



Mechanical Engineering

Elixir Mech. Engg. 72 (2014) 25634-25637

Elixir
ISSN: 2229-712X

Domains Moderator (DM13): platform to evaluate engineering learning & teaching domains

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ARTICLE INFO

Article history:

Received: 23 May 2014;

Received in revised form:

19 June 2014;

Accepted: 9 July 2014;

Keywords

Domain Moderator (DM13),
Instrument, Evaluate,
Learning & teaching domains,
Outcome Based Education (OBE),
Polytechnics & College Community.

ABSTRACT

Domain Moderator (DM13) was developed by Che Ghani Che Kob in year 2013 as a part of his Education Doctorate (EdD) research instrument to evaluate engineering students learning and lecturers teaching domains. Domain Moderator is an education instrument to measure the domains of Engineering Learning & Teaching Domains (ELTD). The ELTD model comes out to enhance the whole process of Education Measurement & Evaluation Methods. The data's of pilot survey among 26 lecturers by using DM13 shown that among engineering lecturer are (61.5%) at active domain, (38.5%) at reflective domain, (73.1%) at sensing domain, (26.9%) at intuitive domain, (92.3%) at visual domain, (7.7%) at verbal domain, (61.5%) at sequential, and (38.5%) at global domain. This data's collection hopes can be use as a moderator among engineering lecturers to success in Outcome Based Education (OBE) at Polytechnics & College Community, KPM, MALAYSIA.

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Introduction

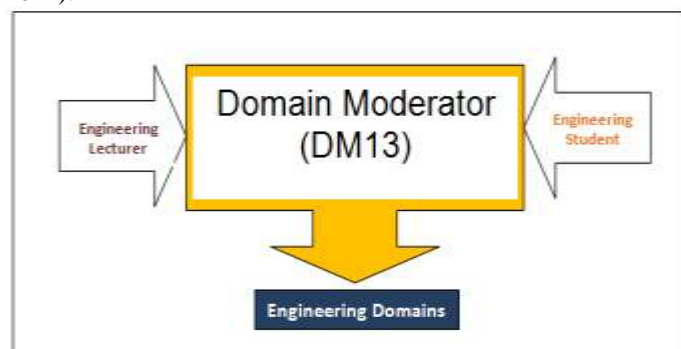
Domain Moderator (DM13) is a new method to measure engineering student and lecturer learning and teaching domains was developed in year 2013. This Model was developed by Che Ghani Che Kob with an expert in Project Based Learning (PjBL), Mr. Md Baharuddin Ab. Rahman at Mechanical Department, Politeknik Seberang Perai (PSP). The problems in understanding the engineering student and lecturer domains among engineering at PSP there for occurs this DM13 product. This DM13 is a part of instrument that used for EdD research of Mr. Che Ghani Che Kob. The objectives of this quantitative research are to collect the domains data's of lecturer domains and produce specific model for engineering education measurement & evaluation methods.

ELTD Model & Methods

The ELTD Model

Engineering Learning & Teaching Domains (ELTD) is an idea to introduce new learning & teaching evaluation method. ELTD came out from the effort of DM13 development with a pilot collection data's among engineering student on 2013 (Md. Baharuddin et al., 2010). The purpose of ELTD is to enhance engineering students domain and skills that will helps them to understand what learning suitable to them (Che Ghani Che Kob et al., 2014). ELTD is a model which is apply with DM13 covering of Silverman theory for its development based specification. Engineering students will gain their learning domain through DM13 measurement (Md. Baharuddin et al., 2011). This DM13 will helps engineering students and lecturers to plan their suitable learning and teaching methods in order to achieve maximum output of learning objectives in engineering curriculum (Khairul Azhar et al., 2014). The model below describes the functional of two main elements (Engineering students & lecturer) in using DM13 as a reflector in measurement of engineering domains. Based on their output engineering domains, the new evaluation process will carries out to ensure maximum output of outcome based education (OBE)

(Synteta, 2001). This DM13 is a part of instrument works as catalysed in OBE implementation at Polytechnics and Community College in MALAYSIA (Md. Baharuddin et al., 2011).



Model ELTD # C.K Che Ghani & A.R Baha, 2014

The Methods

This mini research was conduct among engineering lecturer on 8-9 Mei 2014. There are 26 respondents involved in these pilot studies. Sample have been distributives into 2 groups which are consists 13 respondents in each groups. Each group will be use an instrument DM13 to measure their teaching domains. The process of pilot research takes 2 days. At the first day all sample will entering speech from Dr. Che Ghani to understand the specific domains. After complete first day seminar, all respondents will divide into 2 groups: all domain of sample will be measure as table 3.1 below. This two group will measure their domain through DM13 test. Then from their domain taken, the sample (lecturer) will understand of their domain. At other hands, the sample (lecturer) also can use this DM13 to measure their engineering students domain to create the learning process that suitable for them. This sample test data taken while all 2 groups re act as engineering student. Next data's show the domains of engineering student at their class. This DM 13 evaluation looks very helpful to lecturer as the moderator to

understand the domain of their student before start the class (entering teaching & learning process).



Picture 1 : The Explanation of process of Domains Test



Picture 2: The process of implementation ELTD Model

Data's

This product of DM13 was pilot among 26 lecturers whose are experiences in engineering fields at Mechanical Department. Table 3.1 shown the specific data's while the model ELTD was implemented.

