

Development of Project-Based Instructional Models for Interior Planning 3 Courses, Fakultas of Art and Design Trisakti University

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Abstract This study aims to increase the final value in the course of Interior Planning 3, Faculty of Art and Design – Trisakti University. The research based on acquisition of value over the last 5 years, from star of Academic Year 2010/2011 to Academic Year 2014/2015 in Odd and Even Semesters. The condition is that almost all students have difficulties to complete the task in the form of Portfolio correctly, on time and representative. This research refers to The Dick and Carey Instructional Models up to the ninth step combined with the John Larmer Project-Based Learning Model from the Buck Institute for education in the sixth step and the Interior Design Planning Concept, with research subjects being Interior students, Faculty of Art and Design – Trisakti University. The experimental research has been done through expert validation, such as: Instructional Design, Media and Instructional Materials and conducted on the students by conducting Pre-Test and Post-Test ‘One to one’ test for 3 students, Small Group trials with 9 Students, Field trials I with 15 students and Field trials with 31 students. The trial is declared viable and effective to be developed and applied to the Interior Planning 3 Courses so that students can complete Portfolio assignments correctly, timely and representative with a project-based approach in the design process, where students are able to think creatively, independently and collaboratively work in do: Gathers information both from literature and field surveys as ‘Input’, conducts a ‘Process’ of study and analysis of the collected information to determine the design concept as the end result or ‘Output’. The results of this study are recommended in the form of: Textbooks, Lecturer Guides and Student Guides. Thus it can be concluded that this Project-Based Learning Model can increase the final grade of students in the Course of Interior Planning 3, Faculty of Art and Design – Trisakti University.

Keywords: *project-based learning, design process, portfolio*

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1. Introduction

Interior Planning 3 Courses on Interior Design Study Program, Faculty of art and Design – Trisakti University is planning interior of a Shop in Commercial Building that is Mall with planned room space ± 200-250 m².

To facilitate students as learners to understand the learning materials provided and able to apply and complete the progress of the given tasks used project-based learning approaches and design concepts ‘Input – Process – Output’ during the learning process takes place. This study is based on the Data of the last 5 Years of Academic Year 2010/2011 until Academic Year 2014/2015 as the following table:

Table 1. Odd Semester Student Frequency – Even Years Academic 2010/2011 to Academic Year 2014/2015

Grade Point	Year Academic 2010/2011				Year Academic 2011/2012				Year Academic 2012/2013				Year Academic 2013/2014				Year Academic 2014/2015				
	Odd		Even		Odd		Even		Odd		Even		Odd		Even		Odd		Even		
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%	
A	0	0	1	2.94	0	0	0	0	0	0	1	4.16	0	0	0	0	0	0	0	0	0
A-	0	0	1	2.94	0	0	0	0	0	0	2	8.33	1	7.14	0	0	0	0	1	3.7	
B+	0	0	2	5.88	1	9.09	0	0	0	0	0	0	1	7.14	0	0	0	0	1	3.7	
B	0	0	3	8.82	0	0	2	9.09	1	9.09	6	25	2	14.29	5	17.85	1	6.25	5	18.51	
B-	1	12.5	4	11.76	1	9.09	3	13.66	2	18.18	3	12.5	1	7.14	6	21.42	2	12.5	6	22.22	
C+	3	37.5	8	23.55	3	27.27	5	22.72	3	27.27	1	4.16	2	14.29	2	7.14	2	12.5	5	18.51	
C	1	12.5	12	35.29	3	27.27	5	22.72	2	18.18	3	16.66	2	14.29	5	17.85	6	37.5	2	7.4	
D	2	25	3	8.82	3	27.27	2	9.09	0	0	3	12.5	2	14.29	6	21.42	3	18.75	0	0	
E	1	12.5	0	0	0	0	5	22.72	3	27.27	4	16.66	3	21.42	4	14.28	2	12.5	7	25.92	
Total students	8		34		11		22		11		24		14		28		16		27		

