A flipped learning approach to managerial competency development: Does interactivity with peers and instructor affect learning effectiveness

Abstract

The use of a flipped learning approach has received increasing attention in higher education. Yet, we still know little about the influence of using a flipped learning approach on managerial competency development. Our survey findings show that students generally have more confidence in managerial competencies upon completion of a student-directed experiential learning project, whereby sensitivity and flexibility are ranked at the top. This study also shows that flipped learning enables students to have more interactivity with their peers and instructor, resulting in learning effectiveness. Furthermore, the effects of interactivity with peers and instructor on learning effectiveness are contingent upon whether project requirements are made salient.

Keywords: flipped learning, managerial competency, interactivity

Introduction

In a business world of complexity and uncertainty, there is a high demand for managerial competency development and the ability to apply such skills across various sectors. While employers highly value managerial competencies, they often indicate that university graduates are lacking such essential skills, especially in today's knowledge-based economy (Azevedo, Apfelthaler, & Hurst, 2012). All this has called for more educational innovation in an attempt to enhance traditional instruction. As a result, the flipped learning approach that moves students away from passive learning towards more active learning whereby students engage in collaborative activities, peer learning and complex problem-based learning has been gaining popularity in higher education (Strayer, 2012; Van der Zwan & Afonso, 2019).

According to the learning cycle model, teaching consists of two phases: a phase in which students are gaining conceptual understanding, and a phase in which students learn to apply so as to broaden their conceptual understanding beyond the context where they learned it (Bybee, 1993; Heiss, Obourn, & Hoffman, 1950; Lawson, 2002). In a traditional teaching model, the instructor facilitates content attainment through various means in a classroom setting with students being given the responsibility of applying the concepts generally in the form of assignments, whereas the roles of instructor and students are reversed in a flipped learning model, with students being responsible for attaining the content before coming to class while the instructor facilitating the application process (Jensen, Kummer, & Godoy, 2015).

The values of using flipped learning approach are inconclusive. Several studies indicate that students prefer flipped learning over traditional approaches, whereby students generally enjoy being able to learn in their own pace; flipped learning encourages students to actively engage with lecture material as they need to apply theories and/or frameworks rigorously; it frees up class time for more active learning activities; teachers are given more opportunities to interact with and to assess students' learning (Betihavas et al., 2015; Butt, 2014; Davies, Dean, & Ball, 2013; Gilboy, Heinerichs, & Pazzaglia, 2015; Larson & Yamamoto, 2013; McLaughlin et al., 2014; Roach, 2014). In comparing between flipped and non-flipped learning approaches, some other studies however showed no significant differences in their learning outcomes (Findlay-Thompson & Mombourquette, 2014; Hung, 2015; Jensen, Kummer, & Godoy, 2015).

In our university, we adopted a flipped learning approach in a postgraduate subject. By providing students with the material to gain a basic level of knowledge and understanding of four management functions, classroom time was then be used to deepen their learning and develop managerial competencies through a series of student-directed experiential learning activities. Within this context, the role of instructor shifts towards that of facilitator and coach by empowering students to take control of their own learning. Students were expected to apply managerial competencies when developing and running the experiential learning activity, which took several forms of active learning, such as small-group work and mini-games. The objectives of these activities are twofold: (1) to practise the

four basic management functions of planning, organizing, leading and controlling; and (2) to apply theories to diagnose and solve organizational issues.

Over a period of thirteen teaching weeks, on-going discussion and feedback between students and instructor served to facilitate the processes. Upon completion of the experiential learning activity, students were asked to evaluate their perceived managerial competencies and learning effectiveness. Specifically, we examine when and why interactivity with peers and instructor will lead to learning effectiveness as a result of flipped learning approach. This line of inquiry places an important role of both students and instructor in co-creating the learning process through a flipped approach; and more importantly driving students to apply the four management functions throughout the iterative processes.

Theoretical Framework and Hypotheses Development
Using the flipped learning approach, we developed activities and assessments designed to help students build skills needed to apply organization and management skills in a student-directed experiential learning activity. The learning objectives were to develop a clear understanding of four management functions; and to develop one's perceived ability to engage in organization and management behaviour through collaborative activities, peer learning and problem-based learning.

