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Exploring Students' Self-Evaluation on Their Learning Outcomes through an Integrated Cumulative Grade Point Average Reporting Mechanism

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***Abstract*—**An Integrated Cumulative Grade Point Average (iCGPA) is a mechanism and strategy to ensure the curriculum of an academic programme is constructively aligned to the expected learning outcomes and student performance based on the attainment of those learning outcomes that is reported objectively in a spider web. Much effort and time has been spent to develop a viable mechanism and trains academics to utilize the platform for reporting. The question is: How well do learners conceive the idea of their achievement via iCGPA and whether quality learner attributes have been nurtured through the iCGPA mechanism? This paper presents the architecture of an integrated CGPA mechanism purported to address a holistic evaluation from the evaluation of courses learning outcomes to aligned programme learning outcomes attainment. The paper then discusses the students' understanding of the mechanism and evaluation of their achievement from the generated spider web. A set of questionnaires were distributed to a group of students with iCGPA reporting and frequency analysis was used to compare the perspectives of students on their performance. In addition, the questionnaire also explored how they conceive the idea of an integrated, holistic reporting and how it generates their motivation to improve. The iCGPA group was found to be receptive to what they have achieved throughout their study period. They agreed that the achievement level generated from their spider web allows them to develop intervention and enhance the programme learning outcomes before they graduate.

***Keywords*—**Learning outcomes attainment, iCGPA, programme learning outcomes, spider web, iCGPA reporting skills.

I. Introduction

THE shift from producing educational, training and learning processes under the Bloom's taxonomy has now moved beyond to a more boarder categories that includes soft skills (such as English proficiency), knowledge (of the world at large, the sciences and arts), values (ethics, patriotism and spiritually), leadership abilities (including the love of volunteerism), critical thinking (innovation and problem solving) and entrepreneurial. The immediate goal for doing this is to solve the graduate-employer expectation mismatch and enable graduates to find meaningful employment. With a more competitive and challenging world global, many countries are having graduate unemployment problems. Governments, employers and parents are pressuring higher institutions to produce quality graduates that can be employed.

Yorke [3] defined employability as a set of achievements skills, understandings and personal attributes that makes graduates more likely to gain employment and be successful in their chosen occupation, which benefits themselves, the workforce, the community and the economy. Employers expect graduates to have these skills or 'work readiness' when they start working on the first day. Unfortunately, they found that nowadays graduates are not industry driven. A study by Archer and Davisons [1] revealed the contrast between what some universities are promoting and what is required by industry. According to Kruss [2], higher education institutions are expected to provide graduates adequate soft skills – problem solving, communication, entrepreneurship, good citizenship, managerial skills, and leadership skills.

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II. Outcome-Based Education

A. Program and Course Learning Outcome

Outcome-based Education (OBE) is a method of teaching and learning that emphasizes the outcome after the session.

B. Constructive Alignment

According to Biggs and Tang [4], Constructive Alignment (CA) is a standard used for formulating teaching and learning activities, and assigning assessment tasks, that directly address the learning outcomes. CA is an approach to curriculum design that optimizes the conditions for quality teaching and learning [5] of programme academic.

C. Assessment and Evaluation

According to Smith [6], assessment and evaluation are to facilitate the teaching and learning process called as formative assessment, identify and monitor a student's learning strengths and weaknesses and identify a student's progress, called as summative assessment.

D. iCGPA

An iCGPA is an integrated mechanism for assessing and reporting of students' development and performance of skills, where it addresses graduate employability concern, as mentioned in [7]. The reporting covers attributes outlines of soft skills in the student aspirations which are (1) Knowledge in specific area, (2) Practical Skills, (3) Thinking and Scientific Skills, (4) Communication Skills, (5) Social Skills, Teamwork and Responsibilities, (6) Values, Ethics, Moral and

Professionalism, (7) Information Management and Life Long Learning, (8) Management and Entrepreneurship, and (9) Leadership Skills.

