SOFTWARE ENGINEERING PROJECT MANAGEMENT WITH THE COMMUNITY OF PRACTICE APPROACH

Charlie Y. Shim, *Dept. of CS & IT, Kutztown University of Pennsylvania, USA*

Yeungkwun Kim, *School of Computer Science, Western Illinois University, USA*

Injoo Kim, *Dept. of Comp. & Info. Sci., East-West University, USA*

Contact Email: ***shim@kutztown.edu***

PRESENTER

Charlie Y. Shim received his Ph.D. degree in Computer Science from University of Wyoming in 2001. He is currently working at Kutztown University of Pennsylvania as a professor of CS & IT department.

His research interest lies in the areas of software engineering, computer security, and computer network.

CONTENTS

QUESTION

“What was the most challenging issue that you faced while working on a capstone project in software engineering course?”

ANSWERS

“managing efficient communication among team members”

“addressing conflicts among team members”

“adjusting unfair contribution among team members”

INTRODUCTION

Students' real problem does exist in handling people-related issues properly.

➔ *How to integrate a systematic process of teaching and evaluating teamwork skills based on human and social factors as a part of software engineering course?*

SOFTWARE ENGINEERING AND HUMAN ASPECTS

IEEE defines Software Engineering as

> *"the application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software"*

- project-based capstone course (commonly two semesters)
- can simulate real-world working environments
- human and social factors play as much important role as academic knowledge

COMMUNITY OF PRACTICE (COP)

- Educational literature that refers a network of peers who share a common interest in a particular topic and come together to fulfill both individual and group goals.

- Members wish to collaborate with other members by sharing information and developing knowledge.

COMMONALITIES BETWEEN COP AND S.E.

	Mutual Engagement	Joint Enterprise	Shared Repertoire
Community Of Practice	***practical and meaningful connection among members*** obtained by real contribution of members to complement each other	should have ***a context of being part of a broader*** **system** and operated through a process of collective negotiation	should ***standardize terms used*** in discussions
Software Engineering Project management	***individual member's clear understanding of the project*** accommodated by active communication among team members	should be ***considered within the larger organizational context*** and operated in a wide organizational environment	***records of communication history*** and ***definitions of standardized terminologies***

COP SESSIONS FOR SOFTWARE ENGINEERING CLASS

#	Week	Activity Description
S1	1	***CoP Concept*** - The instructor introduces the idea and importance of the CoP. -The instructor explains how and where the CoP integrated into software engineering project management. - The instructor checks students' understanding of the CoP
S2	1	***Review of Teamwork Principles*** - The instructor reviews teamwork principles and their importance. - The instructor introduces the common problems that teams from previous semesters had.
S3	2	***Project Concept*** - Team members have a general discussion about the nature of the project. - Each member should represent their understanding of the project and get feedback from other members. - Through the discussion, members help each other to understand the project and make sure they are on the same page.
S4	2	***Scope of Assigned Work*** - Each team member clearly understands their role in the project and clear scope of the assigned job.

#	Week	Activity Description
S5	3	***Communication and Evaluation Method*** - Team members adopt a standard method of communication among the members. - Team members adopt an evaluation method for each member's contribution.
S6	8	***Intermediate Evaluation for the CoP activities so far*** - Team members discuss whether communication among members have been maintained effectively so far. - Team members discuss whether mutually supportive and collective learning environments have been maintained so far. - Team members will discuss other project management related issues. - Team members plan on necessary changes for the identified issues. - The instructor performs intermediate surveys on students' teamwork experience.
S7	15	***Final Evaluation*** - Team members have a final discussion on their teamwork experience with the project management. - Team members evaluate other members contribution to the project. - The instructor performs final surveys on students' teamwork experience.

ISSUES TO CONSIDER (I)

- **Size & Member**

  - a team of 3 to 5 members

  - can be properly adjusted according to a classroom environment

  - bigger size

    ➔ hard to maintain close cohesion among members

  - members with various backgrounds

ISSUES TO CONSIDER (II)

- **Communication**
  - meetings are the most common
  - keep meeting minutes
  - social network services, such as blog

- **Effectiveness**
  - will make the approach more robust and meaningful
  - two forms of surveys (i.e., intermediate, and final)

CONCLUSIONS (I)

- Teamwork skills needed for a project management have not been practiced enough.

