e-proceeding

Technology, Science, Social Science & Humanities

International Conference 2022

TESSHI

Reengineering Knowledge & Creativity for Global Excellence

30 June 2022

Technology, Science, Social Science & Humanities
International Conference 2022

E-PROCEEDINGS
TECHNOLOGY, SCIENCE, SOCIAL SCIENCES AND HUMANITIES INTERNATIONAL CONFERENCE
TeSSHI 2022

Reengineering Knowledge and Creativity for Global Excellence

Copy Editors:

Nor Azrina Mohd Yusof (Dr.)
Lee Chai Chuen
Juaini Jamaludin
Normaziana Hassan

Papers presented online at
Technology, Science, Social Sciences and Humanities
International Conference 2022 (TeSSHI 2022)
30 June 2022
UiTM Cawangan Kedah, Merbok
Kedah, Malaysia

UNIVERSITI TEKNOLOGI MARA CAWANGAN KEDAH

Copy Editors/Layout :Nor Azrina Mohd Yusof (Dr.)
Lee Chai Chuen
Juaini Jamaludin
Normaziana Hassan

Cover Design :Asrol Hasan

eISBN **:** 978-967-2948-33-9

Published by : Universiti Teknologi MARA CawanganKedah,
08400 Merbok,
Kedah,
Malaysia.

Printed by : Perpustakaan Sultan Badlishah
Universiti Teknologi MARA Cawangan Kedah,
08400 Merbok,
Kedah,
Malaysia.

Foreword

The papers compiled in these e-proceedings are papers presented online at Technology, Science, Social Sciences and Humanities International Conference 2022 (TeSSHI 2022) held on 30 June 2022 at Universiti Teknologi MARA (UiTM) Cawangan Kedah, Kedah, Malaysia. With the theme, ***Reengineering Knowledge and Creativity for Global Excellence****,* the conference has brought together presenters of diverse background who shared their conceptual and empirical papers in broad areas that are subsumed under the fields of Technology, Science, Social Sciences and Humanities. These e-proceedings comprise current researches that were undertaken with the rigorous endeavour of knowledge enhancement to ensure that the world of academia will continue to flourish. It is thus hoped that readers will significantly benefit from knowledge contained in these proceedings.

TeSSHI 2022 and these e-proceedings would not have been possible without the great efforts from the presenters, and the generous support from the TeSSHI 2022 committee members and the Rector of UiTM Cawangan Kedah, Prof. Dr. Mohamad Abdullah Hemdi. A heartfelt gratitude is extended to all involved. It is hoped that these e-proceedings will be an impetus to stimulate futher studies and research that benefit the society at large.

TABLE OF CONTENTS

LEVs As an Assessment Tool for Affective Domain in Laboratory Courses for Diploma in Civil Engineering

Narita Noh
School of Civil Engineering
Universiti Teknologi Mara Pasir Gudang
Jalan Purnama, Bandar Seri Alam,81750 Masai, Johor, Malaysia.
naritanoh@uitm.edu.my

Noor Raifana Ab Rahim
School of Civil Engineering
Universiti Teknologi Mara Pasir Gudang
Jalan Purnama, Bandar Seri Alam,81750 Masai, Johor, Malaysia.
raifana_rahim@uitm.edu.my

Nur Zaidani Wati Mohd Darwis
School of Civil Engineering
Universiti Teknologi Mara Pasir Gudang
Jalan Purnama, Bandar Seri Alam,81750 Masai, Johor, Malaysia.
nurzaidani@uitm.edu.my

Juwita Asfar
School of Civil Engineering
Universiti Teknologi Mara Pasir Gudang
Jalan Purnama, Bandar Seri Alam,81750 Masai, Johor, Malaysia.
juwita@uitm.edu.my

ABSTRACT

Evaluation of Program Outcomes among technical programs in Institution of Higher Learning (IHL) is vital due to requirements from the accreditation body such as Engineering Technology Accreditation Council (ETAC) for undergraduate study. Those outputs should be well documented as accreditation documents based for the student attainment upon completion of the courses or program. It is to acquire hard work and effort from academics for the data entry during evaluation process especially for grouping work (measuring effective domain). All evaluations must follow an explicit rubric to address relevant domains. Therefore, LEVs are developed using simple excel templates to eliminate repetition of data entry for group marks, reduce mistakes and simple to use. This tempete was developed for ECW 341 as pilot study to measure affective domain through assignment and laboratory report for Diploma in Civil Engineering (EC 110 & CEEC 110) in UiTM Pasir Gudang. In addition, output from LEVs can be used for e-Res data entry and it is ready to save as accreditation document evidence for accreditation phase for IHL.

Key Words: excel template, assessment evaluation tool, effective domain, laboratory courses

INTRODUCTION

Program Outcomes (PO) evaluation and measurement is vital for accreditation for Institution Higher Learning (IHL) especially for technical programs. Those PO should be mapped to generic skill upon completion of 3 years Diploma in Civil Engineering (EC110 & CEEC 110). This program was offered for 4 different UiTM branches in Malaysia which measured students on three main domains which is cognitive, psychomotor, and effective domain (Nikolic et al.,2015; Zaghloul; 2001; Mohaiyedin et al.,2018; Nur Asmaliza et al.,2020). Each domain should be evaluated and measured

explicitly using detail and sufficient rubric to address related domains as in Table 1. It is certain that data entry for fulfilling those criteria in Table 1 will take longer time for the evaluation period. Since UiTM implements Open Ended Laboratory (OEL), assessment difficulties should reflect the level of openness for the laboratory activities (Awang Nasrizal et al.,2016). Hence, assessment rubric is no longer the same for each level. Thus, create hiccups among academics during data entry for evaluation marks.

