Research on the Effectiveness of Reflective Practice Applied to College Students' Service Learning: Taking Advertising Design Courses as an Example

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Abstract
Students' service learning process will be integrated into reflective practice teaching, integrating flipped teaching, experiential learning and workplace experience of social service. Use individual and team reflection training to form a review mechanism of large and small circles. The superposition of each other's experiences forms the basis for new experiences, and repeated accumulation builds the habit of reflection, allowing students to take the lead in answering questions and answers. At each learning stage, students can observe and reflect on their own learning gaps through specific workplace experiences. Teacher support or dialogue with industry experts will form an understanding of the social workplace, and then the application and verification of the design work will be carried out in the next stage. This study is a service learning activity planned in the advertising design course. It uses the teaching operation of reflective practice to test the learning effectiveness of students' creativity, execution and reflection on new products in the three stages of creative ideation, design execution and self-evaluation. . The research results show that circular reflection has an impact on students' creative thinking and self-evaluation, but has no significant impact on execution effectiveness.

Keywords: College Students, Service Learning, Reflective Practice, Design Education

Introduction

General education in college leads to the exploration of majors. The academic system in Taiwan is different from that in the West. Most design education begins with entering a four-year college. Students are limited by course hours and low graduation credits. In recent years, there has been a trend of weakening professional skills, resulting in a decrease in students' quality and professional training. More importantly, they lack the attitude and strength to be in line with the workplace.

There is a gap in functional learning and application, and there is a lack of practical design capabilities. The goal of the commercial design course is to cultivate talents that are in demand in the workplace and to be able to face the competition in the workplace with close to practical experience. However, students learn specific majors and skills but do not know how to apply them in practice. There is a lack of integration in the workplace and they will spend more time exploring career options. The learning-application gap in higher education in Taiwan is the most important issue.

Students' independent learning and teamwork abilities decline. Currently, college students are experiencing high school life through the Covid-19 epidemic and studying remotely. Distance learning results in the lack of real communication among peers, the loss of physical cooperation and insufficient interactive communication in learning, and the loss of the positive significance and influence of peer learning.

Research Purpose

Traditional design teaching is based on competitive learning that evaluates students' classroom performance, while Project Based Learning (PBL) experiential learning is based on the achievement of common goals and the effectiveness of action implementation. Allow students to fully express their opinions, concepts and ideas, while listening and thinking about other people's opinions, and then integrating them into new ideas.

Concept: The design course combines reflective practice, emphasizing the exploration and self-practice of experiential learning, allowing learners to move from abstract thinking to concrete execution through the execution of project design. Students constantly challenge, criticize, evaluate and revise themselves during the execution process. There are three stages of the reflection cycle in design activities, including thinking, reflection and execution. It can train students to find better methods in tasks, change the way they look at themselves, and understand the content and goals of work.

Execution: Students form a supportive task team and go through three spiral cycles. Students can lead meaningful action plans, stimulate discussions, reflect on mistakes, revise designs, and build team cohesion and a sense of belonging.

Literature Review

College Service Learning

Education in Taiwan is compulsory education for twelve years. Functional development begins with college education. Due to lack of practical experience, students are unable to understand the practical significance behind learning. Therefore, students use service learning

to obtain practical work in simulation design services. In addition to changing "teaching and learning", students can also better understand the professional and practical experience in the workplace.

This course combines service learning and reflective practice operations to acquire functional-related experience and skills, improve students' learning motivation and exploration ability, and guide students to achieve in-depth learning. Students not only acquire core skills needed in the future, but also develop the influence of independent learning and thinking (Huang, Malicky, & Lord, 2006). The focus is on the project execution process, where students can challenge themselves, continue exploration, target tasks, communication and cooperation, reflection and correction, and peer criticism as standards for verification. Students can verify their learning performance and improve their sense of academic achievement.

Reflective Practice

Schön (1983) proposed the concept of "reflective practice", defined the relationship between reflection and action, and explained how to use reflection to improve professional capabilities. He proposed two different types of reflection: "Reflection-in-action" and "Reflection-on-action". Reflection-in-action refers to the act of reflection in action, by constantly reviewing one's own status and performance, correcting behavior in real time, and learning how to achieve goals and solve problems. Reflection-on-action refers to the reflection behavior after action, by reconstructing past experiences, reflecting on the performance of past actions, formulating plans for the parts that need improvement, and improving the entire learning process. Scholars Boud et al., (1985) embedded "personal emotions and feelings" into the three-step reflection model, which are **Returning to the experience**: Reconstructing important events that occurred; **Attending to feelings** : Pay attention to the emotions and feelings of the participants, check whether the emotions are positive or negative, and avoid ignoring the events and key reasons that cause negative emotions; **Evaluating the experience:** Re-examine the problems and events that have been understood, and integrate new ones learning experience.

