

*Exploring the Impact of Teaching Design History on Creativity and Intrinsic Motivation:
Curriculum Design and Learning*

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Abstract

The history of design is a basic course for design majors in universities all over the world, and is usually taught in a purely theoretical way. This study adjusts the form of teaching, changing the original "linear lecture"-based teaching to an exploratory teaching method centered on "design styles", using styles as the origin to guide students to radiate their learning of the temporal and spatial backgrounds, developmental reasons, representative figures, social influences, etc., and attracting them to explore the relevant knowledge through the stylistic manifestations of the designs, as well as superimposing their personal understandings of design styles to be applied to the practice of icon design. A total of 30 students participated in this study to examine the effectiveness of the teaching: a statistical T-test comparing the pre-study and post-study results confirmed that the "style-centered" approach was beneficial to students' creativity and intrinsic motivation, which means that the approach is effective in teaching design history; In addition, this study used linear regression analysis to understand the relationship between creativity and intrinsic motivation, and the results showed that creativity had a more pronounced positive effect on intrinsic motivation through "style-centered" design history learning. Lack of motivation is a pain point in history courses, but the style-centered approach to teaching design history has been proven to be useful, and future history classes should take students' learning mindset and desire into account to stimulate their enthusiasm for learning.

Keywords: Design History, Design Teaching, Intrinsic Efficacy, Creativity, Teaching Methods

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Introduction

One of the foundational required courses for design majors is history of design. The content of the course typically covers a range of topics, from the ancient civilization to the modern design movement, with the goal of supporting students in understanding the approaches, expressions, and meanings of design modifications, and also enhancing their professional growth and improving their design ability. Nonetheless, there are two main issues with the way design history is taught today: first, there is a disconnect between theory and practice; rather than emphasizing the ability to apply knowledge to practice, teaching frequently concentrates on introducing historical individuals, categories, and styles; second, the design style is out of date; design history education emphasizes "historical content" rather than having a strong connection to contemporary design content. The "historical content" that is taught in design history classes is prioritized over the contemporary design content. These two issues make it difficult for students to apply their understanding of design history to the development of their abilities and limit their ability to consider potential future trends in design. Students thus raise two concerns about the value and efficacy of design history courses: Would we really benefit from taking a course on the history of design? Which talents are enhanced by studying design history?

Literature Review

Learning Traits for Novices in Design

When it comes to students' cognitive approaches, thinking development, and performance characteristics, design differs from the learning characteristics of basic disciplines as a cross-disciplinary field that places an emphasis on practicality. The main approach to learning of design students is the "right-brain" perception of knowledge, and studies indicate that visual learners prefer to learn through images, icons, videos, movies, and other media (Demirkan, 2016; Demirkan and Demirbas, 2010); However, rather than emphasizing conceptual understanding and theoretical frameworks, novices in design are more engaged with visual style, that is, learning about proven facts and tangible materials (Demirkan, 2016). Second, a key learning characteristic of design students is their propensity for group discussion over independent thought, which is brought about by "interactivity" and plays a significant role in the process of acquiring new knowledge. Schon (1983) suggests that the process of "thought from action" is crucial to learning and that the learning experience is founded on self-reflection, defining the learner as an active practitioner. Schon (1983) studied design workshops as a mode of learning. Learning is facilitated by the "reflection from action" process. For those who are new to design, "active reflection" is an ability that needs to be built, and designers also need to possess it. Teachers should help students cultivate a sense of reflection and acquire the ability to reflect early in their design learning (Demirbas & Demirka, 2003). Students show the best learning when they evaluate the outcomes of their studies or work, and expert assessment supports their professional growth (Demirkan & Demirbas, 2008). Following the completion of the designs by the students, the experts provide professional feedback on the work's creation, which prompts further contemplation from the students; Furthermore, the reflection arising from "presentations" is an essential aspect of reflection as well. Through comments and discussions, groups can improve the quality of their practice by sharing ideas while also allowing teachers and students to discuss the same content in different ways (Demirkan, 2016).

According to earlier research, students studying design rely on their right brains to perceptual learning and are more likely to learn new information through group projects and discussions. With the main objective of fostering active, collaborative, and reflective learners, this study aims to investigate the history course's teaching methods based on the learning characteristics of design beginners. The core content of the study is to enhance students' creative self-confidence and intrinsic motivation in design professional knowledge.