Table 1: Criteria for COPO assessment for effective domain for laboratory report

Level 0		Level 1		Level 2		Marks
Domain	Element	Domain	Element	Domain	Element	
A1 (Receiving)	Punctuality (Submission)	A2 (Responding)	Knowledge on the open-ended laboratory	A2 (Responding)	Knowledge on the open-ended laboratory	10
A2 (Responding)	Knowledge on the open-ended laboratory	A2 (Responding)	Leadership skill	A4 (Organiza-tion)	Organization	10
A2 (Responding)	Leadership skill	A4 (Organization)	Organization	A4 (Organizing)	Summary of procedures/methods	10
A4 (Organization)	Organization	A4 (Organizing)	Result and analysis	A4 (Organizing)	Result and analysis	10
A4 (Organizing)	Discussion	A4 (Organizing)	Discussion	A4 (Organiza-tion)	Discussion	10
A5 (Characterization)	Conclusion	A5 (Characteriza-tion)	Conclusion	A5 (Characteri-zation)	Conclusion	10

Evaluation on effectiveness of the program offered in any IHL should be carried out to measure student performance and attainment (Namasivam et al.,2013; Nur Asmliza et al.,2020; Mazlina et al.,2021; Mohd Samsudin et al.,2020) for certain skill and knowledge profile. This exercise can be done through COPO analysis at the course level and program level that prove graduates have achieved at least minimum 12 PO according to Engineering Technology Accreditation Council (ETAC) requirement. A systematic evaluation process on COPO collection data, analysis and interpretation should be carried out as an indicator for key performance of the course level and program level is achievable (McNeil., 2011). Past research has shown the innovation on Course Outcomes and Program Outcome (COPO) templates at the course level and program level has been done and required funding from IHL and other sources (Mazlina et al.,2021; Mohd Samsudin et al.,2020; Mohaiyedin et al.,2018; Shamsul et al.,2012).

The initial stage of the OBE online system introduces complex webpages using HTML, PHP, and SQL coding (Shamsul et al.,2012). Author found out there is weakness in coping with massive data and various parameters should be included in the system. Later, OBE-ANAS system is invented to analyse PO for Bachelor of Chemical Engineering (Environment) incorporate with graphical user interface (GUI) with Microsoft Visual C#. This programme was improved with their database system

using Microsoft SQL Server 2012 (Mohaiyedin et al; 2018). Meanwhile MyCOPO has been developed to measure student attainment for degree student (Mazlina et al.,2021) and I-RAS is mean for diploma student in civil engineering at Universiti Teknologi Mara (Mohd Samsudin et al., 2020). However, current innovation on the COPO template did not cater for repetition of data entry for grouping work.

Hence, a simple template using excel called Lecturer Evaluation System (LEVs) was developed to simplify the data entry process for grouping work in addressing effective domains for laboratory courses. This template works as an offline platform and can be shared among lecturers using one drive (UiTM domain) as a security measure of the assessment mark. LEVs provide lecturer with shorter time for assessment data entry and minimise mistakes during key in the mark. Lectures are required to insert a student's name and UiTM identification number from System Information Management System (SIMS) to assign students according to their group number in the designation group interface. Then, the lecturer is required to key in mark for the group instead of individual mark in mark template. All data will be automatically filled in the COPO template, and it is ready to save for document evidence for accreditation. Final value in the COPO template can be copied to the UiTM e-Result Exam System (e-Res) template for student grading. However, this template was developed using laboratory course (ECW 341) as pilot study which assesses affective domain using laboratory report and assignment in small groups which address PO6(affective domain). It is hoped, LEVs can reduce lecturer hustle in assessment period and improve assessment practice among academics in Civil Engineering.

AFFECTIVE DOMAIN MEASUREMENT THROUGH LABORATORY REPORT AND MINI PROJECT

Laboratory courses offered at diploma level in Civil Engineering should assess on psychomotor domain (practical test) and affective domain (assignment and laboratory report) in ensuring development of technical competency and skills throughout the courses (ECW 341) as in Table 2. For the laboratory report and mini project, students are assigned in small groups with not more than 4 students in one group as stipulated by ETAC. Hence, marks for the assessment should be group based. Marks should be the same for the entire group member. Hence simplification of data entry for evaluation marks should be done.

Table 2: Domain evaluation for ECW 341

Outcomes	Assessment instrument	Domain	Task oriented
Construct the experiment, data analysis and interpretation method related to relevant topic	Practical test	Psychomotor	Individual
Demonstrate leadership skills in task related to water engineering	Laboratory report/ mini project	Affective	Grouping work

Since this paper only measured on affective domain therefore, the discussion will reflect on the assessment of laboratory report and mini project. Affective domain always being related toward manners which deal with emotion, feeling, values and attitude. Krathwohl, Bloom, and Masia (1973) define effective domains that can be assessed based on 5 levels of complexity as in Table 3.

Table 3: level of complexity for effective domain.

Receiving (A1)	Student aware on the subject matter
Responding (A2)	Student attend to react and participate
Valuing (A3)	Student being able to internalise the values
Organization (A4)	Student being able to compare and know how to prioritise the task
Characterization (A5)	Students can control their behaviour in a positive way.