III. iCGPA Reporting System

This section discusses the proposed reporting mechanism and the iCGPA implementation process flow.

A. Proposed Reporting Mechanism

In the implementing OBE, as shown in Fig. 1, a proposed reporting mechanism comprises of nine major modules or components, which cover: (1) Programme Educational Objectives (PEO) statements, (2) programme module, (3) course module, (4) assessment module, (5) evaluation module, (6) marks and grade module, (7) calculating GPA and CGPA, (8) student evaluation result slip, and (9) Programme Learning Outcomes (PLOs) attainment reporting.

The proposed reporting mechanism implementation process encompasses the establishment of PEOs, followed by PLOs, designing curriculum, teaching and learning methods, assessment types, evaluation, grading and reporting. The mechanism starts with PEOs that are formulated in line with an institutional mission statement and stakeholders' interests. PLOs, which consist of abilities to be attained by students before they graduate, are formulated based on the PEOs address knowledge, and skills and attributes to be attained by assessment of Course Learning Outcomes (CLOs) for every course. The proposed reporting mechanism also addresses PLO attainment before and after students' graduation.

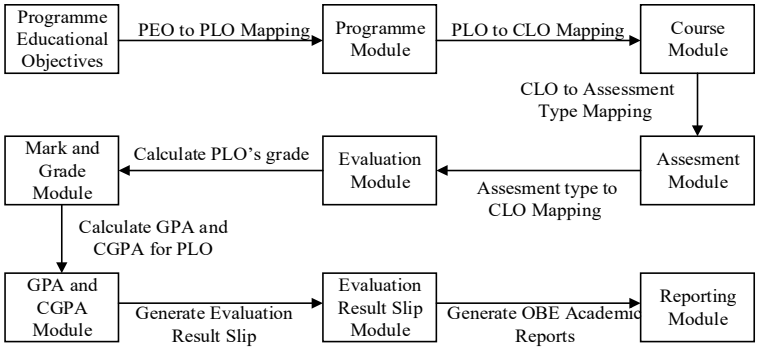


Fig. 1 Proposed Reporting Mechanism

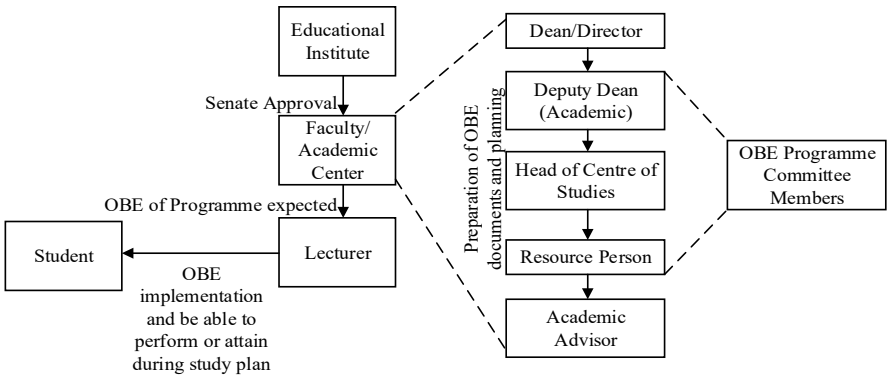


