INNOVATIVE APPROACHES IN PROJECT MANAGEMENT FOR PERSONNEL IN THE EDUCATIONAL AND PUBLIC ADMINISTRATION FIELDS

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1. Overview
An increasing number of organizations are recognizing that they are project based (That is the majority of their added value work is carried out through projects). This organizations are not limited to tradition project based organization such as heavy industries, constructions, IT, and consultancy sector but they are a whole range of industries as well as government agencies and educational institutes all over the world regardless their size and sectors. There is a significant change the interest of individual and organizations to know more about project management as the result of the above mentioned trend. We are today in a rapid evolution of practices and process of project management. Organizations are devoting significant effort to improving the project performance which does have a major economic benefit to them. Nowadays, it is almost impossible to be in any organization without being involved in project management in one way or another. Project management today is a matter of survival for many organizations. The importance and uniqueness of project management is well reflected and implemented by the many bodies of knowledge that have been devolved in the project management area as well as the establishment of recognizable graduation of project managers.

Project managers in organizations
For many years, project management has been referred to as accidental profession where people have not selected it, but ended up doing it any way. As project in most sectors become more important to those organizations, so too do the project managers an their need and importance are increasingly being recognized.. Furthermore, project managers are considered as agents of change and innovation. A parallel career pats are being developed for managers allowing them to be promoted either through line activity or through their excellence in project management. Project management is now an advanced and specialized, therefore project management is organization and individuals.

A history perspective on project management
In theory, we should be able to learn from how humans have managed projects since the start of civilization. Although requirements, resources and constraints have been significantly change, the fundamental issues of project management such as performance, and time still sustain. Recently the nature of project management has changed from contraction industry to all kind of organizations. The first formal tools and techniques such as CPA, PERT which are in use up to day were developed during the 1950's. These tools focused almost exclusively on the project planning phase

Recent development in project management
The growth and acceptance of PM has changed significantly over the past forty years In the recent two decade a accelerate development occur in project management research,
development of tool process and technique. Today, a **strategic approach** rather the **reactive approach**, is taking to the design of project process, this stage is greatly influenced by the changes that have occurred in the context of which modern projects operate such as the availability of technology, powerful software etc'. Several Bodies Of Knowledge (BOK) were established in the area of project management such as The PMI, PRINCE2, APM, etc'. Their objective is to provide project management with common vocabulary ant to present the “Best Practice”.

**Modern project management**
Projects are relevant today to all fields and sectors, nowadays projects which can broadly defined as set of activities which have a defined start and a defined end state and which pursue a defined goal and use a defined set of resources come in many various form and in almost any area. There is a growing recognition in the need to employ professional project managers to carry out projects, As a result of this demand there are more training programs for project managers. In the near future even more focus will be directed towards the development of teaching and training aids in the field of project management training, project managers now undergo formal training in special programs. Today Organizations do not have the choice whether or not to adapt pm approach any more. The survival of org. may very well rest on how well project management is implemented and how **quickly** Companies are graded by their project management Maturity. This grade plays a significant role in potential clients' considerations when choosing a service provider.

**Factors leading to the increased use of project management**
The number and scope of projects being carried out is on the rise. This is due to:

- Compression of the product life cycle
- Global competition
- Knowledge explosion
- Corporate downsizing
- Increased customer focus
- Rapid development of Third World and closed economies
- Small projects that represent big problems

**Major outcomes for the 21st Century**

- An increase in the scope of project management and system integration.
- The focus of projects has shifted from tactical to strategic.
- An increasing discipline in the way projects are managed.

**Project management future trends**

- The growth and acceptance of P.M are expected to continue well into the 21st century.
- Significant growth are especially expected in the area of multinational PM
- Project will be more dynamic and complex
- Long term solution sought
- **More efforts will be focus on teaching and training aids**

2. The Project
What is a project?

- **Characteristics**
  - Collection of interrelated activities
  - Given timeline and budget
  - Specific objective(s)

- **Basic features**
  - One time effort
  - Complexity
  - Coordination between experts, organizations

Definition of a project

Based on these criteria there are many versions of definitions such as

"A temporary endeavor undertaken to create a unique product or service (PMI 2000)"

"A unique set of co-ordinate activities with a definite starting and finishing points, undertaken by individual or organization to meet specific performance objectives within defined schedule, cost and performance parameters (BS 6079; 2000)"

Ancient projects

It often claim that that the first project to be managed is the Manhattan project that created the first atom bomb, however ancient history is replete with projects examples

Some of the better known ones are:

- The Egyptian pyramids
- The palace of king Minos in Crete
- The Parthenon in Greece
- The Maya temples in central America
- The great wall of China
- The temple in Jerusalem

Projects of today

*Today large projects come in many and various forms:*

- The Channel tunnel
- Renovating the Brussels airport
- Constructing the facilities for the Olympic Winter of Summer games
- Constructing bridge, dam, highway, or building
- Opening a new store
- Designing a new plane
- Planning a wedding
- Developing new computer software
- Relocating a factory
- Introducing a new products to the market
- Implementing a new information system
- Performing major maintenance or repair
- Producing and directing a movie
Reengineering a company
Reorganization

