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Review of Mechanical Engineering Lecturer's Perceptions on CIDOS Application as Blended Learning Medium

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Abstract

BL is the latest method of teaching to encourage online learning concept(e-learning) to fulfill the ministry's desire to create an interactive learning environment in line with the National Higher Education Strategic Plan (PSPTN). Application of Curriculum Information Document Online System (CIDOS) is one of the web-based blended learning medium which is designed to developed an effective control system for the inventory of curriculum documents, teaching and learning materials (R & D) and information sharing. It is a media that helps R & D through electronic media between lecturers and students. All lecturers need to use the platform in CIDOS and must perform at least 15 activities multiplied by the number of students to achieve the blended status. However, only 27 of the 63 platforms have been successfully completed in the Department of Mechanical Engineering (JKM), Polytechnic Sultan Haji Ahmad Shah (POLISAS) in December 2015. This study was conducted to study the level of application and skills in using CIDOS for lecturers in JKM. In addition, the objective of this study is to identify lecturers' perceptions of the importance of CIDOS and to study the relationship between skills with the level of CIDOS usage and the relationship between teaching experience and their level of use. A questionnaire consisting of 28 items was distributed to 59 JKM lecturers representing the sample. The method of data analysis to carry out this study is descriptive statistics (frequency and mean score). The reliability of the instrument is $\alpha = 0.99$. Data analysis was done using the IBM SPSS Statistical 20 software. The results showed that respondents gave a positive perception to the research questions. It is found that the mean value obtained for CIDOS's level of application, skill level and level of interest among JKM staffs is 2.69, 2.93 and 2.94 respectively. The results for the Pearson correlation test provided r = +0.65 for the relationship between CIDOS skills and CIDOS usage while r = -0.29 for the relationship between teaching experience and CIDOS usage level. Based on the findings, several suggestions have been proposed to help improve BL achievement using CIDOS applications among lecturers and then achieve the Key Performance Indicator (KPI) set by the Department of Polytechnic Studies (JPP).

Key-word: - Blended Learning, CIDOS, Lecturer, Level of Expertise

1.0 Introduction

The polytechnic institution is now heading towards a rapidly growing education transformation in line with the Polytechnic Transformation Plan. In order to achieve the objective of developing a transformative learning environment, an online learning system (e-learning) is very important and appropriate for engaging in unlimited learning. Generally, e-learning is a kind of teaching tool that uses electronic media, internet or computer network resources that enables knowledge to be delivered to students directly (Hartley, 2006). E-learning creates a formal and informal learning method that is available to users to get things done quickly. It provides access to a variety of learning resources whether virtual or real. This system can also help students learn together in groups without limitation of place and time. The Curriculum Information Document Online System (CIDOS) provides intermediate interaction between lecturers and students and provides interfaces for storing, evaluating and sharing digital content centrally. Blended Learning (BL) is defined as incorporating online learning and face-to-face learning (Rooney, 2003). BL is a method that combines various delivery methods, teaching models and learning styles. It was created to fill the gap between conventional methods and online learning.

1.1 Problem Statement

Application of Curriculum Information Document Online System (CIDOS) is one of the web-based BL medium which is designed to develop an effective control system for the inventory of curriculum documents, teaching and learning materials (R & D) and information sharing. It is a media that helps R & D activities through electronic media between lecturers and students. Lecturers need to use the platform in CIDOS and must perform at least 15 activities multiplied by the number of students to achieve the status of blended. However, only 27 out of 63 platforms have been successfully achieved by the Department of Mechanical Engineering (JKM), Polytechnic of Sultan Haji Ahmad Shah (POLISAS) in December 2015. This led to the failure of the JKM to achieve the Key Performance Indicator (KPI) Polytechnic (JPP) where all lecturers must have a blended status at least one platform for the courses taught. As a result, a survey was conducted to obtain the perception of the Department of Mechanical Engineering lecturers on CIDOS applications as a medium in BL. The results of this study will be used by ICT Polytechnic Sultan Haji Ahmad Shah in identifying the methods that can be taken to encourage lecturers using CIDOS

