take into account situations seemingly unrelated to training, yet impacting upon its effectiveness.

One way to account for external factors when engaging in evaluation is to employ specific strategies that determine the amount of output performance directly related to the training program. This will consequently increase the accuracy and credibility of the evaluation results (Phillips, 1998). Such strategies could include the incorporation of:

- A control group arrangement to isolate training impact. With this strategy, one group receives training while another similar group does not. The difference in performance of the two groups is attributed to the training program.
- Trend lines to project the specific output variables if training had not been undertaken. The projection is then compared to the actual data gathered after training and the difference represents the estimated impact of training.
- Forecasting models to predict the output variable if no training was conducted. Then, the actual performance of that variable is compared with the forecasted value to estimate the impact of training.
- Superiors of participants that provide estimates or “adjustments” to reflect the portion of participants’ improvement related to the training program.
- Experts to provide estimates of the impact of training on the performance variable based on their previous experience. These experts must be familiar with the type of training and the specific situation.
- Subordinates of participants to identify changes in the work climate that could influence the output variables (results) of training. They can then determine if other variables, which could have influenced output performance, changed in the work climate. This will help isolate the effect of training rather than other variables in the work climate on the participants’ behavior at work.
- Other influencing factors such as participants’ motivation and ability to learn and transfer behavior change. These should be identified and their impact

estimated or calculated, leaving the remaining unexplained improvement attributed to training.

- Customers to provide input on the extent to which training has influenced their desire to use the products or services offered by participants.

Project Management Training

One type of training program that has become popular in recent years, and therefore is being evaluated with increasing frequency, is Project Management (PM). The Project Management Institute (Duncan, 1996) defines Project Management as “the application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project. Meeting or exceeding stakeholders needs and expectations invariably involves balancing competing demands among:

- Scope, time, cost and quality;
- Stakeholders with different needs and expectations, and
- Identified requirements (needs) and unidentified (expectations) requirements”.

According to Duncan (1996) the Project Management knowledge areas include:

- Project integration management;
- Project scope management;
- Project time management;
- Project cost management;

- **Project quality management;**
- **Project human resources management;**
- **Project communication management;**
- **Project risk management, and**
- **Project procurement management.**

Project Management operates in an environment broader than the project itself. In order to manage a project successfully, members of the project team must have basic knowledge about the following aspects of the project (Duncan, 1996):

- **Project phases and the project life cycle;**
- **Project stakeholders;**
- **Organizational influences;**
- **Key general management skills, and**
- **Sociological influences.**

Project phases and life cycle: Projects are usually divided into phases to ease the management process and provide links to the organizations operations. Each phase is marked by completion of a deliverable, i.e. a tangible, work product. Collectively, the project phases are called the project life cycle. The project life cycle defines the beginning and end of a project, and how it will be transferred to the organization's operation. The Project Management team must be aware of the project phases and life cycle to ensure that they are implemented successfully.

The stages of a project life cycle according to Morris (1981) are:

Stage I: Feasibility – project formulation, feasibility studies and strategy, design and approval.

Stage II: Planning and Design – base design, cost and schedule, contract terms and contributions, and detailed planning.

Stage III: Production – manufacturing, delivery, civil works, installation, and testing.

Stage IV: Turnover and Startup – final testing and maintenance.

Figure 5 illustrates Morris' cycle.

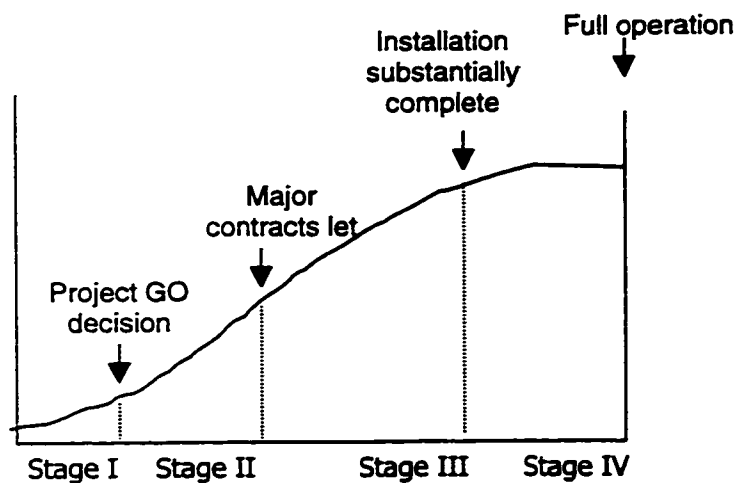


Figure 5. Project life cycle (Morris, 1981)

“Project stakeholders are individuals and organizations who are actively involved in a project and whose interest may be positively or negatively affected as a result of project execution or successful project completion” (Duncan, 1996). The Project Management team must identify the project stakeholders,

determine their needs and expectations, and then manage and influence these expectations to ensure a successful project.

Projects are typically part of an organization larger than the project – corporations, government agencies, professional associations and others. These organizational structures are likely to influence the project. The Project Management team must be aware of how the organization's systems affect the project.

“General management skills provide much of the foundation for building project management skills” (Duncan, 1996). These skills are essential for managing projects. Following are the key general management skills identified by Kotter (1990):

- **Leading:** involves establishing the direction and vision for the future, and strategies needed to produce the desired changes. In addition, “leading” involves aligning the people needed to achieve the vision, and communicating to them the vision for change by words and actions. Leading also includes the ability to motivate and inspire people to overcome barriers to change.
- **Communicating:** involves the exchange of information in a clear, complete and unambiguous manner, so that the receiver receives it in its entirety and understands it.
- **Negotiating:** involves conferring with others in order to come to terms or reach an agreement. In the context of managing a project, negotiation may

be regarding project scope, cost, schedule, objectives, assignments, resources, contract terms and conditions, etc.

- **Problem solving:** involves a combination of problem definition and decision making.
- **Influencing the organization:** involves the ability to “get things done”. It requires understanding the structure of all the organizations involved in the project. Influencing the organization also requires an understanding of the mechanics of power and politics.

The purpose of the present project was to carry out an evaluation of the Project Management training course at IMS Health Canada (Intercontinental Medical Statistics). Over the last 6 years, IMS invested an annual cost of \$58,514 in Project Management training. The company recognized that they need to evaluate the training course and the evaluator offered to do so. Informal data collection on behalf of upper management confirmed that employees are using the skills acquired as a result of the Project Management training course. No formal evaluation of the course was attempted prior to this time.

IMS Health Canada is an organization that collects, codifies and processes information from physicians, pharmacies and hospitals on diagnoses, disease patterns and treatments. The company delivers this information to pharmaceutical companies, government departments, etc. IMS has branches in 91 countries and 2,600 employees. The IMS branch in Montreal has 230 employees and a smaller branch in Toronto has 70 employees.

Kirkpatrick's Four-Level Evaluation model (1975) was used as a framework for the current evaluation. The focus was on measuring participants Reactions, Learning and Behavior. These encompass Levels I, II, and III of Kirkpatrick's model. Level I assessed participants' learning expectations from the training, the degree to which these expectations were met, the effectiveness of the training objectives, instructional methods, training facilities and materials as well as participants' future needs in regards to project management. Level II focused on assessing participants' degree of project management learning in three main areas: defining, planning and implementing a project. Level III assessed the degree to which participants applied what they learned to their job.

CHAPTER II

METHOD

Participants

Participants in the evaluation were 95 male and female employees, who took the Project Management training course at IMS Health Canada over the last 6 years, 4 of their supervisors, and the training instructor. All participants have a high school diploma and some have obtained graduate diplomas and/or masters degrees. Participants in the first Project Management training course received a Project Management software training following the course being evaluated.

Materials

The course evaluated in this project was the Project Management training course given by IMS Health Canada. The course is a customized version of the Kepner Tregoe Project Management training package (1989). The original Kepner Tregoe package teaches technical and interpersonal skills which are considered essential for successful project managing. The technical skills are taught to help participants undergo three phases of Project Management: defining, planning and implementing a project. The interpersonal skills are expected to be utilized by participants as tools throughout the entire Project Management process. The customized version of the training does not teach the interpersonal skills.

The first training session taught the original Kepner Tregoe Project Management training package (1989) and was followed by Primavera PM

software training. From the second session on, the training used the customized version of the Kepner Tregoe package. Initially, the training was offered to as many employees as possible, who are or may be involved in a project team. The purpose was to foster a common project management language among IMS employees. It is still offered to interested employees from all functions of the company, once or twice a year. The course consists of a two-day training and takes place in IMS facilities in Montreal and Toronto. A maximum of 15 employees can register per course. There has yet to be any retraining of employees who took the Project Management training course.

The customized version of the Project Management training course uses a Participant's Workbook (Newhouse, 1998) developed by the course instructor. It teaches the three phases of Project Management:

- Phase one: Defining the project: Project title - including time, cost and performance; Project objectives; Work breakdown structure - activities and sub-activities that have to be completed for the project to be finished; and Resources requirements - skills/knowledge, facilities, equipment and materials.
- Phase two: Planning the project: Assigning responsibilities; Sequencing activities; and Scheduling.
- Phase three: Implementing the project: Launching the project; Monitoring; Modeling; and Closing out.

During the course, participants apply the skills they learn to a current project and complete an "on-the-job action plan" sheet to track their progress.

In order to deliver the course, the instructor uses an Instructor Guide that he designed. It outlines the events that will take place during the course, their time span and the tasks to be performed by the instructor within each event. He uses overheads and a flip chart to highlight key points throughout the course and distributes handouts with practice exercises.

The learning objectives of the IMS Project Management training course, as indicated in the Participant's Workbook, are to have participants:

1. review the three main phases of Project Management;
2. apply the tools in each phase to one or more of their current on-the-job projects, and
3. have a common language with other employees to plan, organize and monitor on-the-job projects.

These objectives include learning basic knowledge, skills and techniques on how to manage projects.

IMS also identified the following employee competencies to be achieved through the Project Management training course (Career Development Planning, 1998):

- Business/technical excellence. "Learning, applying and continuously updating the business/technical knowledge and expertise relevant to one's position; staying on the learning edge by actively keeping abreast of developments at

IMS and in the industry; and leveraging one's knowledge to achieve additional impact and to enhance the success of the organization".

- **Teamwork.** "Working cooperatively within a team and across teams to achieve common goals and to optimize team performance, by actively participating, encouraging and crediting the contributions of others, and taking the initiative to resolve conflicts".
- **Process orientation.** "Defining and developing a process, seeking clarity and order, checking quality, paying attention to details, and documenting work".
- **Product conception and development.** "Understanding client business issues/processes and recognizing business opportunities that could be fulfilled/created through the development of new products; applying product development methodology to create, introduce and sustain profitable new products and new services".

Procedures

Initially, all 95 participants in the Project Management training received a training evaluation Participant Survey Form (See Appendix A). A designated administrator at IMS administered it to participants through inter-company mail, accompanied by a cover letter written by the Vice President of Human Resources explaining the purpose of the evaluation study, a request for their cooperation in completing the survey and an assurance of their anonymity. Participants had approximately two weeks to complete and return the survey forms to the designated administrator at IMS. The surveys were carried to the evaluator.

After the surveys were completed and returned, interviews were conducted with 10 participants either face-to-face or by phone, to further evaluate their degree of learning and on-the-job application of the concepts taught in the Project Management training course. Telephone interviews were utilized with participants from the Toronto branch. Participant Interview Questions can be found in Appendix B.

Four direct supervisors of these participants were also contacted and asked to participate in the evaluation study. They were interviewed regarding their perceptions of the participants' learning and behavior changes on the job since attending the Project Management training. Supervisor Interview Questions can be found in Appendix C.

Concurrent with these one-on-one interviews, the course instructor was interviewed to elicit his reactions and perceptions of the Project Management course. Questions for the instructor can be found in Appendix D.

Finally, one focus group was conducted with three participants to determine the groups' perception of the degree to which participants learned and applied the training to job situations. Questions asked during the focus group can be found in Appendix E.

All face-to-face interviews and the focus group were tape recorded with the consent of the participants, supervisors and instructor.

In order to evaluate immediate Reaction results, the evaluator also reviewed and analyzed data obtained from reaction sheets given to participants

immediately after training took place. The results from these reaction sheets were compared to participants' responses to reaction questions included in the current evaluation survey to determine if a change in the level of participant satisfaction occurred.

Table 4 summarizes the data collection procedures:

Table 4

Data Collection Procedures

Evaluation tools	Delivered to	Rationale	Kirkpatrick's Evaluation Level measured	Type of data
Participant survey form	Participants in the PM training course	Determine degree of satisfaction, learning from training, and transfer to the job.	I, II & III	Reaction Learning Behavior change
Face-to-face & telephone interviews	Participants in the PM training course	Determine degree of learning from training, and transfer to the job.	II & III	Learning Behavior change
Supervisor interview	Supervisors of participants in the PM training course		II & III	Learning Behavior change
Instructor interview	Instructor of the PM training course		II & III	Learning Behavior change
Focus group	Participants in the PM training course	Determine the group's perception of the degree to which participants learned and applied the training to job situations.	II & III	Learning Behavior change
Document review	Evaluator	Evaluate participants' reaction to training.	I	Reaction

Table 5 illustrates the chronology of the various activities that took place during the course of this study.

Table 5

Project Timeline

Task	May			June				July				August		
	3	10	27	1	7	14	21	1	5	12	26	2	16	23
1. Thesis proposal development	***** (5/11 - 5/27)													
2. Thesis proposal revision	* (5/28 - 5/31)													
3. IMS sign off on project timeline and deliverables	May 28													
4. Thesis proposal submission	* (5/31)													
5. Develop survey forms	**** (5/24 - 5/27)													
6. Refine survey forms	* (5/28 - 5/31)													
7. Approve survey forms	* (5/31)													
8. Thesis proposal approval	***** (5/31 - 6/14)													
9. Develop interviews questions	***** (6/1 - 6/7)													
10. Develop focus groups questions	***** (6/1 - 6/7)													
11. Approve interview questions	***** (5/31 - 6/7)													
12. Administer survey forms	**** (6/15 - 6/22)													

Task	May			June				July				August		
	3	10	27	1	7	14	21	1	5	12	26	2	16	23
13. Collect survey forms	* (6/22)													
14. Conduct interviews	**** (6/14 - 6/21)													
15. Conduct focus groups	**** (6/14 - 6/21)													
16. Analyze data	***** (6/21 - 8/1)													
17. Draw conclusions & recommendations from data analysis	**** (8/2 - 8/15)													
18. Thesis submission to Concordia university Masters Thesis Committee	* (8/18)													
19. IMS evaluation report development	**** (8/15 - 8/22)													
20. IMS evaluation report submitted	* (8/23)													

Criterion Measures

The 68 question Participant Survey focused on uncovering specific outcomes and applications of the training (Appendix A). Included were questions related to participants' reaction to the training, their degree of learning and transfer of knowledge and skills learned in the training to the job (Kirkpatrick's Evaluation Levels I, II and III). The survey consisted of 51 Likert-type questions

rated on a five-choice (four-point) scale, from strongly agree to not applicable, and 15 open-ended questions.

