Case-teaching Problem of Project Management: Study for Undergraduate Business Major at Research-oriented Universities

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Abstract. The knowledge and competency of Project Management (PM) have become one of major common capability of employees while facing the huge change of competitive environment, that lets the curriculum and major of PM gain high attention from universities. Case teaching in PM courses is an important and highly applicable teaching method. Undergraduates program for business major at research-oriented universities start up to open the courses involving more and more PM. While, case teaching of PM has its unique challenges due to discrepancies of different training purpose and learners characteristics. Based on PM feature, case-teaching theory, instructional design theory and learner characteristics, this article studies and summarizes the following idea, case teaching theory and strategic feature of case teaching associated with PM curriculum for undergraduates of business school at research-oriented universities, including case features, value orientation and coordination process of case teaching etc.

Introduction

The competency of individual's PM has long been the one of the most important strategic thinking and comprehensive capability in business circle, especially for current workforce globally in which digital technology develop tremendously. Each sector in almost every industry need rapid change, enterprises wants to build up high solid managing capability of PM to cope with continuous changing need for renovation. Moreover, the ability of an enterprise's needs rely on heavily PM talents who are the main core to drive the changes, renovation and execution of superior strategy. So PM talents are the main source of competitiveness for the company, and it goes more and more heavy in a scare, but high-level PM talents in life is not as good as we hope. Annual report of Project Management Institute (PMI) in years shows the gap between demand and supply for PM talents is getting wider year after year, in particular in rapid developing countries. The immediate shortage of PM talent will let GDP suffer instant and direct losses [1]. The gap between demand and need, potential shortage will indirectly result in the full scale of development globally in PM education.

However, it is not easy to grasp the qualified PM capability. It is not realistic either hoping to build up PM knowledge and capability by learning one course because technology development is different, industries are different. This is a big challenge for PM course and teaching, especially for undergraduate business majors, and relevant good research are scarce. On the contrary, lots of research put efforts on MBA education, and come up theories and teaching models, such as commonly used case-teaching [2, 3], it has many universities copy case-teaching from MBA education to be simply used in PM teaching, but lacks of systematic analysis and thinking obviously have big setbacks. Based on PM features and characteristics of undergraduate students in business major at research-oriented universities, this article put her focus on case-teaching potential problems of PM course.

Status and Challenges of Case Teaching in PM Course

PM education at universities has various teaching models due to its varieties majors, taking one typical example of PM at engineering-oriented schools (i.e. software, architecture, etc.), they
normally put more time, curriculum and effort on different perspective of PM in order to build up a better systematic foundation of PM knowledge and PM capability [4, 5]. In line with cultivating purpose of the universities, most majority of schools limit its PM education only on one course instead.

Commonly mindset for PM teaching is that PM teaching involves many case studies. For PM major or curriculum targeting particular industry, the main purpose of case-teaching focuses on grasping the specific tools or methodology, or to experience and to know full course of one project (such as one software application or specific architecture knowledge) [6]. In life, case-teaching of PM widely used in management and business sector, and lots of setbacks and problems still exist, for example, teaching culture, teaching willingness and capability of a professor, students' learning desire and enthusiasm, the gap between course goal and the reality status, students hope for, just name a few [7].

Main problems of case teaching could demonstrate as follows: (a) the gap between methodology and course aim is big. Case teaching is not case explanation but to stimulate students to think. (b) Hoping to teach multiple projects or management capability by one single curriculum, otherwise both will fail. (c) Failure to select appropriate case, which directly resulted in understanding limitation for a question. (d) Some cases especially in a specific and technical industry which are too far from current, or too strange or familiar from students' knowledge and experience, those either failed to let student involve in or encourage and drive students to think and participant [8].

Theory of Case Teaching

Case teaching originally started from Law School of Harvard in USA, then Business School. Case teaching in Harvard Business School greatly influenced MBA teaching methodology globally. Case-teaching models and theories of MBA are flourishing, among which the well-known and widely used are mutual education theory, information processing theory, learning transfer theory, etc. [9]. They say that communication is the necessary and foundation for an effective learning of all, require active interaction between professor and student, students and students. It has more complicated different dimensions though according to different industries need to dig, among which knowledge of solving problems requires learners to be able to find and kill key questions. It will gradually build up a full and solid recognition in the course of solving problems, the mentality of solving problems will be integrated into the life of a person's similar activities in future. Case-teaching teaching well fits the needs of active interaction among students and teachers, obtaining the training targeted to the knowledge of solving problems.