Fig. 2 iCGPA implementation flow

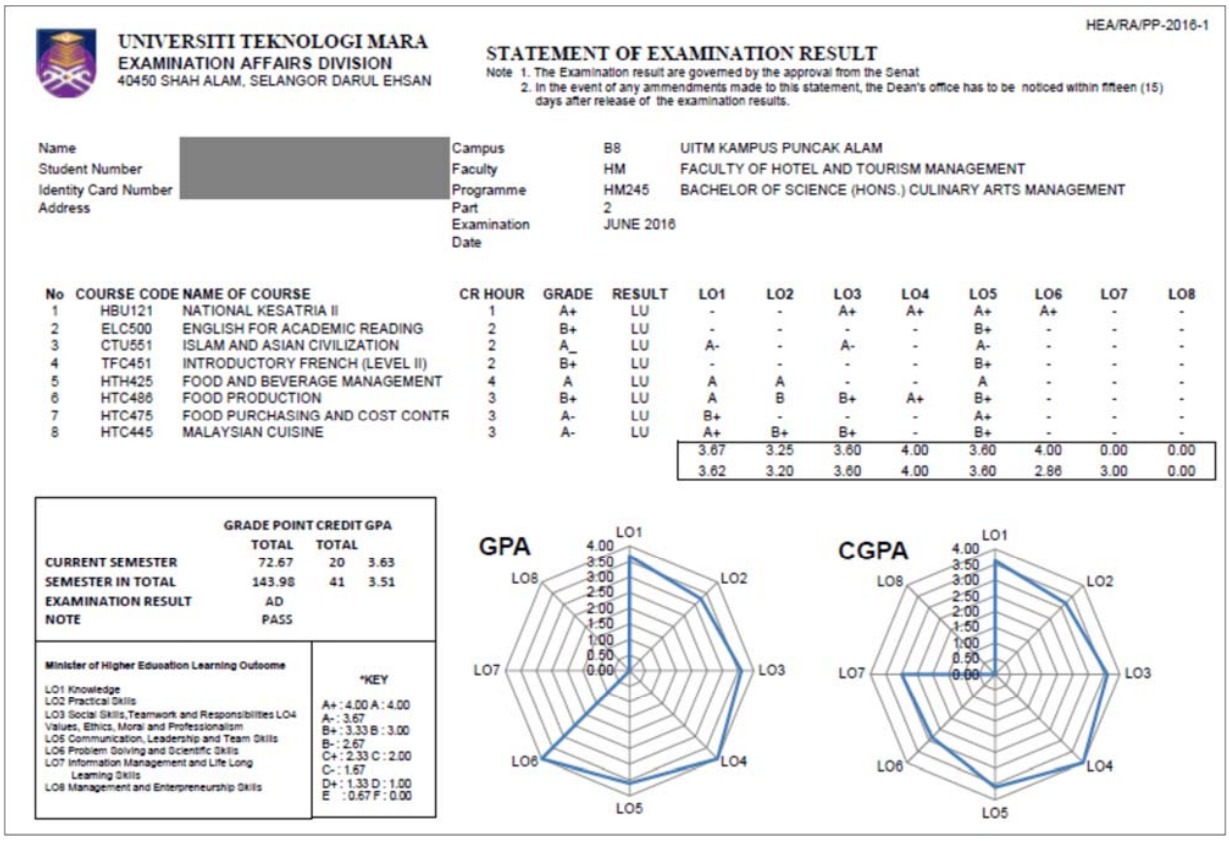
B. iCGPA Implementation Flow

The concept of iCGPA from OBE implementation is to increase the level of interest, interaction, attention and enthusiasm when students believe that they are learning or being taught new concepts. Fig. 2 shows the steps to be taken in the implementation process of iCGPA to academic staff and student. This process is able to continually monitor the effectiveness and impact of curriculum design and delivery. It is needed to increase the engagement and understanding of iCGPA that would naturally lead to the understanding of their own ability in the various domains of learning outcome. This process allows them to develop intervention and enhance the programme learning outcomes before students graduate guided by the academic staff, faculty and educational institute.

C. Reporting Product

Since iCGPA is a mechanism for assessing and reporting of students' development and performance and also mentioned in [8], lecturers and academic advisors need to educate students to read and comprehend the grades for the attainment of learning outcome domains and the radar graph also known as an iCGPA spider web, as shown in Fig. 3. By understanding the strengths and weaknesses, students will be able to target

better grades for the following semester's academic performance.



