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Exploring the Factors Influencing Team-Based Learning Performance: A Teaching Practice of E-commerce Course Integrating National Competition

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ABSTRACT

In order to enhance the learning achievements of e-commerce skills, the e-commerce course is combined with a team-based national competition for internet entrepreneurship and marketing. The e-commerce competition includes creative website construction, micro-video advertising production, website startup or marketing planning, and presentation. The course uses the accomplishment of the competition to contribute to learning results. The study uses this teaching practice of e-commerce to explore the influencing factors of the effectiveness of team-based learning for the reference of future teaching advancement. The entire class is divided into ten teams to participate in the process and results of the competition, to explore the key elements of teamwork learning, and the impact of different team types on learning outcomes.

The results of this study show that teamwork can be influenced by the member participation, mutual support, member ability, leadership, and creativity to form different team types, which in turn affect team outcomes. Besides, the study indicates the relationship between team commitment and leadership. The research results also pointed out the importance of self-regulated learning ability, striving for victory and completing tasks in different stages steadily. In short, the analysis of teamwork learning in this study will help enhance the teaching and learning effectiveness. It is expected that the results of this study can also be used as a reference for future innovative flipping teaching of related courses.

Keyword: e-Commerce, Team Learning, Team type, Commitment, Teaching Practice

1. INTRODUCTION

It is important for students to be able to develop the professional skills required by the industry during their studies. In order to achieve the educational goals, many schools and teachers try to find practical platforms provided by the industry to increase students' interest and achievements.

This is an era of rapid change and high competition. Therefore, it is necessary to cultivate the ability of innovation and entrepreneurship. Many successful entrepreneurs look for business opportunities and creativity in their college days, and through various trials and exercises, develop possible opportunities for entrepreneurship.

The e-commerce course is not only to understand the patterns and technologies developed in the past, but also to explore possible future plans for success. There is a need to practice, familiarize with e-commerce skills, and apply these skills to realize or develop your own ideas using web platforms and technologies.

To understand and better the teaching and learning effectiveness, this study uses the opportunities of this teaching practice to find out the factors influencing the effectiveness of team-based learning. The entire class is divided into ten teams to participate in the process and results of the competition, to explore the key elements of teamwork learning, and the impact of different team types on learning outcomes.

Overall speaking, the study identifies each team's characteristics and its team type by its team elements, discusses the relationship between team commitment and leadership, and analyzes the internal operations of each teams and its relation with performance. Finally, the study provides a refined conceptual framework for shaping team types, based on the results of the above discussions.

1.1 NATIONAL E-COMMERCE COMPETITION

In order to provide students a good platform for practice in business, this course chooses to include a national e-commerce competition which has been held for many years, so that students can use the competition's website functions, provided by the organizer, to build their own business marketing websites and online stores. Through building the websites, the teams can not only sell goods, but also learn about the various tools needed for online marketing.

This national competition is divided into two categories: the startup group and the marketing group. In the competition, only the top ten teams from the preliminary round can enter the finals. The team that chooses the startup group must build its own brand from scratch and sell its own goods and services on the Internet from the perspective of entrepreneurship. Team that chooses the marketing group must work with a company to do online marketing and creative marketing campaigns for the company. The preliminary competition consists of three stages: the construction of a creative website, the production of video advertisements, and the production of marketing plans, for a length of two months. The teams that enter the finals must go to the stage to brief their entrepreneurship or marketing plans.

2.2 TEAM-BASED LEARNING MODEL OF NATIONAL COMPETITION (TBLMNC)

Since e-commerce involves business management knowledge and digital technology applications, in order to enable students to integrate their knowledge and skills, this course uses teamwork to achieve learning goals and competition requirements.

This e-commerce course is a two-credit undergraduate elective course. The syllabus and specifications were explained on the first day of school, and more than 50 people chose this course. In order to meet the competition standard, the class is divided into ten groups, each team consisting of 4-6 participants. Each team has its own team name, but is replaced by a number in this article, as shown in the following table.

Table 1: Team Profile

Team No.	Team Category	Product Category	Number of Team Members
1	Marketing	Dried Fruit	6
2	Marketing	Clothing and Accessories	4
3	Entrepreneurship	Retro Toys, Candies and Games	6
4	Entrepreneurship	Special Biscuits	4
5	Marketing	Hong Kong Food	5
6	Entrepreneurship	Smartphone Case	6
7	Entrepreneurship	Creative Earrings	4
8	Entrepreneurship	Various Bubble Tea	6
9	Marketing	Bread	5
10	Entrepreneurship	Second Hand Mobile Phones	6

In conjunction with the national competition, this course provides or enhances the following knowledge or skills: brand design, creative website construction and management, micro-video advertising production, entrepreneurship and marketing activities planning, briefing skills, ability to integrate and apply the skills learned, as well as intellectual property rights and related regulations. The skills acquired before and after implementations of TBLMNC are compared in the following table.