Interview questions focused on uncovering similar outcomes and applications of the training as the survey form. All interview questions were semi-structured and carried out as a dialogue. This flexibility and openness allowed interviewees to raise their own questions and themes of interest. Participants' Interviews consisted of 11 questions (See Appendix B). Supervisor Interviews contained 10 questions (See Appendix C), and the Instructor Interview had 14 questions (See Appendix D).

The Participant Focus Group consisted of 13 questions. It involved group discussion of issues related to participants' reaction to the training, their degree of learning and transfer to the job of knowledge and skills learned in the training (See Appendix E). The group discussion was facilitated using semi-structured questions. The discussion was recorded on tape. The Vice President of Human Resources and the Director of Project Management at IMS selected the participants for the interviews and focus group to assure that participants were from the company's various functions and were willing to participate in the above mentioned phases of the evaluation.

Data measured by these evaluation instruments may have been influenced by factors other than the Project Management training course. Thus, the survey form and interviews were designed to incorporate the following

measurements that helped isolate the effect of the Project Management training course being evaluated:

- Questions regarding participants' degree of motivation and ability to learn Project Management knowledge and skills.
- Questions regarding participants' degree of motivation and ability to transfer Project Management knowledge and skills to their job environment.

Data analysis

Data collected from the various instruments were initially coded (for example, P1, P2, etc.) so as to track the various sources of information (Lusthaus, 1999).

Responses to the Likert-type items on the Participant Survey Form were sorted on a 4 (most positive) to 1 (least positive) basis. The response Not Applicable (NA) received a score of 0. A mean, standard deviation and frequency count for each question was then calculated.

Responses to the open-ended questions in the Participant Survey Form were categorized by response-type and the frequency of each response-type was reported. Responses to Participant, Supervisor and Instructor interview questions as well as to the Focus Group questions were calculated in the same manner. Instructor interview responses were reported as received, as there was only one source of data for this measure.

CHAPTER III

RESULTS

Participant Surveys

Out of a total of 95 surveys delivered to participants in the Project Management training, 64 were returned, yielding a response rate of 67%. The data from these surveys indicate participants' reaction to the training, their self-assessment as to the impact of the training on their degree of learning in project management and transfer of that learning to their job environment, i.e. their behavior change due to training, as well as other related issues.

Participants' replies to the closed-ended questions in the survey are shown in Table 6. The percentages of replies are reported in Figure 6. Results concerning participants' reaction to the training convey that prior to the training most participants ($\underline{M}=3.04$) felt a need to improve their project management knowledge and skills and expected the training to achieve their need ($\underline{M}=3.24$). In addition, participants ($\underline{M}=3.06$) expected the training to improve their ability to work within a project team. There was a slightly lower level of agreement among participants ($\underline{M}= 2.75$) that they in fact learned from training what they expected to.

The majority of participants felt the objectives of the Project Management training course were clear at the outset ($\underline{M}=3.01$) and met during the course of the training ($\underline{M}=2.92$). There was a slightly lower level of agreement

Table 6

Reaction Scores: Percentages, Means and Standard Deviations

Question	SA	A	D	SD	NA	Mean	Standard Deviation
1. Prior to attending the PM training I felt the need to improve my PM skills and knowledge.	2%	59%	11%	27%	2%	3.04	0.799
2. I expected the PM training to improve my ability to work within a project.	23%	67%	6%	0%	3%	3.06	0.76
3. I expected the PM training to improve my knowledge of the PM methodology.	31%	63%	6%	0%	0%	3.24	0.56
4. The PM training taught me the skills I needed to learn.	5%	59%	36%	0%	0%	2.70	0.57
5. The PM training taught me the knowledge I needed to learn.	5%	67%	28%	0%	0%	2.80	0.59
6. The course objectives were clear to me.	11%	78%	9%	0%	2%	3.01	0.69
7. The course objectives were met.	8%	70%	16%	0%	2%	2.92	0.80
8. The instructor used the most effective methods for maintaining interest and teaching the desired knowledge and skills.	8%	56%	30%	2%	2%	2.77	0.96
9. The training facilities were satisfactory.	9%	81%	9%	0%	0%	3.09	0.86
10. The instructional materials used during the training were well selected and prepared.	55	70%	22%	0%	0%	2.93	1.02
11. I feel my job requires further PM training.	17%	31%	44%	5%	3%	2.67	1.40
12. I feel my job requires more knowledge on the use of PM software.	23%	27%	38%	5%	8%	2.67	1.63

Note. All items measured on a four-point scale from 4 (most positive) to 1 (least positive) and 0 (not applicable), thus, higher scores are more positive.

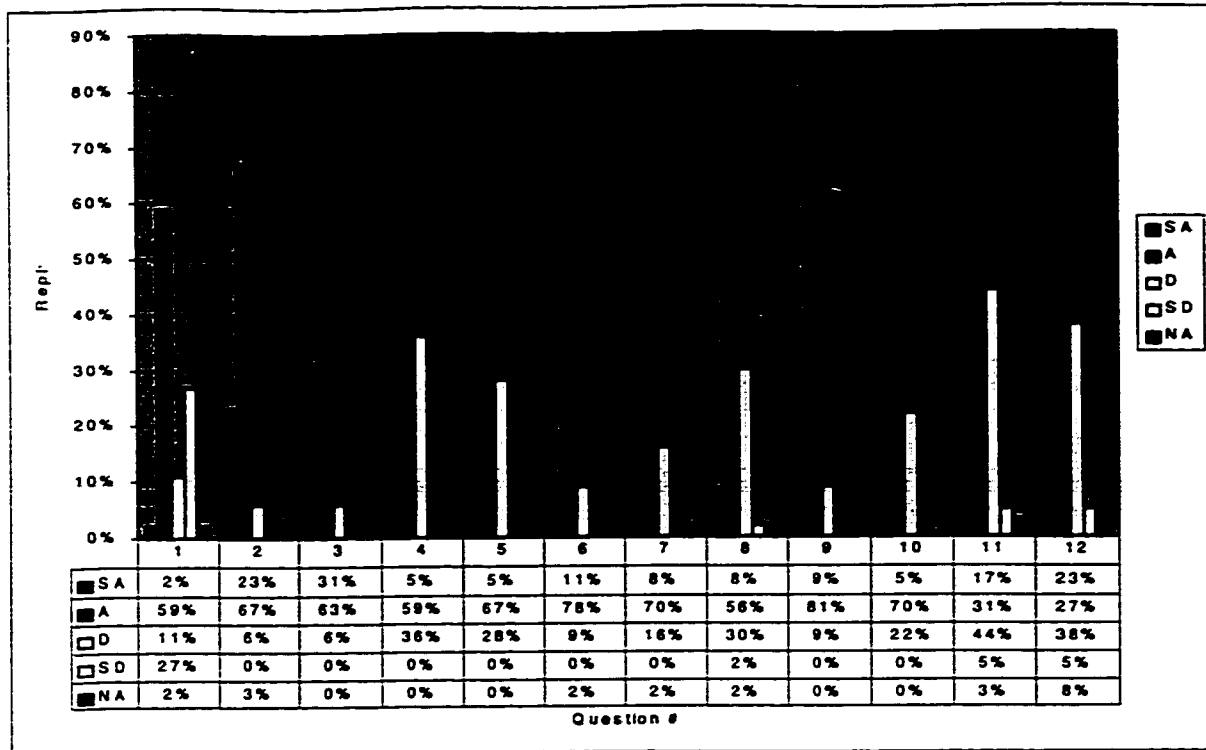


Figure 6. Percentages of Replies: Reaction Questions

(\underline{M} =2.77) that the instructional methods employed by the training instructor were good. Most agreed that the training facilities and materials were adequate (\underline{M} =3.09 and \underline{M} =2.93 respectively).

When asked about a need for further project management training, thirty-one participants of sixty-four (\underline{M} =2.67) felt their jobs required them to participate in such training, thirty-one (48%) disagreed, while two (3%) said this was not applicable to their situation. Thirty-two participants (\underline{M} =2.67) felt that such training should teach how to use a PM software, twenty-seven (42%) disagreed and five (8%) claimed this did not apply to them.

Section B and C of the survey forms attempted to assess participants' specific learning of the project management knowledge and skills taught during training and its application to their job. Table 7 presents the results from the closed-ended questions in section B of the survey regarding participants learning from the training. The percentages of these replies are presented in Figure 7. Questions 1-4 focus on defining a project, questions 5-10 on planning a project and questions 11-16 on implementing a project.

Data from section B reveal that most participants (questions 1-4 \underline{M} =2.71) learned how to define a project. This includes learning how to define a project statement (\underline{M} =2.85), objectives (\underline{M} =2.67), tasks (\underline{M} =2.79) and the roles required to perform these tasks (\underline{M} =2.53).

Table 7

Learning Scores: Percentages, Means and Standard Deviations

Question	SA	A	D	SD	NA	Mean	Standard Deviation
<u>Definition</u>							
1. I know how to define a clear project statement, with measurable start/end points and business outcomes.	14%	73%	2%	0%	8%	2.85	0.964
2. I know how to define measurable objectives and criteria for project success.	6%	73%	9%	0%	9%	2.67	0.960
3. I know how to break a project into specific activities (tasks) with clear begin/end points and well-defined outcomes/deliverables (WBS).	13%	69%	9%	0%	8%	2.79	0.945
4. I know how to define and identify roles/competencies required to perform activities.	2%	70%	16%	0%	9%	2.53	0.947
Total						2.71	0.009
<u>Planing</u>							
5. I know how to identify and secure the right people within the organization that match the required roles/competencies.	3%	48%	30%	6%	11%	2.31	1.081
6. I can accurately estimate the effort required by resources to complete activities.	0%	45%	41%	3%	8%	2.33	2.983
7. I know how to optimize the amount of effort and number of resources to meet deadlines.	5%	41%	44%	2%	8%	2.40	1.079
8. I know how to optimize the sequence of activities in order to balance resource utilization (availability), in compliance with deadlines and overall cost.	5%	39%	38%	0%	13%	2.35	1.246
9. I know how to define special activities in order to minimize identified risks and/or to minimize their impact.	3%	45%	30%	0%	14%	2.37	1.355
10. I can clearly define and communicate the project organization structure, membership within the project team, and clear roles and responsibilities for all participants.	9%	63%	16%	0%	11%	2.71	1.396

Question	SA	A	D	SD	NA	Mean	Standard Deviation
Total						2.41	0.167
<u>Implementation</u>							
11. I know how to schedule, plan and conduct productive meetings with clear objectives and the right participation, which result in clear actions/decisions.	6%	64%	17%	0%	8%	2.76	1.385
12. I know how to consistently document and communicate outstanding issues, decisions, action items and their impact on the project's objectives/deliverables, cost and time constraints.	6%	58%	23%	0%	8%	2.71	1.493
13. I know how to track progresses against the plan, identify deviations and formulate corrective actions on a weekly basis.	3%	53%	25%	0%	14%	2.50	1.720
14. I know how to use Project Management software to maintain up to date, the base plan and subsequent modifications in order to establish on a weekly basis estimated completion dates and costs.	5%	11%	48%	22%	11%	1.95	1.817
15. I know how to effectively balance intensity of efforts, amount of overtime and adherence to deadlines, while maintaining a healthy team morale, a positive team spirit and avoiding burn-out of individuals throughout the project life cycle.	2%	27%	48%	2%	16%	2.15	1.941
16. I know how to conduct productive and useful projects review sessions to gather lessons learned and best practices to be leveraged in future projects.	2%	50%	27%	2%	14%	2.47	2.028
Total						2.42	0.251
<u>General</u>							
17. I feel that I learned what the program intended to teach.	6%	66%	23%	0%	3%	2.94	1.923
18. I feel I remember what I learned in the course.	6%	53%	31%	3%	2%	2.86	2.051

Question	SA	A	D	SD	NA	Mean	Standard Deviation
19. During the training program I had opportunities to practice the training on the job.	6%	45%	38%	3%	6%	2.68	2.260
20. During the training program I was motivated to learn the PM knowledge and skills taught.	13%	73%	9%	0%	2%	3.25	2.229

Note. All items measured on a four-point scale from 4 (most positive) to 1 (least positive) and 0 (not applicable), thus, higher scores are more positive.