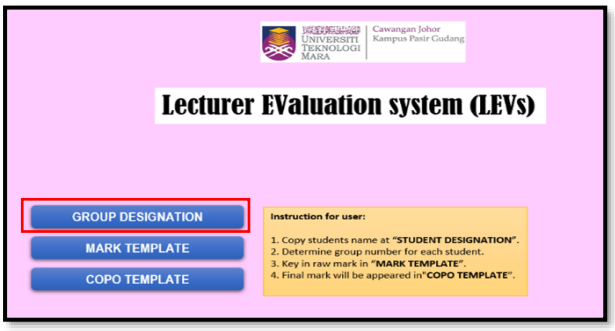
This assessment should be analysed in ensuring graduates would be able to possess and develop competency skills based on effective domain. Proper system or platform should be available in IHL in assisting academics during the evaluation process. It hoped that LEVs would reduce the workload of the academician and simplify the work. Output from LEVs can be used for betterment of teaching and learning processes in future.

METHODOLOGY

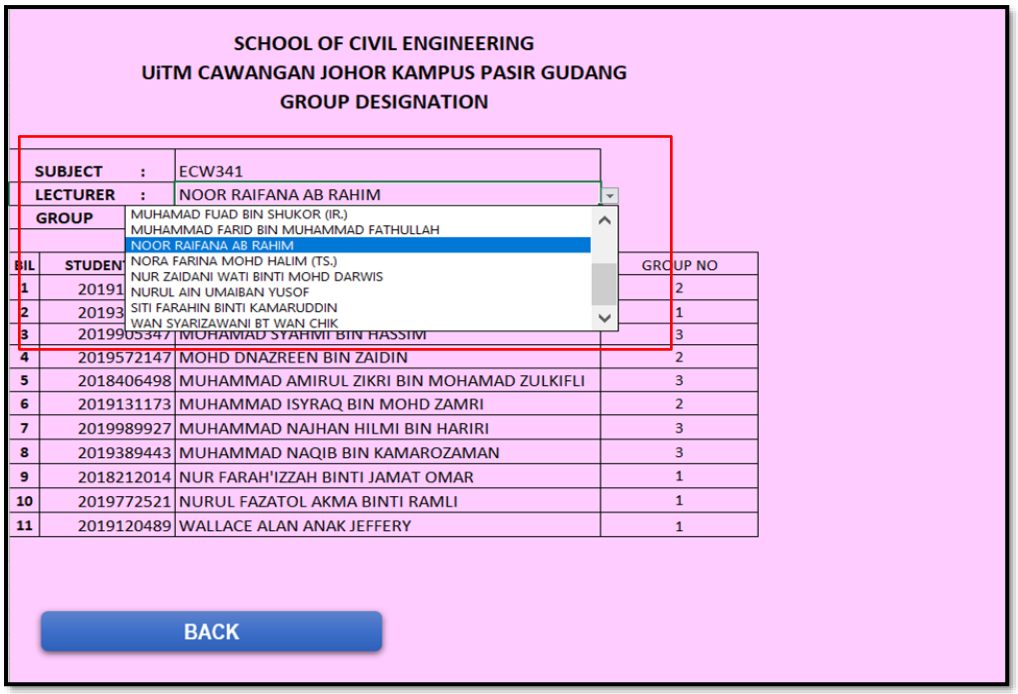
Throughout the course, students are required to work in groups, maximum 4 members in each group and perform the laboratory activities. After finishing the laboratory activities, students must submit laboratory reports for each activity by group. All evaluations must follow an explicit rubric to address relevant domains. It is sure that the rubric should be detailed and sufficient to evaluate student performance. Hence, key in the marks become a headache for the lecturer due to long items written in the rubrics, especially for group work where lecturers need to key in marks for students one by one even though their mark will be the same for all group members. Lecturer Evaluation system (LEVs) is a template that works as an offline system to minimise the process of data entry specifically for group assessment. This template can help the lecturer to key in marks for each group and then it will automatically generate marks for all the group members. Table 4 shows the procedure on how to use LEVs.

Table 4: Procedure of LEVs

LEVs interface



This is the main page of LEVs. Click 'GROUP DESIGNATION' button to fill in the student's information and to assign a group for students.