Reflective Practice Applied to Design Education

Reflective practice is an active and dynamic process that requires repeated practice and internalization to become a part of learning behavior. Reflective students will be more capable and effective in external dialogue and self-communication (Tennyson, 2008). Reflective practice operations are simple and easy, but they need to be done deliberately, thereby forming a habit of thinking, or improving experience and implementation problems. The key is for students to grasp the key points, question content, feedback skills, behavior modification, promotion of cooperative learning, etc. Connecting one experience to another ensures students can perform better at the next level.

In order to get rid of the limitations of classroom teaching, advertising design is based on the "action-reflection" teaching model. Revised Gibbs (1988) proposed the famous reflective cycle theory as a continuous improvement cycle of repeated experiences, including six stages of description, feeling, inspection, analysis, conclusion and action plan. Reflective training on a team basis forms a review mechanism of large and small circles (Figure 1). The superposition of each other's experiences forms the basis for new experiences, and repeated accumulation builds the habit of reflection, allowing students to take the lead in answering

questions and answers. At each learning stage, students can observe and reflect on their own learning gaps through specific workplace experiences. Teachers and industry experts provide support to form an understanding of the social workplace, and then implement the application and verification of design work in the next stage.

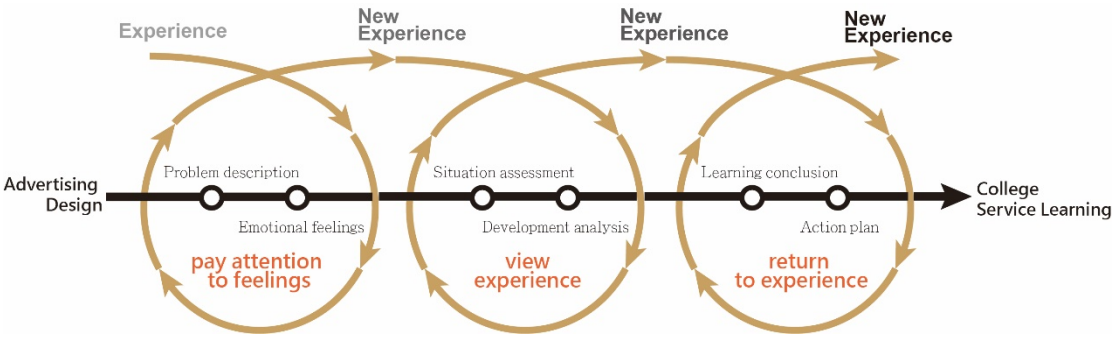

Figure 1. Reflective cycle training for college service learning

The effectiveness survey of reflective practice uses a scale survey, and its items include reflection-in-action, reflection-on-action, reflection with others, self-evaluation, desire to improve, general confidence, communication confidence, uncertainty, pressure, interaction with students, and learning satisfaction.

Cooperative Learning

Cooperative learning is a creative and effective teaching theory and strategy that can improve the atmosphere in the classroom, improve students' academic performance, and promote students to achieve good results. Cooperative learning is also a systematic learning strategy. Six students with different abilities form a group to engage in learning activities in a cooperative manner to jointly complete the team learning goals and improve the team learning level. Cooperative learning starts from the perspective of motivation, emphasizing the incentive effect of cooperative learning on students to engage in tasks. From the perspective of cognition, it emphasizes the impact of cooperative learning on the effect of completing tasks. Students experience collaborative abilities, engagement, collaboration skills and interaction in service-learning tasks.

Educational Practice

The implementation of teaching activities is evaluated through students' participation in the activities to confirm whether they are effective. Students can understand the implementation goals or make students more confident, and evaluate the integration of theory and practice. The questionnaire survey is the Educational Practices Questionnaire (EPQ) developed by Jeffries & Rizzolo (2006), and was later verified by Unver and other scholars for reliability and validity (Unver et al., 2017). This plan will revise the questionnaire to design teaching practice content, including active learning (discussion of ideas, active discussion, timely feedback of opinions and satisfaction of learning time), collaborative learning, and diverse learning methods (the use of different learning methods, evaluation), high expectations (understandable and attainable goals).