Description of Table 1:

In Table 1 shows the Grade Point data obtained by the students of the last 5 years with the following description:

A → 2	Students with Percentage : $2/195 \times 100\% = 1,06\%$
A- → 5	Students with Percentage : $5/195 \times 100\% = 2.56\%$
B+ → 5	Students with Percentage : $5/195 \times 100\% = 2.56\%$
B → 25	Students with Percentage : $25/195 \times 100\% = 12.82\%$
B- → 29	Students with Percentage : $29/195 \times 100\% = 14.87\%$
C+ → 34	Students with Percentage : $34/195 \times 100\% = 17.43\%$
C → 42	Students with Percentage : $42/195 \times 100\% = 21.53\%$
D → 24	Students with Percentage : $24/195 \times 100\% = 12.30\%$
E → 29	Students with Percentage : $29/195 \times 100\% = 14.87\%$

Based on existing facts in the form of value data, it can be concluded that the existing learning does not achieve the objectives are: Student final score low. In the four stages of the experiments conducted by conducting Pre-Test and Post-Test and interviews to students, it is found that during this time the students have difficulties to work on the Portfolio tasks correctly, timely and representative because they have been: 1) Very dependent on guidance and direction from the supervisor lecture; 2) No progress schedule of tasks to be completed per week and 3) There is no Guidebook for Lectures and Guidebook for students.

The Project-Based learning Model develop and applied during the learning process of Interior Planning 3 Course can facilitate lectures and students in completing the process of guidance and tasks that must be completed.

Model Development Concept

Dick and Carey learning model has 10 steps, that is: 1) Identify Instructional Goals; 2) Conduct Instructional Analysis; 3) Analyze Learner and Contexts; 4) Write Performance Objectives; 5) Develop Assessment Instruments; 6) Revise Instruction; 7) Develop Instructional Strategy;

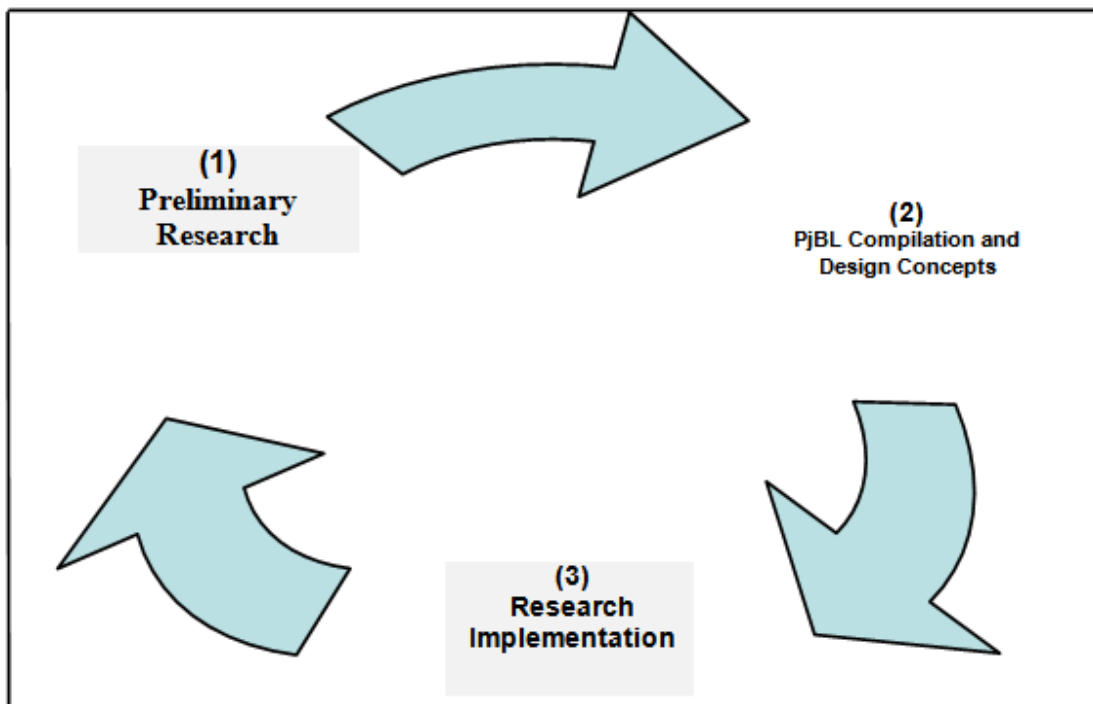
8) Develop and Select Instructional Materials; 9) Design and Conduct Formative Evaluation of Instruction. In the sixth stage, the researcher combine with the Project-Based learning Model from John Larmer and the Design Concept of Interior Design 3 Courses at Faculty of Art and Design – Trisakti University.