Projects in education

Examples from the field of education
- The implementation of a new curriculum;
- The computerization of an educational system;
- Renovating teaching programs
- The design of an MBA course
- Development of workshops for Upper management levels
- Studying towards an academic degree.
- Project-Based teaching

Common characteristics of project

To a great extent all these projects seem to have some elements in common (Slack et al. (1998)
- A goal or objective. A definable end product, result or output that is typically defined in terms of cost, quality and timing of the output from the project activities.
- Uniqueness. A project is usually a one-at-a-time, not a repetitive undertaking even ‘repeat project’ such as the construction of another plant to the same specifications may have distinctive differences in terms of resources used and the actual environment in which the project takes place.
- Complexity. The relationships between the various tasks that have to be performed to achieve the project’s objectives can be very complex.
- Temporary nature. Project has a defined start and end which usually means that a concentrated use of resource is needed to carry out the project.
- Uncertainty. Projects are planned before they are executed and therefore carry an element of risk. Uncertainty is the nature of the beast.
- Life cycle.

Motivation to implement projects

- Why organize the work as a ‘project’?
  – Complexity: customized goods or services
  – Knowledge: exponential expansion
  – Competition: cost, time, quality

- Benefits of systematic planning
  – Reduce uncertainty
  – Create “common language”
  – Establish teamwork and define responsibilities
  – Enable learning

3. Project Management

Project Management definition:
Project Management is the application of knowledge, skill, tools, and techniques to project activities in, order to meet or exceed stakeholders’ needs and expectations from a project. (PMBOCK, 2000)

Project management – An activity entailing the allocating and timing of resources to achieve given objectives in an efficient and expedient manner (Badiru, 1991).

Phases of project management
- **Conceptual design phase** - during which the organization realizes that a project may be needed or receives a request from a customer to propose a plan to perform a project.
- **Definition phase** - in which the project objectives, the project deliverables and the work content are defined and it is decided on how the organization is going to achieve the project objectives and meet the various performance measures
- **Planning** phase -can start which involves breaking down the project into manageable work packages consisting of specific activities which need to be performed in order to accomplish the project objectives
- **Execution** phase- during the execution of the project, its progress must be taken when necessary.
- **Termination phase**- finally, the project enters its termination phase that involves the delivery of the project result (products and/or services)

Successful project
Both the uncertainty and complexity make project management a formidable task.

*A successful project is project that is finished on time within the budget and according to the preset specifications.*

4. Project Manager

The project manager is responsible for assuring that the project (tasks) are completed on time and within budget, but often has no authority on those actually performing the work

**Project manager role**
The Project Manager’s (PM) role is to ensure schedule management processes are applied in order to support the project’s objectives. He is responsible for coordinating and integrating activities across multiple, functional lines. In addition, the project manager is responsible, with support of the P/S, for the development guidelines, plan approval, work execution, and performance control of the IMS, and ensuring the institutional processes and procedures, necessary resources, and tools and techniques are applied to ensure requirements are adhered to by the project team.

**Project manager responsibilities**
- Marketing and continued contact
- Personal preparation
- Manpower planning and assembly of the project team
- Managing the project
- Quality management
- Client relation
- Project status reporting
- Billing and collection
5. Project management and education

Project management has long been considered as an academic field for planning-oriented techniques and, in many respects, an application of engineering science and optimization theory. Much research has also been devoted to the search for the generic factors of project success. Project management has, however, in the last decade received wider interest from other academic disciplines, including the field of education.

Why to learn project management in education?
Project management and education are mutually connected almost more than to any other areas

The benefits of project management in education
- Project management tools are required in education when implementing large scale projects as well as creating a single educational program
- Educational staff are continuously involved in educational projects
- Project management have been recognized as being an effective tool for teaching
- Project based learning might increase students’ autonomy, self-directed learning, skills, problem solving ability etc. as well as their interest in learning both in the school and in the future.
- Project based learning might help to better development of Project management tools, techniques and programs.

Project management aspects in education
- Project management tools are required in Education when implementing large scale projects as well as creating a single educational program
- Project Management practices must focus concurrently on people processes and technology. Students must be provided with an environment in which to learn, apply and evolve their team and project knowledge.
- Since the beginning of 1990’s, Project-based learning is a comprehensive approach to classroom teaching and learning that is designed to engage students in investigation authentic problems.
- Managing educational projects - educational projects are the same in nature as projects in any other field.
- Development of P.M educational programs – Developing educational tools and techniques in P.M are essential and they are the need of the hour.
- Developing P.M based teaching – P.M principals and techniques may be implemented in other teaching programs

Current trend in using project management in education
- Active approach not passive
- Interaction rather then transfer
- Dynamic not static
- New learning paradigm- Knowledge is not delivered But is constructed and created (Wang, 2004)

Advantages of using project management in education
- Increases students’ in the subject
- Increases the relevance of the subjects being taught
- Increases Autonomy, self learning, problem solving skills
- Increases students’ motivation in learning and both in the class and afterwards
- Provide the students with practical tool.