1.2 Objective

Therefore, in this study some objectives have been listed for researchers to find:

i. perception of the application of CIDOS among lecturers in the Department of Mechanical Engineering, POLISAS
ii. The level of CIDOS usage and skills among lecturers in the Department of Mechanical Engineering, POLISAS
iii. Whether teaching experience and skills influence the level of CIDOS use among lecturers in the Department of Mechanical Engineering, POLISAS

1.3 Research Questions

Among the research questions that are to be seen are:
i. What is the level of CIDOS use and the skill level using CIDOS among lecturers in the Department of Mechanical Engineering, POLISAS
ii. What is the perception of the Department of Mechanical Engineering lecturer, POLISAS for the use of CIDOS
iii. Are skills affecting the level of CIDOS use among lecturers of Mechanical Engineering Department, POLISAS
iv. Is working experience influencing the level of CIDOS use among lecturers of Mechanical Engineering Department, POLISAS

1.4 Importance of Study

i. To illustrate the Information and Communications Technology (ICT) of Polytechnic Sultan Haji Ahmad Shah, on the perception of the Department of Mechanical Engineering lecturers on the use of CIDOS as well as the factors affecting their use as a blended learning medium.
ii. Provide information and suggestions to ICT Polytechnic Sultan Haji Ahmad Shah on the rules that can be taken to encourage lecturers using CIDOS.

1.5 Scope of Study

The study was conducted on JKM lecturers at Polytechnic Sultan Haji Ahmad Shah (POLISAS). This study uses a questionnaire as an instrument to examine the perceptions of lecturers on the use of CIDOS in JKM.

2.0 Literature Review

In traditional learning systems, the teaching and learning environment is centered instructor or teacher oriented by suppressing one-way system. Face to face learning is a learning tool that has been practiced in educational institutions in our country since long ago. This situation is very different in e-learning learning where the primary focus is on students. The learning environment requires students to become self-reliant and more active because lesson planning needs to be done by the students themselves with minimal supervision of the instructor. Here, students will make plans and seek information with their own initiative. Amin (2010) considers the use of e-learning as a complement to teaching and learning performed face-to-face or conventional methods. In addition, with the e-learning of this learning method becomes more interesting as it will be a multi-way learning method. This is very different from the traditional methods practiced before. Information search is also unlimited as teaching materials can be chosen by the students themselves whether perceived appropriate or not.

In addition to these two learning methods, Blended Learning (BL) is another branch of learning that begins to grow and becomes the preferred choice of educators. This is in line with the technological developments that allow students and lecturers to interact and communicate online.

According to a study conducted by D. Randy Garrison in 2004, he concluded that blended learning is as important as traditional learning in higher learning institutions. He also proved that blended learning has the potential to produce effective learning experiences.

There are several researchers who conduct research on e-learning. The study conducted by Rubiah and Jamilah (2009) found that academics at USM already had a positive awareness of e-learning in the teaching and learning system although some respondents did not support the stated e-learning concepts. While the study conducted by Ida Rahayu (2011) found CIDOS-based level of readiness and awareness for lecturers at the Department of Mathematics, Science and Computer (JMSK), Politeknik Sultan Abdul Halim Muazzam Shah is at high level which the average mean is 3.96 and 4.09. This is supported by a study conducted by Abdul Razaq (2010) which conclude that one who wants to use the online teaching should conduct an assessment to level of readiness of the student to learn and level of competency to computer application.

3.0 Methodology of study

This study is a quantitative study that studies the perceptions of lecturers in JKM, POLISAS. Data obtained are categorized as quantitative as the data analysis method uses frequency and percentage and min score analysis. The research method used is descriptive research method of sample survey. According to Mohd Majid Konting (2000), descriptive research is a research that aims to explain a phenomenon that is taking place. Sample survey study is a survey conducted on the part of the population studied and random samples used to represent the population being studied.