The reason researcher use the development of the Dick and Carey Instructional Model combined with the John Larmer Project-Based Learning Model and the Design Concept at the sixth stage in addressing the problems in Interior Planning 3 courses are as follows: 1) This model is able to overcome real needs and find the most appropriate solution to solve existing problems; 2) This research can generate knowledge and insight for lecturers and students to overcome the problems during the learning process; 3) The recommendation of this research is able to produce the product in the form of: Textbook, Lecturer Guidance and Student Guidance that has validation value from expert; Learning Design, Media and Learning Materials; 4) Able to motivate lecturers at The Faculty of Art and Design – Trisakti University to innovate develop new product that are always actual by adjusting the development of times and technology as well 5) Able to facilitate lecturers as mentors and students during the learning process.

Model Concept Developed

In this study, the stages of the Dick and Carey learning model up to the ninth step of starting ‘Identify Instructional Goals’ to ‘Design and Conduct Formative Evaluation of Instruction’. In the sixth step, the researchers combine with the Project-Based learning model from John Larmer and Design Concept of Interior Design 3 courses at The Faculty of art and Design – Trisakti University.

The process and stages of this research outline has 3 (three) steps that can be describe with the following cycles.



Circle of Research Steps

From the research cycle above, then the chart can be described as follows:

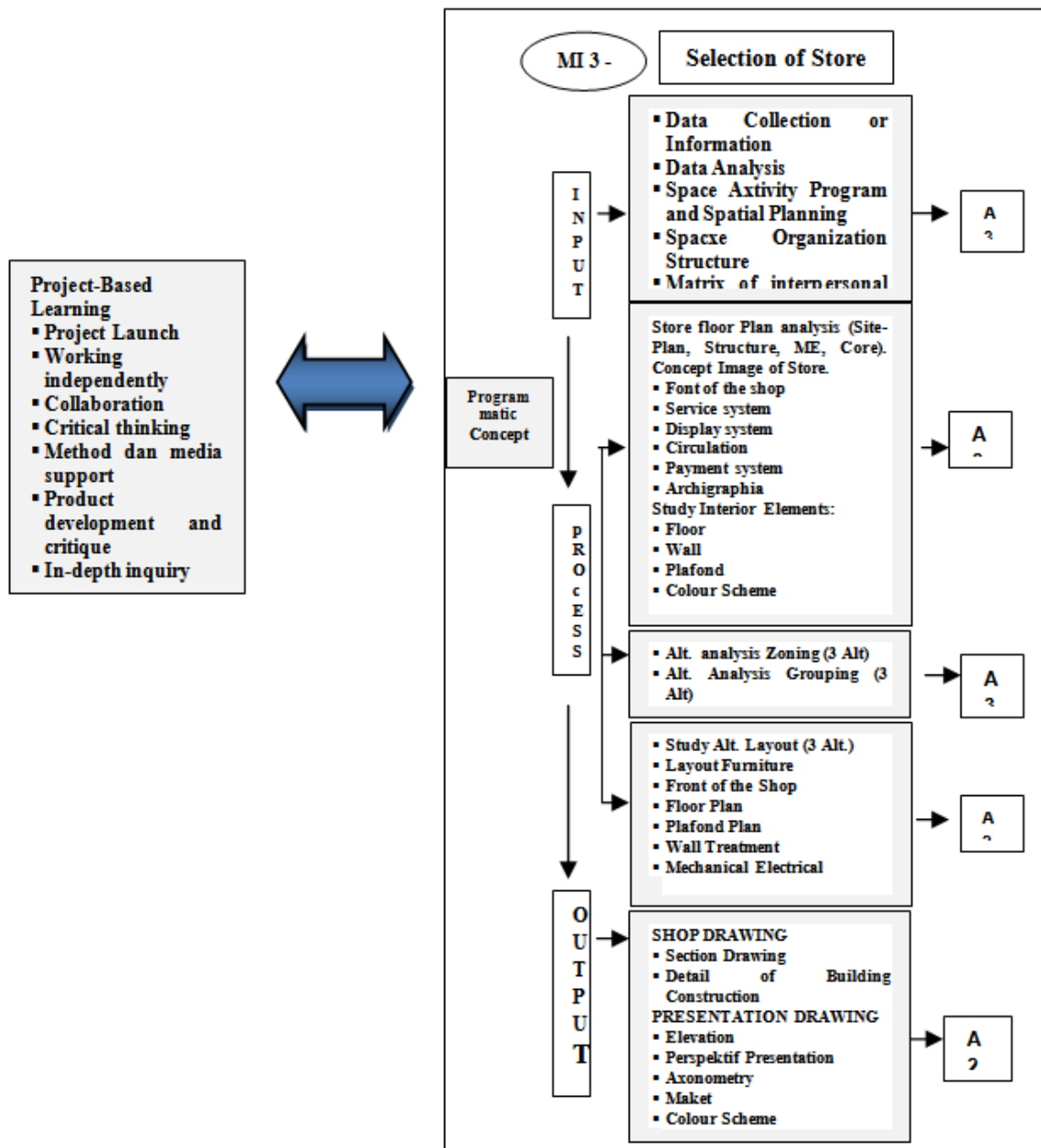


Chart 1. PjBL Compilation and Design Concept Courses Interior Planning 3

Chart Description:

The above chart illustrates the compilation between Project-Based Learning Model and Design Concept for Interior Planning 3 courses during the learning process.