Creativity

One of the most essential components of design work is creativity, and those who practice design are also practitioners of creativity, which serves as a major source of inspiration for new designs, and the assessment of creativity is especially crucial. In general, the expert consensus method—which involves first establishing a basic consensus and then evaluating the works in accordance with the criteria of individual experts, including professional knowledge or skills, style or strategy, individual attitude or preference, and logical cognition—is a common assessment method for evaluating the creativity of individual works (Albert & Runco, 1999; Amabile, 1996). Csikszentmihalyi (1997) expanded the scope of creativity assessment through the systematic perspective of creativity, which defines the source of creativity as the process of interaction between the individual and the environment. According to this perspective, creativity should be professionally assessed according to the three levels of individual, domain, and field. The term "creative self-efficacy" refers to the degree to which individuals have faith that they can create innovative products. It was coined by Tierney and Farmer (2011) and is a combination of the theory. Based on this, Hung and Lin (2004) analyzed self-efficacy in creativity primarily through the lens of the various aspects of design practice, such as the three dimensions of creative product convictions, creative thinking beliefs, and fending off unfavorable assessments. The higher the overall score, the more self-efficacy in creativity. It is critical for individuals, organizations, and society as a whole to evaluate creativity. In addition to helping to evaluate and enhance the design quality of projects or products, the assessment of creativity is linked to design practitioners' recognition of their own creative potential. It also facilitates the most efficient use of social resources and fosters sustainable innovation and development thinking. Thus, the evaluation of creativity is crucial for talent development, professional research, and even the improvement of creativity in this industry.

Intrinsic Motivation

"Motivation" is regarded as a component of creative personality traits and is closely linked to creativity (Weiner, 1972). Conversely, intrinsic motivation describes a person's attitude toward completing a task out of personal curiosity or enjoyment. It includes the expression of competence, spontaneity, autonomy, interest, and enjoyment (Amabile, 1993; King, Walker, & Broyles, 1996). According to Glynn & Webster (1992) and Csikszentmihalyi (2000), design students are more likely to be interested in learning and creating in a group setting. Co-learning can foster creative motivation and concentration, and designers can be intrinsically motivated by a sense of fun in the process, which further prompts curious exploratory behaviors.

The theory of self-efficacy, which is concerned with an individual's assessment of whether or not their abilities match expected outcomes, typically dominates the assessment of intrinsic motivation. Similar to creative self-efficacy, self-efficacy is to look at how confident an individual is in a certain skill. According to Bandura (1999), an individual's self-efficacy is

typically influenced by the outcomes of their accomplishments in relation to their past achievements, alternative experiences that gauge their self-efficacy by comparing or observing themselves to others, and oral persuasion brought on by the opinions of others of their abilities in the social environment. Physical or emotional conditions in which the person evaluates their ability to reach goals in light of those circumstances or emotions, for a total of four influences. The robust correlation observed between intrinsic motivation and creativity highlights the significance of intrinsic motivation in creative endeavors, and scientific evaluation contributes to the comprehension and promotion of creativity.

Research Methods

Organization of the Course

Three stages constitute the course: pre-course planning, in-class instruction and feedback, and evaluation of course outcomes. In order to compare the efficacy of the self-assessment of the study of design history, the teacher selects "urban icon design" as the assessment topic in a national design competition during the pre-course preparation stage. The teacher then focuses on explaining the goals and focuses of the creation of this topic, and the students are required to fill out a subjective evaluation questionnaire dominated by creativity and intrinsic efficacy after completing their work.

This course's main priority is on design styles as a teaching and learning tool during the lecture and discussion sections. This is caused by two factors: first, the learning mentality of novices who wish to rapidly establish a certain style to demonstrate their professional skill; and second, the BTS teaching model, which promotes teachers guiding students and enhancing their investigation of information. Professor Yeh's "BTS Teaching Method" is based on the "Understanding + Guiding + Observing + Learning" teaching model, which emphasizes that teachers should give students opportunities for self-directed learning, teach them how to recognize and solve problems, and teach them how to learn through peer-to-peer learning in order to develop their capacity for thought, expression, and facing uncertainty (Yeh, 2018). Students are encouraged to investigate the theory underlying the knowledge points and the capacity to develop the theory by incorporating it back into their design work by using design styles as a starting point to increase learning interest. The major design styles and representative designers—Bourbon and Baroque/Rococo, Morris and Arts and Crafts, Mouchaux and Art Nouveau, Dunant and Art Deco, Corbusier and Bauhaus, Mondrian and De Stijl, Hockney and Pop Art, and Soutozas and Memphis—are combined in the course content, which also combines the idea of stylistic stimulation. The instructor begins each session with a slide show of classic designs from each design style to provide students a visual boost and basic knowledge of the works.