Learning Engagement

Traditional studies on learning engagement mostly focus on behavioral aspects (such as classroom speeches, good scores), but pay less attention to the intrinsic motivation of learning. Research on action learning focuses on students' practical learning processes and experiences, so surveys of learning participation will focus on students' recognition of classroom teaching. Learning engagement refers to students' level of effort and quality of involvement when performing learning activities. Participation is closely related to students' enthusiasm for learning, learning knowledge and time investment, and will also be greatly affected by classroom participation and interactive communication. The learning participation questionnaire includes "classroom teaching" which refers to students' classroom discussions, peer knowledge sharing, and willingness to collaborate in classroom operations; "online activities" refers to online learning attitudes and participation, including the ability to actively offer assistance, actively share or participate, etc.; "action implementation" means actively participating in the offline implementation process, assisting others.

Methods

Research Design

The research subjects are 69 third-year students in the advertising design course. They have similar learning experiences and are at the stage of career exploration. The client of the service learning is a technology start-up team that specializes in developing motorcycle safety lights to avoid traffic accidents. The student execution goal is to propose marketing plans and advertising designs based on product needs.

Service learning in design courses can make students more familiar with professional content in the future workplace, and communication and interaction among peers will be better. The process of student service learning will consider the improvement and implementation effects of learning methods. Entering the design implementation stage, there is significant learning participation and experience. The research is based on the grouping of cooperative learning teams, which undergoes design execution, communication and review, reflection and feedback, and then the next round of team grouping, and so on, as shown in Figure 2, through three processes of creative thinking, reflection and evaluation, and design execution. A scale survey on cooperative learning, educational practice and learning engagement was conducted after reflection.

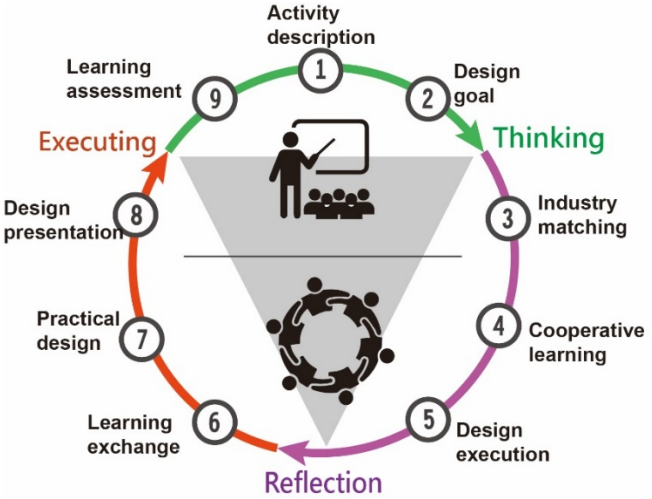

Figure 2. Activity flow of the reflection cycle

Research Method

Students form new cognitive concepts through practical experience and reflective observation in classroom reviews, which are then applied and verified in the next stage of practical design. The reflective observation of service learning will take nine steps (same as Figure 2), including activity description, design goal, service matching, cooperative learning, design execution, learning exchange, practical design, design presentation, and learning assessment, forming an infinite cycle process. Phased task execution incorporates feedback from reflective practice to achieve the application of new learning experiences. The research method is to use the computer software SPSS for data analysis, narrative statistics and t-test and variation analysis in inferential statistics. The scale adopts a Likert-type five-point scale.

The service learning process will go through three reflection cycles, and three scores will be obtained in sequence: creative thinking (**Thinking**), reflection and evaluation (**Reflection**), and design execution (**Execution**). The four-item learning scale was tested after the service was completed. The differences in the performance of the four learning assessments of "Cooperative Learning", "Educational Practice", "Learning Participation" and "Reflective Practice" will be analyzed using internal consistency and related analysis as item identification and homogeneity. Factor analysis uses principal component analysis to extract factors, and questions with factor loadings less than .45 are deleted. In terms of reliability analysis, the reliability of each level must be above 0.7. One-way analysis of variance tests whether there are differences in the scores of the data. Product-difference correlation explores the correlation between aspects to understand the linear relationship between variables.

Data Analysis

First of all, the four-item learning evaluation questionnaire scale in the study is based on the results of reliability analysis. The Cronbach Alpha value of the cooperative learning scale is between .949-.954, and the reliability coefficient is .953; the educational practice scale is between. Between 940-.945, the reliability coefficient is .946; the learning participation scale is between .954-.959, the total reliability coefficient is .958; the reflective practice scale is between .909-.919, The overall reliability coefficient is .914. All four learning scales have high reliability, indicating that the internal consistency of the scale questionnaire is extremely high.