As learning theory develops, especially development of constructivism learning theory, which helped lay a solid theory foundation and methodology for case teaching. Constructivism learning theory believes that the gain of knowledge of a student is not the simple given from teachers by teaching but by meaning constructing in a certain environment. This environment includes the help from others, interactive with others, essential learning materials etc.; it could be classified into four categories: "scenarios, "collaboration," "dialogue," and "meaning construction," case-teaching approach could ideally and perfectly demonstrate the foresaid 4 categories [2]. In the course of case-teaching, we could imitate the scenarios into real business environment where learners could feel, learn to understand the concept and theory, experience the problem in person and find a problem-solving solution just like real business environment. By this process, a learner could gradually build up her/his mindset and capability in order to fulfill the construction of the wanted capabilities [3].

Case teaching of business management has two categories of value orientation. One is academic-technology-oriented, which stress the significance of tools utilized in the class. It believes that students can gain the knowledge of management theory by cases, and learning well the theory in the class is equal to the capability of being able to use the theory in reality. Therefore, it considers cases as the equivalent of reality or practice because. The other is experience-exploration-oriented case-teaching approach, which stress the significance of narration from specific perspective towards specific event; they believed that description of a case
from different perspective could help learners build up multi-angle mentality toward reality. Comparing the two in term of teaching approach, the former focuses more on the gain of knowledge, learning target and case selection, teachers control discussion strictly and have absolute final say for the result. The latter focuses more on the uniqueness of individual experience and different understanding from different angle for the case [11].

**Instructional Design and Learning Theory**

Instructional design is the process of systematic planning for completely teaching system [12]. In this case, Instructional design often is also teaching system design; it considers teaching system as a kind of source and program. Systematic thinking refers to consider all contents during Instructional design including learning purpose, learning process, learning material, etc.

Instructional design bases on learning theory. Gagne pointed out that learning activities implement under certain conditions, different learning objectives and outcomes need different learning method and conditions [13]. Gagne classified learning outcomes into five categories People hold different views about each categories, but they all accept the significant of categorizing and value to teaching.

In the perspective of constructivism learning theory, case teaching includes Scaffolding Instruction (ask students to find the relations between concepts independently), Anchored Instruction (given a specific event or problem to students, ask them to think, discuss and come up with a solution), Random Access Instruction (students randomly participant learning contents, help them grasp certain learning ability and mindset development) [10]. Main purpose of case-teaching approach is to help learners enter the designed scenarios rapidly, encourage them to think and discuss the selected topics or problems, and come up with a desired recognition and mindset.

**Key Features of PM Case Teaching for Undergraduates in Business School**

**Teaching Aim**

MBA education is aiming to train students to become professional manager who has gained the competency to solve certain managing problems, and MBA education stresses its unique feature of practicality, result-oriented, and operative nature [14]. Case-teaching in MBA education is hoping to take students into similar to reality business environment, train them understand problems, analyze problems, and solve problems by team work, train them to gain judgment and ability of exercising decision-making, students could learn management concept, theories and methodology.

The aim of undergraduate students in business school is to finish college education, to have a basic understanding or knowledge to specific subject. Compared with research-oriented universities, the education of business school focuses more on setting up proper basic knowledge system of management, and lay a solid foundation for more advance learning or researching in future. Career path for undergraduates in business school is not clear yet; they may not end up landing jobs in management position at certain company or specific institutes after graduation. The passion of a student for continuous learning and learning methodology she or he could get at college are very important target for undergraduate education, and it is one of important targets in PM teaching too.

**Characteristic of Learners and Case Teaching**

MBA students hold a degree at certain subject and have working experience. They normally aim senior managing position in future. However, undergraduates in business school have not completed their college education. Their knowledge about certain major has not been set up, not mention the working experience they have not started formally. All those prevent them from full understanding of management problem in business environment, also they could not have right methodology or knowledge to analyze problems they need to set up basic managing knowledge, they need to set up wider dimension and perspective to look at an event. In this case, PM is one of chains to finish their education in business school.
In terms of understanding to certain problems and business-designed scenarios, analysis skill and capability, MBA students are much better than undergraduates are. Case selecting and case teaching application will be very different. If business schools simply copy the formality from MBA program, it probably could not lead to good outcome. PM course for undergraduates at business school need academic-technology-oriented case-teaching design in order to build up students’ knowledge structure and mentality as quick as possible. It includes the carefully monitored learning purpose, case selection and learning process etc. However experience-exploration-oriented case-teaching approach will help cultivate proper value, continuous learning passion, build up mature recognition of eagerness to explore external world, eventually it could help grow continuously for years to come.