Interactivity and learning effectiveness
Traditional instructional approach may hinder interactions in the classroom. Limited class time, fixed seating arrangements and students' reservations about speaking out in class had been identified as barriers to high levels of interactivity (Draper & Brown, 2004; Liu et al., 2003). However, flipped learning approach has changed how students and instructor interact, and has provided new opportunities to enhance interactivity. In a student-directed experiential learning activity, students are not only more motivated to learn, but also more attentive, participative and eager to exchange ideas with others; consequently, interactivity improves student learning effectiveness. Interactivity with peers results from participation, discussion and collaboration, whereby it improves the active processing of course contents and facilitates higher-order learning so as to broaden their conceptual understanding (Crouch & Mazur, 2001; Michaelson, Knight, & Fink, 2004). Some students prefer learning from their peers because they speak in a similar language and, therefore, can explain the problems and solutions more effectively (Nicol & Boyle, 2003). Thus, we hypothesize:

Hypothesis 1: Interactivity with peers is positively related to learning effectiveness.

Building interactions with students in class is considered as a critical component of the learning process (Mayer et al., 2009). This interactivity allows instructors to provide immediate feedback during the class, evaluate students' understanding of course materials and concepts, identify any misunderstanding of students, and cultivate closer relationships with them (Trees & Jackson, 2007). Consequently, instructor–student interaction is ranked highly among the factors influencing learning performance (Bullock et al., 2002; Hake, 1998; Higgins, Hartley, & Skelton, 2002). Thus, we hypothesize:

Hypothesis 2: Interactivity with instructor is positively related to learning effectiveness.

Moderating effect of project requirements

Third and finally, we study the interaction effect of project requirements and interactivity on learning effectiveness. If project requirements are made salient, we expect that students will be less prone to interacting with one another in order to attain higher learning effectiveness than those who find project requirements less salient. One reason for this is that roles of project team are more distinctive when project requirements are made salient; team members do not have to waste time and keep interacting with others in defining the roles and clarifying the project requirements. They are more focused on those relevant tasks addressing to the learning outcomes. Also, physical proximity between instructor and students in class plays a key role in the generation, recognition, and acceptance of expectations (Carmeli & Schaubroeck, 2007). We expect that interactivity with instructor will lead to higher learning effectiveness when project requirements are made salient. This is because the instructor-student

interactivity allows the student-directed activity to be on the right track (e.g., appropriateness of activity, relevance of concepts and/or theories); and any misunderstanding can be clarified. Thus, we hypothesize:

Hypothesis 3a: Project requirements will moderate the relationship between interactivity with peers and learning effectiveness: learning effectiveness of those with high interactivity with peers in the context of salient project requirements is significantly lower compared to those with high interactivity with peers in the context of less salient project requirements as well as those with low interactivity with peers when project requirements are made salient.

Hypothesis 3b: Project requirements will moderate the relationship between interactivity with instructor and learning effectiveness: learning effectiveness of those with high interactivity with instructor in the context of salient project requirements is significantly higher.

Figure 1

A Theoretical Framework
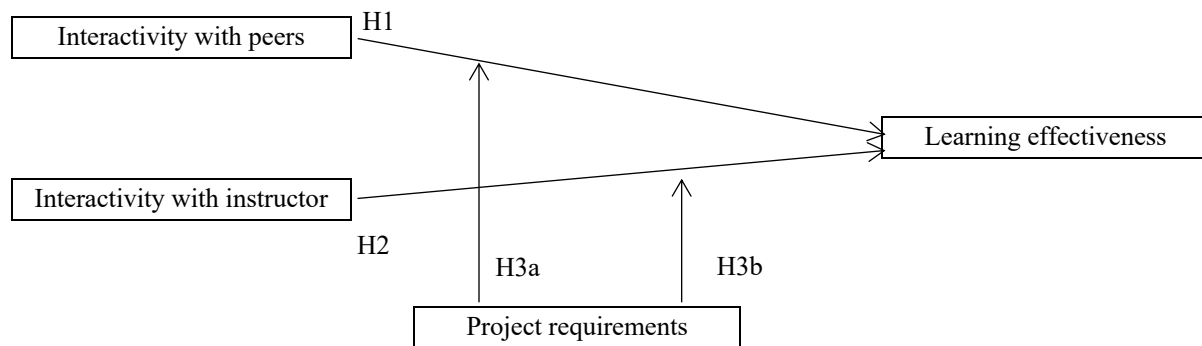
Methods

Sample and data collection

In our university, a flipped learning approach was being adopted during the first semester of academic year 2019/2020. Eighty-three postgraduate students enrolled in an organization and management subject of a master's degree in business and management. They worked as part of a team to develop and implement an experiential learning activity that they would engage their fellow classmates in a topic related to organization and/or management. The activity should allow participants to learn and/or to apply subject knowledge and should not be longer than 60 minutes. Students were divided into 12 teams with around 7 members each. Each team was expected to demonstrate how they planned, organized, led, and controlled the entire activity throughout the process. To help them better prepare for this experiential learning activity, each team was required to submit a proposal (no more than 2,000 words**,** excluding figures, tables, references, and appendices) outlining the activity details and identifying the potential application of organization and/or management theory, concept, and/or framework.