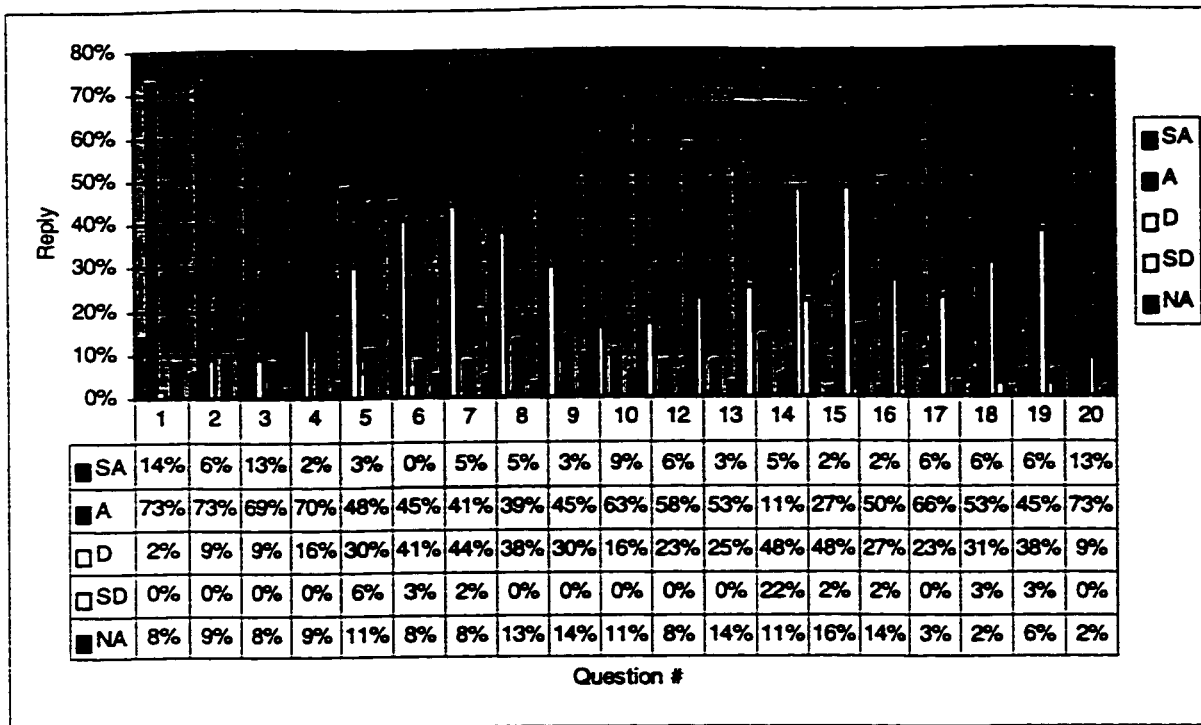


Figure 7. Percentages of Replies: Learning Questions

There was a slightly lower level of agreement (questions 5-10 \underline{M} =2.41) regarding participants' learning of how to plan a project. A small majority (\underline{M} =2.31) learned how to identify the appropriate people to serve on a project's team. A little less than half learned how to estimate the amount of effort required to complete project tasks (\underline{M} =2.33) and optimize it if necessary (\underline{M} =2.40), optimize the sequence of activities to balance resource utilization to meet a project's deadline (\underline{M} =2.35) and plan for risks that may arise in the process of a project (\underline{M} =2.37). Yet, most participants (\underline{M} =2.71) learned how to clearly define and communicate the structure of a project including the roles of its members.

Responses varied with respect to learning how to implement a project, (questions 11-16 \underline{M} =2.42). Most participants stated that they learned how to schedule plan and conduct project meetings (\underline{M} =2.76), document and communicate issues that arise in the course of a project (\underline{M} =2.71), track the progress of a project against its plan as well as formulate corrective actions (\underline{M} =2.50) and conduct productive project reviews for purposes of improvement (\underline{M} =2.47). However, most participants (\underline{M} =1.95) did not learn how to use a PM software and half (\underline{M} =2.15) did not learn how to effectively balance the effort of a project while maintaining a positive team moral.

Overall, participants learned from the training what it intended to teach (\underline{M} =2.94) and remembered its content (\underline{M} =2.86). Forty-two (\underline{M} =2.48) learned how to apply the project management skills to their jobs. A little over half of the

participants ($\underline{M}=2.68$) agreed to have practiced what they learned in the course of the training. Most ($\underline{M}=3.25$) claimed that during the training they were motivated to learn about project management.

Table 8 presents the results from the closed-ended questions in section C of the survey regarding participants' application of what they learned to their job. The percentages of replies are presented in Figure 8.

Replies in section C indicate that most participants (questions 1-4 $\underline{M}=2.23$) applied the knowledge of how to define a project. They defined a project's statement ($\underline{M}=2.25$), objectives ($\underline{M}=2.32$), tasks ($\underline{M}=2.29$) and roles ($\underline{M}=2.06$). However, knowledge of how to plan and implement a project was applied to a lesser degree to participants' jobs (questions 5-10 $\underline{M}=2.02$; questions 11-16 $\underline{M}=2.03$). A small majority ($\underline{M}=2.03$) said they applied the knowledge of how to plan a project, which includes identifying project team members. About half claimed to have estimated a project's resources ($\underline{M}=2.08$) and optimized them to meet deadlines ($\underline{M}=1.91$). There was a lower level of application ($\underline{M}=1.88$) of the knowledge of how to optimize the sequence of activities to balance resource utilization and half ($\underline{M}=2.15$) claimed to have planned project risks as a result of the training. Forty-six participants ($\underline{M}=2.05$) felt they clearly defined and communicated a project's structure.

As to implementation skills, most participants ($\underline{M}=2.33$) applied the knowledge of how to schedule, plan and conduct productive meetings to their job. Fewer documented and communicated projects' issues consistently

Table 8

Application Scores: Percentages, Means and Standard Deviations

Question	SA	A	D	SD	NA	Mean	Standard Deviation
<u>Definition</u>							
1. I apply my knowledge of how to define a clear project statement, with measurable start/end points and business outcomes.	13%	72%	2%	0%	13%	2.25	1.425
2. I apply my knowledge of how to define measurable objectives and criteria for project success.	6%	73%	8%	0%	13%	2.32	1.388
3. I apply my knowledge of how to break a project into specific activities (tasks) with clear begin/end points and well-defined outcomes/deliverables (WBS).	13%	67%	9%	0%	9%	2.29	1.323
4. I apply my knowledge of how to identify roles/competencies required to perform activities.	3%	63%	19%	0%	13%	2.06	1.412
Total						2.23	0.045
<u>Planing</u>							
5. I apply my knowledge of how to identify and secure the right people within the organization that match the required roles/competencies.	3%	48%	30%	5%	13%	2.03	1.378
6. I apply my knowledge of how to accurately estimate the effort required by resources to complete activities.	0%	45%	39%	2%	11%	2.08	1.382
7. I apply my knowledge of how to optimize the amount of effort and number of resources to meet deadlines.	5%	41%	41%	2%	11%	1.91	1.510
8. I apply my knowledge of how to optimize the sequence of activities in order to balance resource utilization (availability), in compliance with deadlines and overall cost.	5%	42%	33%	0%	14%	1.88	1.603
9. I apply my knowledge of how to define special activities in order to minimize identified risks and/or to minimize their impact.	3%	45%	30%	0%	14%	2.15	1.603

Question	SA	A	D	SD	NA	Mean	Standard Deviation
10. I apply my knowledge of how to clearly define and communicate the project organization structure, membership within the project team, and clear roles and responsibilities for all participants.	9%	63%	14%	0%	13%	2.05	1.765
Total						2.02	0.148
Implementation							
11. I apply my knowledge of how to schedule, plan and conduct productive meetings with clear objectives and the right participation, which result in clear actions/decisions.	5%	66%	16%	0%	9%	2.33	1.767
12. I apply my knowledge of how to consistently document and communicate outstanding issues, decisions, action items and their impact on the project's objectives/deliverables, cost and time constraints.	6%	56%	23%	0%	9%	2.37	1.815
13. I apply my knowledge of how to track progresses against the plan, identify deviations and formulate corrective actions on a weekly basis.	3%	56%	20%	0%	16%	2.01	1.993
14. I apply my knowledge of how to use Project Management software to maintain up to date, the base plan and subsequent modifications in order to establish on a weekly basis estimated completion dates and costs.	5%	13%	47%	20%	13%	1.54	2.045
15. I apply my knowledge of how to effectively balance intensity of efforts, amount of overtime and adherence to deadlines, while maintaining a healthy team morale, a positive team spirit and avoiding burn-out of individuals throughout the project life cycle.	2%	28%	45%	2%	19%	1.89	2.190

Question	SA	A	D	SD	NA	Mean	Standard Deviation
16. I apply my knowledge of how to conduct productive and useful projects review sessions to gather lessons learned and best practices to be leveraged in future projects.	2%	50%	25%	2%	16%	2.01	2.281
Total						2.03	0.201
<u>General</u>							
17. After the training I was motivated to transfer the PM knowledge and skills I learned to my job.	8%	66%	19%	0%	6%	2.65	2.298
18. The training taught me the manner in which to apply the new PM knowledge and skills on the job.	6%	59%	25%	2%	5%	2.48	2.340
19. The conditions in my work environment provide me with the opportunity to transfer the PM knowledge and skills I learned during training.	8%	44%	34%	3%	9%	2.33	2.557

Note. All items measured on a four-point scale from 4 (most positive) to 1 (least positive) and 0 (not applicable), thus, higher scores are more positive.

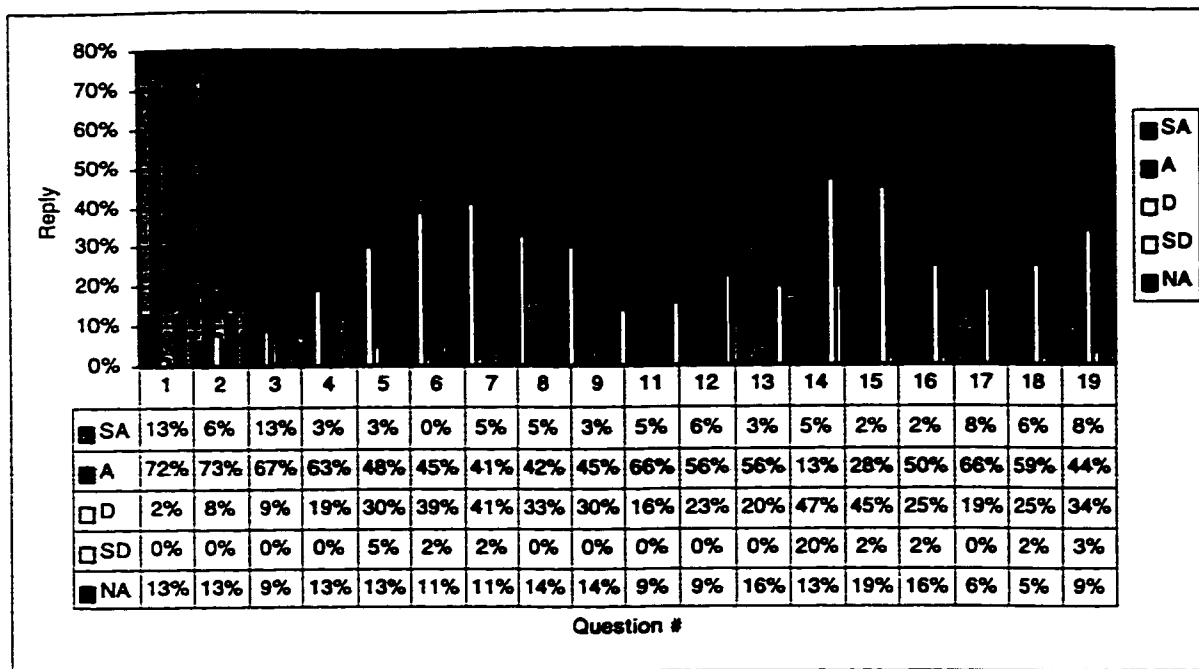


Figure 8. Percentages of Replies: Application Questions

(\underline{M} =2.37), tracked their progress against the plan (\underline{M} =2.01) and conducted productive project reviews (\underline{M} =2.01). The majority of participants (\underline{M} =1.54) did not use a PM software to manage their projects. A little less than half (\underline{M} =1.89) did not apply the knowledge of how to balance the intensity of a project's efforts and overtime while maintaining a positive team spirit through the life of a project. Only nineteen of sixty-four (30%) said they were able to do so on their job.

Thirty-three participants (\underline{M} =2.33) agreed that their work environment provided them with the opportunity to utilize the knowledge acquired during training. Forty-seven (\underline{M} =2.65) felt motivated to transfer what they learned to their jobs following the training.

Participants' responses to the open-ended questions in the survey are reported in Table 9. All sixty-four participants (100%) indicated that they felt the objective of the Project Management training course was to provide them with a basic overview of the phases of project management that could be implemented to their jobs to achieve successful results. This objective was comprised of teaching a standardized methodology to define a project, plan its activities and monitor its process while employing a common project management terminology.

Four participants (6%) said the objective was also to provide them with an opportunity to implement the theoretical background taught in real-life projects, and three (5%) added that that the course intended to teach how to

Table 9

Participant Surveys: Replies to open-ended Questions

Question	Replies
<u>Training Objectives</u>	
1. What were, in your opinion, the objectives of the PM training?	<p>Provide a basic overview of the phases of project management (64)</p> <p>Teach how to develop contingency plans (3)</p> <p>Provide an opportunity to implement the theoretical background taught (4)</p> <p>Teach how to schedule a series of events (2)</p> <p>Teach how to use the Gantt chart (1)</p> <p>Teach PM software (1)</p>
Were they met?	<p>Yes (27)</p> <p>No (4)</p> <p>No reply (33)</p>
<u>Learning</u>	
2. Did the program give you any other benefits? If so, what were they?	<p>A basic methodology to manage projects in an organized and structured manner (35)</p> <p>Use the WBS tool (13)</p> <p>PM concepts (12)</p> <p>Problem identification (7)</p>
3. What knowledge and skills were taught in the training?	<p>Schedule and sequence project tasks (6)</p> <p>Write proper project objectives (5)</p> <p>Learn types of projects done at IMS and how they are managed(5)</p>
4. What do you feel was the most important thing you learned in the PM training course?	<p>Resource planning (4)</p> <p>Communication skills (4)</p> <p>Assign roles to tasks and monitor their progress (2)</p> <p>Create a project network (1)</p> <p>Identify dependencies among project tasks (1)</p> <p>Identify the critical path and milestones (1)</p> <p>Analyze problems (1)</p> <p>Implement a project (1)</p> <p>Prepare project deliverables (1)</p> <p>Document and communicate results (1)</p> <p>The importance of keeping open communication channels between project members throughout the life of a project (1)</p>

Question	Replies
5. What did you not learn that you expected to learn?	Use a PM software (12) Apply the PM methodology to real life projects (6) IMS requirements in regard to PM (2) Manage large scale projects (1) Work within time and resource limitations using the project management methodology (1) Plan for and allocate a project's resources and how to measure its success (1) Teach others about managing projects (1) Did not learn anything new (1)
<u>Application</u>	
6. What actions/behaviors were you expected to perform on the job following the training?	Use the PM methodology to manage projects (23) Use the WBS tool (18) Define project goals (8) Resource allocation (5) Schedule tasks (4) Monitor project activities (2) Teamwork skills (2)
7. What elements of the PM training course have been most useful to you in your performance on the job?	Document and communicate project results (2) Sequence a project's activities in a logical order (1) Prioritize activities (1) Assign roles to tasks (1) Analyze potential problems that may arise during the process of a project (1) Put the elements of a project into a PM software (1)
8. Do you feel the training helped you in your job as a PM? Why or why not?	Did not implement what was taught (14) Use the knowledge to organize and manage everyday business as usual (BAU) activities (8) Training was not useful to job performance (7)

