EVALUATION OF CIVIL ENGINEERING STUDENT ATTAINMENT MEASUREMENT SYSTEM - A SATISFACTION SURVEY

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INTRODUCTION
The Outcome-Based Education (OBE) is designed to focus and organize the process of learning and its final outcome in which reflecting the achievement of students at the end of their learning experiences.

FCE, UiTM implemented OBE since 2004

Qualifying requirement in the accreditation of engineering programme by EAC, Malaysia.

CHALLENGES:
Data complexity – too many data and variables
The accuracy of data - that certain measurement or data might be left out that might be equally important

SOLUTION:
Develop assessment tool – a computerized assessment tools to accurately measure the student PO attainment

MyCOPO – developed by FCE, UiTM in 2014

The teaching, learning and assessment methods shall be performed consistently in accordance to the appropriate graduate attributes as listed in the Programme Educational Objectives (PEO), Program Outcome (PO) and Course Outcome (CO) of the education content.

EAC (2020)
Figure 1. PO linking to PEOs and the Vision and Mission of UiTM
Figure 2. Sample of MyCOPO output
MyCOPO POs ATTAINMENT MODEL
Estimation of Individual Student PO Attainment

Table 1. Assessment in Dynamics Course ECS429 addressing PO1 (Example)

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Assignment/Project</th>
<th>Common Test</th>
<th>Final Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question (Q)</td>
<td>Assignment 1</td>
<td>Q1(a)</td>
<td>Q2(a)</td>
</tr>
<tr>
<td>Marks Obtained</td>
<td></td>
<td></td>
<td>Q1(a), Q2(a)</td>
</tr>
<tr>
<td>Full Marks</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Weightage</td>
<td>10%</td>
<td>15%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Based on this assessment (see, Table 1), the attainment of PO1 by student X evaluated from Dynamics course ECS429 are given as in Equation (1).

\[
PO_1 = \frac{10}{15} \times 10\% + \frac{8}{15} \times 15\% + \frac{12}{15} \times 15\% + \frac{38}{50} \times 60\% = 72.3\% \tag{1}
\]

PO performance indicators

Table 2. Key Performance Indicator (KPI) for attainment of PO

<table>
<thead>
<tr>
<th>PO score (%)</th>
<th>Category</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-100</td>
<td>Excellent</td>
<td>PASS</td>
</tr>
<tr>
<td>60-79</td>
<td>Good</td>
<td>PASS</td>
</tr>
<tr>
<td>50-59</td>
<td>Satisfactory</td>
<td>FAIL</td>
</tr>
<tr>
<td>0-49</td>
<td>Fail</td>
<td>FAIL</td>
</tr>
</tbody>
</table>

Average PO = \[\frac{\sum(No \ of \ credits \times \ PO \ marks)}{\sum(No \ of \ credit)}\] \tag{2}

Cumulative PO = \[\frac{\sum(No \ of \ credits \times \ PO \ marks) + \cdots + \sum(No \ of \ credits \times \ PO \ marks)}{\sum(No \ of \ total \ credit)}\] \tag{3}
A Quantitative Survey

between 23rd-29th October 2019

Survey link provided by google form was announced through chat media, circulated among staff and students in the faculty.

Participation in the survey was solely voluntary.

approximately 15 questions preceded by few demographic questions and the remaining with specific questions on MyCOPO system.

Figure 3. Main characteristics in questionnaires

| Section 1: Impact of MyCOPO | • Ability of MyCOPO • Roles of MyCOPO |
| Section 2: Delivery & Quality | • Accessibility • Reliability • User friendly • Time saving • Flexibility |
| Section 3: Rate & Suggestions | • Happiness Index • Suggestions |
RESULTS AND DISCUSSION
IMPACT OF MyCOPO

How do you rate MyCOPO?

Staff Survey
(47 Respondents)

Student Survey
(227 Respondents)

Figure 4. Staff and students rating on MyCOPO system
**IMPACT OF MyCOPO**

**Before the implementation of MyCOPO:** How long would you think the analysis of the cumulative and averaged POs attainment for each student can be done once you have submitted the POs data for your own groups/courses?

**Figure 5. Comparison of time allocation for analysis before and after MyCOPO implementation**

- **Before MyCOPO:**
  - 27.7% within 1 day
  - 12.8% within 1 week
  - 8.5% within 1 month
  - 34% within 6 months
  - 17% more than 6 months
  - **49%**

- **After MyCOPO:**
  - 19.1% within 1 day
  - 78.7% within 1 week
  - 1.9% within 1 month
  - 0.5% within 6 months
  - 0.5% more than 6 months
  - **98%**

**After the implementation of MyCOPO:** How long would you think the analysis of the cumulative and averaged POs attainment for each student can be done once you have submitted the POs data for your own groups/courses?
DELIVERY AND QUALITY OF THE SYSTEM

MyCOPO is easily accessible.

The process of uploading POs data in MyCOPO is fast, easy and user friendly.

MyCOPO is flexible and can adopt changes made in curriculum review (i.e. change in POs, new courses).

Figure 6. Data from academic staff survey on delivery and quality of the system
DELIVERY AND QUALITY OF THE SYSTEM

MyCOPO is easily accessible.

I can easily understand my POs attainment from the data presentation of MyCOPO.

Student Survey
(227 Respondents)

Figure 7. Data from students’ survey on delivery and quality
Users’ Happiness Index Rating

Are you happy to have MyCOPO in the faculty?

Staff Survey (47 Respondents)
- Happy: 81%

Student Survey (227 Respondents)
- Happy: 69%

Figure 4. Staff and students rating on MyCOPO system

- < 5: Unhappy
- 5 – 6: Satisfactory
- 7 – 8: Happy
- 9 – 10: Strongly Happy
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Y.Bhg. Prof/Tuan/Puan,

PEMBERITAHUAN SECARA SUKARELA HAK CIPTA (VOLUNTARY NOTIFICATION)

Dengan segala hormat bersama, perkara di atas adalah seperti berikut. Sekian

2. Saluca dan dinyatakan bahawa pihak Research Innovation Unit (RIBU) telah membuat permohonan pemberitahuan secara sukarela (Voluntary Notification) di Perbadanan Harta Intelek Malaysia (MyIPO) bagi karya Y.Bhg. Profesor/Universiti yang disimpan dan/atau dihasilkan yang berikut:

<table>
<thead>
<tr>
<th>Taja Karya</th>
<th>No. Permohonan MyIPO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mycoto System</td>
<td>LV2019002975</td>
</tr>
</tbody>
</table>


4. Kerjasama daripada pihak Y.Bhg. Profesor/Universiti dalam perkara ini adalah aman dihargai dan didaftarkan dengan acuan terima kasih. Sebarang maklumat lanjut, sila hubungi sekretariat Harta Intelek LITM di talian 03-5543 7976 / 03-5544 2748 atau email kepada bitcom@ultm.edu.my / iplibuultm@gmail.com.

Sekian

Yang benar,

FARIZAH MOHAMED ISA
Katua Pengurusan Harta intelek
RECOGNITION – INNOVATION
(IIDEX & ITEX & OE)
IMPACT OF MyCOPO
Reduction in term of time consumption by the academic staff for POs analysis as well as cost of material and workforce.

DELIVERY AND QUALITY OF THE SYSTEM
Easily accessible, user friendly and has the ability to cope with revised curriculum and POs mapping.
Helps student to monitor academic achievement.

USER’S’ HAPPINESS INDEX RATING
Staff – 8.2 (81%)
Student – 7.2 (69%)
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THANK YOU