Students engage in exploratory, collaborative learning within the framework of the BTS teaching framework is the second primary target of classroom instruction and feedback. Beginners in design are guided to understand the ideas underlying design styles through collaborative work and teacher support in this course. Through active exploration rather than passive indoctrination, students in groups of three delve deeper into their understanding and awareness of the styles surrounding the contemporary background, reasons for development, social influence, representative figures, design ideas, and classic works; Depending on how well their studies are going, the teacher will pose pertinent questions to the students in order to help them expand the scope and depth of their research. Teacher will also offer advice to any groups who stray from the intended topic. The teacher will summarize the design

concepts of the time, which will act as a reminder of the past and the future—that is, finishing one of the items in the classroom feedback—when the students organize their study of the style into a learning report and present it orally at the start of the next lesson.

Supporting students in applying what they have learned to design practice—which culminates in a second iconography project with a competition serving as an effectiveness test—is the third main goal of teaching and feedback. Although there is no restriction on the extent of style imitation, the concept and style of the second icon design may differ significantly from the first. Once the students have completed their work, the teacher asks them to comment on each other's work in order to encourage their participation, excitement, and competitive spirit. Next, the industry experts are invited to provide an expert opinion and offer suggestions. Based on the findings of these two evaluations, the students modify their designs and submit it to the competition. Simultaneously, academic essay writing is an additional way to evaluate the efficacy of education. Every student must write a discursive essay of at least 3,000 words on design style in order to strengthen their knowledge organization, logical thinking, and critical expression skills as well as further develop their comprehension of the depth of the practical application of design style. Students are still needed to complete the same subjective assessment form from the previous round after finishing the second icon design.

Participants and Experimental Process

This study aims to conduct an in-depth investigation of the relationship between creativity and internal efficacy in order to evaluate the effectiveness of the new teaching model and the learning characteristics of design beginners, based on the confirmation that this teaching method is beneficial to the development of students' design ability. The pre-test and post-test were compared prior to and following instruction in order to perform the experiment, which was based on the self-assessment of icon design. 30 Chinese students, 10 male and 20 female, first-year university students majoring in design, ages 17 to 20, participated in the experiment, which was carried out in a normal class given by the researcher. The students underwent a design history study that was mostly centered around the BTS teaching framework over the 2.5 months that separated the pre-study and post-study icon design phases.

After finishing both designs, students were asked to provide feedback on their subjective degree of creativity and intrinsic efficacy using a 7-point Likert scale. Each of the 10 icons in the workload required by the designs took an equal amount of time to complete. Before to the questionnaire being finished, the researcher made it clear that it was to be done in person and that there were no right or wrong answers, nor would it affect the final course grade. Following data collection, the researcher utilized narrative statistics and the paired-sample T-test of SPSS statistical software to validate and draw conclusions. This allowed them to make preliminary conclusions about whether the students' design abilities differed before and after the study, and it also allowed them to explore the learning characteristics of beginning designers by using linear analysis to elucidate the relationship between creativity and intrinsic efficacy.

Questionnaire

Following the completion of the two icon designs, each student was requested to complete an exactly same subjective evaluation form that measured their degree of intrinsic motivation and creativity. This study uses the "Creative Self-Efficacy Scale" developed by Hung and Lin

(2004) as the foundational text, and the purpose of "creative self-efficacy" is to test the students' evaluation of their own creativity during the process of learning and applying design history. The wording of some of the questions is modified according to the actual content of the design history course, involving three dimensions: belief in creative products, creative thinking strategies, and resistance to negative evaluations, with a total of 11 questions. The researcher additionally evaluated the students' intrinsic feelings associated with creating icons after learning and being influenced by classical design styles using the self-stated questionnaire that Amabile (1996) proposed as a parent for measuring students' intrinsic motivation. The modified questions included four facets, namely, senses of fulfillment during the design work, degree of stress, degree of liking the work, and motivation perception, with a total of six questions. The majority of respondents finished the questions in less than three minutes, and both employed a seven-point Likert scale for subjective evaluation. The questionnaires were written in the respondents' native tongue.

Results

The results of this research evaluated how "utility" and "relationship" were used to analyze the new approach to teaching design history. The Creative Self-Efficacy Scale's Cronbach's α was 0.872, indicating that the internal consistency of the questionnaire items was sufficiently good, based on the reliability analysis of the scales. The Intrinsic Efficacy Scale's Cronbach's α was 0.666, still within an acceptable range. Consequently, statistical analysis of the information gathered from the two surveys is possible.