Question	Replies
<u>Recommendations</u>	
9. What can be done to improve the program?	<p>Provide different levels of PM training geared to individual needs and requirements (5)</p> <p>Create a basic and advanced PM training for members on project teams and project managers respectively (1)</p> <p>Create a subset of the current training for all employees (1)</p> <p>Offer the current training only to employees who participate in project teams (2)</p> <p>Offer the current training only to employees with no PM knowledge (1)</p> <p>Shorten the training sessions (4)</p> <p>Lengthen the training session (4)</p> <p>Shorten the duration of a day of training (3)</p> <p>Deliver training off IMS facilities (1)</p> <p>Enhance the training program to teach how to manage projects (7)</p> <p>Teach how to use a PM software (16)</p> <p>Link training to a PM software (3)</p> <p>Provide participants with reading materials on PM (15)</p> <p>Use business and IMS examples (12)</p> <p>Use a "case" project for all participants to work on (1)</p> <p>Use a project that failed to understand why (1)</p> <p>Teach how to put confidence intervals around the projects critical path to determine the chance of its completion on a certain date (1)</p> <p>Teach how to anticipate obstacles that may confront a project manager (1)</p> <p>Teach how to plan for contingencies (1)</p> <p>Teach how to allocate resources (1)</p> <p>Teach how to estimate a project's timeframe (1)</p> <p>Teach what makes a project successful (1)</p> <p>Teach how to assess a project (1)</p> <p>Spend more time on applying the skills taught to actual projects (1)</p> <p>Provide a refresher session (5)</p> <p>Ensure participants have a chance to implement what they learned when back on the job (2)</p>

Question	Replies
PM needs	
10. What are your current needs in regards to PM training?	PM software training (17) Refresher of PM software training (1) Advanced PM training on how to perform as project managers (6)
11. Do you feel a need for further PM training in order to improve your on the job performance? If yes, what should the training include?	Teach how to estimate the duration of project tasks (4) How to estimate necessary resources (3) How to handle various projects simultaneously (2) How to manage risks and take corrective actions (2) How to cost projects (2) How to cope with cross-functional project teams (2) How to define the roles of participants on project teams (1) How to track the process of a project (1) How to identify dependencies (1) How to apply the methodology taught to real life projects (1) How to determine what makes a project successful (1) How the project management process that was taught relates to IMS projects and issues (4) Focus the training on how to handle projects in different departments at IMS (4) What other methodologies to project management exist (2) Project management information from books and articles (1) Refresher session (7) Mentoring on PM (1) No need for further PM training (17) Not applicable (5) No reply (5)
Comments	
9. In general, what was your opinion of the PM training program?	Instructor and information very engaging and interesting (3) Good instructional materials (2)

Note. Questions 2, 3 & 4 were grouped to produce results about what participants learned from the training. Questions 6, 7 & 8 were grouped to produce results about what participants applied on the job. Questions 10 & 11 were grouped to produce results about participants' future needs in regard to PM training.

develop contingency plans. Two (3%) participants felt the objective was to teach how to schedule a series of events in order to complete a project on time and another (2%) mentioned that the objective was to teach how to use the Gantt chart and identify milestones within a project. One participant (2%) thought the objective was to teach a PM software though this was not accomplished in the training in question.

In the sixty-four returned surveys, twenty-seven participants (42%) stated that the objectives of the training were met. Four (6%) said the objectives were not met, four (6%) said they were partially met and thirty-three (51%) did not answer the question. A reason for the high level of non responses may be that the question "what were the objectives of the training" appeared in the same line as the question "were the objectives met", rather than as an independent question.

Thirty-five participants (48%) stated that they learned from the Project Management training a basic methodology to manage projects in an organized and structured manner. This encompassed how to define and plan a project in a way that assured that all necessary elements are taken into account initially. Thirteen participants (20%) stated they learned how to use the Work Breakdown Structure (WBS) tool to determine project tasks. Twelve (19%) claimed they learned from the training basic project management concepts such as project objectives, milestones, time line and critical path, and seven participants (11%) learned problem identification and contingency planning.

Six participants (9%) learned how to schedule a project's tasks and sequence them appropriately, and two (3%) mentioned they learned to do so using the Gantt chart. Five (8%) said they learned how to write proper project objectives. Four participants (6%) felt they learned how to prioritize a project's tasks, and two (3%) added that they learned how to assign roles to each task and monitor their progress. Another four (6%) learned resource planning, four (6%) learned communication skills and six (9%) learned teamwork skills that are a subset of communication skills.

Among the skills individual participants claimed to have learned in the training are: how to create a project network, identify dependencies among project tasks, identify the critical path and milestones, analyze problems, implement a project, prepare project deliverables, document and communicate results and the importance of keeping open communication channels between project members throughout the life of a project. Five participants (8%) stated that the training provided them with an opportunity to learn about different types of projects done at IMS and how other employees with diverse experiences handle them.

Two participants (3%) stated that, since they had previous project management training and experience, it was difficult to determine if their project management knowledge and skills are due to the training in question. Three others (5%) emphasized that the Primavera PM software training, which followed the first session on the training evaluated in this study, was overwhelming and

so could not be learned properly and applied to their work. One participant (2%) felt he/she did not learn anything new from the training.

Twelve participants (19%) said that they expected to learn during training how to use a PM software to assist them when managing projects, however this was not incorporated into the training content. One (2%) noted that this was due to lack of time. Another participant (2%) expected to learn how to use a PM software to define a project's critical path.

Six (9%) claimed that contrary to their expectations, the training did not teach how to apply the methodology taught to manage real projects. They would have liked to receive more concrete knowledge of how to manage projects. Two (3%) wanted to learn what are IMS's requirements and techniques to manage projects. Another (2%) said the training taught how to manage small projects rather than projects of any larger magnitude.

Other project management skills participants expected to learn, though not taught in the training are: how to work within time and resource limitations using the project management methodology, how to plan for and allocate a project's resources and how to measure its success. One participant (2%) said that not enough time was devoted during training to practice what they learned and another (2%) claimed he/she did not acquire enough knowledge to teach others about managing projects.

When indicating their level of transfer of the project management knowledge and skills, twenty-three participants (36%) said they have

implemented the basic project management knowledge to plan, organize and manage projects, especially small-scale ones in order to control workload effectively. Eighteen (28%) utilized the WBS tool to lay out the tasks necessary to complete a project, though one of them (2%) added that he already knew how to do this before training. Eight participants (13%) implemented the knowledge of how to define project goals and determine ways to achieve them at the outset of a project. Five (8%) applied the knowledge of how to determine what resources are required for each project task in order to complete them. Four (6%) implemented the knowledge of how to schedule tasks to determine a project time frame, and two (3%) implemented the skills acquired to monitor project activities. Two participants (3%) employed the teamwork skills they learned to assist their project team, and two others (3%) documented and communicated project results as taught in training.

Other project management knowledge exercised by participants following the training include: sequencing of a project's activities in a logical order, prioritizing activities, assigning roles to tasks, analyzing potential problems that may arise during the process of a project, and putting the elements of a project into a PM software to be available to all project team members.

Fourteen participants (22%) stated that they did not have an opportunity to implement what they learned in training to their job because they do not manage projects. Two of them (3%) said that only now do they have such an opportunity and thus would like to retake the course to be able to implement

what was taught appropriately. Another (2%) said that his/her job does not require the use of project management skills and knowledge. Nevertheless, eight of these participants (13%) mentioned that they used their general understanding of project management and its jargon to organize and manage their everyday work. One (2%) said that he/she used this knowledge to contribute to projects when acting as a member of a project team. Thirteen participants (20%) did not respond to the questions regarding the application of the training to their job.

Seven participants (11%) claimed that the training did not contribute to their job performance. Five of them (8%) explained that this was due to the fact that the training was too basic for their needs when managing projects, especially large ones. Two others (3%) said the training was not helpful to their job because it was very basic and they had previous project management knowledge and experience from which they acquired the basics.

Five participants (8%) recommended to break the training into different levels, geared to the different roles employees play on a project team and to their diverse requirements. Another (2%) recommended having advanced, intermediate and basic training courses to address the different needs of employees based on their previous project management knowledge and skills. A variation of this recommendation was to produce two types of training programs: a comprehensive training designated for project managers and a shorter one for participants on project teams. One participant (2%) commented that IMS should

create a subset of the current Project Management training for all IMS employees to provide them with background information on the process of managing projects. This information is essential when working on a project team. Another participant (2%) noted that the current training was very basic and thus should be classified as an entry-level course, targeted to people with no previous project management knowledge or experience rather than to all IMS employees. Two participants (3%) claimed that the training should be offered only to participants who are going to participate in a project team and implement what was taught following the training.

Four participants (6%) who were in the three-day training session said it should be shorter, as it was difficult to be away from daily responsibilities for three days straight. Four (6%) who were in the two-day training recommended extending it to three days so participants have a chance to absorb the content better. Three others (5%) recommended shortening the duration of a day of training by adding an extra day or pre-selecting the relevant projects to be worked through during training. This will enable participants to complete the projects selected in the time frame available for training, which was a concern for one participant (2%).

Seven participants (11%) recommended constructing the course as an advanced project management training by incorporating into it more details that teach how to actually manage projects. The training in question was too basic for project managers' needs. Sixteen (25%) advocated the notion that the training

should teach how to use a simple PM software that will assist managers in managing projects effectively. Three (5%) recommended adding to the training a component that will link the project management methodology taught to the PM software adopted by IMS. Fifteen participants (23%) thought it would be advantageous to provide participants with good reading materials before the training, and information on "best practices" and other perspectives to manage projects during training.

Twelve participants (19%) recommended that the training use examples that are more closely related to IMS-type projects and/or the "business world" which participants could relate to. One (2%) mentioned that the training might introduce a "case project" that all groups work on, rather than have each group work on a different project. This will allow them to compare results and reduce the number of variables involved so they can focus on the core information essential for managing projects successfully. Another (2%) recommended incorporating a case study of a project that failed and asking participants to discover why.

Other recommendations made to improve the training content include, to teach how to put confidence intervals around the projects critical path to determine the chance (in percentage) of its completion on a certain date, anticipate obstacles that may confront a project manager, plan for contingencies and allocate resources, estimate a project's time frame, focus on what makes a

project successful, how to assess the project, and spend more time on applying the skills taught to actual projects.

Five participants (8%) recommended providing those who took the training with a half-a-day refresher session of the key elements taught. Another two (3%) said IMS should find ways to assure that the skills and knowledge acquired during training are practiced on the job in real-life project situations. One (2%) felt that a survey should be delivered to participants who took the training after they first had a chance to apply the skills and knowledge learned to their job.

Seventeen participants (27%) expressed a need for training on how to use an effective PM software to track the process of a project. One of them (2%) would like to learn how to implement the project management methodology taught in the training while using a PM software tool. Another (2%) indicated that this software should be installed immediately following the training on the participants' computers, so they can practice using it. One participant (2%) who received the software training felt a need for a refresher session on that training.

Six participants (9%) stated that they needed a more advanced and sophisticated training program that will teach them how to perform as project managers. One (2%) suggested using a training program from another company for this purpose. Other project management skills participants felt they needed to learn are, how to estimate the duration of project tasks (6%), estimate necessary resources (5%), handle various projects simultaneously (3%), manage

risks and take corrective actions (3%), cost projects (3%), cope with cross-functional project teams (3%), define the roles of participants on project teams (2%), track the process of a project (2%), identify dependencies (2%), apply the methodology taught to real-life projects (2%) and determine what makes a project successful (2%).

Four participants (6%) felt they required training on how the project management process that was taught relates to IMS projects and issues. Four (6%) added that the training should focus specifically on how to handle projects in different departments at IMS. Two participants (3%) would like to learn what other methodologies for project management existed, and one (2%) expressed a need for project management information from books and articles to keep up-to-date about what is happening in the world in regards to project management.

Seven participants (11%) needed a refresher course to remind them of the main elements taught, and one (2%) explained that this was due to the fact that currently his/her job requires more use of project management methodology. One (2%) felt a need to have the ability to access ongoing coaching and mentoring to improve project management performance.

Seventeen participants (27%) stated that they had no need for future training on project management and five (8%) said that future project management training was not applicable to their situation. Two (3%) of them explained that this was due to the fact that they were not involved in project-type work. Five participants (8%) did not reply to the questions related to future

project management needs, either because it was not applicable to them or they did not bother filling in the open-ended questions.

Three participants (5%) commented that the training instructor was very engaging and motivating. The information presented was interesting, well structured and easy to follow. Another two (3%) mentioned that the instructional materials were good and useful. One of the participants (2%) thought the training materials could be improved, and another (2%) remarked that it would be more efficient if all future training takes place away from the IMS work-site and moved to another.

