

## Computer-Based Training (CBT): Innovation and Influence Towards Teaching-Learning Process at JBLFMU-Molo

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**ABSTRACT:** This study determined the level of assessment of subjects with CBT (Computer-Based-Training) application among marine engineering students of John B. Lacson Foundation Maritime University-Molo, Iloilo City. The participants in this study were the randomly selected one hundred and thirty-three (133) marine engineering students of JBLFMU-Molo, Iloilo City who had taken subjects with CBTs. The present study employed quantitative-qualitative research design by Creswell (2013). Results reveal the following: (1) review with CBT or CBTR review is the mostly utilized subject because this is needed in the marine engineering licensure examinations; (2) level of assessment of CBTs is excellent; (3) no significant differences in the assessment of CBTs were found out among marine engineering students as classified according to different variables such as academic performance, students' classification, type of students, and section.

### 1 INTRODUCTION

The information and communication systems have been generally used in many sectors, one is the academe or institution. This is widely used particularly by the instructors and students at universities, especially among highly developed countries (Kantabutra & Jariangprasert, 2013). In line with this study, the researchers determined the role of CBT in the different subjects of the marine engineering students of JBLFMU-Molo, Iloilo City, Philippines. This mode of determination was in the form of evaluation or assessment.

Assessment includes students' specific individual characteristics such as age, skills, and academic proficiency (Cawthon & Leppo, 2013). These variables have an effect on the assessment outcomes of the students. Assessment system is a part of the learning context, thus, flexible assessment system could relieve stress of students in the examination. Academic

motivation is a robust predictor of learning outcomes and which assessment is part of the academic activity (Ariani, 2016). As mentioned by Brookhart (2004), assessment occurs at the intersection of the three teaching functions such as instruction, classroom management, and academic counseling. In the studies of Siritonghawon & Kairit (2006) and Ozlan, Koeler, & Baykal (2009), it was mentioned that the subject has influenced the measure of students' perception towards this particular computer-based teaching. This perception has affected the acceptance and success of the delivery of instruction of this particular subject, CBT (Computer Based-Teaching) subjects of marine engineering students.

## 2 STATEMENT OF THE PROBLEM

- 1 What is the subject that mostly utilized CBT (Computer-Based Teaching) among marine engineering students?
- 2 What is the level of assessment of CBT among marine engineering students as an entire group and when grouped according to the following: (a) academic performance, (b) students' classification, (c) type of students, and (d) section?
- 3 Are there significant differences in the subjects using CBT when categorized according to different categories such as (a) academic performance, (b) students' classification, (c) type of students, and (d) section?
- 4 What are the respondents' views or ideas about CBT in relation to the teaching-learning process?

## 3 CONCEPTUAL FRAMEWORK

The conceptual framework of this study presents the assessment of CBT subjects among marine engineering students. This assessment is further determined in terms of the respondent-related factors such as academic performance, students' classification, type of scholarship, and section. To understand the inter-relationship of each variable clearly, the diagram is presented in Figure 1 below.

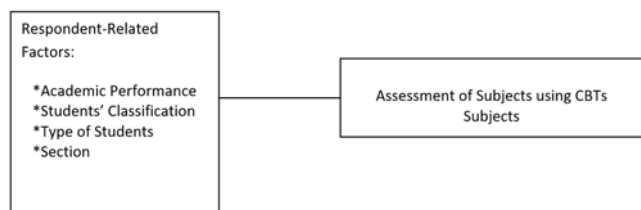


Figure 1. Assessment of the CBTs subjects

## 4 METHOD

The present study employed quantitative-qualitative research design by Creswell (2013). This research design is appropriate with different sample sizes, a general rule of thumb for qualitative research the samples for a single study involving individual interview usually lie at under 50. If much larger than 50 it becomes difficult to manage in terms of data collection and analysis that can be achieved. Some experts in qualitative research suggested to move further away from the traditional forms and practices (Ritchie, Lewis, Nichols, & Ormston, 2013). The respondents were distributed according to different groupings such as according to grade, students' classification, type of scholarships of the students, and section.

Furthermore, the respondents were requested to answer the Assessment Rating Scale instrument on CBT, which contained open-ended question such as "what are the ideas about latest CBT in relation to learning of the marine engineering students?" The answers of the respondents were gathered and analyzed according in order to answer the specific

questions of the present study. The instrument was submitted to the experts and members of the Research Committee to determine the validity. Revision, refinement, and alignment of the items of the instrument were followed and done by the researchers. Comments and suggestions from the jurors and experts were followed in order to improve the intended instrument for this particular study. Pilot-testing was conducted only to thirty (30) students in order to gauge if the items were understood properly. Reactions from the students were gathered and revisions on the instrument were done prior to the final administration. Appropriate statistical tools used were frequency, percentage, rank, and mean.

## 5 PARTICIPANTS OF THE STUDY

The participants of this study were one hundred thirty three (133) marine engineering students of the College of maritime Education of JBLFMU-Molo for this school year 2016-2017. The participants were using CBTs in their professional and allied subjects. The distribution of the participants is presented in Table 1.