SCHOOL OF CIVIL ENGINEERING
UiTM CAWANGAN JOHOR KAMPUS PASIR GUDANG
GROUP DESIGNATION

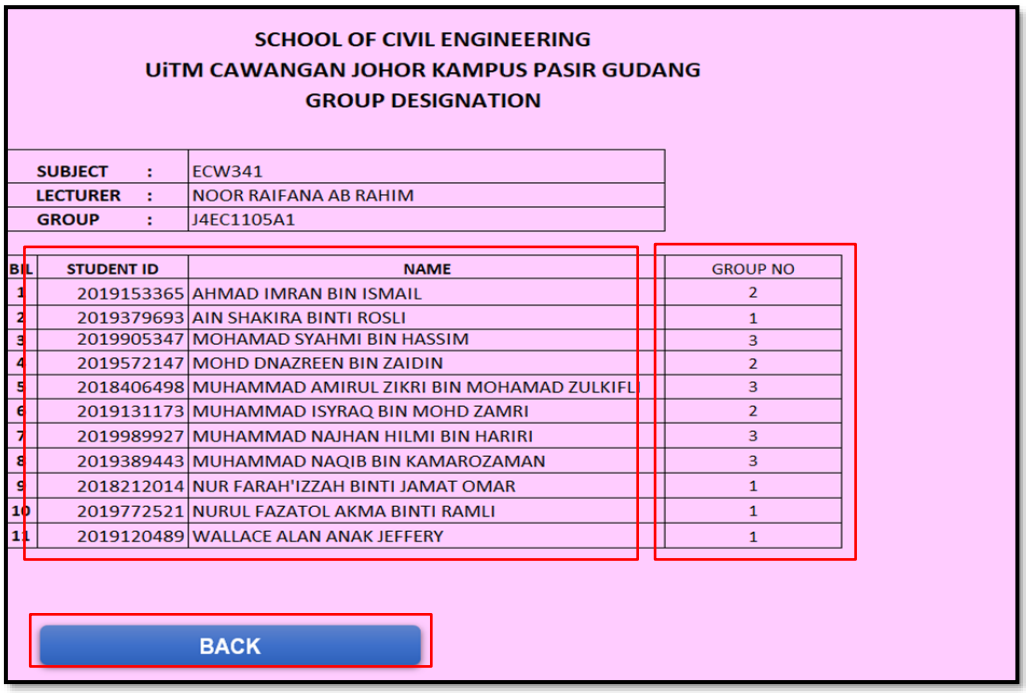
SUBJECT : ECW341
LECTURER : NOOR RAIFANA AB RAHIM
GROUP

MUHAMAD FUAD BIN SHUKOR (IR.)
MUHAMMAD FARID BIN MUHAMMAD FATHULLAH
NOOR RAIFANA AB RAHIM
NORA FARINA MOHD HALIM (TS.)
NUR ZAIDANI WATI BINTI MOHD DARWIS
NURUL AIN UMAIBAN YUSOF
SITI FARAHIN BINTI KAMARUDDIN
WAN SYARIZAWANI BT WAN CHIK

BIL	STUDEN		GROUP NO
1	20191		2
2	20193		1
3	2019905347	MOHAMAD SYAHMI BIN HASSIM	3
4	2019572147	MOHD DNAZREEN BIN ZAIDIN	2
5	2018406498	MUHAMMAD AMIRUL ZIKRI BIN MOHAMAD ZULKIFLI	3
6	2019131173	MUHAMMAD ISYRAQ BIN MOHD ZAMRI	2
7	2019989927	MUHAMMAD NAJHAN HILMI BIN HARIRI	3
8	2019389443	MUHAMMAD NAQIB BIN KAMAROZAMAN	3
9	2018212014	NUR FARAH'IZZAH BINTI JAMAT OMAR	1
10	2019772521	NURUL FAZATOL AKMA BINTI RAMLI	1
11	2019120489	WALLACE ALAN ANAK JEFFERY	1

BACK

Fill in information for the group and select the lecturer's name from the drop-down button.



SCHOOL OF CIVIL ENGINEERING
UiTM CAWANGAN JOHOR KAMPUS PASIR GUDANG
GROUP DESIGNATION

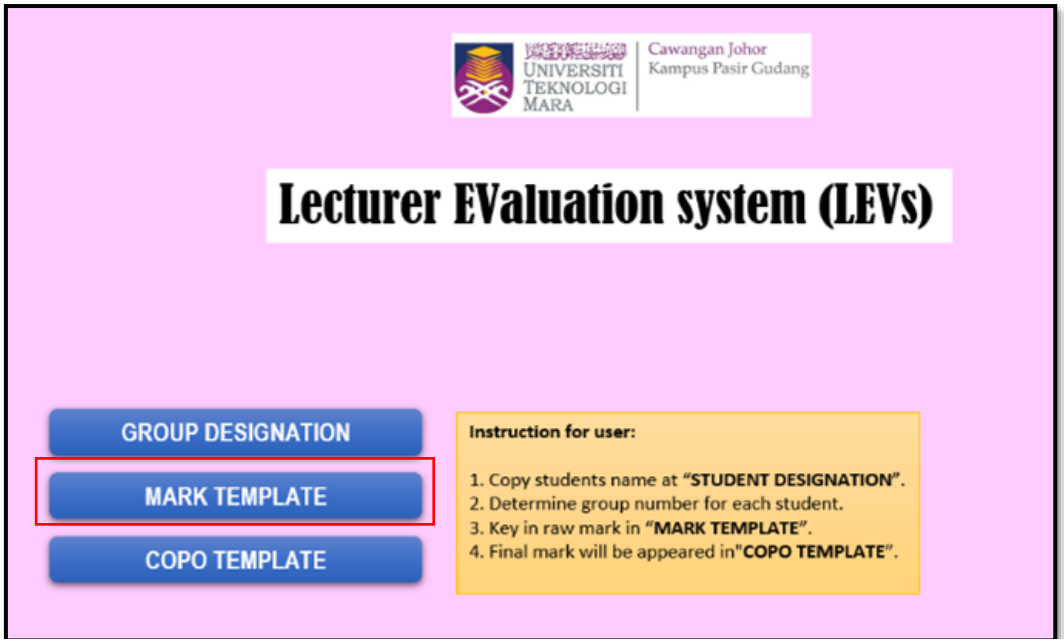
SUBJECT : ECW341
LECTURER : NOOR RAIFANA AB RAHIM
GROUP : J4EC1105A1

BIL	STUDENT ID	NAME	GROUP NO
1	2019153365	AHMAD IMRAN BIN ISMAIL	2
2	2019379693	AIN SHAKIRA BINTI ROSLI	1
3	2019905347	MOHAMAD SYAHMI BIN HASSIM	3
4	2019572147	MOHD DNAZREEN BIN ZAIDIN	2
5	2018406498	MUHAMMAD AMIRUL ZIKRI BIN MOHAMAD ZULKIFL	3
6	2019131173	MUHAMMAD ISYRAQ BIN MOHD ZAMRI	2
7	2019989927	MUHAMMAD NAJHAN HILMI BIN HARIRI	3
8	2019389443	MUHAMMAD NAQIB BIN KAMAROZAMAN	3
9	2018212014	NUR FARAH'IZZAH BINTI JAMAT OMAR	1
10	2019772521	NURUL FAZATOL AKMA BINTI RAMLI	1
11	2019120489	WALLACE ALAN ANAK JEFFERY	1