Table 2: Expected Learning Achievements After TBLMNC

Skills	Indicators	Before	After
Brand design	Creativity and uniqueness of team name, logo and brand story	None	Creating team brand name and design
Creative website construction and management	Banner design and completing creative website construction and content setting	None	Each team has set up its own creative website for online sales and marketing Awards
Micro-video advertising production	Completion of creative 30 second micro-video advertising production	None	Complete and upload YouTube and creative websites Awards
Entrepreneurship or marketing activities planning capabilities	Completion of notable entrepreneurship or marketing activities plan including finance forecasting	None	Completion of entrepreneurship or marketing activities plan Awards
Briefing skills	Completion of briefing recordings or presentations	Basic	Completing briefing recordings and uploading to YouTube and Moodle Adopted the report and passed the evaluation
Overall ability: integrate and apply the skills learned	National competition awards Final rating	None	Complete the entire submissions Awards or appraisals Student achievement and/or learning growth

2. LITERATURE REVIEW

Michaelsen, Davidson, and Major (2014) point out that team-based learning is a form of flipping teaching. This kind of learning method is a way of teamwork and learning, so that students can form a number of teams, work together to complete tasks, and learn to grow in tasks, rather than passively sitting in the classroom to listen.

The main advantage of this team learning model is that most of the class time is spent actively practicing the need to apply concepts to related issues (Michaelsen and Sweet, 2008).

Slavin (1995) and Turner (2001) considered team learning as a viable way to improve performance in an educational environment. Umble, Umble, and Artz (2008) indicates that team-based competitions enhance the ability of college students; the results of the study point out that the team-based project can produce many positive learning outcomes.

Many studies in the past have shown that the use of team projects in education has the following benefits: (1) increase learning and understanding, (2) encourage problem-solving skills development, and (3) produces deeper and more critical thinking, (4) provide opportunities to integrate prior knowledge and experience, (5) increase confidence, (6) provide contextual relevance, (7) establish project ownership, (8) encourage group interaction, (9) increase the fun of the course, and (10) prepare students for future work and life experiences (Johnson and Johnson, 1986; Kurfiss, 1988; Cuseo, 1992).

Leadership is a key component of high-performance teams (Ulrich and Crider, 2017). A team leader is like a helmsman, mastering the direction of the voyage and motivating the team to achieve the goal. According to O'Connor (1972), effective leaders made companies earn higher net profits. Katzenbach and Smith (2006) identified six things necessary to good team leadership: keep the purpose, goals, and approach relevant and meaningful, build commitment and confidence, manage relationships with outsiders and remove obstacles, create opportunities for others, and do real work. Afolabi, Adesina and Aigbedion (2009) pointed out team leadership style is one of the major factors leading to a team's success.

Through the process of team-based learning, effective team leadership contributes to team learning performance and achievement. An effective team leader should motivate a team, such as providing encouragement, guidance, and inspiration to team members, and also maximize participation that lead to team commitment.

Heathfield (2019) pointed out the importance of team commitment. The high commitment of team members to work together effectively will help achieve the team's success goals. Katzenbach and Smith (2006) indicated that high team performance needs a deep commitment to one another's growth and success. Team commitment depends on active participation and mutual support. The participation of team members can reduce the burden of work and the narrowness of opinions, resulting in high quality, creative solutions.

Participation refers to the degree of involvement of team members in team project. The most basic part of team-based learning is the participation of members. This participation is not just to attend a certain team meeting or discussion, but to make relevant efforts to contribute to the team. With participation, there will be opportunities to learn from each other, as well as the completion and convergence of assignments and progress. Moreover, in the process of participation, everyone can listen to the opinions of the team members, raise the problems encountered, and work together to solve these problems. The participation of team members has a positive impact on the decision-making of team (Wagner III, 1994).

Mutual support refers that team members support each other. It is an important team competency and allows a team to be more effective. Mutual support is not just helping team members, but also a kind of mutual accountability as a team. Katzenbach and Smith (2006) stated that with complementary skills, team members should be equally committed to the team's goals for which they hold themselves mutual accountable. Therefore, all team members should engage in mutual support in terms of mutual help, assistance, and positive feedback, in order to solve problems and enhance cohesion. In the team learning process, mutual support also helps students from different backgrounds to learn and complement each other's abilities and contribute to the integration of team work.

