HARNESSING THE POWER OF MCQ CO-CREATION IN HIGHER EDUCATION: INSIGHTS INTO PERCEPTIONS OF HELPING BEHAVIOR

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Abstract

Social support within peer groups is essential in higher education, where students are often organized into project groups to achieve specific objectives. Traditionally, these groups function in isolation, with inter-group assistance perceived as competitive rather than collaborative. This paper explores the transformative potential of student co-creation projects, which dissolve the boundaries of individual groups to foster a class-wide collaborative environment. Conducted during the 2024 academic year, this study involved undergraduate students at a public university in Hong Kong. The project challenged students with the technical complexities of company law, requiring them to collaboratively develop multiple-choice questions on the university's learning management system. This approach enabled both individual students and groups to actively learn together, practice critical thinking skills, and develop the ability to make well-reasoned judgments.

The study identifies key antecedents for successful co-creation, including helping behavior among students, their readiness to co-create, and intrinsic motivation to participate. Prior to the project's commencement, students completed a self-administered survey, yielding 318 responses. Exploratory factor analysis and reliability tests validated the three factors. Regression analysis revealed that readiness to co-create, motivational factors, and helping behavior are significant predictors of students' improved preparation for subject revision and examination. This exploratory study provides valuable insights for instructors, highlighting not only traditional intrinsic motivators and readiness to co-create but also emphasizing the critical role of social support in facilitating successful co-creation projects. It underscores the importance of a student-centric approach in fostering a supportive and integrative educational environment that prepares students for collaborative professional landscapes.

Keywords: Active learning, cocreation, critical thinking, helping behavior, learning management system, MCQs, student-centric approach.

1 INTRODUCTION

In Hong Kong's higher education landscape, social support within peer groups is crucial, as students are frequently organized into project teams to achieve specific learning objectives. However, the 'free-rider' phenomenon, explained by the concept of social loafing, is not uncommon in group-based projects [1]. This occurs when some students reduce their individual effort in group settings compared to when they work alone [2]. Beyond individual contributions, these project groups often collaborate internally but operate in isolation, with inter-group assistance perceived as competitive rather than collaborative. Instructors worldwide recognize the significant differences in learning climate, academic outcomes, and even student interest and career inspiration between cohesive groups and those affected by free-riders. Therefore, as an educator, exploring various pedagogical models to reduce social loafing is a valuable endeavor.

A group-based co-creation activity in the subject of company law was designed to enhance student interaction both within and between groups. Given the challenging nature of company law for business school students, mastering the material can be difficult. Previous studies have demonstrated that engaging students in co-creating assessment activities can extend beyond mere memorization and understanding. Specially, as outlined in Bloom’s taxonomy, developing questions, such as multiple-choice questions, involves students in higher-order thinking skills - analyzing, evaluating, and ultimately creating [3]. This teaching and learning approach enable both individual students and groups to actively collaborate, fostering a climate that encourages well-reasoned judgments and the practice of critical thinking skills.

This pilot study, using a group-based MCQs co-creation activities, aims to explore students' perceptions of their readiness to engage in group learning activities and assess the extent of helping behaviors they believe they offer to peers in pursuit of collective goals. The helping behaviors can significantly impact group success and holds the transformative potential to dismantle the competitive climate between groups, fostering a class-wide collaborative environment for active learning.

2 METHODOLOGY

This pilot study was conducted at the business school of a public university in Hong Kong, focusing on undergraduate students enrolled in the company law course. These students were challenged with the technical complexities of company law and participated in a Multiple-Choice Questions (MCQs) Challenge, a specially designed teaching and learning activity. They were required to collaboratively develop MCQs using the university's learning management system, Blackboard, during the academic year 2024-25, spanning semesters 1 and 2.

At the beginning of each semester, a self-administered survey was distributed to the students to collect data on their perceptions of various variables, including 23 statements addressing role clarity, perceived ability, perceived motivation, helping behavior, along with one statement assessing the perceived impact of the activity on their academic outcomes, particularly in aiding their end-of-semester revision. A total of 318 responses were collected, providing a robust dataset for analysis. The data underwent exploratory factor analysis to identify underlying patterns, followed by reliability tests to ensure the consistency of the measures. Subsequently, regression analysis was conducted to examine the relationships between key variables.

The variable of role clarity was measured using five statements [4][5][6], such as ‘I feel confident about how to co-create the MCQs effectively for deep learning purposes.’, and ‘I am not sure how the co-creation of the MCQs can be used properly for deep learning purposes.’