Table 1. Single sample K-S fitness test

		Creativity	Reflection	Execution	Cooperative learning	Educational practice	Learning engagement	Reflective practice
N		69	69	69	69	69	69	69
Normal parameter	Mean	85.579	87.333	87.637	4.146	4.213	4.032	3.993
	Std. Deviation	3.923	2.553	3.959	.569	.538	.635	.397
Most extreme difference	Absolute	.170	.264	.174	.078	.081	.085	.064
	Postive	.153	.264	.174	.067	.072	.064	.054
	Negative	-.170	-.180	-.120	-.078	-.081	-.085	-.064
K-S Z value		.170	.264	.174	.264	.081	.085	.064
Asymp. Sig.		.000	.000	.000	.200	.200	.200	.200
Result		Abnormal	Abnormal	Abnormal	Normal	Normal	Normal	Normal

The three-stage scores of the students' reflection cycle and the four learning assessments after service learning are tested by K-S fitness test (Table 1). Among them, the significant values of the three scores are all .000, which is less than the significance level of .05, indicating that

are assigned abnormally. The significant values of the four learning scales are all .200, which is more than the significance level of .05, indicating that the four assessments are all normally distributed.

Table 2a. Descriptive Statistics of three stage scores

Three-stages	N	Mean	Std. Deviation	Mix	Max
Creativity	69	85.579	3.923	79.00	93.00
Reflection	69	87.333	2.553	85.00	94.00
Execution	69	87.637	3.959	80.00	95.00

Table 2b. Wilcoxon sign rank test of students' scores in three-stages

	Creativity - Reflection	Creativity - Execution	Reflection - Execution
Z	-3.202	-2.634	-.079
sig	.001	.008	.937

According to the Z statistic (positive level) of the Wilcoxon Sign Rank test (table 2a, 2b), the observed value of creativity-reflection is -3.202, with a significant value of .001 (<.05); the observed value of creativity-execution is -2.634, with a significant value of .008 (<.05); the observed value of reflection-execution is -.079, and the significant value is .937 (>.05). The results show that there is a significant difference between the creativity score and reflection and execution scores. However, there is no significant difference between reflection and execution. Among them, the Z value is negative, indicating that the performance of the three stages of reflective cycle teaching has improved significantly.

Table 3. One-sample test of learning assessments

items	T	df	Sig.	average difference	95% confidence interval	
					lower	upper
Cooperative learning	16.730	68	.000	1.146	1.009	1.283
Educational practice	18.722	68	.000	1.213	1.083	1.342
Learning engagement	13.488	68	.000	1.032	.879	1.185
Reflective practice	20.780	68	.000	.993	.898	1.088

Table 4. Pearson correlation analysis of learning assessments

Variances	Cooperative learning	Educational practice	Learning engagement
Educational practice	.855 .000		
Learning engagement	.810 .000	.722 .000	
Reflective practice	.643 .000	.636 .000	.637 .000

According to the results of one-sample test in Table 3, students' cooperative learning (t=16.730, P=.000), educational practice (t=18.722, P=.000), learning engagement (t=13.488, P=.000)and reflective practice (t=20.780, P=.000). all four learning assessments reached the significant level (<.05). It means that there are significant differences in the cooperative learning, educational practice, learning engagement, reflective practice of the students. It means that after students have gone through the reflection cycle, there are significant differences in all four learning assessments.

The process of the reflection cycle of service learning is different among the four learning assessments. Students' cooperative learning, educational practice and learning engagement have a significant impact on the effectiveness of reflective practice. Comparing the four learning assessments, there are means of some questions, including learning engagement in online and extracurricular activities, confidence in reflective practice, interaction and learning satisfaction.

According to the Pearson correlation sample test of the four learning assessments (Table 4), all correlation coefficient r values ranged from .636 to .855, and the significant values were all .000 (<.05), reaching the significant level. It means that the student reflection cycle is positively correlated with the four learning assessments and is highly correlated (.6<r<.9).

Table 5. Pearson correlation analysis of sub-variables of reflective practice

	1	2	3	4	5	6	7	8	9
reflection-in-action[1]	1								
reflection-on-action[2]	.666** .000	1							
reflection with others[3]	.673** .000	.674** .000	1						
self-evaluation[4]	.590** .000	.785** .000	.591** .000	1					
desire to improve[5]	.554** .000	.586** .000	.635** .000	.566** .000	1				
general confidence[6]	.329** .006	.455** .000	.340** .004	.494** .000	***.237*** ***.050***	1			
communication confidence[7]	.466** .000	.457** .000	.381** .001	.595** .000	.342** .004	.747** .000	1		
uncertainty[8]	.500** .000	.355** .003	.390** .001	***.207*** ***.089***	.419** .000	***-.076*** ***.533***	***-.017*** ***.887***	1	
stress and interaction[9]	***.129*** ***.292***	***.008*** ***.950***	***-.205*** ***.091***	***-.052*** ***.673***	***-.013*** ***.918***	***-.106*** ***.384***	***-.165*** ***.176***	.430** .000	1
learning satisfaction[10]	.539** .000	.503** .000	.640** .000	.567** .000	.596** .000	.381** .001	.359** .002	.248* .040	***-.181*** ***.136***