In addition, whether team members participate in team projects or support each other, or even lead the team, they need to have the relevant skills and knowledge to help demonstrate the results of the entire team operation. These abilities can include the expertise and skills that the team needs, as well as the ability to communicate and collaborate (Afolabi et al., 2009; Heathfield, 2019; Katzenbach and Smith, 2006; Michaelsen and Sweet, 2008; Umble et al., 2008; Ulrich and Crider, 2017). And these abilities can also grow with effective teamwork learning.

3. RESEARCH FRAMEWORK AND METHOD

3.1 RESEARCH FRAMEWORK

This study argues that team type can influence team performance. The team type is shaped by its team's elements. Team element is made of team core elements and facilitating elements. The core elements of the team's competencies include member participation, mutual support, member abilities, leadership, and creativity. The facilitating elements include student background, curriculum norms, incentives, course instructor, TA, as well as competition platform and rules.

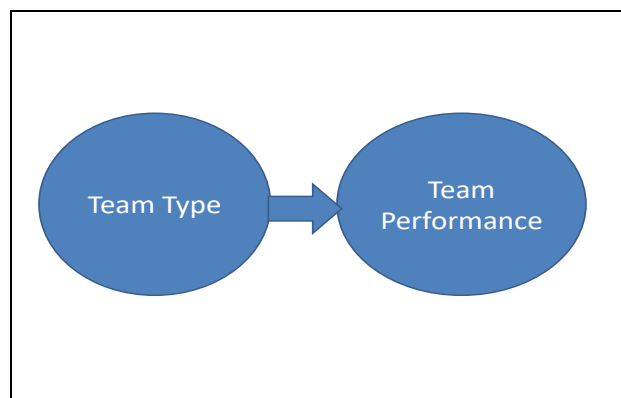


Figure 1: Initial Framework of Research

3.2 RESEARCH METHOD

This study adopts the action research method. Throughout the research process, the instructor plays the facilitator and the researcher of the course. From the systematic research of coordinated action such as planning, action, observation and reflection, the e-commerce knowledge and skills are taught throughout the semester, and the whole class is guided to participate in the national e-commerce competition. Through this national competition, a model different from traditional teaching is provided to make the course more learning outcomes. In addition, in terms of research skills, we also use ethnographic methods to observe the participation and progress of team members every week. Qualitative and quantitative analysis is performed using observational records and learning sheets and mutual assessment forms of each team. The content analysis is based on grounded theory and finds out the factors behind the behavior of team members.

4. ANALYSIS AND DISCUSSIONS

4.1 COMPARISONS OF KEY TEAM ELEMENTS

As a result from the inter-team evaluation and actual performance of the teams, the average member participation, mutual support, member ability, leadership, and creativity of each team are shown in the following table.

Table 3: Comparisons of Key Team Elements

Team No.	Member Participation	Mutual Support	Member Ability	Leadership	Creativity
T1	medium high	medium high	medium high	high	medium
T2	high	high	high	very high	medium
T3	high	very high	high	very high	high
T4	high	high	medium high	high	medium high
T5	very low	very low	low	very low	low
T6	very low	very low	low	very low	low
T7	medium high	medium high	medium high	high	medium
T8	low	low	medium low	low	low
T9	high	high	high	medium high	high
T10	low	medium	medium low	very low	low

4.2 TEAM COMMITMENT VS. LEADERSHIP

In addition, team commitment can be defined by the average member participation and mutual support of each team.

Table 4: Team Commitment vs. Leadership

Team No.	Team Commitment vs. Leadership
T1	medium high commitment with high leadership
T2	high commitment with very high leadership
T3	high leadership and high commitment to perfection
T4	high commitment with high leadership
T5	very low commitment with low leadership
T6	very low commitment with low leadership
T7	medium high commitment with high leadership
T8	low commitment with low leadership

T9	high commitment with medium high leadership
T10	medium low commitment with very low leadership

The team commitment and leadership of each team can be compared as shown in the following figure. According to the analysis above, the team commitment is positively related to the team leadership.