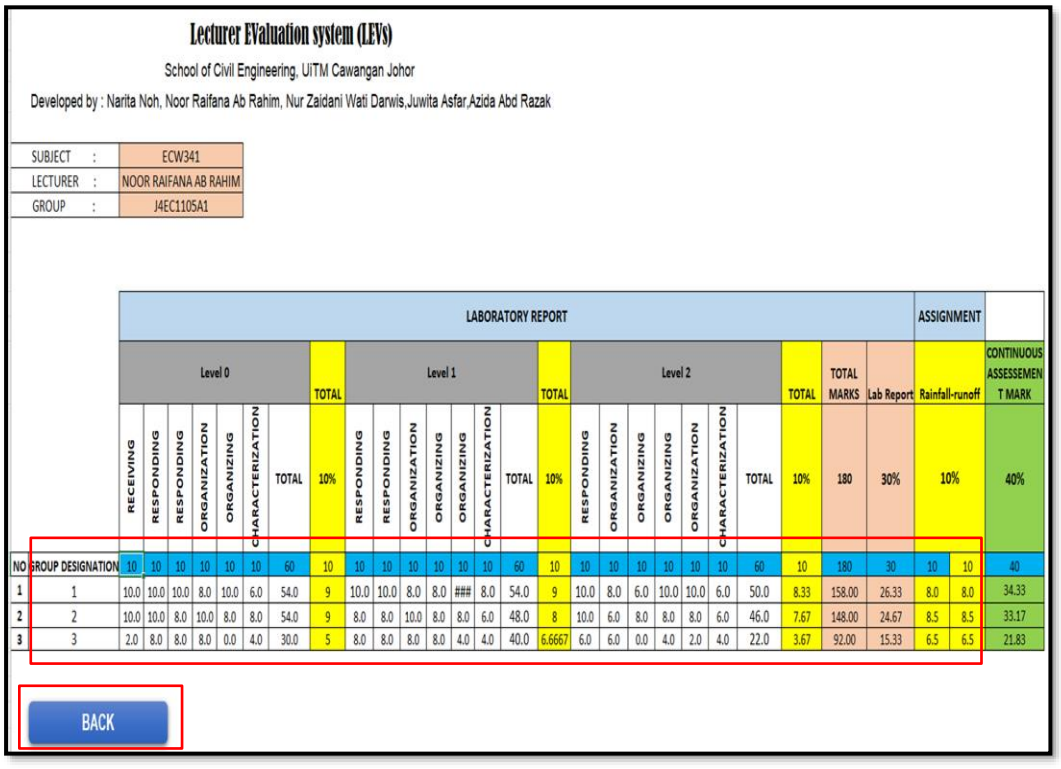
BACK

---

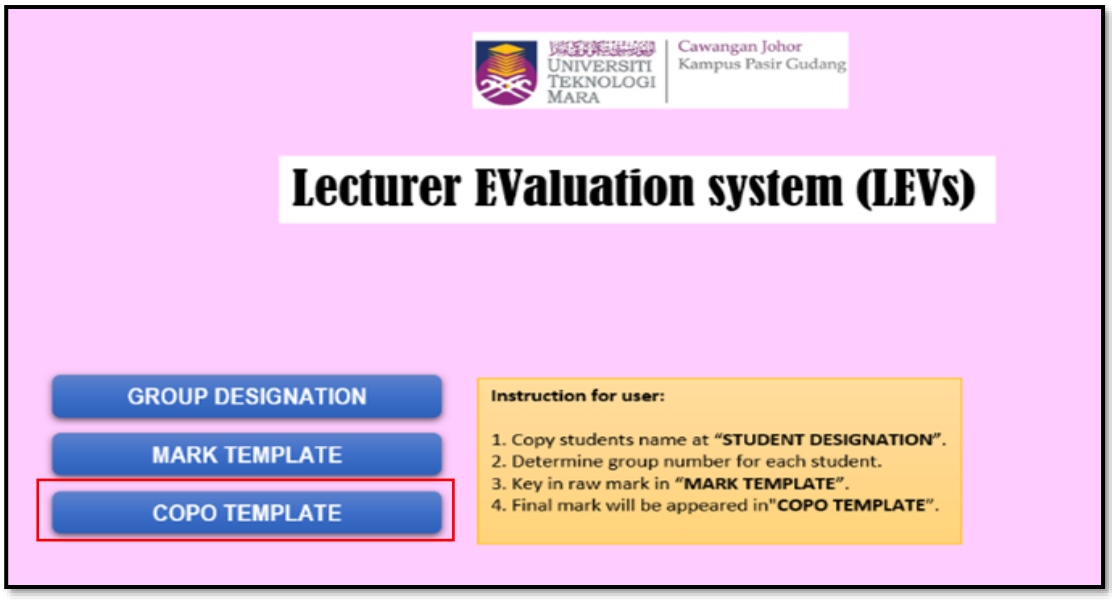
a) Copy student's ID and name according to Student Information Management System (SIMS).
b) Fill in the student's group. Maximum four students per group.
c) Click 'BACK' to return to main page