** Indicates that the P value is less than the significant level .05

Cooperative learning, educational practice, and learning engagement are highly correlated. Reflective practice also has a medium to high correlation (Table 4). The action scale of reflective practice for service design is to evaluate the thinking, action, evaluation, pressure and satisfaction of the service design process, and contains ten sub-variables. There are reflection-in-action, reflection-on-action, reflection with others, self-evaluation, desire to improve, general confidence, communication confidence, uncertainty, pressure, interaction with students, and learning satisfaction. According to Pearson correlation analysis (Table 5), service pressure and interactive communication have no significant correlation with other variables. Design processing correctness was also not significantly related to students' execution and communication confidence.

Findings

There is no significant interaction between scores of students' reflection cycles and learning assessments. It means that the performance of service learning has no direct impact on the learning effectiveness of the entire design activity, but there is a significant improvement in the three scores, and there is an interactive impact on cooperation, practice, participation and reflective practice.

According to the mean of the questionnaires on cooperative learning, educational practice, learning engagement and reflective practice, students participate less in online activities, are more difficult to discuss or share, and are less likely to be motivated to participate in extracurricular or online activities.

The results of the reflective practice scale showed lack of confidence and interaction, low self-confidence, feeling stressed about communication and communication, and affecting learning satisfaction. Among them, "uncertainty", "general confidence" and "communication confidence" did not reach significance, and showed reverse negative values. It means that when students' "uncertainty" is high, learning actions, problem-solving abilities, self-confidence and improvement abilities are also relatively reduced, which in turn affects "learning satisfaction". It shows that students' hesitance about the design service process, methods, or lack of understanding of peers and service needs all indirectly affect the performance of design execution, as well as academic scores, achievements, and satisfaction.

Therefore, the application of reflective practice focuses on students understanding learning objectives, as well as service design needs. They can make good use of their knowledge and skills to share and provide information more effectively. They can also interact with each other with the necessary experience, and listen to their classmates' thoughts and opinions, thereby enhancing their self-confidence in the collaborative process. This can reduce learning pressure and improve communication effects and learning satisfaction.

Discussion and Conclusion

In the reflective practice process of service learning, students constantly re-evaluate their experiences, learn lessons and improve them as a basis for the next experience. That is, students develop a work attitude that can connect to the workplace by discovering mistakes and reviewing and evaluating better ways to perform tasks. Such training can help students improve their self-reflective abilities in response to problems that students lack practical experience but are not good at thinking about. The role of teachers is relegated to the role of learning supporter, challenging students to think about workplace coping, professional needs, lack of customer communication and implementation, etc., things that cannot be experienced in classroom teaching, and becoming a supporter of students' independent learning.

Students improve their understanding through their own in-depth thinking. Peers provide challenging problems to stimulate students' existing concepts and thoughts and stimulate new solutions. Reflective practical operations also provide students with a learning experience of "trust" and "communication", and achieve mutual support and learning and growth through peer sharing and feedback. Students also gain different experiences from the process of expressing communication and listening to other people's opinions.

In addition, through the course's reflective practice training, students and teachers can not only reflect on the performance in project design, but also exchange opinions and see the diversity and personality of students. Students can conduct learning and communication in the way they like, and decide reflective expressions or tools to support the reflective process, which is in line with students' tendency to think independently. This kind of experiential learning is transformed from a teacher-led classroom to a situation where students independently seek answers and verify results, solving the problem of students' learning-application gap and enthusiasm for learning.

Implications

Advertising design is different from knowledge-based courses. In addition to changing classroom teaching operations, it must also play a role in workplace classrooms. Combining "service learning" and "reflective practice", the traditional design learning process is reversed, and the teacher's role in the course is changed from a leader to a counselor or supporter. Critical reflection has excellent feedback effects when applied to design teaching. Students take the lead in learning goals and progress, providing workplace experience that cannot be learned in college courses. The learning process undergoes multiple cycles of reflection to master the modification of learning tasks and achieve design education goals. However, the depth of reflective practice requires practice, especially in the learning stage. If students can internalize reflection as a learning habit, they will be able to deal with workplace pressure and setbacks more effectively, and they will be able to accept criticism, challenges and suggestions more calmly.

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