

# Perceptual Influence of Cooperative Goal to Problem Solving Approach

Hon Keung Yau, Alison Lai Fong Cheng

**Abstract**—The purpose of this paper is to examine the students' perception of the cooperative goal to promote the problem solving approach and help student learn from mistakes under a cooperative environment. A survey methodology was employed in this study and totally 167 questionnaires were collected from Universities in Hong Kong. The students perceived that the cooperative goal is significantly positive associated with the problem solving approach.

**Index Terms**—Cooperative goal, Hong Kong, Problem solving approach, Learning from mistakes

## I. INTRODUCTION

Teamwork has become more and more important and essential in the society. In fact, many organizations use team as an autonomous working unit, and it is a must for members to cooperate with each other to get the work done. However, one's ability is finite and restricted, people always need to work with other to accomplish tasks and projects. Teams outperform individuals acting alone, especially when performance requires multiple skills, judgments and experiences. Furthermore, mistake is inevitable when working as a team, however, previous research emphasized that people would deny their mistakes that are pointed out and appear to be defensive, and they will even continue with their present action [9] and they do not want to correct them even they waste their time and money since they are afraid of blaming by others and encumber the team performance by their own faults. Moreover, teamwork skill is also important for the University students because the skill can prepare themselves better for the highly competitive working environment. In addition, previous studies have shown that cooperative goal is one of the methods to enhance the problem solving approach which encourages open discussion among group members of their mistakes [9]. However, it appears that no studies have been done before to investigate the students' team learning from mistakes in Hong Kong universities. The purpose of this paper is to fill this gap and to examine the students' perception of the cooperative goal to improve problem solving approach which promotes student learning from mistakes under a cooperative environment by answering the

research question "what is the impact of cooperative goal on problem solving approach in Hong Kong higher education?"

## II. LITERATURE REVIEW

The theories of the problem solving approach and cooperative goal are addressed in the following sections.

In universities, students are familiar with working in teams, one way in which management schools have responded to the need for developing student teamwork skills is to increase the use of team projects as part of their curriculum, and most of them are short-term project team. The use of project teams creates cooperative learning groups in which students share knowledge and enhance one another's learning around course content and team dynamics [5]. Student teams are typically used to enhance learning among team members through reflection and the sharing of knowledge among team members [8]. Therefore, it is important to develop teamwork skills and be positive to team learning from mistakes for university students, which are useful in the current society.

Some studies suggest that participation in student project teams often creates more frustration and dislike of teamwork than appreciation for the diversity of perspectives and improved learning and performance that it makes possible [1]. There is a big variance between the purpose of working as a team and the reality. One of the reasons of the above problem is that students always work as short-term project, the reflection and discussion required for team learning might also reduce team efficiency, a necessity in short-term project teams working to meet a deadline [4].

Deutsch [10] [11], in his theory of how the tension systems of different people may be interrelated, conceptualized three types of goal structures, which are cooperative, competitive and individualistic.

According to Deutsch [10] [11], cooperative goals are which the goals of the separate individuals are linked together that there is a positive correlation among their goal attainments. An individual can attain his/her goal only if other participants can attain their goals, he/she would seek an outcome that is beneficial to all those with whom he or she is cooperatively linked.

It is suggested that having shared mental models would enhance learning from mistakes [2].

With cooperative goals, people want each other to

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H. K. Yau is with the Department of Systems Engineering and Engineering Management, City University of Hong Kong, Kowloon Tong, Kowloon, Hong Kong (corresponding author to provide phone: 852-34426158, Fax: 852-34420173, email: [honkyau@cityu.edu.hk](mailto:honkyau@cityu.edu.hk)).

A. L. F. Cheng is with the Hong Kong College of Technology, Kowloon, Kowloon, Hong Kong (email: [alisoncheng\\_lai\\_fong@yahoo.com.hk](mailto:alisoncheng_lai_fong@yahoo.com.hk)).

perform effectively, for such competence helps each person to be successful. They interact in ways that promote common goals and they resolve issues for mutual benefit. They focus on developing joint abilities in order to succeed as a team, thus errors and mistakes are considered impediments to their joint progress towards their goals [9].

Problem solving involves the open discussion among group members of their mistakes in order to understand the conditions that improve the future improvement. They are willing to admit their mistakes, share their experience and delve into how they can correct the error and reduce the probability of its recurrence [9].

Evidence supports that proposition that a problem solving approach to dealing with the issues and mistakes can foster learning, whereas blaming makes discussions more threatening and divisive [7].

Previous small group research investigating group learning and performance showed that pro-activity in problem solving highly and positively correlated to team learning. Shared agreement among team members on using mistakes to learn was an important antecedent to group performance [2]. Therefore, problem solving approach can facilitate to promote group learning from mistakes, and effective teammate relationship, team climate, leadership, and values are critical for developing a problem solving approach and thus learning from mistakes.