Research Stages

In accordance with the circle of research step, it can be describe the research stages are as follows:

Dick and Carey Model

- 1) Researcher identifies the instructional needs and sets the Instructional Objective General Interior Planning course 3.
- 2) Researchers conduct an instructional analysis that describes the general competence to be a sub-competence of basic competencies and special competencies.

- 3) Researcher identify the behavior and characteristic of students, this is done to equate the perception of students before the learning process takes place.
- 4) Researcher specifies the Instructional Special Purpose of the Interior Planning 3.
- 5) Develop an assessment tool to see of the task progress that has been done by the students, including doing some evaluation.
- 6) Develop an Instructional Strategy that includes 5 stages of activity, that is: 1. Pre-Instructional activities; 2. Content Presentation; 3. Learner Participation; 4. Assessment and 5. Follow-trough Activities.

Note:

In the sixth phase, researcher combine with the project-based learning model from John Larmer and the Design

Concept of Interior Design 3 courses, that is: Input → Process → Output

- 7) From the combination of Dick and Carey learning model to the ninth step with the model of Project-Based learning and Design Concept, then at this stage researcher develops instructional material of Interior Planning 3 courses.
- 8) At this stage, researcher develops and conducts formative evaluation with instructional instrument validation test from the experts: Instructional design, Media and Instructional Materials prior to testing on the students: One to one, Small Group, Field Trial I and Field Trial II.
- 9) Is the final stage of research in the form of recommendations in the form of products: Textbooks, Guidance for lecturers and Guidance for students.