Table 1. Distribution of the Participants

Category	f	%
A. Entire Group	133	100.00
B. Academic Performance		
80 and below	20	15.04
81-85	88	66.17
86 and above	25	18.79
C. Student's Classification		
Regular	108	81.20
Irregular	12	9.03
Special Program	13	9.77
D. Type of Students		
Company-Sponsored Students	17	12.78
Non-Company Sponsored Students	116	87.22
E. Section		
Argon	10	7.52
Barium	10	7.52
Cobalt	10	7.52
Dysium	10	7.52
Enstium	10	7.52
Flourine	10	7.52
Germanium	10	7.52
Helium	10	7.52
Iridium	10	7.52
Jetsam	10	7.52
Krypton	10	7.52
Lithium	10	7.52
Polaris	13	9.77

The utilization result indicates that subject that used CBT mostly is the CBTR (CBT review), which was ranked 1 compared to Auxiliary Machinery subject. This means that marine engineering students used the CBTR most of the time.

Table 2. Utilization of CBTs of the Subjects of Marine Engineering Students

Category	f	R	f
A. Subjects Using CBT	133		100
CBTR	45	1	34
Auxiliary Machinery	37	2	28
Chemistry	30	3	22
Math	21	4	16

For the Level of Evaluation of CBT

To determine the level of evaluation of CBTs, the 5, 4, 3, 2, and 1 scale were used to determine the level of evaluation of CBT subjects among marine engineering students. For statistical analysis, the following descriptive levels and descriptions were employed:

Scale	Description
4.21 - 5.00	Excellent
3.41 - 4.20	Very Good
2.61 - 3.40	Good
1.80 - 2.60	Poor
1.00 - 1.79	Very Poor

The level of assessment of CBTs is excellent as shown in Table 3.

Table 3. Level of Assessment of CBT subjects when respondents were classified according to Different Categories

Category	Mean	Description
Entire Group	4.24	Excellent
Academic Performance		
80 and below	4.33	Excellent
81-85	4.19	Very Good
86 and above	4.32	Excellent
Student Classification		
Regular	4.23	Excellent
Irregular	4.48	Excellent
Special Program	4.08	Very Good
Type of Students		
Company-Sponsored Student	4.31	Excellent
Non-Company Sponsored Student	4.23	Excellent
Section		
Argon	4.47	Excellent
Barium	4.11	Very Good
Cobalt	4.37	Excellent
Dysium	4.27	Excellent
Enstium	4.59	Excellent
Flourine	4.44	Excellent
Germanium	4.39	Excellent
Helium	4.14	Very Good
Iridium	4.65	Excellent
Jetsam	3.99	Very Good
Krypton	3.90	Very Good
Lithium	3.80	Very Good
Polaris	4.06	Very Good

Scale	Description
4.21 - 5.00	Excellent
3.41 - 4.20	Very Good
2.61 - 3.40	Good
1.80 - 2.60	Poor
1.00 - 1.79	Very Poor

## 6 INFERENTIAL DATA-ANALYSIS

This section of the research discusses the results pertaining to the differences of the assessment of CBTs among marine engineering students. The appropriate statistical tools used in order to determine the significant differences on CBTs are t-test and ANOVA (Analysis of Variance) when the respondents are grouped to two and three or more categories.

### 7 DIFFERENCES IN THE LEVEL OF ASSESSMENT OF CBT

Table 4 below shows the t-test results when the respondents were categorized according to two categories such as type of students. The result shows that there were no significant differences in the assessment of CBTs among marine engineering students either the respondents were classified company-sponsored or non-company sponsored students. This simply means that the respondents' assessment on CBTs was not influenced by the type of scholarship.

The data are shown in Table 4.

Table 4. t-test Results in Assessment of CBTs according to Type of Students

Category	N	Meant	df	Sig.
Type of Students:				
Company-Sponsored	17	4.3118	.501	131 .617
Non-Company Sponsored	116	4.2276		

### 8 ANALYSIS OF VARIANCE IN ASSESSMENT (ANOVA) OF CBTS AMONG MARINE ENGINEERING STUDENTS

Analysis of Variance in Assessment (ANOVA) of CBTs when grouped according to average grade, type of student, and section. Table 5 shows that there are no significant differences on their assessment when the respondents were grouped according to three or more categories such as average grade, students' classification, and section with the results of .523, .152, and .111 at two-tailed level of significance.

The data are shown in Table 5.