Based on the above evidence, we hypothesize:

**Hypothesis 1:** The cooperative goal has positive impact on improving the problem solving approach.

### III. METHODOLOGY

To investigate the perception of Hong Kong university students concerning about the impact of the problem solving approach on improving the rating of team learning from mistakes. A survey methodology was employed. A questionnaire was designed using the measurement scale [9]. The 13 items were included in the questionnaire as shown in Table I. The scale of problem solving approach was included from questions 1 to 6 while the scale of the rating of team learning from mistakes were included from questions 7 to 11. 7 point Likert scale was used for those 11 questions in the questionnaire.

TABLE I  
ITEM IN THE QUESTIONNAIRE

|   |
|---|
| 1. After a mistake has been made, we analyze it thoroughly.   |
| 2. Team members work to use their mistakes to make progress.  |
| 3. In this team mistakes are discussed so that we can correct them.   |
| 4. Because mistakes provide important information for how we can complete our work, we discuss them.            |
| 5. When a team member makes an error, they share it with others so that they don't make the same mistake again. |
| 6. After an error, people think through how to correct it.  |
| 7. Our team members 'swim or sink' together.  |
| 8. Our team members want each other to succeed.   |
| 9. Our team members seek compatible goals.  |
| 10. Our team members' goals go together.  |
| 11. When our team members work together, we usually have common goals.  |

Then a pilot study for a small group of respondents was conducted. The respondents generally understood all the questions and pointed out some wrong words in the questionnaire. They thought that the length of the questionnaire was acceptable.

After the pilot study, totally 220 questionnaires were distributed to several universities in Hong Kong. Totally 167 samples were collected. The return rate was about 76%. All the questionnaires were found to be fully completed and the data was relevant, and the data was proved to be valid and useful.

After all data were collected, the data were analyzed using SPSS. Then the factor analysis and reliability test were conducted. The results were shown in Table II.

The commonly accepted standard of factor loadings was 0.3 [3]. According to table II, it showed that the factor loadings of all questions were above 0.3. Therefore all items of questionnaire were retained. In addition, the values of Cronbach's alpha of problem solving approach and the rating of team learning from mistakes were 0.773 and 0.810 respectively. Normally, the alpha value should be greater than 0.7 for well established measures [6]. As no alpha value in this survey study was less than 0.7, the results were considered to be consistent and reliable.

TABLE II  
RESULTS OF FACTOR LOADING AND RELIABILITY

| Scale                    | Questions | Factor Loadings | Cronbach's Alpha |
|--------------------------|-----------|-----------------|------------------|
| Problem solving approach | Q1        | .584            | 0.773            |
|                          | Q2        | .686            |                  |
|                          | Q3        | .769            |                  |
|                          | Q4        | .696            |                  |
|                          | Q5        | .504            |                  |
|                          | Q6        | .696            |                  |
| Cooperative goals        | Q7        | .724            | 0.810            |
|                          | Q8        | .736            |                  |
|                          | Q9        | .648            |                  |
|                          | Q10       | .493            |                  |
|                          | Q11       | .751            |                  |

### IV. RESULTS AND DISCUSSION

167 students returned the questionnaire. Of the questionnaire returned, 52.7% were completed by males and 47.3% were completed by females. 11.4% of respondents were year 1 students, 26.9% were year 2 students, 55.7% were year 3 students, 6% were postgraduate students and others. In addition, 94% were full time students, 3.6% were part time students and 2.4% were exchange students.

The correlation test was then used to test the relationship between the cooperative goal and problem solving approach. The findings indicated that there was significant positive correlation between the cooperative goal and problem solving approach ( $r = 0.425$ ,  $p < 0.001$ ). It can be concluded that the cooperative goal can enhance problem solving approach and help students promote learning from mistakes in Hong Kong higher education. Hence, the Hypothesis 1 was supported. Findings suggest that cooperative goals within a team may be a foundation for the problem-solving interaction among members that helps teams learn from their mistakes [9]. As cooperative goals toward positive correlation among team's goal attainment, and team members would identify the problems and develop a solution when there is something go wrong and cooperative goals focus on developing joint abilities and keeps the harmony within teams.

The main difference between our study and other scholars' works is that our study investigated the students' perceptions of the impact of cooperative goals on problem solving approach in Hong Kong higher education while other scholars' studies examined the staff's perceptions of the impact of cooperative goals on problem solving approach in other industries in other countries.

## V. CONCLUSION

It can be concluded that that there was significant positive correlation between the cooperative goals and problem solving approach. This study contributed to the impact of cooperative goals on problem solving approach in Hong Kong higher education. Based on this study's findings, the university's educators can integrate more group assignments and projects in their courses to enhance students' learning and motivation.

The major limitations of this study were the small sample size and used only the survey technique. In the future study, qualitative technique like interview should be used to explore the reasons why the cooperative goals can enhance the problem solving approach and help to enhance the team learning from mistakes in Hong Kong higher education.

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