**Project-based learning (PBL)**

*Project-based learning* is a teaching method where teachers guide students through a problem-solving process which includes identifying a problem, developing a plan, testing the plan against reality, and reflecting on the plan while in the process of designing and completing a project. Project-based learning (PBL) is a constructivist pedagogy that intends to bring about deep learning by allowing learners to use an inquiry based approach to engage with issues and questions that are rich, real and relevant to the topic being studied. It is designed to be used for complex issues that require students to investigate in order to understand (Barron, 1998). PBL is more than just a web-quest or internet research task. Within this type of learning, students are expected to use technology in meaningful ways to help them investigate or present their knowledge. PBL is generally a less structured approach than traditional, teacher-led classroom learning. However, working in non- or low-structured environment can introduce significant side effects. In such an environment it is difficult for students to clearly identify project design-flow phases.

**6. Educational simulation**

**Simulation**

Simulation is set of computer-based technique that illustrate the behavior of dynamic complex systems

**Advantages of simulations**

- Create dynamic environment
- Iterative
- Individual interaction
- Predictive tool
- Replace expensive and time consuming alternatives
- Reduce cost of risks associated with mistakes
- What if analysis
- Alternative development

**The use of simulations**

- Training
- Education
- Testing
- Estimation
- Decision Support System (DSS)
- What if analysis
- Replace heuristics methods
- Games

**Simulation and education**
Introduction to the use of simulations to aid learning

Electronic Learning (E-Learning) environments and the digital university became increasingly pervasive with the advent and popularity of the Internet and Intranet in the end of 1990 and the beginning of the new millennium. Old and new teaching methods and instructional strategies are being explored and developed. The common thread among all is that the learning process, in most cases, is individual. Simulations are recognized as an efficient and effective way of teaching and learning complex dynamic systems as well as a tool to avoid the cost of risks associated with OJT with new technologies. Simulation-based education products are recognized as an excellent “illustrative tools” – used exceedingly in students centered learning methodologies.

Implementation of simulations in education

Simulation sometimes recognizes as a third way of doing science, in contrast to both induction and deduction. Simulation can be an effective tool for discovering surprising consequences of simple assumptions, it is used to provide experience creation of new knowledge either for its own sake or aid decision maker in a decision process.

Simulation-based teaching and learning

Simulation-based teaching is one of the tools in the new developed trend in education – learning-by-doing. A simulator is self-paced learning approach which can incorporate special teaching and learning mechanisms to support the individual learner. In particular, simulations are becoming an integral part of management and engineering education as students learn by using and building simulations of complex systems and processes. In contrast to the real world, which is being simulated to various degrees of fidelity, the students using a simulator are able to “stop the world” and “step outside” of the simulated process to review and understand it better.

Advantages of Simulation-based teaching

- Provide controlled environment allowing to demonstrate specific methods and techniques which can be directed by the instructor
- Interaction with subject rather than with teachers.
- Students are provided with an environment in which to learn, apply and evolve their team and knowledge
- Enhance self learning processes
- Enhance individual learning

Issues with respect to simulation-based teaching and learning.

- Simulations are recognized as an efficient and effective way of teaching and learning complex dynamic systems.
- Efficiency is gained by reducing the time it takes to reach a specified level of learning
- Effectiveness is gained by achieving better results in performing the tasks learned.
- In particular, simulations are becoming an integral part of education as students learn by using and building simulations of complex systems and processes

7. The Project Team Builder (PTB)

The Project Team Builder (PTB) presents a new approach to the teaching and training of project management—an approach based on a software tool that combines an interactive, dynamic case study and a simple yet effective Project Management System. The PTB applies recent developments in the area of learning histories in simulation-based teaching. The PTB is
designed to support individual training in project management and to provide an environment for practicing teamwork in managing dynamic stochastic multiple projects. The new concept of a simulation-based training environment with a built-in learning history recording and inquiry mechanism is employed in the PTB. The PTB can be used as a stand-alone system as it contains models for scheduling, budgeting, resource management, cash management, monitoring and control. The PTB can be used with Microsoft Project to plan the project, to monitor and to control it by transferring information from the Project Team Builder (PTB) and analyzing it using Microsoft Project.

The PTB principles

- The Project Team Builder (PTB) is a training aid designed to facilitate the training of project management in a dynamic, stochastic environment. It is based on the following principles:
  - A simulation approach—the PTB simulates one or more projects. The simulation is controlled by a simple user interface and no knowledge of simulation or simulation languages is required.
  - A case study approach—the PTB is based on a simulation of case studies called scenarios. Each case study is a project or a collection of projects performed under schedule, budget and resource constraints, in a dynamic stochastic environment. The details of these case studies are built into the simulation while all the data required for analysis and decision-making is easily accessed by the user interface. A user-friendly case study generator facilitates the development of new case studies as required.
  - A dynamic approach—the case studies built into the PTB are dynamic in the sense that the situation changes over time. A random effect is introduced to simulate the uncertainty in the environment, and decisions made by the user cause changes in the state of the system simulated.

References