Participant Interviews

Results from the interviews conducted with ten participants in the Project Management training course are categorized and reported in Table 10. According to these participants, the main objective of the Project Management training was to provide them with a general overview of project management. This includes the key fundamentals for managing projects successfully: project management concepts and methodology. Two noted that the course intended to develop a common project management language among participants. Another two felt that the objective was also to teach how to create a WBS, build proper timelines and identify milestones. Furthermore, two were of the opinion that the training was geared at providing them with an opportunity to practice what they learned by having to build a project from scratch as a training exercise. One added that it intended to teach contingency planning and team skills, and another emphasized

Table 10

Participant Interviews

Question	Replies
<u>Training objectives</u>	
1. In your opinion, what were the objectives of the PM training program?	Provide participants with a general overview of project management (10) Develop a common project management language among participants (2) Teach contingency planning and team skills (1) Teach how to create a WBS, build proper timelines and identify milestones (2) Provide participants with an opportunity to practice what they learned (2)
2. Do you think the program met its objectives? Why?	Yes (10)
<u>Learning</u>	
3. What did you learn from the PM training program?	Basic project management concepts, and a basic framework to manage all projects (10) Teamwork skills (5) Assign times to tasks and monitor them to keep track of their progress (4) The importance of writing proper project objectives (3) Assign roles to each task (3) Identify and allocate resources to project task (3) The importance of involving all members of a project team in planning a project (3) Prioritize a project's tasks (1) Identify and determine dependencies among tasks, the milestones and the critical success factors of a project (1). The importance of thinking of the basic elements of a project at its start before getting into the details (1) Define a project scope and identify the necessary resources at the planning stage (1) How other departments manage projects (1) Learned only the basics of PM, which is not sufficient to manage extensive projects (5)

Question	Replies
<u>Training impact</u>	
4. What impact do you feel the program had on you? On the organization? Why/How?	<p>Very little impact (1) Was a review (1)</p> <p>Ensured that everyone at IMS utilizes the same project management framework, language and techniques to small projects (10) Not sufficient knowledge to manage projects (10) Improved the way business issues are handled (1) Improved the way managers manage their projects, in particularly in the IT department (1)</p>
<u>Application</u>	
5. Did you apply what you learned? How?	<p>Apply the generic framework to manage projects (10) Use WBS tool (10) Apply framework to the early stages of managing a project (1) Apply PM skills to daily business issues (1) Do not utilize the timeline tool (1) Did not have an opportunity to use and apply what was learned in training to the job (1)</p>
6. What did you like best about the PM training program?	<p>The use of real life examples taken from their work environment (5) Hands-on approach (4) The fact the training provided them with an opportunity to meet people from different departments, to work together to build and manage a project (3) The simplification of the real life examples to explain the fundamentals of project management (2) The instructors' informal teaching style and the good feedback (2) Instructional materials (1) Learning how to write projects objectives and use the WBS tool (1)</p>

Question	Replies
Recommendations	
7. What recommendations would you suggest for improving the content of the PM training program?	<p>IMS should offer two different types of Project Management training programs: A basic training and a more intense training (3)</p> <p>Create a detailed and comprehensive Participant Workbook (2)</p> <p>Include the instructors' course notes in the Participant Workbook and make it look more professional (2)</p> <p>Deliver the training over a more extensive period of time (2)</p> <p>Incorporate in the training instruction on resource planning, financial planning, influencing, negotiating, communicating and handling difficulties (1)</p> <p>Teach the process of preparing a project for presentation to different stakeholders (1)</p> <p>Design the training to target the specific needs of individual departments (1)</p> <p>Make the training more interactive (1)</p> <p>Adapt throughout IMS a standardized way to encourage and reinforce participants to apply what was learned in the training when back on their job (1)</p> <p>Evaluate the training and its application six months after its delivery (1)</p> <p>Provide all managers who manage projects as part of their work responsibilities with a simple PM software to assist them in their job (1)</p> <p>Provide participants who took the training with a refresher session (1)</p>
8. What recommendations would you suggest for improving the delivery of the PM training program?	<p>Good delivery (10)</p> <p>Deliver the training off IMS facilities (2)</p>

Question	Replies
PM needs	
9. Do you feel a need for further PM training? If so, what should the training include?	<p>Need PM software training (2)</p> <p>Financial management, problem solving and resource allocation (1)</p> <p>An advanced and more detailed training on how to perform the middle and later stages of managing projects (1)</p>
General	
10. Is the program cycle appropriate (1-2 times a year)? Should it be offered more/less often? Why?	<p>Yes (10)</p> <p>Need a review session (5)</p>
11. Who should take the PM training program?	<p>All employees involved in project type work (10)</p> <p>Managers (8)</p> <p>SME working on project teams (2)</p> <p>Specialists should receive a condensed version (1)</p>

that the training did not aim at teaching participants how to actually function as project managers.

All participants interviewed stated that the objectives of the course were met. They learned the basic project management concepts, and a basic framework to manage all projects, whether large or small scale. This included learning how to plan a project, identify its tasks and develop a correct WBS that encompasses all its necessary elements. Five participants identified team skills as something they learned during training. They acquired knowledge of how to work with team members on planning and developing a project, and assuring proper communication among members. Four participants felt they learned how to assign times to tasks and monitor them to keep track of their progress. This helped them organize projects up front and save time. Three participants learned the importance of writing proper project objectives. Another three said they learned how to properly assign roles to each task, and three others added that they learned how to identify and allocate resources to project tasks. Three participants learned the importance of involving all members of a project team in the planning stages, to allow them to contribute to the best of their ability to the success of the project. One learned how to prioritize a project's tasks, and another how to identify and determine dependencies among tasks, the milestones and the critical success factors of a project.

One participant noted that the training taught him the importance of thinking of the basic elements of a project at its start before getting into the

details. According to another participant, the training taught how to define a project's scope and identify the necessary resources at the planning stage. He stated that this is essential when managing large projects that involve dealing with people from different departments with varied points of view. One participant appreciated the fact that the course provided her with an opportunity to learn how other departments manage projects.

In general, all participants felt the training course taught them the fundamental functional skills required for planning and developing projects. This enabled them to approach future projects in a structured and organized manner. However, five participants were of the opinion that though the training taught them the basics for managing projects, it was not detailed enough to enable them to manage extensive projects.

One participant felt that the course had very little impact on her since it was basic in nature, and she knew much of what was taught from participating in projects prior to the training. Another felt the training reviewed what she had already known, but made her more aware of the methodology and benefits of using it. Thus the course assisted in applying previous project management knowledge to her job.

One of the participants interviewed participated in the Primavera PM software training that followed the first session of the training evaluated in this study. She claimed the software was very complex and difficult to learn and not beneficial for her job. She stated that IMS must identify which employees

actually need to learn how to use this software and provide the training to them alone.

Participants felt that the impact of the training on IMS as a whole was limited. On the one hand, it assured that everyone at IMS utilizes the same project management framework, language and techniques. As a result, members of project teams have a common language and understanding when working on projects. Nevertheless, the knowledge acquired from the training was sufficient to manage small-scale projects only. As one participant stated, project managers of large projects at IMS had project management training other than the course in question, or work experience and used a PM software not taught in the training course.

One participant claimed that though the training content was not sufficient to teach how to perform as a project manager of large projects, it benefited IMS since all employees handling business issues could exercise it in their daily jobs. Another participant noted that the training was valuable to most departments in that it improved the way managers manage their projects, in particular in the Information Technology (IT) department. The course had less impact on operations where there is an ongoing need for improvement in project management performance.

Nine of the ten participants interviewed claimed that they applied what they learned in that they utilize the generic framework taught to plan and develop projects. In particular, they used the WBS tool to break down project

tasks into subsequent components. One participant said that the timeline tool taught in the course was not used. Another noted that since the course is very basic, it was not sufficient to be applied to the complex levels of managing projects, but rather to the planning stages only. According to one participant, the skills learned during training were applied to her daily business plans and issues that may cross over different functional areas, and thus require defining and developing tasks and allocating resources, though she does not manage projects herself.

One of the participants stated that she did not have an opportunity to use and apply what she learned in training to her job, and therefore her project management knowledge decreased. Another said that following the training he too did not work on projects and thus did not have an opportunity to apply what he learned. Now, a few years later, he works on projects and applies what he learned. Had he done so immediately after the training it would have been more valuable for him and his skills would have improved.

When asked what they liked best about the training course, five participants said they enjoyed the use of real-life examples taken from their work environment to teach the project management process. Four said they liked the hands-on approach employed in the training. This was manifested in the activity in which participants were asked to use as examples, projects they were involved in at the time to practice building a project from scratch, while employing the project management framework. Three participants liked the fact the training

provided them with an opportunity to meet people from different departments and work together to build and manage a project. It enabled them to learn how others manage projects and how they could help each other in doing so. Two participants mentioned that they appreciated the fact that the instructor took real-life examples and simplified them to explain the fundamentals of project management rather than focusing on the details.

Two participants mentioned that they liked the instructors' informal teaching style and the informative feedback he provided participants. This made it enjoyable and easy to learn. One liked the materials used and thought they were well done. Another participant said she liked learning how to write project objectives and use the WBS tool, since it is practical and applicable to her job.

Following are recommendations for improving the content of the Project Management training course, made by the interviewed participants:

- IMS should offer two different types of Project Management training programs: a basic training like the existing one for all employees who work on projects and/or handle business issues that span over a length of time and have milestones, dependencies and a deadline; another more intense training that includes instruction on how to apply the basics to all stages of a project, how to budget a project and use a PM software. This latter training should be offered to employees who will be managing projects. (3)
- Create a detailed and comprehensive Participant Workbook with more reading materials (four to five pages) on project management areas such as how to

get information on project management practices, certification and accreditation. (2)

- **Include the instructors' course notes in the Participant Workbook and make it look more professional. (2)**
- **Deliver the training over a more extensive period of time to allow participants to think about what is taught and do some work on their own to practice their skills while in training. (2)**
- **Make the training more interactive by asking participants for feedback on their progress to see if they understand, and then move on if they did. This will prevent a situation in which they are taught things they already know and help focus on what they do not know. (1)**
- **Incorporate in the training instruction on resource planning, financial planning, influencing, negotiating, communicating and handling difficulties. (1)**
- **Teach the process of preparing a project for presentation to different stakeholders in order to obtain their approval of it. (1)**
- **Design the training to target the specific needs of individual departments and thus customize it to teach how to manage the types of projects executed at these departments. (1)**
- **Adapt throughout IMS a standardized way to encourage and reinforce participants to apply what was learned in the training when back on their job. Otherwise they loose what they learned. (1)**

- Evaluate the training and its application six months after delivery. (1)
- Provide all managers who manage projects as part of their work responsibilities with a simple PM software to assist them in their job. (1)
- Provide participants who took the training with a refresher session to review what they learned. (1)
- Shorten the training (This recommendation was implemented in the later versions of the training course).

Participants felt the delivery of the training course was good and had no recommendation for improvement. Two recommended delivering the training away from IMS facilities so that people are not bothered with messages and other distractions during training time.

All participants were in agreement that the training in question was too basic for their needs and did not provide suitable tools to allow them to manage large scale projects. Thus, two mentioned a need to receive training on how to use a PM software such as Primavera or Shoortrack. The softwares available to them (e.g. Microsoft Excel) are not sufficient to manage large-scale projects. One participant would like training on financial management, problem solving and resource allocation. Another said he needed an advanced and more detailed training on how to perform the middle and later stages of managing projects.

Participants agreed that the course cycle of one to two times a year is appropriate, given that the company has a low turnover rate and that the course should be offered to new employees only. However, five participants mentioned

the need for a follow-up session that will review what was learned in the training, to refresh their memory and see what can be improved.

Participants interviewed felt that the majority of IMS employees are commonly involved in project work and thus should attend the Project Management training course. It is essential that all members of a project team understand the basic principles and terminology of project management. One participant indicated that this would enable them to see the bigger picture and contribute to a project even if they have a small part in it. According to eight participants, the training course should be offered to employees holding positions of managers, project managers, and business development managers from across all company functions including marketing, operations, IT and finance. Two added that it is important to provide the training to Subject Matter Experts (SMEs) that serve on project teams as well. Another stated that, specialists such as statisticians and programmers should receive a condensed version of the training to understand the terminology used by project managers and where they fit within the project. One said that IMS must assess the training course and the company's current needs in regards to project management to determine who should take the training.

Participant Focus Group

The results from the focus group conducted with three participants in the Project Management training are reported in Table 11. Similar to the survey and interview data, this information indicates participants' self-assessment as to the

Table 11

Participant Focus Group

<u>Questions</u>	<u>Replies</u>
<u>Training objectives</u>	
1. In your opinion, what were the objectives of the PM training program?	Provide a systematic methodology to manage projects (3) Teach time management (3) Teach WBS (3)
2. Do you think the program met its objectives? Why?	Yes (3)
<u>Learning</u>	
3. What did you learn from the PM training program?	Create a WBS (3) Schedule tasks (3) Allocate resources (3) Training was only a refresher (3)
<u>Training impact</u>	
4. What impact do you feel the program had on you? On the organization? Why/How?	Non (3) All employees have a common PM lingo and WBS tool (3)
<u>Application</u>	
5. Did you apply what you learned? How?	Training was not applied to the job (3) Training content was not applicable to the job (1)
6. What did you like best about the PM training program?	Did not like: Training lacked emphasis on the phases of a project, how to scope a project, what makes it successful, and how to deal with problems (3) No instruction on how to identify dependencies (1) No IMS examples (1)

Questions	Replies
<u>Recommendations</u>	
7. What recommendations would you suggest for improving the content of the PM training program?	<p>Adapt the training to the audiences attending it (3)</p> <p>Teach how to use project management tools - PM software (3)</p> <p>Evaluate the companies chosen PM software (Primavera) to determine if it is an appropriate one for employees needs (3)</p> <p>Teach how to scope a project at its early stages, plan for resources and identify contingencies. (3)</p> <p>Teach financial planning, how to communicate with the relevant parties of a project, risk management and how to measure projects' success (3)</p> <p>Teach how to create a project report and present it to its various stakeholders (1)</p> <p>Incorporate in the training practical examples related to participants' real life experiences (3)</p> <p>Consult managers about their needs in regards to project management during the planning and designing stages of the training (1)</p> <p>Include in training a single project for all groups to manage and compare results (1)</p>
8. What recommendations would you suggest for improving the delivery of the PM training program?	Non (3)
<u>PM needs</u>	
9. Do you feel a need for further PM training? If so, what should the training include?	How to use a PM software (3)

Questions	Replies
General	
10. Is the program cycle appropriate (1-2 times a year)? Should it be offered more/less often? Why?	Yes (3)
11. Who should take the PM training program?	Participants with no previous PM knowledge or experience (3)

impact of the training on their degree of project management learning and transfer of that learning to their job environment.

Participants in the focus group claimed that the objective of the training course was to provide them with a systematic methodology and process to approach projects. In addition, it aimed at teaching time management and WBS, i.e. how to break down the process of a project into its micro components and structure them appropriately.

Participants stated that the objectives were met in that the training taught the fundamental principles and concepts of project management. They learned how to create a WBS with project activities, time them and allocate resources around them. However, for them the training was in truth a refresher of what they learned in university rather than a new learning experience. It was their opinion that the training was beneficial only to people with no previous project management background or experience and no understanding of what project management is all about.

Participants felt that the training's impact on IMS as an organization was in the fact that all employees had an opportunity to learn and use a common project management lingo and the WBS tool when working on a project. Participants testified that the training did not change the way they managed their projects and thus was not applied to their jobs. It provided them with a theoretical understanding of what they are supposed to do, but did not provide them with the appropriate tools necessary to apply the theory to their job

environment. This created a gap between what was taught during training and its actual application. One participant said the content of the training did not lend itself to his activities at work and therefore was not applicable to him.