Project-Based Learning

In this study, researcher used John Larmer's Project-Based Model of the Buck Institute for Education. This model has 8 (eight) important steps in involving students to be able to work independently to find solutions to solve problems in designing and planning the Interior of a shop in Commercial Building that is Mall. The eight steps are:

- 1) **Significant Content**, in this case the student chooses the type of shop to be designed. Examples are Men's Clothing Store and create a task completion schedule in accordance with the format of the task to be completed.
- 2) **A need to Know**, in this case that students need to know is the characteristics of product sold. Taking into account the variants of: Types, Sizes, Designs and Colours. Then the calculation of the number of products, how to display and display form later.
- 3) **A Driving Question**, which is done by the students is doing the calculation of the needs of the amount of space in the Activity Chart and Facilities table.
- 4) **Student Voice and Choice**, students are able to complete their tasks independently after completing the Activity diagram and facilities table by creating study and analysis of Zoning and Grouping.
- 5) **21st Century Competencies**, at this stage students make alternative layout with the guidance of Supervisor lecture by considering user circulation and display placement.
- 6) **In-Dept Inquiry**, after determining the chosen layout of the students make the section and elevation drawing.
- 7) **Critique and Revision**, students choose the application for the interior elements in accordance with the image of the Shop planned and complete the progress of the task as a whole and consult with the supervisor.
- 8) **Public Audience**, students are able to present progress in portfolio form correctly, on time and representative.

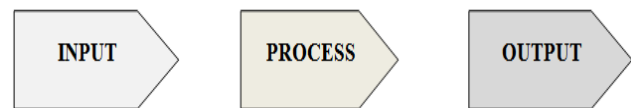
Design Concept

The concept of design in the learning process of Interior Planning Course 3 can be described as follows:

- 1) **Input**, is the stage in which learners collect various information related to the planning and design of

the store in Commercial Building that is Mall. This information can be obtained from literature, lecture notes, articles, website as initial data and field data such as: surveys, interviews, measurements and documentation.

- 2) **Process**, is the stage where the students conduct the study and analysis of the data obtained, both initial data and field data are adjusted to the characteristics of stores and products sold and the application on the plan that will be used such as: Macro data (building location, environmental conditions and community users in the environment) and Micro data (Façade building, structure, building facilities and building regulations).
- 3) **Output**, is the stage in which the student has determined the design decision in accordance with the results of studies and analysis made in the Portfolio.



Shop and Store

In planning the interior of the shop there are some opinions that we quote as a reference in the learning process, among others: Holly Bastow-Shoop, et.all., david Mun and Lawrence J. Israel, AIA., FISP.

- 1) **Holly Bastow-Shoop**, et.all., state that: 'Visual Merchandising is everything the customer sees, both exterior and interior, that creates a positive image of a business and results in attention, interest, desire and action on the part of the customer.'¹
- 2) **David Mun**, stated that in designing the store there are several aspects to be considered include:
 1. The type and characteristics of store and product sold;
 2. Planning and Layout;
 3. Fixtures and Fittings;
 4. The Shopfront;
 5. Signs;
 6. Security system;
 7. Environmental service;
 8. Engineering services, and
 9. Implementation.
- 3) **Lawrence J. Israel, AIA., FISP**, states that in planning and designing a store there are things to note such as:
 - 1) Store design is the formulation of all aspects of the retail (physical environment to achieve image, operational performance and successful sales results);
 - 2) Store design is helping the client add value (the physical product through the provision and management of imagination), and
 - 3) Store design is the creation of compelling environment for competitive retail selling at profit.²

Of the three statements above can be concluded that in the interior planning of a store there are several aspects related to aspects such as: shopfront, shop characteristics and products sold, layout, interior decoration, display, sign, service, comfort and security system.