Table 5. ANOVA of the Assessment on CBTs when the respondents were categorized according to Academic Performance, Students' Classification, and Section

Variable	Degrees of Freedom			Sum of Squares			Mean Squares		F	Sig
	Between Groups	Within Groups	Total	Between Groups	Within Groups	Total	Between Groups	Within Groups		
A. Academic Performance	2	128	130	13.345	31.467	44.81	.334	.342	.975	.523
B. Students' Classification	2	128	130	19.944	33.944	53.14	.480	.369	1.30	.152
C. Section	12	118	130	718.270	1207.29	1925.56	17.957	13.123	1.37	.111

## 9 QUALITATIVE ANALYSIS

The views or ideas on CBTs in relation to teaching-learning process by the marine engineering students are discussed in this section. Majority of the respondents agreed that using CBTs in the subject is an *inter-active teaching strategy*. This is supported by sharing the following statements: "learn the importance of CBTs towards modernized strategy in teaching", "CBTs are stimulating and enjoyable", and "help the instructors to teach properly their subjects".

The respondents mentioned also that CBTs *improve computer skills*. This statement is supported by the remarks of the respondents "CBTs enhance the students' computer skills in relation to how to use the modern technology on board".

The third is *CBTs develop critical thinking skills*. This idea is grounded on the insights given by the respondents when they shared that "CBTs allow the students to develop their critical thinking and spontaneous inter-action", and "CBTs give them simulations about the real life situation on board".

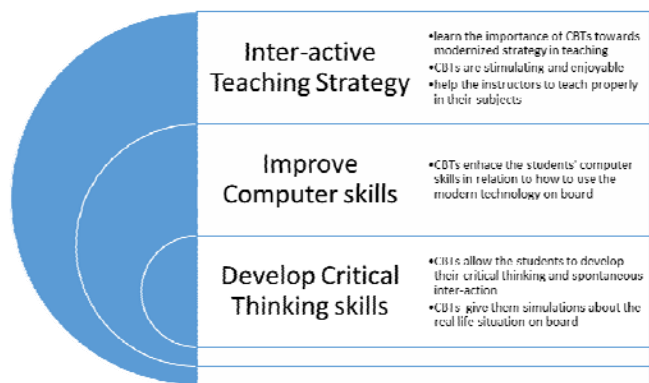


Figure 2. Views and ideas of the respondents on CBTs in relation to teaching-learning process

## 10 CONCLUSIONS

Based on the findings of the present study, the following conclusions were drawn:

- 1 The review with CBT or CBTR review is the mostly utilized subject because this is needed in the marine engineering licensure examinations. Most of the areas in the marine engineering exams are computer-based, therefore, this may help them to be familiar with the system of examinations given by MARINA.
- 2 The level of assessment of CBTs is excellent. This shows that the marine engineering students

recognize the role of CBT in the delivery of instruction.

- 3 The no significant differences in the assessment of CBTs among marine engineering students as classified according to different variables imply that the differences in the assessment of CBT is not influenced by the academic performance, students' classification, type of students, and section. Maybe there are other factors that may influence the differences in the assessment of CBTs.
- 4 CBTs are considered as inter-active teaching strategies can improve computer skills of the students and can develop their critical thinking skills. The importance and significant role of CBTs in the maritime instruction are required by the STCW, which supported in the results of the present study.

## 11 RECOMMENDATIONS:

Based on the findings and conclusions of this study, the following recommendations were advanced:

- 1 The other subjects should also utilize the CBTs so that learning will be maximized.
- 2 The assessment and evaluation of subjects utilizing CBT should be done regularly in order to gather feedback and enhance the learning outcomes.
- 3 The researchers need to suggest other variables that might influence the differences in the assessment of CBTs.
- 4 The role and importance of CBTs should be emphasized always in the different subjects in order to determine the extent of CBTs.
- 5 The researchers suggest parallel studies to determine other variables that may influence the level of assessment of CBTs and its implication in the teaching-learning process of the marine engineering students.

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## APPENDIX A

What are your views or ideas about the Roles of CBT in teaching-learning process?

- I learn necessary for learning they teach first aid properly and other parts of machinery
- how to operate computer
- I learn how important of purifier and how it works on board ship
- I learn the importance of purifier
- they teach properly
- they teach first aid properly and other parts of machinery
- they teach properly and easy
- teaching us through computers
- Gives us simulation about what would happen on board

- It guides and gives information through computer training
- helps us understanding the subject
- gives us the near to life situation on operating certain systems on board
- it helps us understand the subject also to feel what is really happening on board
- in order to have an idea in computer and technology
- it is a training that enhances our computer skills in automatic and manual operations of certain machineries
- students would appreciate and learn how to apply in vessel
- we can learn more to the fact that the more interactive the lesson in a computer the more we can learn with simulations and animations
- modernize strategy on teaching the students
- will be able to know the principle, operation and maintenance (troubleshooting of every machines, plants & equipments onboard thru computer program)
- even if it about computer but you can easily understand and do it in actual
- it is necessary but better if see it in actual situation
- to know how to operate in actual
- to be familiar about controls of different systems
- subjects that have CBT are stimulating and enjoyed
- to learn and to use the modern technology
- provides information and updates of the subjects
- to know how to use the modern equipment
- CBT helps students the practical training onboard ship using computers
- Considered as an informal channel that allows spontaneous interaction and develops critical thinking