HEA/RA/PP-2016-1

UNIVERSITI TEKNOLOGI MARA
EXAMINATION AFFAIRS DIVISION
40450 SHAH ALAM, SELANGOR DARUL EHSAN

STATEMENT OF EXAMINATION RESULT

Note 1. The Examination result are governed by the approval from the Senat
2. In the event of any ammendments made to this statement, the Dean's office has to be noticed within fifteen (15) days after release of the examination results.

Name [redacted]
Student Number
Identity Card Number
Address

Campus B8 UITM KAMPUS PUNCAK ALAM
Faculty HM FACULTY OF HOTEL AND TOURISM MANAGEMENT
Programme HM245 BACHELOR OF SCIENCE (HONS.) CULINARY ARTS MANAGEMENT
Part 2
Examination Date JUNE 2016

No	COURSE CODE	NAME OF COURSE	CR HOUR	GRADE	RESULT	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
1	HBU121	NATIONAL KESATRIA II	1	A+	LU	-	-	A+	A+	A+	A+	-	-
2	ELC500	ENGLISH FOR ACADEMIC READING	2	B+	LU	-	-	-	-	B+	-	-	-
3	CTU551	ISLAM AND ASIAN CIVILIZATION	2	A_	LU	A-	-	A-	-	A-	-	-	-
4	TFC451	INTRODUCTORY FRENCH (LEVEL II)	2	B+	LU	-	-	-	-	B+	-	-	-
5	HTH425	FOOD AND BEVERAGE MANAGEMENT	4	A	LU	A	A	-	-	A	-	-	-
6	HTC486	FOOD PRODUCTION	3	B+	LU	A	B	B+	A+	B+	-	-	-
7	HTC475	FOOD PURCHASING AND COST CONTR	3	A-	LU	B+	-	-	-	A+	-	-	-
8	HTC445	MALAYSIAN CUISINE	3	A-	LU	A+	B+	B+	-	B+	-	-	-
						3.67	3.25	3.60	4.00	3.60	4.00	0.00	0.00
						3.62	3.20	3.60	4.00	3.60	2.86	3.00	0.00

	GRADE POINT TOTAL	CREDIT TOTAL	GPA
CURRENT SEMESTER	72.67	20	3.63
SEMESTER IN TOTAL	143.98	41	3.51
EXAMINATION RESULT	AD		
NOTE	PASS		

Minister of Higher Education Learning Outcome
LO1 Knowledge
LO2 Practical Skills
LO3 Social Skills,Teamwork and Responsibilities LO4 Values, Ethics, Moral and Professionalism
LO5 Communication, Leadership and Team Skills
LO6 Problem Solving and Scientific Skills
LO7 Information Management and Life Long Learning Skills
LO8 Management and Enterpreneurship Skills

*KEY
A+ : 4.00 A : 4.00
A- : 3.67
B+ : 3.33 B : 3.00
B- : 2.67
C+ : 2.33 C : 2.00
C- : 1.67
D+ : 1.33 D : 1.00
E : 0.67 F : 0.00

Fig. 3 Sample of Student Evaluation Result Slip

IV. Research Methodology

This study was conducted in May 2017 and employed a quantitative approach. In particular, a questionnaire survey method to achieve the aim of the study, i.e. to explore students' perception on their understanding and benefits of iCGPA reporting mechanism. Students from the Faculty of Hotel and Tourism Management of the Universiti Teknologi MARA (UiTM) were chosen as the study samples, as this faculty was the pioneer faculty that exercised iCGPA in the university. This academic programme was specifically selected to apply iCGPA in the curriculum; in which, the curricula's coverage is highly practical in nature, and hence, the results and outcomes of students' iCGPA can be easily determined. In total, 47 students from the Bachelor of Science Culinary Arts Management were involved with the implementation of iCGPA at the university.