**PM Course and Its Case-teaching Characteristic**

The scope and structure of PM raised by Project Management Body of Knowledge (PMIBOK) has been the important reference for industries related closely to PM and schools when they set up PM major, curriculum etc. PMI think that competency structure of ideal PM talent are technical PM skills, leadership skill, strategic and business management skills [15].

PM skills are classified into two parts, soft skills and hard skills [16]. Soft skills involves communication, leadership, desired management ability, etc. Those skills are hardly able to be converted into obvious physical outcome, and hardly be found to use any certain of techniques. However hard skills are solid physical skills PM can use, it could demonstrate as specific delivery of PM result, such as working structure of several phases, definitely some PM will use certain tool or models, especially in some industries which has unique or particular features.

In the sense we consider PM skills, especially for software, engineering industry etc., shall more likely belong to the range of hard skills, and those industries put more weight on a specific professional PM skills [6]. While leadership, strategy and business management are often considered as soft skills. In today's rapid changing and complex environment, the significance of understanding and insight for a project for a company, problem features of PM, and possible coping strategy are the most important and difficult capability to build up. Obvious these abilities could not be achieved by simply explanation, where is the right reason and big advantage for case teaching to lay on.

**Strategic Planning of PM Case Teaching**

**Learning Outcome and Course Goal**

For undergraduates of business school at research-oriented universities, one single PM course obviously is not the whole picture of PM knowledge and ability building, but only focus on the understanding of business, management, and business changes, be prepared for the challenges of today's or future's more complex business environment. For undergraduates of business school, PM is one of important capabilities of business and management knowledge and ability building.

So understanding PM features, knowing the structure of PM, the scale of PM, what kind of questions we shall understand and focus on in order to continue learning in the future, all these become main purpose of PM course for business majors at college. The insight for PM specific problems and awareness of finding main problems in which direction is more superior request for learners, that shall be the ultimate target for PM course.

The building of PM capability is a long-term continuous process of learning and accumulation, especially for more advanced PM capability at certain industries, such as leadership, the capability of strategy and business management etc. Therefore, to encourage and maintain the acceptance of PM significance, learning interest and passion, are also the very important target for learners.

**Course Contents and Case-teaching Features**

Talking about course aim, the main content or knowledge structure mostly is designed based on PMIBOK system, but not necessary to cover all range of knowledge. What we can do is to select
the most appropriate parts, which could demonstrate PM features, and focus more on specific knowledge to solve major management problems, and fulfill the management task which need to be completed.

Main mission of case analysis is to acknowledge the practical significance of the project, project features, problem features in PM and corresponding PM strategy. Key aim of PM case analysis is to gain acknowledgement and insight. Based on all these we shall carefully select the cases, and the principle of selecting cases are as follows. (a) Real business projects draw from real life, aiming to be true and real; (b) Projects covers different industries, different countries, success cases or failure, aiming to be open and multiple dimensional. (c) Professional knowledge and experience to cases are not necessary; (d) Cases could demonstrate the features of real and new competitive challenge the enterprises faced, in order to show the significance of PM in improving enterprises’ competitiveness.

**Case-teaching Process**

Case teaching of PM includes two parts, case selection and analysis process, group preparation and summary. In terms of academic-technology-oriented case teaching, the particular course unit need to be assigned the Corresponding cases. The cases have better be able to show the specified PM problem features in the selected course unit. The acknowledgement and insight to PM problem and the corresponding strategy are the key for case analysis.

Case analysis preparation and discussion based on groups will helpful to be collaborate, interactive and mutual encouragement. Group-based PM shows a certain experience-exploration-oriented value, it help build up PM knowledge, mentality and passion for learning by group study. The member of case- analysis groups need report their logic of analysis, background and findings to the whole class, and face Q&A session. The role of teachers is to guide students to stick to their topic and selected industry to discuss case problem and case features. During discussion and presentation, teachers only ask questions to stimulate and guild the class to the right direction of thinking in order to find the existing problems in cases, to point out setback of PM, and find gaps to be possibly improved.

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