The proposal should generally follow the structure outlined in *Management Teaching Review*'s Experiential Exercises. Ongoing discussions between students and subject lecturer continued during the processes, and feedback was given to students upon submission of the proposal and completion of the experiential learning activity respectively. At the semester end, we conducted a posttest only with experimental group design, through which students were invited to do an online survey on the effectiveness of adopting the flipped learning approach as to whether their perceived ability to perform managerial competencies would increase, and whether interactivity with peers and instructor would improve learning effectiveness. Their participation was voluntary and anonymous. Data collected were treated in strict confidence.

Measures

Learning effectiveness was measured by adapting the three items following MacGeorge et al. (2008) on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A sample item is "The group work has improved my comprehension of the concepts studied in the course." The Cronbach's alpha value of this scale was 0.91.

Managerial competencies were measured using the Job Competency Survey (Chong, 2013). This instrument comprises forty competencies divided into six groups – intellectual-information handling, communication, management, interpersonal, leadership, and personal. Students were asked to assess how confident they were in their ability to engage the abovementioned tasks on a five-point Likert scale ranging from 1 (very little) to 5 (very much). Sample items include "seeking all possible relevant information for the task systematically"; "developing alternative courses of action and making decisions based on logical assumptions that reflect factual information."

Interactivity with peers was measured by using a subset of four items from Liu (2003) and McMillan and Hwang (2002) on a five-point Likert scale (1=strongly disagree; 5=strongly agree). A sample item includes "The group work facilitates my interaction with peers." The Cronbach's alpha value of this scale was 0.83.

Interactivity with instructor was assessed by adapting the scale from Liu (2003) and McMillan and Hwang (2002) on a five-point Likert scale (1=strongly disagree; 5=strongly agree). A sample item is "The group work gives me the opportunity to discuss with my subject lecturer." The Cronbach's alpha value of this scale was 0.94.

Project requirements were assessed using a three-item scale. We adapted the wording to have the requirements as the referent, tapping the extent of salience to which students perceived what they were required to do in the group project, and viewed these requirements in ways that aligned with their actions. This scale was measured from responses ranging from 1 (strongly disagree) to 5 (strongly agree). Sample items include "The group work requires me to make decision(s);" "The group work requires me to collaborate in a team;" and "The group work requires me to find a better solution." The Cronbach's alpha value of this scale was 0.82.

Control variable. We also collect data for control likely to provide alternative explanation for learning effectiveness. Control variable includes team size (in terms of number of students in each team).

Results
According to Table 1 (Appendix I), students had more confidence in various managerial competencies upon completion of a student-directed experiential learning project. Among these skills, based on Chong's (2013) categorization, considering the feelings and needs of others (sensitivity), taking other views into account and changing position when appropriate (flexibility), and adopting a flexible but not compliant style when interacting with others (flexibility) were the top three (mean scores > 4.4). Students also reported to have more confidence in effectively coordinating the activities of team members to achieve common goals (organizing), influencing and persuading others to give their agreement and commitment to a decision or course of action which they initially opposed (persuasiveness), and tailoring content to the audience's understanding (oral presentation) (mean scores > 4.3).

We used hierarchical regression models to examine our hypotheses. Hypothesis 1, indicating that interactivity with peers is positively related to learning effectiveness, was marginally supported (β = .31, p < .10). Hypothesis 2, which states that interactivity with instructor is positively related to learning effectiveness, was supported (β = .60, p < .01). It also produced a significant model with R^2 of .77 (F = 18.92, p < .001). In testing the moderating effect, mean-centered data were used to minimize the distortion due to high correlations between the interaction term and its component variable (Aiken & West, 1991). Entering the product terms into the regression produced a significant model with R^2 of .84 (F = 20.75, p < .001). There was significant relationship between the product terms and learning effectiveness. It revealed a significant negative interaction (β = -.56, p < .05) such that, consistent with hypothesis 3a, learning effectiveness of those with high interactivity with peers in the context of salient project requirements is significantly lower compared to those with high interactivity with peers in the context of less salient project requirements as well as those with low interactivity with peers when project requirements are made salient. Hypothesis 3b, stating that learning effectiveness of those with high interactivity with instructor in the context of salient project requirements is significantly higher, was supported (β = .51, p < .05).