The quest to explore students' perception on their understanding and the benefits of the iCGPA reporting mechanism involved two main research phases. The early stage of the research encompassed a review of literature, whilst the second phase was related to questionnaire surveys. A review of literature was made on related studies and policies and guidelines pertaining to iCGPA, as highlighted by the Ministry of Higher Education Malaysia. A questionnaire survey has been carried out on the identified study samples. The survey instrument was developed to seek relevant input on the extent of students' perception and understanding about iCGPA. Also, the instrument was used to seek the students' opinion about the benefits of iCGPA and its implementation in UiTM. The questionnaire survey consisted of 15 questions; these questionnaires are divided into five sections, as follows:

- Section A: General information including student identification number, semester, gender and CGPA point.
- Section B: General understanding about iCGPA.
- Section C: Perception about the benefits of iCGPA implementation.
- Section D: Potential learning outcomes of iCGPA and its implementation in the University.
- Section E: General learning motivation and the usefulness of the iCGPA 'spider web' in improving academic performance.

The questionnaires were distributed to all 47 students involved with the iCGPA university system. A total of 24 respondents answered the survey for a response rate of 51%; this percentage is considered statistically satisfactory. Analyses were carried out on all survey responses received from the studied samples. Particularly, descriptive analyses

have been performed to investigate the respective students' understanding and perceptions concerning iCGPA implementation, as well as the expected learning outcomes of iCGPA concepts and practice. Such an analysis approach is deemed relevant to facilitate in achieving the study's primary aim. Fig. 4 shows the summary of the research phases involved in this study, as discussed above.

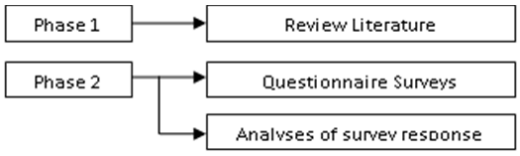


Fig. 4 Summary of key research phases

V. Results and Discussion

The reporting system is expected to generate interest among the students and give them the motivation to keep tabs on their own learning. The research took a case study approach, employing both quantitative and qualitative data to gauge how well learners conceived the idea of their achievement via iCGPA and whether they felt quality attributes could be nurtured through the reporting mechanism. The students' understanding of the mechanism and evaluation of their achievement from the generated spider web were explored. This section described the participants and the findings derived from the survey conducted.

A. Demographics

In total, there were only five male students and 42 female students who participated in the study. Their cumulative grade point average (CGPA) ranges from 2.87 to 3.68.

B. General Understanding about iCGPA

The students were given five statements on iCGPA and were asked to rate each statement. Table I shows that the students do have a good understanding of what iCGPA is all about.

TABLE I
Students' Understanding of iCGPA

Item	Mean	Min	Max	STD
A mechanism to ensure quality curriculum design, delivery and assessment of your academic courses and programme.	3.7	3	5	0.69
A system to assess your learning development of knowledge and skills.	3.9	2	5	0.85
A mechanism that assists faculty and university making decisions or planning for academic improvement.	3.8	3	5	0.64
An integrated assessment system to measure your holistic attainment based on your learning experiences at university.	4.1	3	5	0.58
Reports your holistic performance and learning outcome achievement throughout your study period.	4.1	3	5	0.54

Table II further illustrates the students' views on the benefits of iCGPA to them. Most of the students perceived iCGPA as a means to identify and improve their skills. A moderate percentage (62.5%), however, agreed that iCGPA could facilitate lecturers to conduct suitable learning activities. Others were neutral or disagreed with the statement. Almost all students (91.6%) agreed that the spider web generated helped them identify and determine their soft skills. It was apparent that the students were familiar with the spider web and its functions.