Participants felt the training lacked an emphasis on the phases of a project, how to define its scope to assure it yields what was expected of it and how to measure its success. Moreover, there was no contingency built into the training, which is essential for managing projects effectively. Thus they did not learn how to plan for and deal with problems when working on projects, though no project they know of was delivered on time and within budget. One participant mentioned that though the training taught how to do a WBS, it did not instruct on how to identify dependencies among the tasks. In addition, the examples used during the training were not relevant to IMS.

A major criticism participants had of the training was that it did not take into account its audience. It was offered to employees with diverse project management background and knowledge rather than being targeted to their different needs. They felt the training should have been customized to be relevant to participants' different levels of project management knowledge and to the various roles they play at IMS. Tied to this is the notion participants expressed that it is impossible to teach a generic method for managing all projects at IMS. Such an approach as was taken in the Project Management training course prevented the instruction from getting into higher levels of depth and from using specific examples.

Following are the recommendations made by the participants in the focus group to improve the training content:

- Adapt the training to the audiences attending it, by splitting it between an introductory course such as the current training and a strategic more advanced course for project managers. (3)
- Teach in the strategic training program how to use project management tools such as PM software. (3)
- Evaluate the company's chosen PM software (Primavera) to determine if it is an appropriate one for employees' needs. (3)
- Teach how to scope a project at its early stages, plan for resources and identify contingencies. (3)
- Teach financial planning, how to communicate with the relevant parties of a project, risk management and how to measure project success. (3)
- Teach how to create a project report and present it to its various stakeholders. (1)
- Incorporate in the training practical examples related to participants' real-life experiences. (3)
- Consult managers about their needs in regards to project management during the planning and designing stages of the training. (1)
- Introduce in training a single project and ask participants to get into groups and manage it to see how creative they can be and what strategies they

employ. The instructor should then go to the groups, suggest problems that may arise and ask participants to handle them. (1)

Participants said the instructor was very charismatic and related well to his audience. They had no recommendations for improving the delivery of the training. Nevertheless, they believe the instructor was not provided with an appropriate environment for the training to succeed.

Participants strongly emphasized the need for training on how to use a PM software. The training taught them the mechanics of managing a project manually, however currently companies are using technology for these purposes. IMS adopted Primavera as their project management software and therefore the training should have taught how to use it. One participant wondered if this is in fact an appropriate software given its complexity and the amount of administration and maintenance involved in utilizing it.

Participants felt that although the training did not apply to them, its cycle is appropriate. In their opinion, the training applied only to employees with no prior project management knowledge or work experience who are moving up on the company's ladder from subordinate roles to higher positions in operations, such as team leaders and system managers. These employees need to have an understanding of the basic project management concepts used in the company, even if they will not be expected to manage projects. The more advanced type of training participants mentioned earlier would be targeted to managers who will manage projects and use the company's PM software to do so.

Supervisor Interviews

Table 12 details the results from the interviews conducted with four supervisors of participants in the Project Management training course. These data contain the supervisors' perspectives as to participants' degree of learning from training and transfer of that learning to their performance on the job.

There was an agreement among all supervisors that the main objective of the Project Management training course was to provide participants with a structured functional framework to manage the process of their projects effectively. This included teaching them techniques to identify and understand the dimensions of a project, its objectives, requirements, deliverables (WBS) and how to monitor a project against identified benchmarks to know if it is on schedule or not. In addition, the course aimed at introducing throughout IMS formal project management concepts.

Supervisors felt that the objectives of the course were met for most participants. They learned how to approach projects in a structured consistent manner, by writing objectives and doing a WBS (breaking down the project tasks, assigning roles to each task, etc.). This enabled them to be more organized and efficient when working on a project. In addition, participants learned basic project management terminology and how to use it in their work environment.

However, as one supervisor noted, since the training was very basic in nature, it was useful only for people who had no formal training or work

Table 12

Supervisor Interviews

Question	Replies
<u>Training objectives</u>	
1. In your opinion, what were the objectives of the PM training program?	To provide participants with a structured functional framework to manage the process of their projects (4) Introduce throughout IMS formal project management concepts (4)
2. Do you think the program met its objectives? Why?	Yes (4)
<u>Learning</u>	
3. What did participants learn from the PM training program?	Approach projects in a structured consistent manner (4) Write objectives (4) Do a WBS (4) Basic project management terminology (4)
<u>Training impact</u>	
4. What impact do you feel the program had on participants? On the organization? Why/How?	Useful only for people who had no formal training or work experience in project management (1) Minor impact (3) Improved the way IMS manages project (1) Consistency in project management methodology and language (1)
<u>Application</u>	
5. Did participants apply what they learned? How?	Yes, to a certain extent (4) All participants have an understanding of how to create project objectives, tasks, schedules, allocate resources and determine their priorities (4) No implementation of timeline-planning tool (1)

Question	Replies
<u>Recommendations</u>	
6. What recommendations would you suggest for improving the content of the PM training program?	<p>Teach how to use PM tools, software (2)</p> <p>Include in the training a module that is a case study of a project that went bad, analyze it to learn where the process went wrong (1)</p> <p>Add instruction on how to plan and manage activities and solve problem (1)</p> <p>Teach analytical and communication skills as well as risk management (1)</p> <p>Organize short duration refresher sessions (1)</p> <p>Create two types of training: a short course for employees with a need for basic project management skills, and an advanced Project Management training for those who need to learn more than the basics (1)</p>
7. What recommendations would you suggest for improving the delivery of the PM training program?	Non (4)
<u>PM needs</u>	
8. Do you feel a need for further PM training? If so, what should the training include?	<p>Yes (4)</p> <p>How to use a project management software (2)</p> <p>Risk management (1)</p> <p>Refresher session (1)</p>
<u>General</u>	
9. Is the program cycle appropriate (1-2 times a year)? Should it be offered more/less often? Why?	Yes (4)
10. Who should take the PM training program?	<p>All employees involved in project type work (3)</p> <p>Basic middle managers (1)</p>

experience in project management. Those who did have such experiences did not learn much from the training.

According to three supervisors, the training had minor affects on the organization as a whole. The reason for this was that it was very basic and therefore useful only for managing small-scale projects. The training had to impact upon large and complex projects in order for it to pay off for the organization.

Nevertheless, one did feel that the training improved the way IMS manages projects. It made the organization more conscious that there are better ways to approach projects and allowed IMS to become more stringent in their expectations of how projects should be managed. Another supervisor said that the training benefited IMS in that everyone went through the same type of training and learned a common project management language. Thereby it created a certain amount of consistency in the project management methodology and terminology used in the company. One of the supervisors said he did not know enough about the training to determine whether it had any affect on IMS.

It was the supervisors' observation that some participants applied what they learned in the training while others did not. The learning was applied in terms of having an understanding of how to create project objectives, tasks, schedules, allocate resources and determine their priorities. Supervisors noticed that participants who had an opportunity to implement the skills learned during training immediately, gained long-term benefits from the training and were able

to further improve their skills on the job. However, for those who did not exercise what was learned in training within a year, the skills tended to atrophy.

One supervisor claimed that most of his employees who took the training (15 out of 16 participants) did not follow-up and implement what they learned. He tried to reinforce their project management skills by using another method for managing projects. Another supervisor noted that the timeline-planning tool taught in training was not clear and easy to use, and therefore not utilized by participants.

Following are the recommendations made by supervisors for improving the content of the Project Management training course:

- Teach how to use PM software. (2)
- Include in the training a module that is a “case study” of a project that went bad. Participants should be asked to analyze the project and find out where the process went wrong. For example, were the appropriate tools used? Were tools used in an inappropriate way? (1)
- Add instruction on how to plan and manage activities and solve problems. (1)
- Teach analytical and communication skills as well as risk management. (1)
- Organize short-duration refresher sessions to remind people of what they learned in the course so they will apply it. (1)
- Offer the current training course only to employees with a need for basic project management skills, and in that case it should be shortened. Create a new advanced Project Management training for those who had some project

management training and/or work experience, and need to learn more than the basics. Such training should introduce more real-world IMS projects. For example, a typical IMS project that was completed could be used and worked through during training. (1)

Supervisors had no recommendations for improving the delivery of the training, either because they felt it was good or did not have enough knowledge to comment on its delivery.

All supervisors felt their employees needed further project management training. Two wanted employees to learn how to use a project management software that will enable them to create timelines, WBS, schedule tasks, and find dependencies among tasks (what tasks run parallel, what tasks have to be accomplished before pursuing the others, etc.). Another claimed that participants needed to learn how to plan and manage project risks.

One supervisor said participants required a refresher session to review what they learned in the training and highlight the main points. This would remind them of what they forgot or neglected after the training so they will further apply it to their current work.

Supervisors agreed that the course cycle of one to two times a year is appropriate, given that the company has a low turnover and needs to have enough people registered for a course to justify the cost. Three claimed that the training should be offered only to employees involved in projects or in project type work that takes place over a period of time. These people need to learn

how to approach a project, break down the work into appropriate segments, put times against each segment to approximate its duration, etc. One supervisor felt that only basic middle managers should attend the training course.

Instructor Interview

According to the instructor of the Project Management training course, the original objectives of the training, as defined by IMS at the initial stages before launching it, were to provide all IMS employees with a unified formal methodology to manage projects. Thereby all projects will have formal objectives, a WBS, a Network diagram with a critical path going through it and proper resource planning. In addition, IMS hoped that the training would teach participants to proactively plan projects, i.e. think ahead of what may go wrong in a project and how to handle that possibility.

However, these objectives were found to be too broad for purposes of the training and had to be narrowed to make them more realistic. The objectives of the existing training were to provide participants with a basic framework for managing projects and teach them basic project management concepts. More specifically, to teach participants how to: write good objectives before planning the project and its actions; create a WBS; do a Network diagram with the critical path running through it; plan resources; and to a certain extent, proactively plan around future problems that may come up during the project.

According to the instructor, the training objectives were achieved. Participants learned the basic project management framework and concepts that

are useful to manage their projects. However, he cannot tell to what extent the objectives were met as no formal measurement was employed.

He claimed that the training made small yet important improvements in the way participants manage their projects and in the way projects are managed in the organization as a whole. As a result of the training, all IMS employees have a common methodology and terminology that they exercise on their jobs when managing projects. This in turn saves IMS time and arguments about methodology and terminology.

The instructor believes that participants applied what they learned. When he visited at IMS he saw them use stickies on the wall, which is a project management technique taught in the course. He strongly emphasized the importance of conducting a Kirkpatrick Level Two, Three, and Four evaluation of the training. This will show if and to what extent participants actually learned from the training, applied what they learned and if it had an impact on the organization. Level One evaluation, which is done, is not sufficient.

In order to teach the training course, the instructor used a classical instructional methodology called Systematic Teaching based on the Kepner-Tregoe approach. Following this method, the course was divided into segments and subsegments. Every segment was taught in eight stages: (1) Introduction to the segment and bridge to the previous one, (2) a Motivation component, to motivate participants to listen and learn, (3) an Information component, (4) a Relevance component, (5) a Process component, (6) an Example, (7) TFU -

testing for understanding and (8) a Summary and bridge into the next segment. This method has become automatic for the instructor and therefore transparent to participants.

The training was designed to be very practical and hands-on. Participants had to plan real-life projects taken from their work environment. By the end of the training they came out with at least three to four projects ready to utilize.

The training in question was supposed to be the first in a series of two, the second being training on how to use a PM software called Primavera. Participants in the first training session found the software to be too sophisticated for their needs when managing the majority of their projects. By the time a project was created in the computer and the software controls it periodically, the project deadline has passed. Participants preferred putting stickies on the wall to represent the WBS, thus the software training was terminated.

The instructor believes that there was no need to incorporate into the training instruction on how to use a PM software. He recommended adding a component to the training that will show the link between his course, which teaches basic project management concepts, and a PM software that might be used at IMS. Moreover, IMS should consider adapting a simple PM software (such as Microsoft Project) as a standard throughout the company and give employees who work on large projects a one-day overview of it. With respect to further project management training, the instructor felt participants could benefit

from a review session that will revisit the methodology learned, but this is not a high priority.

According to the instructor, the course cycle of one to two times a year is appropriate. It should be offered to all employees including the receptionist. This will ensure that everyone at IMS is using the same methodology and is capable of contributing to the company to the best of their ability.

CHAPTER IV

DISCUSSION

The purpose of the present project was to carry out an evaluation of the Project Management training course at IMS Health Canada. The focus was on measuring participants Reactions, Learning and Behavior. These encompass Levels I, II, and III of Kirkpatrick's evaluation model.

The most important set of conclusions from this evaluation relate to participants' levels of project management learning from the training and behavior change as a result of training, i.e., application of the learning to their job performance. All participants, their supervisors and the training instructor confirmed that the main objective of the training was to provide participants with an overview of a project management methodology and jargon. They acknowledged that this objective was met, as participants learned a basic project management method and some concepts.

Participants emphasized that this acquired knowledge applied to the defining and planning stages of managing a project. They learned how to define project objectives, tasks and roles and, to a lesser degree, plan a project by identifying its required roles, estimating as well as optimizing a project's resources, planning for risks and defining and communicating a project's plan. However, participants claimed to lack knowledge on how to utilize the methodology during the implementation stage of a project. It is recommended to

revise and improve the training component that encompasses how to implement projects be so that participants can better learn how to execute projects and later apply that knowledge to their work.

Participants stated that they learned how to schedule, plan and conduct productive meetings and document as well as communicate outstanding issues that arise in the course of implementing a project. Yet, many found that they did not learn how to deal with deviations from a project plan while maintaining proper communications among team members. It is essential that future training sessions teach these skills to assure successful implementation of projects. The Participant Workbook contains instruction on how to set contingency actions in order to modify a project plan and lessen the negative impact of problems that arise during projects. This segment may have been left unattended during the actual training sessions, due to lack of time.

Some participants mentioned learning teamwork skills as a result of working with a group on managing real-life projects during training. This points to the usefulness of this training activity in teaching the interpersonal aspect of managing projects. The original version of the Participant Workbook included a section on People Skills, which was omitted from the revised version in an attempt to condense the course. IMS should consider incorporating instruction on interpersonal and communication skills into the current Project Management training.

A number of participants stated that the training failed to teach them anything new, as it was very basic in nature and they had previous project management training and/or experience. Supervisors had a similar notion that some participants did not benefit from the training. Therefore, IMS should evaluate the content of the training and the needs of their employees in order to determine who should attend the sessions and who should not.