3.1 Population and Sample of Study

The population is the target group of researchers, which is the group to whom the results will be generalized (Gay and Air, 2003). The sample was the respondents selected to represent a population. The determination of the population of the study is important in the study because the population will determine how and how many samples will be choosen as well as the expenditure of the study. A total of 59 lecturers were randomly selected as respondents from 71 lecturers in JKM. The suitability of this sample refers to Krejeie and Morgan (1970) tables.

3.2 Instrument of Study

This study is a descriptive survey study. Questionnaire was used to obtain information from respondents. The questionnaire is more practical and effective for large populations as it can measure a large sample size and will increase the accuracy of sample to estimate population parameters (Mohd Majid, 1990). This research questionnaire consists of 28 items which contains into several sections. According to Kamarudin & Roslim (1990), the purpose of the questionnaire was to obtain accurate and complete information.

3.2.1 Methods of Data Analysis

All questionnaire items were analyzed using the IBM SPSS Statistical 20 software. Descriptive data analysis methods were used to describe information pertaining to research questions. To achieve that goal, mean analysis and standard deviation are used to illustrate the descriptive score distribution of each item. To measure the level, respondents' responses were classified into three min score scores with three levels namely low, medium and high as in Table 1 below

Table 1: Mean Interpretation

Mean	Interpretation
1.00 -2.33	Low
2.34 - 3.67	Moderate
3.68 - 5.00	High

Sumber: Wiersma & Stephen (2005)

Next, the correlation statistical analysis is used to identify factors that influence the degree of application of CIDOS applications. The strength of relationships among variables in this study is estimated by using the scale of strengths suggested by Healey (2008) as in Table 2 below.

Table 2: Coefficient of correlation Value

Correlation Coefficient (r)	Interpretation
below 0.1	Weak correlation
0.10 - 0.30	Moderate correlation
0.30 - above	Strength correlation

Sumber: Healey (2008)

3.3 Pilot Study

Pilot study was conducted to test the reliability of the instrument that was built and to make sure the questions in the questionnaire were in line with the respondent's situation. According to Mohd Salleh and Zaidatun (2001), reliability or reliability is a measure of the ability of a research instrument to measure the problem of consistency every time it is used at different times, places and samples. The maximum value of the reliability coefficient is 1. If the coefficient value is less than 0.6, then it may be considered that the instrument used in the study has low reliability value.

A pilot study was conducted on 10 lecturers at JKM POLISAS which was randomly selected. To test the reliability of the study instrument, the researcher uses the Alpha Cronbach Model (α) from the IBM SPSS Statistical 20 software. The α value obtained is 0.912. According to Sekaran (2003), if the Alpha Cronbach coefficient is between 0.9 and 1.0 it shows that the study item is very good and effective and acceptable.

4.0 Decision And Discussion

Data obtained through questionnaires from respondents were collected and analyzed using the IBM SPSS Statistical 20 program. The findings of demographic factors were analyzed using frequency and percentage and translated into tables. The objectives of the study are expressed in mean and standard deviation. Data analysis was developed and arranged according to the objective and hypotheses of the study.

4.1 Analysis of Partial Demographic Factor Analysis

To analyze the respondents' demographic information of sex, academic qualifications, have used online applications other than CIDOS or not as teaching experience, the frequency and percentage method used. Respondent background analysis is shown in Table 3 to Table 6.

Table 3: Distribution of Number and Percentage of Respondents by Sex

Item	Number	percentage
Male	42	71.2
Female	17	28.8
Total	**59**	**100**

Table 3 shows the distribution of the number and percentage of respondents by sex. The total number of randomly selected respondents was 59 people. Of these, 42 (71.2%) were men while 17 (28.8%) were females. The total number of male lecturers as respondents is because the mechanical engineering field is monopolized by men.