Perceived ability was assessed through five statements [4][5][6], such as ‘I am fully capable of co-creating the MCQs.’, ‘I am confident in my ability to co-create the MCQs.’, and ‘Co-creating MCQs for deep learning purposes is well within the scope of my abilities.’

Perceived motivation was measured by eight statements [4][5][6], such as ‘I feel motivated to co-create the MCQs for deep learning purposes.’, ‘I feel motivated to share information with teaching staff in the process of MCQs co-creation.’, and ‘I feel motivated to share information with my group members in the process of MCQs co-creation.’

Finally, helping behavior was assessed using four statements [7][8]. They are ‘I will assist my group members if they need to co-create the MCQs.’, ‘I will help my group members if they seem to have problems with co-creating the MCQs.’, ‘I will teach my group members how to co-create the MCQs.’, and ‘I will advise other group members if they seem to have problems with co-creating the MCQs.’

3 RESULTS

3.1 Exploratory Factor Analysis

A reliability test was conducted, resulting in the deletion of two statements from the role clarity variable (RC2, RC5) yielding a Cronbach’s alpha of 0.787. In the perceived ability variable, three statements were removed (PA4, PA5, PA6), resulting in a Cronbach’s alpha of 0.797. For perceived motivation, one statement (PM4) was deleted, achieving a Cronbach’s alpha of 0.939. All statements in the helping behavior variable were retained, with a Cronbach’s alpha of 0.897, indicating strong internal consistency across these measures.

Twenty-three statements across four variables were subjected to exploratory factor analysis using Principal Component Analysis with the Varimax rotation method. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.956, and Bartlett’s Test of Sphericity yielded a value of 7597.361 with a significance level of less than 0.001. The results indicate that the data matrix possessed sufficient correlation for factor analysis. The study adhered to established criteria, including requiring eigenvalues greater than 1.0 for factor retention, factor loadings exceeding 0.5 for each statement; an alpha value from reliability tests above 0.5, and total variances explained exceeding 50% [9].

The exploratory factor analysis confirmed a three-factor model, explaining a total variance of 77.932%. Factor 1, labeled 'Readiness to Co-Create,' consists of six statements from the role clarity and perceived ability variables (RC4, PA2, PA1, RC3, PA3, RC1), with factor loadings ranging from 0.734 to 0.844. Factor 2, termed 'Intrinsic Motivation to Participate,' includes seven statements from the perceived motivation variable, with factor loadings between 0.667 and 0.799. The final factor, 'Helping Behavior,' comprises four statements, with factor loadings ranging from 0.733 to 0.838.

3.2 Regression Analysis

The dependent variable in this study was 'co-creating MCQs will aid my end-of-semester revision.' A stepwise estimation approach was employed to determine the relative weightings of the factors and identify the best predictor of the dependent variable. The analysis revealed that a three-factor model positively influenced the dependent variable. The overall regression model was statistically significant, $F(3, 271) = 138.193$, $p < 0.001$, $R^2 = 0.605$, indicating that the identified factors effectively predict the perceived benefit of co-creating MCQs for end-of-semester revision. The equation in this multiple predictor model is that 'Y (Co-creating MCQs will aid my end-of-semester revision) = 0.151 + 0.178 (Readiness to co-create) + 0.413 (Intrinsic motivation to participate) + 0.553 (Helping behavior)'.

4 CONCLUSIONS

The above findings suggest that three key factors—students' readiness to co-create (including role clarity about the co-creation activity and their perceived ability to create MCQs), motivation and their helping behavior—significantly enhance their perception of the activity's usefulness for end-of-semester revision. The multiple predictor model also highlights intrinsic motivation and helping behavior as significant predictors.

According to equity theory, students' motivation to engage in teaching and learning activities, such as MCQ assessment development, is influenced by their assessment of input versus expected output. To address potential social loafing in group projects, it is important to clearly communicate reward mechanisms to students, incorporating both individual and group incentives to mitigate free-rider issues.

In the realm of organizational behavior theories, Organizational Citizenship Behavior (OCB) has been extensively studied. OCB is defined as 'individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization' [10]. This concept can offer valuable insights for student project groups in higher education. In this study, instructors can explore strategies to enhance OCBs, helping students cultivate positive and cooperative behaviors. OCB includes several dimensions, such as altruism, which involves students voluntarily assisting others through peace-making, cheerleading, and facilitating both in-group and inter-group communication. Instructors can promote a learning environment that encourages altruism by serving as role models from the beginning of the semester and organizing pre-training sessions before engaging in teaching and learning activities [8].