- We
  - proposed ***adoption of the CoP method*** into software engineering classroom.
  - justified the ***applicability of the Cop method*** to software engineering classroom environment.
  - developed specific ***CoP sessions for a software engineering course***.

CONCLUSIONS (II)

- Students will

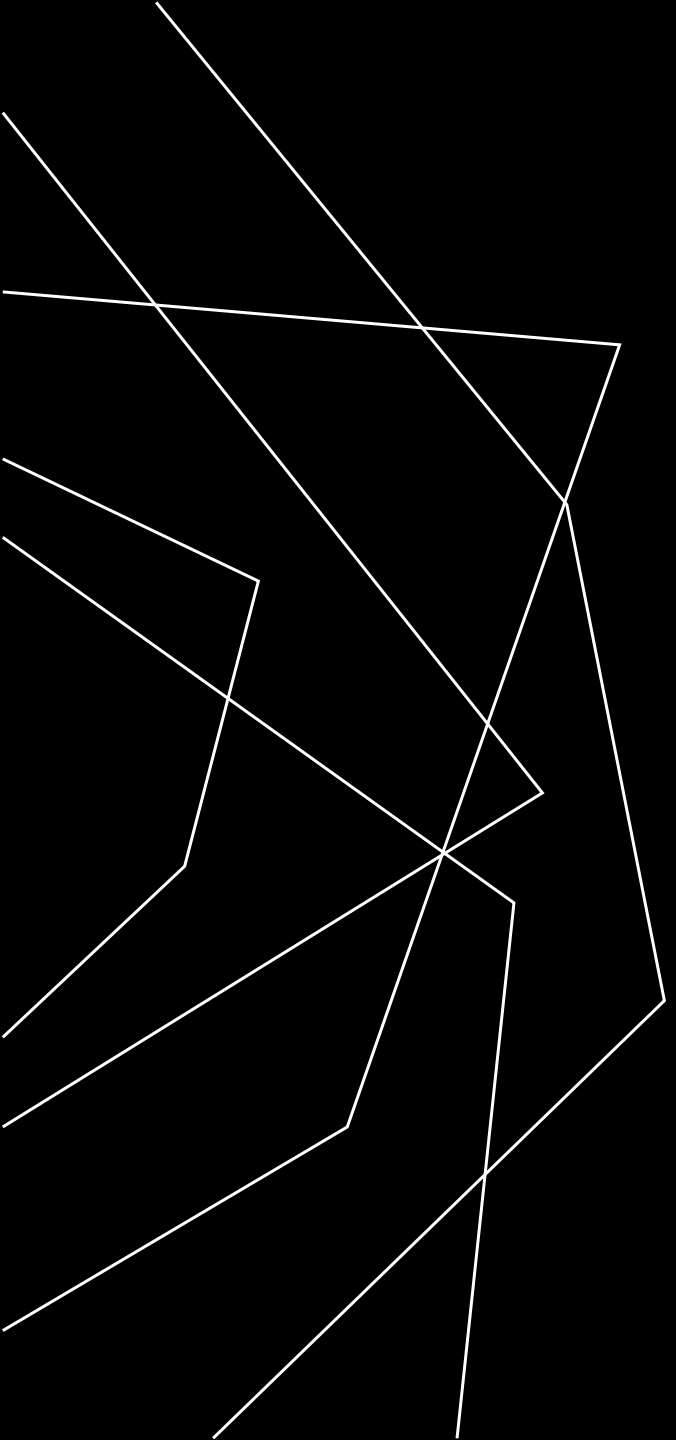
  - understand the ***importance of human and social factors***.

  - practice ***people-related issues*** in a systematic way.

  - be equipped with ***necessary teamwork skills*** to accommodate ***mutually supportive*** and ***collective learning*** environment for software development.

FUTURE STUDY

- Develop two surveys for the proposed CoP sessions
- Designing and adopting a formal measure



THANK YOU

Charlie Y. Shim

shim@kutztown.edu