Table 4: Distribution of Number and Percentage of Respondents by Eligibility

Item	Number	percentage
Certificate	2	3.4
Diploma	6	10.2
Bachelor Degree	42	71.2
Degree	9	15.2
Jumlah	**59**	**100**

Table 4 shows the distribution of numbers and percentage of respondents according to their respective academic qualifications. Based on the analysis conducted, the number of lecturers with Bachelor's academic qualifications was the highest of 42 (71.2%). While 9 (15.2%) of the respondents had Master, followed by a Diploma of 6 (10.2%) and a Certificate of 2 (3.4%). Respondents with the Certificate and Diploma are the majority of lecturers who have been working for more than 20 years.

Table 5: Percentage Distribution and Percentage of Respondents who used online applications

Item	Number	percentage
Respondents who used online applications	50	84.7
Respondents who never used online applications except CIDOS	9	15.3
Total	**59**	**100**

Table 5 above shows the distribution of numbers and percentage of respondents who have used online applications other than CIDOS as a mixed learning medium such as Facebook, blog, Blackboard, Yahoo group and so on. Referring to the analysis conducted, a total of 50 respondents (84.7%) had used online applications other than CIDOS. Only 9 people (15.3%) have never used any other online applications. This finding shows that the majority of respondents were exposed to applications like CIDOS and did not feel awkward to use them. For respondents who have never used any of the online applications may be due to the lack of confidence and motivation to use them. This is a concern because according to Concannon (2005) reports that individual initiatives are one of the factors that contribute to the use of e-learning.

Table 6: Percentage Distribution and Percentage Percentage by Teaching Experience

Teaching Experience	Number	Percentage
1 - 5 years	10	16.9
6 - 10 years	18	30.5
11 - 15 years	17	28.8
16-20 years	8	13.6
21 years and above	6	10.2
Total	**59**	**100**

Table 6 shows the number and respondents based on their respective teaching experience. The majority of respondents had 6 to 10 years of teaching experience of 18 (30.5%). While 17 (28.8%) of respondents have taught for 11 to 15 years. This was followed by 10 people (16.9%) for 1 to 5 years, 8 persons (13.6%) for 16 to 20 years and the least respondents who had been teaching for 21 years and above were 6 (10.2%) only.

4.2 Section B Analysis

Section B has 8 items that need to be answered by 59 randomly selected respondents. These items were analyzed using the mean score analysis to answer the question of the study which was the level of CIDOS usage among JKM lecturers. The data obtained were analyzed to obtain mean value and standard deviation for each item. The findings of this analysis are shown in Table 7. The mean interpretation used is as in Table 1. The results of the analysis show that the mean of each CIDOS level is at a moderate level of 2.69. Items 1 and 2 had the highest mean score of 3.02. The item that gets the lowest mean score is item 5 which is to run the test using CIDOS. This shows the frequency of lecturers in JKM checking in and opening the CIDOS page is positive and is not in a worrying phase. This shows that the majority of lecturers in JKM have a clear exposure to CIDOS. While the tendency for lecturers to conduct tests using CIDOS is less than others. This may be due to lack of exposure to lecturers.

In addition, this may be due to the fact that most lecturers are more comfortable using the old method of using printed questions because their opinions are more easily reviewed and supervised. This finding supports Ab Rahman's (2008) the subjects taught are easier to complete in the classroom because actual communication is more effective than using e-learning methods.