¹ Holly Bastow-Shoop et.all., *Visual Merchandising, A Guide for Small Retailers.*, (Iowa: North Central Regional Center Rural Development, 1991), p.1.

² Lawrence J. Israel, *Store Planning Design, History-Theory-Process.*, (Canada: John Wiley & Sons, Inc., 1994), p. 8.

2. Method

The design of the study is done by increasing the final score of Interior Planning 3 courses on Interior Design Study Program, Faculty of Art and Design – Trisakti University using Dick and Carey Instructional Model up to the ninth step combined with Project-Based learning Model and Design Concept on step sixth.

Stages of the research process taken are: 1) Needs analysis and Field observation; 2) Determining the research plan; 3) Initial Product development; 4) Initial test; 5) Initial product revision; 6) Field trial; 7) Field trial revision; 8) Test of product effectiveness; 9) Last revision and 10) Dissemination and Implementation.

From the results of this study obtained Qualitative data in the form of: advice and insert from the experts (Instructional design, Media and Instructional Materials) and Quantitative data in from of ‘t’ test to see the effectiveness and feasibility of applied products.

Quantitative data to test the effectiveness and feasibility of the applied product, is by the ‘t’ test on the assessment of Pre-Test and Post-Test which can be seen in the following table:

1. One to one trial tested on 3 (three) students

Table. Results of Pre-Test and Pos-Test rating Evaluation ‘One to One’

Students	GRADE			Value of Mean	
	Pre	Post	Final Score	Pre T.	Post T
a	55	75	B+	59,00	79,33
b	58	78	A-		
c	64	85	A		

While the ‘t’ test shows:

Ho; μ pre-tes \geq μ post-tes and H1; μ pre-tes $<$ μ post-tes, based on data analysis to the test the effectiveness of the module using a significant test of correlation ‘t calculate’ obtain data of 27,135 with degrees of freedom = 1. This is evidenced also with the level of signigance \rightarrow ‘t calculate’ = 0,023 $<$ α = 0,05; then the module can be ‘effective’ for 3 (three) students.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.999 ^a	.999	.997	.26726

a. Predictors: (Constant), Pre

ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	52.595	1	52.595	736.333	.023 ^a
	Residual	.071	1	.071		
	Total	52.667	2			

a. Predictors: (Constant), Pre

b. Dependent Variable: Post

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	13.310	2.438		5.459	.115
	Pre	1.119	.041	.999	27.135	.023

a. Dependent Variable: Post

2. Small group trial, this trial was conducted on 9 (nine) students with the following Pre-Test and Post-Test results:

Table. Result of Pre-Test and Pos-Test rating Evaluation ‘Small Group’

Students	GRADE			Value of Mean	
	Pre	Post	Final Score	Pre-Test	Post-Test
1	50	70	B	49,33	78,11
2	55	87	A		
3	50	75	B+		
4	45	80	A		
5	45	73	B		
6	45	70	B		
7	50	80	A		
8	52	83	A		
9	52	85	A		

While the ‘t’ test shows:

Ho; μ pre-tes \geq μ post-tes and H1; μ pre-tes $<$ μ post-tes, based on data analysis to the test the effectiveness of the module using a significant test of correlation ‘t calculate’ obtain data of 2,442 with degrees of freedom = 7. This is evidenced also with the level of signigance \rightarrow ‘t calculate’ = 0,045 $<$ α = 0,05; then the module can be ‘effective’ for 9 (nine) students.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.678 ^a	.460	.383	5.00641

a. Predictors: (Constant), Pre

ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	149.440	1	149.440	5.962	.045 ^a
	Residual	175.449	7	25.064		
	Total	324.889	8			

a. Predictors: (Constant), Pre

b. Dependent Variable: Post

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.974	24.276		.782	.460
	Pre	1.199	.491	.678	2.442	.045

a. Dependent Variable: Post

3. Field Trial I, this trial was conducted on 15 (fifteen) students with the following Pre-Test and Post-Test results:

Table. Result of Pre-Test and Pos-Test rating Evaluation ‘Field Trial I’