The majority of participants who took part in this evaluation as well as their supervisors and the instructor were in agreement that participants applied to a certain extent the basic project management framework and terminology learned to the defining phase of managing projects. However, few applied this knowledge to planning and implementing projects. This suggests that not all concepts learned transferred to actual job performance, particularly the knowledge of how to plan a project. Thus, the training should focus on instructing participants how to apply what is taught to their job.

Brinkerhoff (1995) recommended that in order to increase transfer of training, participants' supervisors must ensure that the training provided is tightly linked to important performance improvement needs of participants, and that this importance is derived from an analysis of business goals and strategy. In addition, it is recommended that prior to sending employees to training, supervisors evaluate their employees' needs in regards to project management and determine if the existing training can fulfill these needs. This will assure that the training is of value to participants and that they will apply it to their job.

The work environment should also encourage participants to apply what they learned. The study conducted by Brinkerhoff et al. (1995) confirmed that factors at the work situation have a significant impact on facilitating or hindering transfer of training. Supervisors of participants attending training and the training leaders at the company should work together to create specific conditions in the participants' work that support and encourage the transfer of knowledge and skills learned in training and its utilization on the job. For example, supervisors may conduct a debriefing session with participants before the training to elicit their expectations from training, and an after-training follow-up discussion.

It is important to note in this context that some participants in the Project Management training did not have an opportunity to apply the skills and knowledge acquired during training to their jobs. Therefore, supervisors at IMS who decide to send their employees to the training, should create a work environment in which participants can implement their learning immediately following the training. Otherwise, the benefits of the training decrease or become obsolete with time. Twenty percent of the participants (13 of 64) did not respond to the open-ended questions regarding the application of the training to their jobs. One explanation may be that they did not have an opportunity to apply the content of the training to their work environment, though they did not state so explicitly.

Participants and supervisors who participated in this evaluation made a variety of recommendations for improving the Project Management training course. The most reoccurring recommendation was to create at IMS two different types of Project Management training programs: one basic training similar to the existing one for all employees who work on projects and/or handle business issues that span over a length of time and have milestones, dependencies and a deadline; another more intense training that includes instruction on how to apply the basics to all stages of a project, how to handle project contingencies and use a PM software. The latter training should be offered to employees, who will actually manage large complex projects, since the existing training is not sufficient for their requirements.

In addition, participants recommended incorporating into the training content activities and examples that are practical and relevant to the corporate practice and to participants' real-life experiences at IMS. According to Ono (1995), participants learn best and value courses that use hands-on participatory learning activities. Such activities should provide them with the opportunity to work through their own past and present project management situations to obtain peer and instructor advice. Participants suggested that the Participant Workbook should be more detailed and comprehensive and include reading materials (four to five pages) on project management areas, such as how to get information on project management practices, certification and accreditation. It

should also incorporate the instructors' course notes and be designed to look more professional.

Participants and supervisors in this evaluation felt that, while some participants did not acquire new knowledge from the training, others still require a more advanced and detailed project management training that will teach them how to perform as project managers and utilize the methodology taught to plan and implement projects successfully. In addition, they expressed a current need to provide participants with training in how to use a simple user-friendly project management software that will assist them in managing projects. Thus it seems reasonable to classify the training in question as a basic introductory course to project management and offer it to employees with no previous training or work experience in project management. A higher-level course should be designed to meet the requirements of those faced with the responsibilities of managing projects. Such training should encompass instruction on how to use PM software.

According to the training instructor, participants did not require training on how to use the PM software adopted by IMS (Primavera), in as much as this software would not facilitate the management of most of their projects. It is very complex and sophisticated and requires a significant amount of maintenance. However, in the instructor's opinion, training should incorporate a link between its content and a standardized simple PM software.

Participants and supervisors stated that it is necessary to incorporate into the training content instruction on risk management, how to plan for

contingencies that can arise in the course of a project and how to handle them appropriately. This aspect of project management existed in the original training course but was eliminated from successive sessions due to lack of time. IMS should consider including such instruction in the higher level training recommended above, as it is an essential element of managing projects.

According to Baldry (1998), there is a clear requirement for organizations to develop an improved system of risk management which identifies and analyses risks that may occur within the parameters of a project. Project risks encompass not only the more readily measurable and comprehensible matters such as cost and time variables, but also the human factors within the company. One approach to risk management is to accumulate experiences from past projects and synthesize their likely risk factors (Baldry, 1998). These data may be valuable in assessing the potential risks to projects and the range of the impact of risk events on a project. This information can be brought together in a Project Risk Register, as described by Williams (1994), which is a controlled document that lists specific events in a project which are likely to occur, and analyses them according to their probability of occurrence, their potential impact, and risk factors. This body of knowledge can assist in determining a company's risk management process, and be used in developing risk management training. The analysis of projects' risks can be done on a company-wide or departmental scale.

Participants in the current evaluation found that they required training on how to manage projects that are typical to IMS and, moreover, specific to the different departments at IMS. Therefore the training should be customized to meet these needs and incorporate examples of projects conducted at IMS. This was achieved to a certain extent in the latter versions of the training. Furthermore, participants and supervisors mentioned that it would be advantageous to provide past participants with a refresher session that will review the key points taught so that they can thereafter apply them to their job.

Participants, supervisors and the instructor recognized that the training benefited IMS as a whole in that it provided all employees with a formal and structured project management methodology and terminology. It helped achieve a certain degree of consistency and understanding among employees in how to manage projects. This information was sufficient for participants that work on project teams, though not for project managers. This notion leads to the recommendation made above to design and implement a high-level comprehensive Project Management training program for project managers at IMS.

The Reaction sheets filled out by participants following the Project Management training sessions did not add to the information acquired from this evaluation study regarding participants' satisfaction with the training.

In light of the high level of motivation expressed by participants to learn project management knowledge and apply that learning to their job, it was

assumed that motivational factors rather than the training alone, have contributed to participants' degree of learning and application.

It is recommended that IMS view this evaluation of the Project Management training course, not as an end in itself, but as a process of analysis. It is intended to serve as a source of feedback on the progress of learning from the Project Management training and the application of that learning to the job in order to improve performance. IMS should ensure an active follow-up of this evaluation report to continuously improve the training and its educational effort.

Prior to conducting further evaluations, it is recommended that IMS hold a one-day workshop, to ask stakeholders (participants in the training, their supervisors, a training instructor, and a top management team) to define the scope and purpose of the evaluation, who is to be the target audience for the evaluation, and what aspects of the course are to be evaluated. In addition, the evaluator should inquire regarding stakeholders' opinions of the course evaluated (Bramley, 1996). This will benefit the planning and development of future evaluations and ensure that they are tailored to the needs of participants. Moreover, support and understanding on the part of IMS's decision-makers as to the merits of an evaluation will assure its dissemination and effect on the company's practices (Anderson, 1998). To gain stakeholders' support and understanding of the process of evaluation, all plans, processes and results of the evaluation must be communicated to stakeholders through the delivery of progress reports and a final evaluation report.

Future evaluation frameworks should be expanded to include explicit examination of organizational (Kirkpatrick Level IV) and social results (Watkins, 1998). At this level, the evaluation should measure the impact of the training and its value to the organization. These impacts can incorporate monetary, efficiency, morale and teamwork changes, etc.

Finally, it is recommended that IMS engage in proactive evaluation (Watkins, 1998). This implies identifying a set of performance measures by which to determine training success prior to its development, and aligning the evaluation with the planning, development and implementation stages of training. This will assure that the training meets its intended objectives and adds value to the organization.

It is essential for organizations that spend substantial amounts of resources on training programs to evaluate the effectiveness and efficiency of these programs. Such an assessment should clearly include the evaluation of participants' learning from training and behavior changes on the job following training. Yet, research data show that most evaluations are performed at Kirkpatrick's first evaluation Level (Level I). According to the American Society for Training and Development's benchmarking report (1996), 34 percent of courses were evaluated at Kirkpatrick's second Level (Level II), 11 percent at Kirkpatrick's third Level (Level III), and two percent at Kirkpatrick's final Level (Level IV). In a survey reported by Linkage Incorporated (1996), only 43 percent of companies performed Level II evaluation, 34 percent Level III, and 16 percent

Level IV. According to Carnevale and Schulz (1990), many training professionals do not evaluate their training programs at all due to time and cost considerations.

Many organizations believe that they can implicitly tell whether their training is working (Marth, 1994). However, without a formal evaluation methodology, the organization can only have a sense that its training is not working properly. Without evaluations, one cannot effectively determine the usefulness of the training and/or pinpoint necessary changes to improve the training (Kirkpatrick, 1996a). Marth (1994) states that, while it may be costly to conduct training evaluation, the consequences of not evaluating training can be even higher. Failure to demonstrate the effectiveness and efficiency of training has resulted in the demise of valid training programs that meet organizations' needs. Further, the cost associated with ineffective training programs can be deadly to organizations' success in today's competing economy. An improved understanding of the effectiveness of training builds organizations' credibility with clients by showing them that they have a unique process that requires specific skills to assure the added value of their work (Carliner, 1997). In addition, the evaluation results will help organizations determine whether to continue offering the training (Kirkpatrick, 1996a).

Current Evaluation Limitations

Information on satisfaction with training, the impact of training on learning and the degree of application of the learning, i.e. behavior change as a

result of training, are key factors in IMS's understanding of the Project Management training. Such information on training outcomes is important for making further investment choices regarding training. However, there were a number of methodological obstacles that have limited the findings in this evaluation.

First, the data collection strategy relied on participants' self-assessment and the impressions of their supervisors, which is intrinsically a subjective method. Moreover, the findings were open to subjective interpretation by the evaluator. To counter this limitation, data were collected using multiple instruments thereby achieving some degree of triangulation.

Second, it was difficult to isolate the effect of training, particularly since different time spans have elapsed between participants' training and the evaluation. During that time, participants may have acquired project management skills from their work and various factors other than the training in question. Furthermore, participants in this evaluation were all past participants in the Project Management training, yet the content of the training evolved and changed since it was first launched in 1994. Thus not all participants received the exact same training course. For instance, the earlier versions of the training taught risk management and interpersonal skills related to the planning phase of managing a project, while the later versions eliminated these sections. The original training spanned over three days and was followed by training on how to use a PM software while the later ones were shortened to two days and did not

incorporate software training. Thus, participants inevitably reported on different concepts learned and different applications from the training, which made it difficult to arrive at any definite conclusions from the evaluation. Upon IMS request to shorten the survey, the evaluator eliminated demographic questions that identified the exact training sessions participants attended. As a result, it was not possible to distinguish between participants who received the earlier version of the training and those who did not.

Third, there were potential selection biases as survey participants were those who volunteered to answer the questions, and interviewees and focus group participants were selected by the Vice President of Human Resources and the Director of Project Management at IMS, and then asked to participate by the evaluator. Though an attempt was made to select participants that represent cross functions at the company, those who agreed to participate may have had specific characteristics that affected the results.

In addition, due to time constraints, survey forms were administered during the same week that interviews and focus group were conducted. Consequently, it was not possible to utilize the survey data to formulate interview and focus group questions. Thus, the interviews and focus group were not employed as a means to gain further insight into participants' reaction to training, learning and behavior change.

Overall, this evaluation concludes that the Project Management training course was successful in teaching participants the basics of project management.

It is apparent that, while participants learned how to utilize this project management knowledge and skills to define and plan projects, they did not learn how to properly implement projects. Thus it is necessary to enhance the current training by including in it instruction on how to execute IMS-type projects and use a PM software. Such training will enable participants to carry out projects and manage project contingencies effectively.

REFERENCES

- Alliger, G. M. & Janak, E. A. (1989). Kirkpatrick's levels of training criteria: thirty years later. Personal Psychology, 42, 331-342.
- AME Newsletter (1996). Lexington: Linkage, Incorporate.
- Anderson, G. (1998). Fundamentals of educational research. Bristol: Falmer Press.
- Argyris, C. (1990). Overcoming organizational defenses: facilitating organizational learning. Boston: Allyn and Bacon.
- American Society for Training and Development (1996). Benchmarking Forum. Marlboro: NYNEX Learning Center.
- Baldry, D. (1998). The evaluation of risk management in public sector capital projects. International Journal of project Management, 16(1), 35-41.
- Bassi, L. J., Benson, G., & Cheney, S. (1997). The top ten trends. Training and Development Journal, 50(11), 3.
- Bramley, P. (1996). Evaluating Training. London: Institute of Personnel and Development.
- Brinkerhoff, R. O., & Gill, S. J. (1987). Achieving results from training. San Francisco: Jossey-Bass.
- Brinkerhoff, R. O., & Montesino, M. U. (1995). Partnership for training transfer: Lessons from a corporate study. Human Resource Development Quarterly, 6(3), 263-274.

- Brown, S. M., & Seidner, C. J. (1998). Evaluating Corporate Training: Models and Issues. Boston: Kluwer Academic Publisher.
- Brown, S. M. (1998). The changing context of practice. In S. M. Brown, & C. J. Seidner (Eds.) Evaluating Corporate Training: Models and Issues (pp. 3-18). Boston: Kluwer Academic Publisher.
- Carliner, S. (1997). Adapting the Kirkpatrick model to technical communication products and services. Performance Improvement, 36(4), 14-23.
- Carnevale, A. P., & Schulz, E. R. (1990). Return on Investment: Accounting for Training. Training and Development Journal (Supplement, July, 1990).
- Cummings, O. W. (1998). What stakeholders want to know. In S. M. Brown, & C. J. Seidner (Eds.) Evaluating Corporate Training: Models and Issues (pp. 41-62). Boston: Kluwer Academic publisher.
- Duncan, W. R. (1996). A guide to the Project Management Body of Knowledge, Upper Darby: PMI Standards Committee.
- Greene, J. C. (1994). Qualitative program evaluation: Practice and promise. In N. K. Denzin, & Y. S. Lincoln (Eds.), Handbook of qualitative research (pp. 530-544). Thousand Oaks: Sage Publications.
- Holton, E. F. (1996) The flawed four level evaluation model. Human Resource Development Quarterly, 7(1), 5-29.
- IMS Heath Canada (1998). Career development planning. Montreal: IMS Health.
- Kepner Tregoe (1989). Project Management. Toronto: Kepner Tregoe Incorporation.