TABLE II
Students' Perception of iCGPA Benefits

Item	Mean	Min	Max	STD
Nurture students to be holistic, balanced and entrepreneurial.	3.9	2	5	0.78
Assist students to improve their holistic ability.	3.9	3	5	0.72
Assist your university in ensuring high student employability.	4.1	3	5	0.72
Measure students' learning ability for an individual course.	3.8	3	5	0.64
Facilitate the lecturer to conduct suitable learning activities.	3.7	2	5	0.80
Generate spider web for students to identify and determine their soft skills.	4.3	3	5	0.64
Help students to identify intervention activities towards improving their skills.	4.0	3	5	0.69
Equip students with appropriate skills expected by industry.	3.9	3	5	0.69

The students were then requested to rate how the iCGPA reporting system supports the development of each of the outcome domains, with "1" being the highest supported domain. Table III shows that the students rated knowledge as highly supported, while leadership skills were rated least supported. It is believed that the students rated these skills based on their current status. Since they are in Year 2, leadership skills may have not been assessed and the scores accumulated in the spider web. However, it is interesting to note that a number of the respondents rated all the domains as highly supported through the iCGPA mechanism.

TABLE III
Students' Rating the Support for Each Learning Outcome Domains

Outcome domains	Rating
Knowledge	1.8
Practical Skills	2.0
Thinking and Scientific Skills	2.7
Communication Skills	2.8
Social Skills, Teamwork and Responsibilities	2.4
Values, Ethics, Moral and Professionalism	2.4
Information Management and Life Long Learning	2.5
Management and Entrepreneurship	3.3
Leadership Skills	4.0

A quick check on the students CGPA and their scores on understanding iCGPA found that there was a weak, non-significant correlation between their CGPA and understanding of iCGPA. Though this was not done to test any hypothesis due to the small, non-random nature of the research sample, it may be of benefit in future research when more students are involved.

C. The Qualitative Analysis

In order to gauge the students' general perspective and usefulness of iCGPA, including its implementation and

reporting, open ended responses were elicited from the respondents. All 24 respondents gave their input. A qualitative analysis of the narratives found several emergent themes.

i. *Identification of strengths and weaknesses:* The students agreed that the spider web, as an outcome reporting mechanism, helped them identify both their strengths and weaknesses.
ii. *Motivation to improve:* This is mentioned by most of the students. They stressed that the spider web motivated them to study harder and improve on skills such as communication, leadership and social skills. It is interesting to note that the students were also very specific in mentioning the skills they need to improve.
iii. *Planning intervention and setting goals*: The students were found to be conscious of the need to plan their study and to set goals in order to attain their learning outcomes.
iv. *Clarity and transparency in assessing skills:* Students raised their concerns regarding the assessment of skills that were conducted by the lecturers.
v. *Role of the lecturers and academic advisor:* The students highlighted the support received from their academic advisor; they nonetheless raised their concerns on the lack of the lecturers' effort to ensure iCGPA is understood and internalized by the students.

Analysis of both quantitative and qualitative data revealed the positive views and understanding of iCGPA among the students. The iCGPA reporting mechanism induced motivation and awareness of their own responsibilities in assuring the achievement of their learning outcomes. The students also had heightened awareness on the importance of planning and setting goals to achieve such outcomes. In addition, they were concerned on the way assessments were conducted. The support received from academic advisors, and the role of the lecturers in enhancing students' understanding of iCGPA, were also highlighted.

VI. Conclusion

The study has demonstrated the understanding of students from an iCGPA project group who conceived ICGPA as an integrated, holistic reporting mechanism that generated their motivation to improve. The research respondents were receptive to what they had achieved throughout their study period. They agreed that the achievement level generated from their spider web allowed them to develop intervention and enhance the programme learning outcomes before they graduate. However, it is important to take into consideration their concerns and observations, especially those pertaining to the assessments and the supporting role of lecturers and academic advisors. This study was conducted with the assumptions that effective assessments have been developed and constructive alignment was done rigorously.

Further studies may focus on the lecturer's perspective and specific skills development and assessments. A bigger research sample derived from a wider population should also be considered in order for the findings to be generalized and the study to inform policy.

Acknowledgment

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