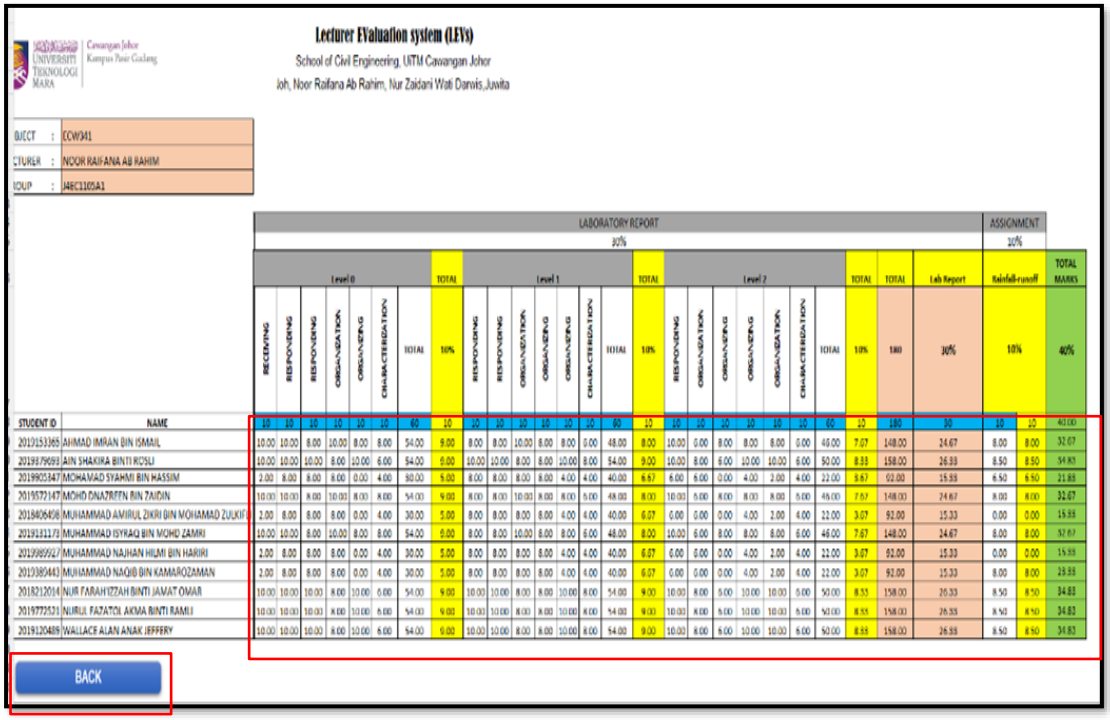
Click 'MARK TEMPLATE' to key in marks for each group.



a) Key in student's mark here for each assessment in the course. Lecturer will only need to key in marks for each designation group. Marks for each student will be automatically generated according to their group.
b) Click 'BACK' to return to main page



Click 'COPO TEMPLATE' to view marks for each student.



a) Marks for each student will be automatically generated here. Lecturers can copy these marks to 'UiTM e-Result Exam System' to produce results for this course.
b) Click 'BACK' to return to main page

This whole process can reduce the time taken for the lecturer to key in marks for each student as it can be done according to the student's group as the mark will automatically fill in the COPO template. It will also minimise mistakes during the key in process.

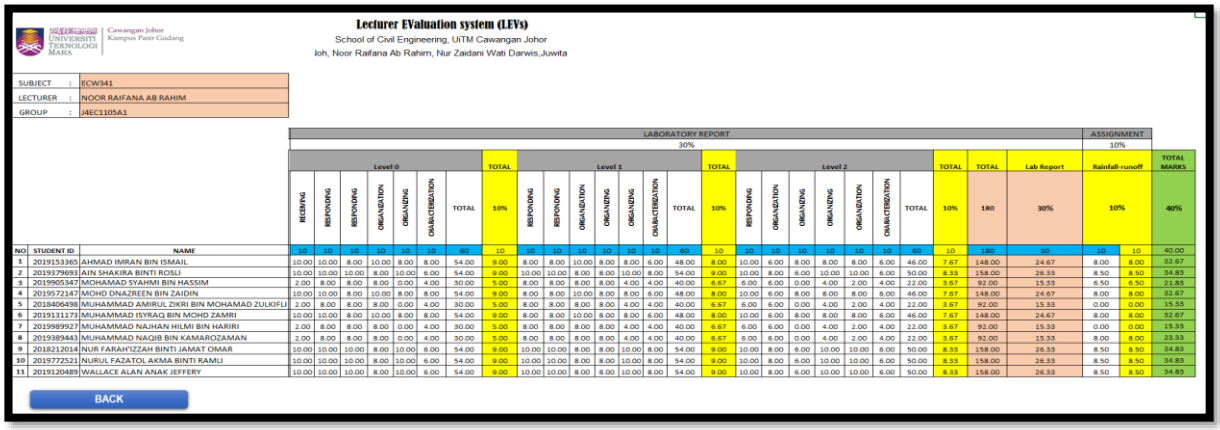
RESULT AND DISCUSSION

Lecturer Evaluation System (LEVs) is developed to improve current practice for assessment data entry for grouping work for laboratory courses. Several criteria to be considered in developing LEVs; analysis process should be precise; key in process should be easy, and template is cost effective.