The Efficacy of a Novel Approach to Teaching Design History

In this study, paired-sample T-tests were used for pre- and post-study pairwise comparisons of creative self-efficacy and intrinsic motivation efficacy, respectively. Table 1 presents the findings. While the mean creativity results before and after the study were 4.939 (SD=0.568) and 5.324 (SD=0.823), respectively, the mean difference in students' creative self-efficacy before and after the study reached -0.384, and the significance reached the criterion ($p=0.023$, $p<0.05^*$). This indicates that following the study of the new design history curriculum, results on the creativity self-efficacy assessment were significantly higher in the post-study than in the pre-study. The mean of the difference between intrinsic motivation efficacy before and after the study amounted to -0.486, with significance reaching the standardized value ($p=0.022$, $p<0.05^*$). The mean of intrinsic motivation efficacy before and after the study was 5.040 (SD=0.741) and 5.526 (SD=0.844), respectively, indicating that the results of intrinsic motivation efficacy assessed in the post-study were significantly higher than those in the pre-study. In conclusion, the standard deviation findings of the post-study demonstrated a significant tendency to broaden compared to the pre-study for both creative self-efficacy and internal intrinsic drive.

Table 1: the results for Creative Self-Efficacy and Intrinsic Motivation Efficacy's mean and standard deviation

	Group	N	Mean	STDEV	SEM
Creative	Before	30	4.939	0.568	0.103
	After	30	5.324	0.823	0.150
Motivation	Before	30	5.040	0.741	0.135
	After	30	5.526	0.844	0.154

Table 2: Creative Self-Efficacy and Intrinsic Motivation Efficacy paired-sample T-test results before and after learning

		Mean	STDEV	t	df	Sig.(2-tailed)
Creative	Before - After	-0.384	0.878	-2.401	29	0.023
Motivation	Before - After	-0.486	1.102	-2.418	29	0.022

The Impact of Creative Self-Improvement on Intrinsic Motivation

Exploring the relationship between creative self-confidence and intrinsic motivation is another purpose of this study, which aims to better understand the mental state of students' learning. Stepwise analysis was employed in the statistical processes using SPSS, with creative self-confidence being the independent variable and intrinsic motivation being the dependent variable.

This study phase evaluated the subjective assessment scores for the pre- and post-study independently in order to ensure the precision and comprehensiveness of the findings. Table 3 presents results. With an R-squared of 0.542, the fitted equation accounts for 54.2% of the variation observed in the dependent variable. While the unstandardized coefficient of creative self-efficacy on intrinsic motivation is 0.697 and meets the significant criterion ($B=0.697$, $p=0.000^{**}$), the ANOVA test result in the overall evaluation for the entire model meets the significant criterion ($F=68.724$, $p=0.000^{**}$), indicating that the fitted equation is meaningful. It suggests that intrinsic efficacy and creative self-efficacy can be positively correlated, meaning that the better the creative self-efficacy, the greater the intrinsic motivation to learn and create.

Pre-learning findings revealed a model R-squared of 0.391, meaning that 39.1% of the dependent variable in the pre-learning can be explained by the fitted equation, which is significantly less than the post-learning performance. The fitted equation was significant, according to the ANOVA test results, which also met the significance criterion ($F=17.985$, $p=0.000^{**}$). However, the pre-learning model's F-value was significantly lower than the post-learning model's, indicating that the model's ability to explain variation in the dependent variable is not as strong as it is in the post-learning model; In final analysis, the pre-learning period's unstandardized coefficient of creativity self-efficacy on intrinsic motivation was 0.635, meeting the significance criterion ($B=0.635$, $p=0.000^{**}$). This suggests that, even in the absence of knowledge about design history, creativity self-efficacy can positively influence intrinsic efficacy. The explanatory power of the model of students' creative self-confidence on self-efficacy increased when the pre- and post-study conditions were compared. This may mean that after learning through the new design history teaching method, students' creative self-confidence can have a greater impact on their self-efficacy.

Table 3: Model summary and results from the number of variations analysis

	R	R ²	R ² Adjusted	S.E.		SS	df	F	Sig.
Pre-test	0.625	0.391	0.369	0.458	Regression	3.755	1	17.985	0.000
					Residual	5.877	28		
					Total	9.625	29		
Post-test	0.736	0.542	0.534	0.470	Regression	15.188	1	68.724	0.000
					Residual	12.818	58		
					Total	28.005	59		

Table 4: Results of standardized and unstandardized coefficients

	Model	B	S.E.	β	T	Sig.
Pre-test	(Constant)	1.674	0.744		2.250	0.033
	Creative	0.635	0.150	0.625	4.241	0.000
Post-test	(Constant)	1.459	0.436		3.349	0.001
	Creative	0.697	0.084	0.736	8.290	0.000