Another important dimension of OCB is sportsmanship, which emphasizes working towards team goals without complaints. Complaints can foster resentment and spread negativity, so it is crucial to educate students on avoiding such pitfalls in group projects. Encouraging students to gracefully accept less preferred decisions or arrangements for the sake of achieving group objectives is vital for fostering a cooperative and productive team environment. Additionally, maintaining a positive attitude by greeting the class with enthusiasm and showing appreciation and humor can help ease tension and promote learning [8].

The organizational compliance dimension also offers valuable insights for group work [8]. In a cross-cultural setting, local and exchange students may exhibit different working styles and communication preferences, including modes and timing. Behaviors such as arriving early, and adhering to systems like internal deadlines, which are part of mutually agreed-upon ground rules, are crucial.

In summary, scholars in the field of Organizational Citizenship Behavior (OCB) have identified numerous helping behaviors that are essential to teach, cultivate, and model for students in peer-directed groups [12]. In this study's context, developing MCQs requires students to utilize creativity and higher-order thinking skills, with positive social support within and across peer groups serving as a key enabler. Successfully implementing these practices can dissolve the boundaries of individual social loafing and inter-group competition, fostering a class-wide collaborative environment. Conversely, if the process is not carefully designed to prepare students for this task, the effectiveness of the teaching and learning method may be compromised. Insights gained from understanding helping behaviors provide instructors with valuable perspectives to consider when designing and implementing future teaching and learning activities.

4.1 Limitations

This study employs a cross-sectional design within a single academic year, incorporating pre-survey data. The aim is not to generalize the findings but to provide insights into identifying key antecedents for

the successful co-creation of subject assessment. Since this co-creation activity also aim to assist students with end-of-semester revision, qualitative interviews are recommended to gather additional feedback and comments from participating students, allowing for modifications to the activity in the following semester.

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REFERENCES

[1] B.E. Perron, “Reducing social loafing in group-based projects,” *College Teaching*, vol. 59, no. 7, pp. 163-164, 2011.

[2] S.L. Piezon and R.L. Donaldson, “Online groups and social loafing: Understanding student-group interactions,” *Online Journal of Distance Learning Administration*, vol. 8, no. 4, pp.1-11, 2005.

[3] A. Ko, S. Sabapathy, and W.W.L. Chiu, “Student readiness for co-creation: Enhancing active learning for student-staff partnership in higher education,” in *INTED2024 Proceedings*, pp. 1587-1591, 2024. Doi: 10.21125/inted.2024.0459.

[4] S. Dellande, M.C. Gilly, and J.L. Graham, “Gaining compliance and losing weight: The role of the service provider in health care services,” *Journal of Marketing*, vol. 68, no. 3, pp. 78-91, 2004.

[5] M.L. Meuter, M.J. Bitner, A.L. Ostrom, and S.W. Brown, “Choosing among alternative service delivery modes: An investigation of customer trial of self-service technologies,” *Journal of Marketing*, vol. 69, no. 2, pp. 61-83, 2005.

[6] W. Wang, P. Hsieh, and H.R. Yen, “Engaging customers in value co-creation: The emergence of customer readiness,” in *International Joint Conference on Service Sciences, IEEE 2011*, pp. 135-139, 2011.

[7] T.H. Elsharnouby, “Student co-creation behavior in higher education: The role of satisfaction with the university experience,” *Journal of Marketing for Higher Education*, vol. 25, no. 2, pp. 238-262, 2015.

[8] A. Mazen, S. Herman, and S. Ornstein, “Professor delight: Cultivating organizational citizenship behavior,” *Journal of Management Education*, vol. 32, no. 5, pp. 563-579, 2008.

[9] J.F. Hair, W.C.C. Black, B.J. Babin, R.E. Anderson, and R.L. Tatham, *Multivariate data analysis.* Sixth edition. New Jersey: Pearson Prentice Hall, 2005.

[10] D.W. Organ, P.M. Podsakoff, and S.B. MacKenzie, *Organizational citizenship behaviour: Its nature, antecedents and consequences.* Beverly Hills, CA: Sage, 2006.

[11] J.L. Raver, M.G. Ehrhart, and I.C. Chadwick, “The emergence of team helping norms: Foundations within members' attributes and behavior,” *Journal of Organizational Behavior*, vol. 33, no. 5, pp. 616-637, 2012.

[12] N.M. Webb and A. Mastergeorge, “Promoting effective helping behavior in peer-directed groups,” *International Journal of Educational Research*, vol. 39, no. 1-2, pp. 73-97, 2003.