Table 7: Mean Analysis for Level of CIDOS Application

Item No	Item	Standard Deviation	Mean	Interpretation
1	Sign in to CIDOS?	1.025	3.02	Moderate
2	Try to sign in to CIDOS?	1.008	3.02	Moderate
3	Upload notes and assessment in CIDOS?	1.111	2.85	Moderate
4	Conducting Quiz using CIDOS?	0.998	2.63	Moderate
5	Conducting Test using CIDOS?	0.952	2.44	Moderate
6	Using Chat Room section in CIDOS?	1.056	2.53	Moderate
7	Using Forum section in CIDOS?	1.006	2.53	Moderate
8	Using CIDOS everyday?	0.933	2.56	Moderate
	Overall Mean	**0.832**	**2.69**	**Moderate**

4.3 Section C Analysis

Part C has 6 items that need to be answered by respondents regarding skill level using CIDOS. The mean interpretation method as in Table 1 is used. Table 8 shows the average mean mean of all items in this section is 2.93 and is in moderation. Item 9 has the highest mean value of 3.15. While the lowest mean score is in item 13. This analysis shows that the majority of lecturers in JKM, POLISAS are capable and know to carry out assignments into CIDOS. The lowest mean score shown by item 13 interprets that lecturer's skills using the forum space contained in the CIDOS need to be upgraded to be used in the R & D process.

Table 8: Min Analysis for CIDOS Skills Level

Item No	Item	Standard Deviation	Mean	Interpretation
9	Upload notes and assessment in CIDOS?	1.031	3.15	Moderate
10	Conducting Quiz using CIDOS?	1.008	2.98	Moderate
11	Evaluate and grading using CIDOS?	1.062	3.10	Moderate
12	Using Chat Room section in CIDOS?	1.194	2.76	Moderate
13	Using Forum section in CIDOS?	1.077	2.66	Moderate
14	Updating platform in CIDOS such as adding animation, changing the background etc	1.096	2.93	Moderate
	Overall Mean	**0.943**	**2.93**	**Moderate**

4.4 Section D Analysis

The items to get respondents' responses to CIDOS interest in the R & D process have been presented in Section D. In this section, 7 items need to be answered by the respondents. The method used to analyze the findings in this section is based on the mean interpretation as in Table 1. The results of this study are shown in Table 9 as below. The mean overall mean of the item in this section is 2.94 and indicates the level of agreement. Item 17 obtained the highest mean score of 3.07. This shows the majority of lecturers in JKM, POLISAS agreed that by using CIDOS paper use in the R & D process can be reduced and saved. While item 15 recorded the lowest mean score of 2.75. Based on this analysis, it indicates that lecturers in this department are disagreeing that CIDOS can save time. This may be due to the relatively slow access to the system's website at certain times

Table 9: Min Analysis for CIDOS Interest Stages

Item No	Item	Standard Deviation	Mean	Interpretation
15	This system saves time	0.709	2.75	Agree
16	This system saves energy in terms of R & D processes	0.647	2.83	Agree
17	This system saves paper	0.691	3.07	Agree
18	All assessment can be stored here	0.640	2.93	Agree
19	Quizzes and tests can be conducted anytime and anywhere	0.718	2.97	Agree
20	All copies of the ratings will not be lost	0.694	3.03	Agree
21	Learning references can be done at any time.	0.742	3.03	Agree
	Min Overall	**0.553**	**2.94**	**Agree**

4.5 Section E Analysis

Part E has 3 items to be answered by the respondent. The items presented in this section are to know the extent of the training held by the respondents. The results of the study were analyzed using frequency and percentage methods. Analysis of respondents' training is shown in Tables 10 to 12.

Table 10: Percentage Distribution and Percentage of Respondents that owned a Computer

Item	Number	Percentage
Respondents that owned a Computer	51	86.4
Respondents that doesn't owned a Computer	8	13.6
Total	**59**	**100**

From the table above, the number of respondents with personal computers or laptop computers was 51 people (86.4%). While respondents who do not have personal computers or laptops are 8 (13.6%). This shows that the majority of lecturers in JKM, POLISAS have no problem accessing the system because they have their own personal computers. This shows that aspects of learning equipment need to be upgraded whether there are more computer and internet facilities in or outside polytechnics. According to Hasan san Harun (2006), technical problems such as online speed and computer capabilities are used to influence a person's level of satisfaction with the developed system.