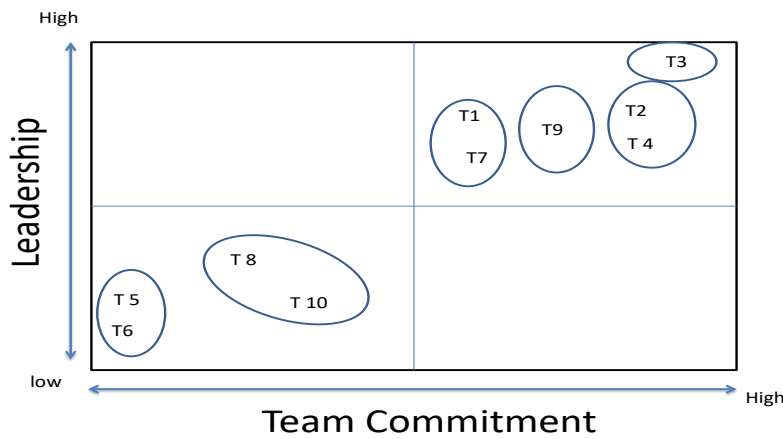


Figure 2: Team Commitment vs. Leadership

4.3 ANALYSIS OF THE INTERNAL OPERATIONS OF THE TEAMS

According to the inter-member evaluation, the individual reflection sheets and the individual interviews, the internal operation of each team and the characteristics of each performance are organized as shown in the following table. Besides, the team types are named by each team's characteristics.

Table 5: Team Characteristics and Team Type

Team No.	Team Characteristics	Team Type
T1	The leader takes the lead and works with the team members to find a company that is willing to cooperate. Two of the six are almost not involved. The team's LOGO is not prominent but the products of the partner company are eye-catching. Creativity: medium	Pursuing the completion of the competition
T2	The team leader has strong leadership and two other team members actively cooperate. The team leader shows strong leadership and two other team members actively cooperate. One of the group members is slow, and often needs to wait for the team member to complete the assignment. Marketing campaigns are not prominent, but all competitions to be submitted can be actively completed on time. Creativity: medium	Self-regulated learning with steadily completed tasks
T3	The team leader is willing to pay effort for the team members without complaining, and constantly pursues the perfection of each work. Three members have a design background; the team leader's ability in multimedia design is particularly strong. One has a business background, specializing in marketing planning. The team members are responsible for assigned work tasks, and the entire team is able to self-regulate and complete works on time. The team's LOGO is unique and creative, and other works are excellent. Creativity: high	Strong self-regulated learning and continuous improvement towards perfection

T4	<p>One of the team members has a design background and the others are with food & beverage services background.</p> <p>The team brand is quite creative and its products are prominent.</p> <p>The leader is easygoing. The proposed product combination is a highlight of marketing.</p> <p>Creativity: medium high</p>	Self-regulated learning with steadily completed tasks
T5	<p>Only the team leader was doing things, but later the team leader did not participate after the third stage because of personal reasons.</p> <p>Finally, one of team members took the initiative to complete the follow-up briefing, and another one joined to participate.</p> <p>The team leader complained that the team members did not participate at the beginning, and the team members complained that the team leader was not active later.</p> <p>Creativity: low</p>	The rest striving to survive
T6	<p>The team leader is not very involved after signing up.</p> <p>There is less interaction between the members.</p> <p>The items the team chooses to sell are not prominent.</p> <p>Two of the team members initially assisted in the completion, but because of limited ability, while others did not do it, one showed the incompetence of the individual and the other was not willing to continue to participate.</p> <p>Finally, the former completes the briefing with the other team members who did not participate first.</p> <p>Creativity: low</p>	The rest striving to survive
T7	<p>Three of the team members have a multimedia design background.</p> <p>Two of them were more active, and although the participation of other team members was low, the work was still completed.</p> <p>Creativity: medium</p>	Pursuing the completion of the competition
T8	<p>Team members have low participation and their related abilities are weak.</p> <p>Most of the team members have less time to participate in the course and participate in the competition due to individual part-time jobs and participation in other activities.</p> <p>At the beginning, the team leader reluctantly supported the team, one of team members provided the product, and another one made a simple film.</p> <p>Later, many team members did not participate and did not assist in the completion.</p> <p>Finally, the briefing was completed by a team member and another team member who had not previously participated.</p> <p>Creativity: low</p>	Only hoping to pass
T9	<p>The team leader is relatively tough but the communication with other team members is a little poor.</p> <p>The team leader hoped to win, but the other team members just wanted to pass the course.</p> <p>Sometimes the team members have opinions on the work arrangements.</p> <p>Some team members have a hard time to cooperate because of personal part-time jobs. However, the team makes progress all the time. The team leader has risk awareness and always has alternative plans. The team leader is creative and good at marketing activities planning. The other two have strong multimedia capabilities. One of team members was quite familiar with the goods and the shop they work with.</p> <p>Creativity: high</p>	Strive for victory despite disputes in the team storm
T10	<p>The team leader did not participate since the team was formed.</p> <p>It is almost done by mutual assistance of the deputy leader and the other two.</p> <p>Creativity: low</p>	Only hoping to pass

4.4 TEAMS THAT WON THE NATIONAL E-COMMERCE COMPETITION

The competition for the national e-commerce competition is very intense. The participating units include 100 teams from a number of different national and private universities. In the end, five teams in this class won seven awards. T3 won the third place in the final runner-up and the Store Creative Award in the national competition. T9 won the third place in the national competition and the third place in the Marketing Creative Award. T4 won the second place in the Product Creativity Award. T1 and t2 won the Masterpiece Award.