Figure 1a and Figure 1b show output generated interface COPO Template from LEVs. This template is generated after the lecturer key in marks in the Mark Template for each group. For this pilot study, 18 students were taken this subject for semester 20212, which are 11 students for class J4EC1105A1 and 7 students for class J4EC1105A2 as presented in Figure 1a and Figure 1b respectively. As shown from the figure, each laboratory report consists of several elements to be assessed, and to be key in. By developing LEVs, as explained in the methodology, the lecturer will only need to key in marks for each designation group. Marks for each student will be automatically generated according to their group. This will reduce the time used by each lecturer to analyse their students, especially for larger intakes.

Figure 2 below shows output generation from LEVs on the affective domain for each student. From LEVs, lecturers can analyse attainment of POs for laboratory courses. From this figure, sixteen students attain PO6 above 50% and two students attain PO6 less than 50%. The highest PO's attainment is 87% and the lowest is 38%. The average attainment is 76%, which shows that most students achieved attribute skills represented by PO6.

As currently, teaching and learning is conducted through open distance learning and hybrid, collection of data in softcopy is more suitable for the current T&L method. To assist and ensure the process of assessment analysis is easier and efficient, the development of assessment tools is required, especially for assessment with several components to be assessed through rubrics.



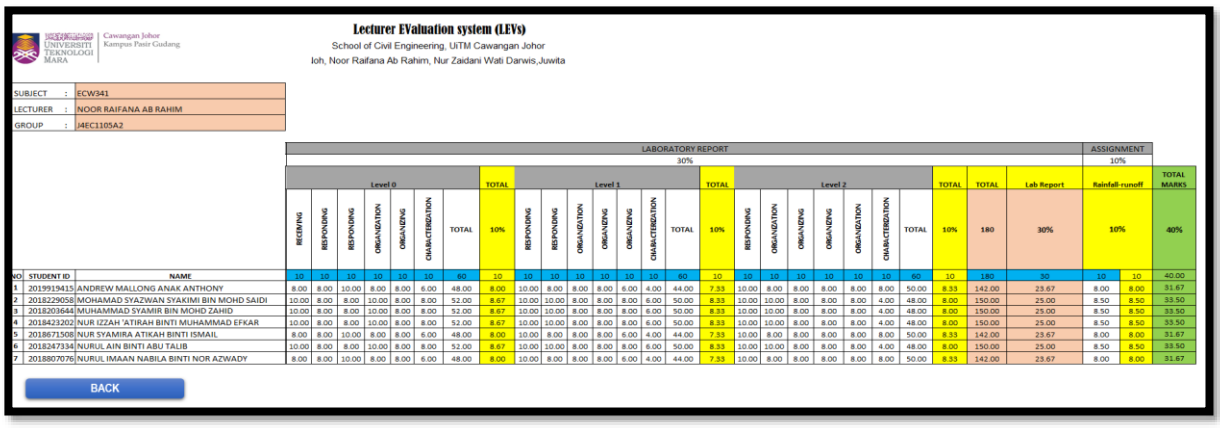
Lecturer EValuation system (LEVs)
School of Civil Engineering, UiTM Cawangan Johor
Ioh, Noor Raifana Ab Rahim, Nur Zaidani Wati Darwis,Juwita

SUBJECT : ECW341
LECTURER : NOOR RAIFANA AB RAHIM
GROUP : J4EC1105A1

NO	STUDENT ID	NAME	TOTAL MARKS
1	2019153365	AHMAD IMRAN BIN ISMAIL	32.67
2	2019379693	AIN SHAKIRA BINTI ROSLI	34.83
3	2019905347	MOHAMAD SYAHMI BIN HASSIM	21.83
4	2019572147	MOHD DNAZREEN BIN ZAIDIN	32.67
5	2018406498	MUHAMMAD AMIRUL ZIKRI BIN MOHAMAD ZULKIFLI	15.33
6	2019131173	MUHAMMAD ISYRAQ BIN MOHD ZAMRI	32.67
7	2019989927	MUHAMMAD NAJHAN HILMI BIN HARIRI	15.33
8	2019389443	MUHAMMAD NAQIB BIN KAMAROZAMAN	23.33
9	2018212014	NUR FAIRAHYZZAH BINTI JAMAT OMAR	34.83
10	2019772521	NURUL FAZATOL AKMA BINTI RAMLI	34.83
11	2019120489	WALLACE ALAN ANAK JEFFERY	34.83

BACK

Figure 1a: Output generated interface COPO Template from LEVs for class J4EC1105A1



Lecturer EValuation system (LEVs)
School of Civil Engineering, UiTM Cawangan Johor
Ioh, Noor Raifana Ab Rahim, Nur Zaidani Wati Darwis,Juwita

SUBJECT : ECW341
LECTURER : NOOR RAIFANA AB RAHIM
GROUP : J4EC1105A2

NO	STUDENT ID	NAME	TOTAL MARKS
1	2019919415	ANDREW MALLONG ANAK ANTHONY	31.67
2	2018229058	MOHAMAD SYAZWAN SYAKIMI BIN MOHD SAIDI	33.50
3	2018203644	MUHAMMAD SYAMIR BIN MOHD ZAHID	33.50
4	2018423202	NUR IZZAH 'ATIRAH BINTI MUHAMMAD EFKAR	33.50
5	2018671508	NUR SYAMIRA ATIKAH BINTI ISMAIL	31.67
6	2018247334	NURUL AIN BINTI ABU TALIB	33.50
7	2018807076	NURUL IMAAN NABILA BINTI NOR AZWADY	31.67

BACK

Figure 1b: Output generated interface COPO Template from LEVs for class J4EC1105A2