- Kirkpatrick, D. L. (Ed.). (1975). Evaluating training programs, Madison: American Society for Training and Development.
- Kirkpatrick, D. L. (1996). Great Ideas Revised. Training and Development, 50(1), 54-59.
- Kirkpatrick, D. L. (1996a). Evaluating training programs: The four levels. San Francisco: Berrett Koehler Publisher.
- Kotter, P. (1990). A force for change: How leadership differs from management, New York: The Free Press.
- Lusthaus, C., Adrien, M. H., Anderson, G., & Carden, F. (1999). Enhancing organizational performance, Ottawa: International Department Research Center.
- Marth, J. (1994). Evaluating organizational training programs: Alternatives and criteria for selection. Paper presented at the Annual Meeting of the Midwestern Educational Research Association, Chicago, IL.
- Mathieu, J. E., Tennenbaum, S. I., & Salas, E. (1990). A causal model of individual and situational influences on training effectiveness measures. Paper presented at the annual meeting of the Society of Industrial Organizational Psychology, Miami, FL.
- Moor C. A. & Seidner C. J. (1998). Organizational strategy and training evaluation. In S. M. Brown, & C. J. Seidner (Eds.) Evaluating Corporate Training: Models and Issues (pp. 19-40). Boston: Kluwer Academic Publisher.

- Morris, P. (1981). Managing project interfaces: Key points for project success. In Duncan W. R., Director of Standards. (1996). A guide to the Project Management Body of Knowledge, PMI Standards Committee, Upper Darby, PA.
- Newhouse, C. (1998). Project Management Participant's Workbook. Montreal: Colin Newhouse and Associates Incorporation.
- Ono, D. (1995). Upgrading skills using the US Project Management Institute body of knowledge. International Journal of Project Management, 13(2), 137-140.
- Perez, M. A. (1999). Evaluating training and education in organizations. Paper presented at the annual meeting of the Canadian Evaluation Society, Toronto, ON.
- Phillips, J. J. (1998). Level four and beyond: an ROI model. In, S. M. Brown, & C. J. Seidner (Eds.) Evaluating Corporate Training: Models and Issues (pp. 113-140). Boston: Kluwer Academic Publisher.
- Posavac, E. J. & Carey, P. G. (1992). Program evaluation. Englewood Cliffs: Prentice Hall.
- Tennenbaum, S. I. & Yukl, G. (1992). Training and development. Annual Review Psychology, 43, 399-441.
- Watkins, R., Leigh, D., Foshay, R. & Kaufman, R. (1998). Kirkpatrick plus: Evaluation and continuous improvement with a community focus. Evaluating Training Research & Development, 46(4), 90-96.

Williams, T. M. (1994). Using a risk register to integrate risk management in project definition. International Journal of Project Management, 12(1), 17-22.

APPENDIX A
PARTICIPANT SURVEY

Dear Participant,

IMS Health Canada is conducting an evaluation of their Project Management training course. Part of this evaluation involves a survey of all employees who participated in this course, to collect information on their satisfaction, learning and application of what was learned in the course.

Please fill out this questionnaire and return it to Patti Thomas as soon as possible in the envelope provided. It should take approximately 30 minutes to complete. We assure you that your responses will go directly to the evaluator and that no one else will see them.

If you have any questions please contact Yael Nisan at ynisan@hotmail.com or (514) 848-2527.

Your participation is important to the success of this study and we thank you for your contribution.

**Thank you,
Yael**

Participant Survey

Job Title: _____

Department: _____

Please circle your response to the following items.

Year of participation in the PM training:

- (a) 1994 – 1995 (c) 1998 - 1999
 (b) 1996 – 1997

How long have you worked for IMS?

- (a) Less than 1 year (c) 5-10 years
 (b) 1-5 years (d) over 10 years

A. Satisfaction with training

Please circle your response to the following items.

Key:

SA = strongly agree

A = agree

D = disagree

SD = strongly disagree

NA = not applicable (in your situation)

	Strongly Agree			Strongly Disagree	
1. Prior to attending the PM training I felt the need to improve my PM skills and knowledge.	SA	A	D	SD	NA
2. I expected the PM training to improve my ability to work within a project.	SA	A	D	SD	NA
3. I expected the PM training to improve my knowledge of the PM methodology.	SA	A	D	SD	NA
4. The PM training taught me the skills I needed to learn.	SA	A	D	SD	NA
5. The PM training taught me the knowledge I needed to learn.	SA	A	D	SD	NA
6. The course objectives were clear to me.	SA	A	D	SD	NA
7. The course objectives were met.	SA	A	D	SD	NA
8. The instructor used the most effective methods for maintaining interest and teaching the desired knowledge and skills.	SA	A	D	SD	NA
9. The training facilities were satisfactory.	SA	A	D	SD	NA
10. The instructional materials used during the training were well selected and prepared.	SA	A	D	SD	NA
11. I feel my job requires further PM training.	SA	A	D	SD	NA
12. I feel my job requires more knowledge on the use of PM software.	SA	A	D	SD	NA

1. What were, in your opinion, the objectives of the PM training? Where they met?

2. Did the program give you any other benefits? If so, what were they?

3. What knowledge and skills were taught in the training?

4. What actions/behaviors were you expected to perform on the job following the training?

5. In general, what was your opinion of the PM training program?

6. What can be done to improve the program?

7. What are your current needs in regards to PM training?

Please add any comments you would like to make about the PM training.

The following 2 section are designed to assess your degree of learning from the PM training (section B) and your application of that learning to your job (section C).

B. Degree of learning

Please circle your response to the following items.

Key:

SA = strongly agree

A = agree

D = disagree

SD = strongly disagree

NA = not applicable (in your situation)

	Strongly Agree			Strongly Disagree	
1. I know how to define a clear project statement, with measurable start/end points and business outcomes.	SA	A		SD	NA
2. I know how to define measurable objectives and criteria for project success.	SA	A	D	SD	NA
3. I know how to break a project into specific activities (tasks) with clear begin/end points and well-defined outcomes/deliverables (WBS).	SA	A	D	SD	NA
4. I know how to define identify roles/competencies required to perform activities.	SA	A	D	SD	NA
5. I know how to identify and secure the right people within the organization that match the required roles/competencies.	SA	A	D	SD	NA
6. I can accurately estimate the effort required by resources to complete activities.	SA	A	D	SD	NA
7. I know how to optimize the amount of effort and number of resources to meet deadlines.	SA	A	D	SD	NA
8. I know how to optimize the sequence of activities in order to balance resource utilization (availability), in compliance with deadlines and overall cost.	SA	A	D	SD	NA
9. I know how to define special activities in order to minimize identified risks and/or to minimize their impact.	SA	A	D	SD	NA
10. I can clearly define and communicate the project organization structure, membership within the project team, and clear roles and responsibilities for all participants.	SA	A	D	SD	NA
11. I know how to schedule, plan and conduct productive meetings with clear objectives and the right participation, which result in clear actions/decisions.	SA	A	D	SD	NA
12. I know how to consistently document and communicate outstanding issues, decisions, action items and their impact on the project's objectives/deliverables, cost and time constraints.	SA	A	D	SD	NA
13. I know how to track progresses against the plan, identify deviations and formulate corrective actions on a weekly basis.	SA	A	D	SD	NA

14. I know how to use Project Management software to maintain up to date, the base plan and subsequent modifications in order to establish on a weekly basis estimated completion dates and costs.	SA	A	D	SD	NA
15. I know how to effectively balance intensity of efforts, amount of overtime and adherence to deadlines, while maintaining a healthy team morale, a positive team spirit and avoiding burn-out of individuals throughout the project life cycle.	SA	A	D	SD	NA
16. I know how to conduct productive and useful projects review sessions to gather lessons learned and best practices to be leveraged in future projects.	SA	A	D	SD	NA
17. I feel that I learned what the program intended to teach.	SA	A	D	SD	NA
18. I feel I remember what I learned in the course.	SA	A	D	SD	NA
19. During the training program I had opportunities to practice the training on the job.	SA	A	D	SD	NA
20. During the training program I was motivated to learn the PM knowledge and skills taught.	SA	A	D	SD	NA

1. What do you feel was the most important thing you learned in the PM training course?

2. What did you not learn that you expected to learn?

Please add any comments you would like to make about your learning from the PM training.

C. Transfer to the job

Please circle your response to the following items.

Key:

SA = strongly agree

A = agree

D = disagree

SD = strongly disagree

NA = not applicable (in your situation)

	Strongly Agree			Strongly Disagree	
1. I apply my knowledge of how to define a clear project statement, with measurable start/end points and business outcomes.	SA	A	D	SD	NA
2. I apply my knowledge of how to define measurable objectives and criteria for project success.	SA	A	D	SD	NA
3. I apply my knowledge of how to break a project into specific activities (tasks) with clear begin/end points and well-defined outcomes/deliverables (WBS).	SA	A	D	SD	NA
4. I apply my knowledge of how to identify roles/competencies required to perform activities.	SA	A	D	SD	NA
5. I apply my knowledge of how to identify and secure the right people within the organization that match the required roles/competencies.	SA	A	D	SD	NA
6. I apply my knowledge of how to accurately estimate the effort required by resources to complete activities.	SA	A	D	SD	NA
7. I apply my knowledge of how to optimize the amount of effort and number of resources to meet deadlines.	SA	A	D	SD	NA
8. I apply my knowledge of how to optimize the sequence of activities in order to balance resource utilization (availability), in compliance with deadlines and overall cost.	SA	A	D	SD	NA
9. I apply my knowledge of how to define special activities in order to minimize identified risks and/or to minimize their impact.	SA	A	D	SD	NA
10. I apply my knowledge of how to clearly define and communicate the project organization structure, membership within the project team, and clear roles and responsibilities for all participants.	SA	A	D	SD	NA
11. I apply my knowledge of how to schedule, plan and conduct productive meetings with clear objectives and the right participation, which result in clear actions/decisions.	SA	A	D	SD	NA
12. I apply my knowledge of how to consistently document and communicate outstanding issues, decisions, action items and their impact on the project's objectives/deliverables, cost and time constraints.	SA	A	D	SD	NA

13. I apply my knowledge of how to track progresses against the plan, identify deviations and formulate corrective actions on a weekly basis.	SA	A	D	SD	NA
14. I apply my knowledge of how to use Project Management software to maintain up to date, the base plan and subsequent modifications in order to establish on a weekly basis estimated completion dates and costs.	SA	A	D	SD	NA
15. I apply my knowledge of how to effectively balance intensity of efforts, amount of overtime and adherence to deadlines, while maintaining a healthy team morale, a positive team spirit and avoiding burn-out of individuals throughout the project life cycle.	SA	A	D	SD	NA
16. I apply my knowledge of how to conduct productive and useful projects review sessions to gather lessons learned and best practices to be leveraged in future projects.	SA	A	D	SD	NA
17. After the training I was motivated to transfer the PM knowledge and skills I learned to my job.	SA	A	D	SD	NA
18. The training taught me the manner in which to apply the new PM knowledge and skills on the job.	SA	A	D	SD	NA
19. The conditions in my work environment provide me with the opportunity to transfer the PM knowledge and skills I learned during training.	SA	A	D	SD	NA

1. Do you feel the training helped you in your job as a PM? Why or why not?

2. What elements of the PM training course have been most useful to you in your performance on the job?

3. Do you feel a need for further PM training in order to improve your on the job performance?
If yes, what should the training include?

Please add any comments you would like to make about the application of what you learned in the PM training.

Thank you very much for your time and effort in filling out this survey!!

APPENDIX B
PARTICIPANT INTERVIEW QUESTIONS

Participant Interview Questions

1. In your opinion, what were the objectives of the PM training program?
2. Do you think the program met its objectives? Why?
3. What impact do you feel the program had on you? On the organization?
Why/How?
4. What did you learn from the PM training program?
5. Did you apply it? How?
6. Is the program cycle appropriate (1-2 times a year)? Should it be offered more/less often? Why?
7. Who should take the PM training program?
8. What did you like best about the PM training program?
9. What recommendations would you suggest for improving the content of the PM training program?
10. What recommendations would you suggest for improving the delivery of the PM training program?
11. Do you feel a need for further PM training? If so, what should the training include?

APPENDIX C
SUPERVISOR INTERVIEW QUESTIONS

Supervisor Interview Questions

- 1. In your opinion, what were the objectives of the PM training program?**
- 2. Do you think the program met its objectives? Why?**
- 3. What impact do you feel the program had on your employees who attended the training? On the organization? Why/How?**
- 4. What did your employees learn from the PM training program?**
- 5. Did they apply it? How?**
- 6. Is the program cycle appropriate (1-2 times a year)? Should it be offered more/less often? Why?**
- 7. Who should take the PM training program?**
- 8. What recommendations would you suggest for improving the content of the PM training program?**
- 9. What recommendations would you suggest for improving the delivery of the PM training program?**
- 10. Do you feel your employees need further PM training? If so, what should the training include?**

APPENDIX D
INSTRUCTOR INTERVIEW QUESTIONS

Instructor Interview Questions

- 1. In your opinion, what were the objectives of the PM training program?**
- 2. Do you think the program met its objectives? Why?**
- 3. What impact do you feel the program had on participants? On the organization? Why/How?**
- 4. What did you expect participants to learn from the PM training program?**
- 5. In your opinion, did they apply it? How?**
- 6. What instructional strategies did you use to teach the course?**
- 7. Is the program cycle appropriate (1-2 times a year)? Should it be offered more/less often? Why?**
- 8. Who should take the PM training program?**
- 9. What do you like best about the PM training program?**
- 10. What recommendations would you suggest for improving the content of the PM training program?**
- 11. What recommendations would you suggest for improving the delivery of the PM training program?**
- 12. What recommendations would you suggest for improving the content of the PM training program?**
- 13. What recommendations would you suggest for improving the assessment of the PM training program?**
- 14. Do you feel employees need further PM training? If so, what should it include?**

APPENDIX E

PARTICIPANT FOCUS GROUP QUESTIONS

Participant Focus Group Questions

1. In your opinion, what were the objectives of the PM training program?
2. Do you think the program met its objectives? Why?
3. What impact do you feel the program had on you? On the organization?
Why/How?
4. What did you learn from the PM training program?
5. Did you apply it? How?
6. Is the program cycle appropriate (1-2 times a year)? Should it be offered more/less often? Why?
7. Who should take the PM training program?
8. What did you like best about the PM training program?
9. What recommendations would you suggest for improving the content of the PM training program?
10. What recommendations would you suggest for improving the delivery of the PM training program?
12. What are your current needs in regards to PM training?
13. Do you feel a need for further PM training? If so, what should the training include?