Conclusion
This study provides empirical evidence from the students we have sampled, in combination with instructor experiences,

to develop fresh perspectives on using flipped learning approach effectively in grooming students for leadership and managerial positions. We set out to examine when and why interactivity with peers and instructor will lead to higher learning effectiveness, contingent on the salience of project requirements. To this end, instructors are encouraged to use flipped learning approach in course design and delivery. Our study contributes to effective teaching and learning in the field of organization and management by promoting reflection and reassessment of the approaches we use to provoke learning. This line of inquiry places an important role of both students and instructor in co-creating the learning process through a flipped approach; and more importantly driving students to apply the four management functions throughout the iterative processes while allowing their peers to immerse themselves in understanding relevant management concepts and theories.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Thousand Oaks: SAGE.

Azevedo, A, Apfelthaler, G., & Hurst, D. (2012). Competency development in business graduates: An industry-driven approach for examining the alignment of undergraduate business education with industry requirements. *International Journal of Management Education*, *10*(1), 12-28.

Betihavas, V., Bridgman, H., Kornhaber, R., & Cross, M. (2015). The evidence for 'flipping out': A systematic review of the flipped classroom in nursing education. *Nurse Education Today, 6*, 15–21.

Bullock, D. W., LaBella, V. P., Clingan, T., Ding, Z., Stewart, G., & Thibado, P. M. (2002). Enhancing the student-instructor interaction frequency. *The Physics Teacher, 40*, 535–541.

Butt, A. (2014). Student views on the use of a flipped classroom approach: Evidence from Australia. *Business Education & Accreditation, 6*(1), 33–43.

Bybee, R. (1993). *An instructional model for science education: Developing biological literacy.* Colorado Springs, CO: Biological Sciences Curriculum Studies.

Carmeli, A., & Schaubroeck, J. (2007). The influence of leaders' and other referents' normative expectations on individual involvement in creative work. *The Leadership Quarterly, 18*, 35–48.

Chong, E. (2013). Managerial competencies and career advancement: A comparative study of managers in two countries. *Journal of Business Research, 66*, 345-353.

Crouch, C. H., & Mazur, E. (2001). Peer instruction: ten years of experience and results. *American Journal of Physics, 69*(9), 970–977.

Davies, R. S., Dean, D. L., & Ball, N. (2013). Flipping the classroom and instructional technology integration in a college-level information systems spreadsheet course. *Educational Technology Research and Development, 61*(4), 563–580.

Draper, S. W., & Brown, M. I. (2004). Increasing interactivity in lectures using an electronic voting system. *Journal of Computer Assisted Learning, 20*, 81–94.

Findlay-Thompson, S., & Mombourquette, P. (2014). Evaluation of a flipped classroom in an undergraduate business course. *Business Education & Accreditation, 6*(1), 63–71

Gilboy, M. B., Heinerichs, S., & Pazzaglia, G. (2015). Enhancing student engagement using the flipped classroom. *Journal of Nutrition Education and Behavior, 47*(1), 109–114.

Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousands student survey of mechanics test data for introductory physics courses. *American Journal of Physics, 66*, 64–74.

Heiss, E. D., Obourn, E. S., Hoffman, C. W. (1950). *Modern science teaching*. New York: Macmillan.

Higgins, R., Hartley, P., & Skelton, A. (2002). The conscientious consumer: Reconsidering the role of assessment feedback in student learning. *Studies in Higher Education, 27*(1), 53–64.

Hung, H. (2015). Flipping the classroom for English language learners to foster active learning. *Computer Assisted Language Learning, 28*(1), 81–96.

Jensen, J. L., Kummer, T. A., & Godoy, P. M. (2015). Improvements from a flipped classroom may simply be the fruits of active learning. *CBE—Life Sciences Education*, *14*, 1–12.

Larson, S., & Yamamoto, J. (2013). Flipping the college spreadsheet skills classroom: Initial empirical results. *Journal of Emerging Trends in Computing and Information Sciences, 4*(10), 751–758.

Lawson, A. E. (2002). *Science teaching and development of thinking*. Belmont, CA: Wadsworth/Thompson Learning.

Liu, T., Liang, J., Wang, H., Chan, T., & Wei, L. (2003). Embedding educlick in classroom to enhance interaction. In Proceedings international conference computers in education (ICCE) (pp. 117–125). Hong Kong, China.

Liu, Y. (2003). Developing a scale to measure the interactivity of websites. *Journal of Advertising Research, 43*(3), 207–216.

MacGeorge, E. L., Homan, S. R., Dunning, J. B., Jr., Elmore, D., Bodie, G. D., Evans, E., Khichadia, S., Lichti, S. M., Feng, B., & Geddes, B. (2008). The influence of learning characteristics on evaluation of audience response technology. *Journal of Computing in Higher Education, 19*, 25–46.