Based on above data's, the level of sub-scale negative (-) or positive (+) dimension of learning styles of the respondents was determined by reference to the scores obtained. Table 3.1 shows the levels of each dimension in the sub-scale of respondent learning styles. If the score appear at score from 1 to 3, that means the respondent is at equilibrium between the two dimensions of the learning their style. Respondent (Students) at this level are able to adapt and accept any kind of lessons. For a score of 5 to 7 means, the respondents tend to have moderate learning style dimensions concerned. Students at this level tend to be a learning style but can still adapt to the learning styles of others if the need arises. While, for the score around 9 to 11, that means the respondents tend to higher learning style and strong just to receive a style concerned. The Students at this level is difficult to accept that learning styles. This happen cause of there is not in accordance with their learning style preferences. To facilitate of pilot data, the score for 'a' will be stated in the positive, while the value of the score 'b' in a negative value to determine the different levels of learning styles of respondents.

Conclusion

Results showed that the level of learning domain styles for each dimension is not a major factor academic achievement but how the student's strengths and weaknesses is a key of student achievement while using DM13 as moderator before class start. With this DM13 test, lecturer can choose what practice they should preferred as learning style. Each sub- scale of domain dimensions will show the learning style should be able to implement to acquire student academic achievement. But

lecturer also needs to be aware of its weaknesses while test of their students and strive to overcome to recover of their weaknesses with DM13 test. The ability of students to adapt themselves with the highest level of achieving learning objectives at classroom. The success of DM13 pilot test research in year 2013 became more effective for the year 2014 while this DM13 was pilot again among 26 expert engineering lecturers at Politeknik Seberang Prai. Consequently, the new model names ELTD hopefully can be used for the next researcher.

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Table 3.1: Data's Collections for Lecturer/Students Domains

Respondent no. (N)	Active Score (Domain - n)	Reflective Score (Domain - n)	Sensing Score (Domain - n)	Intuitive Score (Domain - n)	Visual Score (Domain - n)	Verbal Score (Domain - n)	Sequential Score (Domain - n)	Global Score (Domain - n)
1	1 (+5)	0 (0)	1 (+1)	0 (0)	1 (+1)	0 (0)	0 (0)	1 (-1)
2	1 (+3)	0 (0)	1 (+7)	0 (0)	1 (+7)	0 (0)	0 (0)	1 (-3)
3	0 (0)	1 (-3)	1 (+1)	0 (0)	1 (+1)	0 (0)	0 (0)	1 (-1)
4	1 (+3)	0 (0)	0 (0)	1 (-1)	1 (+7)	0 (0)	1 (+3)	0 (0)
5	1 (+5)	0 (0)	1 (+1)	0 (0)	1 (+1)	0 (0)	0 (0)	1 (-1)
6	0 (0)	1 (-5)	1 (+5)	0 (0)	1 (+5)	0 (0)	1 (+5)	0 (0)
7	1 (+11)	0 (0)	0 (0)	1 (-7)	1 (+5)	0 (0)	1 (+3)	0 (0)
8	1 (+1)	0 (0)	1 (+3)	0 (0)	1 (+6)	0 (0)	1 (+3)	0 (0)
9	1 (+1)	0 (0)	1 (+11)	0 (0)	1 (+11)	0 (0)	1 (+5)	0 (0)
10	0 (0)	1 (-1)	1 (+3)	0 (0)	1 (+9)	0 (0)	0 (0)	1 (-9)
11	0 (0)	1 (-7)	1 (+5)	0 (0)	0 (0)	1 (-7)	1 (+5)	0 (0)
12	1 (+7)	0 (0)	1 (+5)	0 (0)	1 (+11)	0 (0)	1 (+3)	0 (0)
13	1 (+11)	0 (0)	1 (+5)	0 (0)	1 (+3)	0 (0)	1 (+5)	0 (0)
14	1 (+7)	0 (0)	0 (0)	1 (-1)	1 (+11)	0 (0)	1 (+5)	0 (0)
15	1 (+7)	0 (0)	1 (+5)	0 (0)	1 (+9)	0 (0)	1 (+5)	0 (0)
16	1 (+3)	0 (0)	1 (+7)	0 (0)	1 (+7)	0 (0)	1 (+3)	0 (0)
17	1 (+5)	0 (0)	1 (+7)	0 (0)	1 (+5)	0 (0)	1 (+5)	0 (0)
18	1 (+3)	0 (0)	0 (0)	1 (-1)	1 (+9)	0 (0)	0 (0)	1 (-1)
19	0 (0)	1 (-7)	1 (+1)	0 (0)	1 (+9)	0 (0)	0 (0)	1 (-1)
20	0 (0)	1 (-3)	0 (0)	1 (-5)	1 (+9)	0 (0)	0 (0)	1 (-3)
21	0 (0)	1 (-7)	1 (+7)	0 (0)	1 (+9)	0 (0)	1 (+3)	0 (0)
22	0 (0)	1 (-3)	1 (+3)	0 (0)	1 (+9)	0 (0)	1 (+9)	0 (0)
23	1 (+5)	0 (0)	1 (+11)	0 (0)	1 (+11)	0 (0)	1 (+3)	0 (0)
24	0 (0)	1 (-1)	1 (+7)	0 (0)	1 (+9)	0 (0)	1 (+3)	0 (0)
25	0 (0)	1 (-5)	0 (0)	1 (-3)	0 (0)	1 (-9)	0 (0)	1 (-11)
26	1 (+7)	0 (0)	0 (0)	1 (-5)	1 (+11)	0 (0)	0 (0)	1 (-3)
Total score Percentage (%)	16 61.5	10 38.5	19 73.1	7 26.9	24 92.3	2 7.7	16 61.5	10 38.5

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