Table 11: Percentage Distribution and Percentage of Respondents who have been formally trained

Item	Number	Percentage
Respondents who have been formally trained	56	94.9
Respondents who have not been formally trained	3	5.1
Total	**59**	**100**

Table 11 above shows the number of repondents who have been given formal training on CIDOS. Based on these tables, 56 respondents (94.9%) had been given formal training on how to use CIDOS. However, there were 3 (5.1%) respondents who never received formal training

Table 12: Number and Percentage Distribution of Respondents who need additional training

Item	Number	Percentage
Respondents who need additional training	44	74.6
Respondents who did not need additional training	15	25.4
Total	**59**	**100**

Table 12 above shows the number of respondents who need additional training on how to use CIDOS. There were 44 (74.6%) respondents requires additional training, while 15 (25.4%) respondents did not need additional training. This finding shows that majority of lecturers want additional training to improve their competence in using CIDOS for P & P processes. It is important that lecturers improve CIDOS's ability to apply as one of the blended learning mediums and encourage students to use them. The study conducted by Ahmad, Rashid and Elias (2010) states that the role of instructors that gives widespread exposure to e-learning is beneficial.

4.6 The relationship between Skill Level in CIDOS and CIDOS Application Level

Table 13: Relationship between Skill Level in CIDOS and CIDOS Application Level

		Level of use	**Level of Skill**
application _ level	Pearson Correlation	1	.649**
	Sig. (2-tailed)		0
	N	59	59
skill_level	Pearson Correlation	.649**	1
	Sig. (2-tailed)	0	
	N	59	59

Based on the table above, the Pearson correlation value obtained is 0.649. This shows that there is a strong positive relationship between CIDOS level of use and skill level. This can be referenced in Table 2. Hence there is a significant relationship between CIDOS level of use and skill level using CIDOS.

4.7 Relationship between Teaching Experience and CIDOS Application Level

Table 14: Relationship between Teaching Experience and CIDOS Application Level

		experience	**application_level**
experience	Pearson Correlation	1	-.292*
	Sig. (2-tailed)		0.025
	N	59	59
Level of use	Pearson Correlation	-.292*	1
	Sig. (2-tailed)	0.025	
	N	59	59

Based on the table above, there is a negative but moderate relationship between the teaching experience of the respondents and the level of CIDOS use. The Pearson correlation value is -0.292. This relationship is negative or reverse-shaped as seen on the negative sign of the Pearson correlation coefficient.

4.8 Recommendation

i. The use of e-learning can be enhanced by improving the skills of lecturers through additional training. This is because most lecturers have minimal skills and can only use basic applications in CIDOS. Albion (1999) suggests that an ideal way to improve the efficacy of teachers (lecturers) towards ICT usage is to provide ICT skills training as these trainings improve the efficacy of teachers (lecturers).

ii. Internet access speed should be improved as it affects the level of CIDOS usage because the difficulty in accessing the system will affect the level of CIDOS usage while blocking the JPP effort to promote the use of e-learning in the R & D process.

iii. Improved CIDOS app to be user-friendly and easy to use.

iv. Giving rewards and incentives to promote the involvement of lecturers to the optimum level and can be an example and encouragement to other faculty members.

5. Conclusion

Overall, the results show that the level of CIDOS use among JKM lecturers, POLISAS is at a moderate level. A continuous effort should be intensified by policyholders and organizations so that the aim of the CAP e-learning KPM that sets 50% of the courses organized at IPTA must be on-line online using a mixed learning approach to achieve. Therefore, proactive improvement measures should be mobilized to further strengthen and empower the use of CIDOS in the future.

Five aspects need to be emphasized so that these applications can be fully utilized in the process of mixed learning namely pedagogy, lecturer, student, infrastructure and organization. Proper implementation, training and convenience policies and rewards should be given to enhance the motivation of lecturers using CIDOS

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