Discussion

Design History Course Teaching Method

The study of design history is unquestionably important, but many students only recognize its significance after they have formed their knowledge framework. As a result, beginning designers are unable to devote enough time to the course due to their lack of theoretical knowledge and practical design experience. First, beginners lack skilled methods and have the learning motivation of wanting to quickly master a variety of design styles in order to show their professional ability. The classic styles shown in the early part of the course fit the learning psychology of beginners. Design students are adept at using images, charts, films, and other sensory forms of learning rather than reading through theory, so this approach can be used to enhance the attractiveness of the relevant knowledge and digging into the role. Second, collaborative exploratory learning within the BTS framework enhances most students' engagement and knowledge discussion, a phenomenon associated with design students' propensity to learn collaboratively and engage in peer discussions (Demirkan, & Demirbas, 2008; Demirkan, 2016); In order to become a guide rather than an indoctrinator of the theoretical construction, the teacher also assumes the role of a coach. This involves paying close attention to the students' performance and feedback during the collaborative exploratory instruction, as well as timing their questions and suggestions. This aligns with the bipolar perceive dimension (ACeCE) characteristic of freshman design majors, which is that they are more likely to independently construct theories and analytical techniques. The two icon creations that students completed before and after class enable them to fully understand the value of applying theory to practice. Most students are inspired by the classic style and apply it to the current icon design, though the degree and approach of application vary depending on each person's comprehension of the various points of knowledge. After the study, the majority of students demonstrate a noticeable improvement in the cohesiveness of the icon design, and some of them are even able to apply or even expand on the classic style. Lastly, the students' multiple prize wins at the NCDA Competition help to validate the effectiveness of the teaching method.

The Characteristics of Learning for Novices in Design

The innovative "style attraction + BTS teaching method" for teaching design history is beneficial for improving students' creativity, self-confidence, and intrinsic motivation, as evidenced by the comparison of pre- and post-study findings. Beginners can create in accordance with this visual layout if style guidance is reinforced in the teaching of design history and other theoretical training. The classic style does not always stifle creativity; rather, students' ability to learn and then borrow, incorporate, or expands their creative boundaries and fosters their imagination. Regarding intrinsic motivational efficacy, beginners typically lack design-related knowledge and lack confidence in their own designs. However, this teaching approach enables beginners to quickly grasp visual styles and the underlying

principles, providing a "quick fix" that boosts confidence in the design practice path and encourages beginners' intrinsic motivational efficacy toward design.

The association between creative self-confidence and intrinsic motivation efficacy was also investigated in this study. The findings indicated that intrinsic motivational efficacy was positively impacted by self-confidence in one's creative abilities, both before and after learning. This suggests that the "confidence" factor plays a pivotal role in igniting students' motivation to learn, and that the adage "confidence is the only thing that makes good grades possible" is no more meaningful than that. Due to this, this study makes use of a novel approach to teaching design history in order to boost students' creative self-confidence, which is essential for fostering intrinsic motivating effectiveness. Notably, after learning using the new teaching strategy, the students' standard deviation results on creativity and intrinsic motivation showed an expanding trend. This suggests that while the self-evaluation results were generally improved, the data were not uniformly distributed, and there were a few extremes or outliers, which suggested that different students absorbed the course content to varying degrees. Additionally, there was a widening of the differences in the effectiveness of creativity self-efficacy and intrinsic motivation, which could be related to the fact that each student's degree of self-efficacy was either raised significantly or not elevated. Simultaneously, the model connection demonstrating the differential explanatory power between pre- and post-learning on the impact of creative self-efficacy on intrinsic motivation efficacy was observed. While there was a positive relationship between creative self-efficacy and intrinsic motivational efficacy before and after learning, the explanatory power of the model was stronger and the standardized coefficient was higher after learning, indicating that creative self-efficacy had a greater impact on intrinsic motivational efficacy and that subjective evaluations performed better in terms of model validity after learning. Beginners found that the new design history teaching technique increased students' motivation for design practice by exacerbating the effect of their creative self-confidence on intrinsic motivational efficacy.

Conclusion

Using the BTS methodology as a guide, this study investigated a teaching model for a design history course and verified the effect of the teaching approach on design novices in terms of creative self-efficacy and intrinsic motivation. Beginners found the teaching approach to be effective, and their creative self-efficacy had a positive effect on intrinsic motivation. This phenomenon became more prominent after students experienced the new teaching strategy, indicating that the new teaching approach increased the impact of creative self-efficacy on intrinsic motivation. To have a more thorough grasp of the learning characteristics of starting design students, future study might examine the impact of exploratory learning on various student categories.

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