Mayer, R. E., Stull, A., DeLeeuw, K., Almeroth, K., Bimber, B., Chun, D., Bulger, M., Campbell, J., Knight, A., & Zhang, H. (2009). Clickers in college classrooms: Fostering learning with questioning methods in large lecture classes. *Contemporary Educational Psychology, 34*, 51–57.

McLaughlin, J. E., Roth, M. T., Glatt, D. M., Gharkholonarehe, N., Davidson, C. A., Griffin, L. M., Esserman, D. A., Mumper, R. J. (2014). The flipped classroom: A course redesign to foster learning and engagement in a health professions school. *Academic Medicine*, *89*(2), 236–243.

McMillan, S. J., & Hwang, J. (2002). Measures of perceived interactivity: An exploration of the role of direction and communication, user control and time in shaping perceptions of interactivity. *Journal of Advertising, 31*(3), 29–42.

Michaelson, L. K., Knight, A. B., & Fink, L. D. (2004). *Team-based learning: A transforming use of small groups in college teaching*. Sterling, VA: Stylus.

Nicol, D., & Boyle, J. (2003). Peer instruction versus class-wide discussion in large classes: A comparison of two interaction methods in the wired classroom. *Studies of Higher Education, 28*, 457–473.

Roach, T. (2014). Student perceptions toward flipped learning: New methods to increase interaction and active learning in economics. *International Review of Economics Education, 17*, 74–84.

Strayer, J. F. (2012). How learning in an inverted classroom influences cooperation, innovation and task orientation. *Learning Environments Research*, *15*, 171-193.

Trees, A. R., & Jackson, M. H. (2007). The learning environment in clicker classrooms: Student processes of learning and involvement in large university-level courses using student response systems. *Learning, Media and Technology, 32*, 21–40.

Van der Zwan, N., & Afonso, A. (2019). Activating the research methods curriculum: A blended flipped classroom. *PS: Political Science & Politics*, 52(4), 749-753.

Appendix I

Table 1.

Perceived Abilities to Perform Managerial Competencies (Top 28)

Upon completion of the group project (i.e., experiential learning activity), how much confidence do you have in your ability to engage in the followings?	Mean	s.d.
Considering the feelings and needs of others	4.68	0.48
Taking other views into account and changing position when appropriate	4.42	0.51
Adopting a flexible (but not compliant) style when interacting with others	4.42	0.61
Effectively coordinating the activities of team members to achieve common goals	4.37	0.60
Influencing and persuading others to give their agreement and commitment to a decision or course of action which they initially opposed	4.32	0.75
Tailoring content to the audience's understanding	4.32	0.58
Adapting behavior rapidly to the requirements of a new situation	4.26	0.56
Inspiring others to achieve goals by showing vision and a clear idea of what needs to be achieved, and by showing commitment and enthusiasm	4.26	0.56
Establishing rapport quickly with team members	4.26	0.65
Making a strong, positive impression on first meeting	4.26	0.73
Making effective use of own time and other resources	4.26	0.56
Applying knowledge of changing internal situations and pressures to identify potential problems and opportunities	4.26	0.56
Conveying the clear impression that key points have been recalled and been taken into	4.21	0.63
Effectively assimilating and retaining written information	4.21	0.71
Identifying those opportunities which will increase team performance outcomes	4.21	0.54
Maintaining effectiveness in very different situations and environments, with various tasks, responsibilities, or people	4.16	0.60
Actively attempting to influence events to achieve goals, a self-starter rather than	4.16	0.60
Establishing priorities, visualising all possible changes required to meet future	4.16	0.76
Generating and recognising imaginative solutions	4.16	0.69
Organising efficiently and tidily	4.16	0.60
Providing appropriate feedback	4.16	0.69
Establishing courses of action for self and others to accomplish a specific goal	4.16	0.60
Being enthusiastic and lively when speaking	4.16	0.60
Showing a readiness to make decisions, rendering judgements, taking action, or committing oneself, even if information is incomplete and/or of dubious validity	4.16	0.69
Seeking new experiences and situations rather than the security afforded by well-established or familiar ones	4.16	0.60
Eliciting relevant information from others	4.11	0.66
Adhering to prevailing social, ethical norms and standards on the job	4.11	0.66
Taking action in which the dominant influence is your own convictions rather than the influence of other people's opinions	4.11	0.66

Source: Chong (2013); Measured on a five-point scale ranging from 1 (very little) to 5 (very much)