Students	GRADE			Value of Mean	
	Pre T.	Post T.	Final Score		
1	40	75	B+	44,53	78,13
2	40	73	B		
3	52	83	A		
4	55	85	A		
5	38	70	B		
6	40	85	A		
7	45	83	A		
8	40	76	B+		
9	50	83	A		
10	45	83	A		
11	40	73	B		
12	46	73	B		
13	47	70	B		
14	50	83	A		
15	40	77	A-		

While the ‘t’ test shows:

Ho; μ pre-tes \geq μ post-tes and H1; μ pre-tes $<$ μ post-tes, based on data analysis to the test the effectiveness of the module using a significant test of correlation ‘t calculate’ obtain data of 2,455 with degrees of freedom = 13. This is evidenced also with the level of significance \rightarrow ‘t calculate’ = 0,029 $<$ α = 0,05; then the module can be ‘effective’ for 15 (fifteen) students.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.563a	.317	.264	4.80768

a. Predictors: (Constant), Pre

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	139.254	1	139.254	6.025	.029 ^a
	Residual	300.479	13	23.114		
	Total	439.733	14			

a. Predictors: (Constant), Pre

b. Dependent Variable: Post

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	51.849	10.780		4.810	.000
	Pre	.590	.240	.563	2.455	.029

a. Dependent Variable Post

4. Field Trial II, this trial was conducted on 31 students with the following Pre-Test and Post-Test results:

Table. Result of Pre-Test and Pos-Test rating Evaluation ‘Field Trial II’

Students	GRADE			Value of Mean	
	Pre T.	Pos T.	Final Score		
1	40	79	A-	41,54	79,61
2	35	81	A		
3	38	73	B		
4	38	75	B+		
5	40	72	B		
6	46	73	B		
7	40	75	B+		
8	50	77	A-		
9	40	73	B		
10	38	83	A		
11	38	81	A		
12	38	81	A		
13	35	74	B+		
14	40	83	A		
15	40	85	A		
16	35	80	A		
17	37	77	A-		
18	38	78	A-		
19	40	81	A		
20	52	83	A		
21	46	81	A		
22	55	89	A		
23	50	85	A		
24	48	83	A		
25	48	80	A		
26	40	73	B		
27	40	81	A		
28	40	83	A		
29	45	83	A		
30	40	85	A		
31	38	80	A		

While the ‘t’ test shows:

Ho; μ pre-tes \geq μ post-tes and H1; μ pre-tes $<$ μ post-tes, based on data analysis to the test the effectiveness of the module using a significant test of correlation ‘t calculate’ obtain data of 2,235 with degrees of freedom = 29. This is evidenced also with the level of significance \rightarrow ‘t calculate’ = 0,033 $<$ α = 0,05; then the module can be ‘effective’ for 31 students.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.383 ^a	.147	.118	4.12891

a. Predictors: (Constant), Pre

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	85.159	1	85.159	4.995	.033 ^a
	Residual	494.390	29	17.048		
	Total	579.548	30			

a. Predictors: (Constant), Pre

b. Dependent Variable: Post

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	66.286	5.995		11.058	.000
	Pre	.320	.143	.383	2.235	.033

a. Dependent Variable: Post

3. Conclusion

Based on the results of the experimental stages conducted, the results of the study ‘Development of Project-Based Learning model for The course of Interior Planning 3, Faculty of Art and Design – Trisakti University’ can be concluded that:

1. The results of this research are recommended in form of product: Textbook, Lecturer Guidance and Student Guidance.

2. Based on the results of the effectiveness test and the feasibility of the product produced through the test ‘t’, stated that the product produced ‘Effective’ and ‘Eligible’ and recommended for use in Learning Processes Interior Planning Courses 3.

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