Totally speaking, the team in which members collaborated with a strong self-regulated learning ability performed the best, followed by the team that strived for victory despite disputes in the team storm, and the team that completed tasks in different stages steadily.

Table 6: Teams that won the National e-Commerce Competition

Team No.	□ National Competition Winning
T3	<ul style="list-style-type: none"> ● National Competition Final Runner-Up; ● Third Place in the Store Creative Award
T9	<ul style="list-style-type: none"> ● The National Competition Finally Won the Third Place ● Third Place in Marketing Creative Award
T4	Second Place in the Product Creativity Award
T1	Masterpiece Award
T2	Masterpiece Award

4.5 REFINED FRAMEWORK OF RESEARCH

From the above analysis, member participation, mutual support, member ability, leadership, and creativity have a positive impact on learning performance. Among them, the participation of team members and the level of mutual support between team members are directly affected by personal responsibility, learning attitude, and willingness to invest. If there is no sense of responsibility for team work, then participation is naturally low and may not even help the team members. And the attitude of learning is even more so. In particular, some students only want to pass the course, which will hinder them from breaking through the development of personal abilities. Due to the external personal reasons or part-time job hours of the team members, the actual time available for the course will be affected. Therefore, sense of responsibility, learning attitude, willingness of investing time, member participation, and mutual support contribute to team commitment. Higher team commitment, better personal ability, and better leadership lead to learning performance as well as team performance, as shown below.

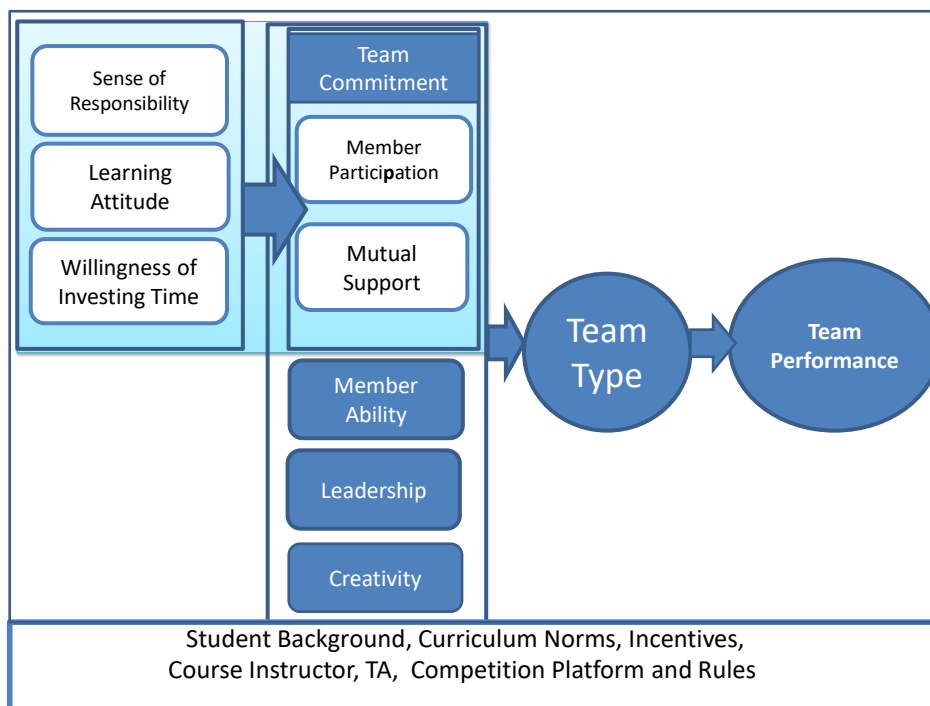


Figure 3: Refined Conceptual Framework for Shaping Team Types

5. CONCLUSION

The results of the study show that integrating the team learning of the national competition into the e-commerce course is helpful for the effectiveness of the entire course. This model of learning not only allows students to understand the competition in the market during the school, but also to develop the professional ability of the course and the competitiveness of the future workplace. It is also known from this study that the selection and motivation of team members are very important. If the team members have the ability, responsibility and willingness to invest, under the leadership of the excellent team leader, everyone's high participation and mutual cooperation will help bring out team performance. At the same time, everyone in the team can learn from each other more effectively.

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