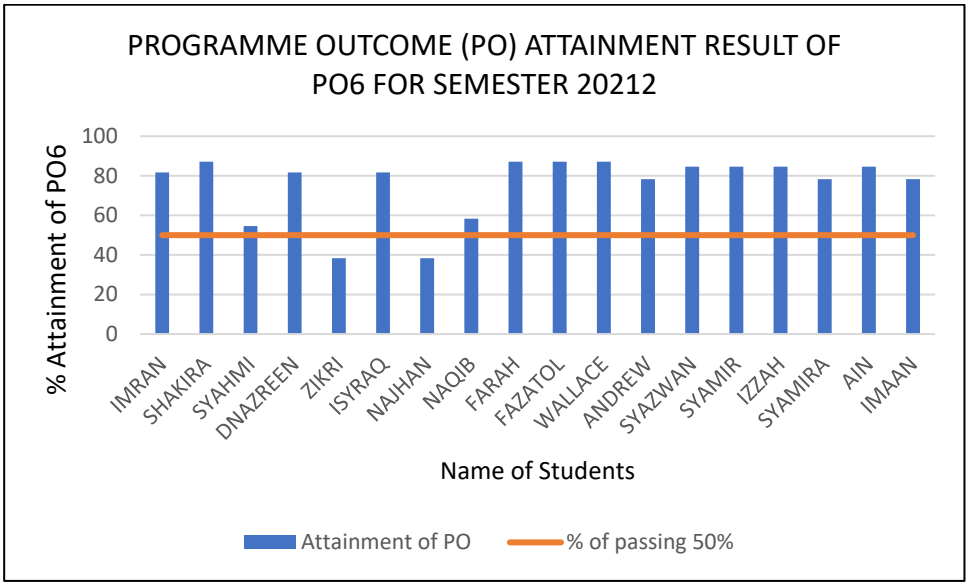


Figure 2: Output Generation from LEVs on the Affective Domain for Each Student

CONCLUSION

LEVs are viewed to be assessment tools that reduce academic hustle during data entry for the evaluation process. It eliminates the repetition of data entry and output from LEVs is ready for accreditation document evidence. However, there is room for improvement to betterment of the system and it might be used for other courses. Surveys among lecturers should be conducted for the feedback and to evaluate the effectiveness of LEVs during the assessment period.

ACKNOWLEDGEMENTS

Authors would like to acknowledge all lecturers ECW 341 in UiTM Pasir Gudang for spare their time to use LEVs for the pilot study.

REFERENCES

Awang Nasrizal, A. A., Beatrice, C. B., Narita, N., Rudy, T., (2016). *OEL Implementation in Sustainable Engineering Education*. Procedia - Social and Behavioral Sciences 224, pg 613 – 619.

Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1973). *Taxonomy of Educational Objectives, the Classification of Educational Goals*. Handbook II: Affective Domain. New York: David McKay Co., Inc

Mazlina, M., Lian,O.H., Mohd Raizamzamani, M. Z.,Balqis, M. Y., Norbaya, S., (2021). *Student Attainment Measurement System in Civil Engineering Undergraduate Programme: A Satisfaction Survey*. Asian Journal of University Education (AJUE). Volume 17, Number 2.

McNeil, C. R. (2011). *A Program Evaluation Model: Using Bloom's Taxonomy to Identify Outcome Indicators in Outcomes Based Program Evaluations.* Journal of Adult Education Volume 40, Number 2, 2011

Mohaiyedin, I., Aida Zulia, Z., Nor Fadzilah, M., Wan Zuraida, W. K., Norhusna M. N., (2018). *Measuring Program Attainments (POs) of Bachelor of Chemical Engineering (Environment) using OBE – ANAS v14.0 Tool*. ESTEEM Academic Journal.Vol. 14, pg 20-31.

Mohd Samsudin, A. H., Md Rasul, M. N., Nor Hafizah Hanis, A., Siti Hafizan, H., Mohd Azuan, T., Nurulzatushima, A. K., Ahmad Syauqi, H., Fairus Azwan,A., Shafienaz, I., Mohd Azrizal, F., Suhailah, M. N., (2020). *Revolution on Assessment for Student Monitoring System (i-RAS).* Retrieved from https://joms.uitm.edu.my/index.php/jurim/article/view/34/39

Namasivayam, S., Al-Atabi, M., Chong, C.H., Choong, F., Hosseini, M., Gamboa, R.A., (2013). *A blueprint for measuring programme outcomes*. Journal of Engineering Science and Technology Special Issue on Engineering Education ,pg 46 – 55

Nikolic, S., Suesse, T., Goldfinch, T., McCarthy, T., (2015). *Relationship between learning in the engineering laboratory and student evaluations*. Proceedings of the Australasian Association for Engineering Education Annual Conference, pp. 1-9.

Nur Asmaliza, M. N., Noraida, M. S., Rohaya, A., Siti Hawa, R., (2020). *Students' Performance on Cognitive, Psychomotor and Affective Domain in the Course Outcome for embedded Course.* Universal Journal of Educational Research 8(8): 3469-3474, DOI: 10.13189/ujer.2020.080821

Shamsul, M., Zarina, T., Rafizah, M. H., Afandi, A., Mohamad, M. S.,(2012). *An Evaluation of Assessment Tools in Outcome-based Education: A Way Forward*. Journal of Education and Vocational Research. Vol. 3, No. 11, pp. 336-343.

Zaghloul, A.R.M., (2001). *Assessment of Lab Work: A Three-Domain Model; Cognitive, Affective, and Psychomotor*. Proceedings of the 2001 American Society for Engineering Education Annual Conference & Exposition.