Comparison on the Quality Performance Achievement of Students in UiTMCPP during the ODL and F2F Teaching and Learning Methods

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Abstract— Lockdowns in response to the spread of COVID-19 in 2020 have interrupted the conventional Teaching and Learning (T&L) approach in educational institutions. In conjunction with that, higher education was quick to replace face-to-face (F2F) lectures with fully online learning (OL). The abrupt change impacted learning and examinations across the globe. To remain relevant, universities have reinvented and expanded the digitalization in T&L. This paper investigates the impact of student's performance against the changes in the teaching and learning (T&L) methods from traditional F2F to OL and online distance learning (ODL) during the COVID-19 pandemic in Universiti Teknologi MARA, Cawangan Pulau Pinang (UiTMCPP), Malaysia. Data collected in this study was based on the examination results in both the Diploma and Degree students from the year 2019 to 2020 which involved four consecutive semesters: two semesters on F2F and two semesters on ODL. The examination results were projected into the Key Performance Indicator (KPI) that was determined by the top management in UiTMCPP - Student Quality Objectives (OKP). The main purpose of OKP is to monitor the student's performance and achievement in every programme offered. The statistical analysis was conducted using the Statistical Package for Social Science (SPSS). The results of Analysis of Variant (ANOVA) and Tukey Honest Significant Difference (HSD) show that the T&L method is significantly different between F2F and ODL, whereby the ODL method significantly improved the students' performance.

Keywords— Higher education, face-to-face (F2F) learning, online distance learning (ODL), online learning (OL)

I. INTRODUCTION

The quality of higher education is important in producing excellent graduates and further contributes to our economic sectors in various fields of expertise (Christersson et.al., 2020). In the year 2020, in response to the movement control order and with the increase of COVID-19 cases in Malaysia, the Ministry of Higher Education (MoHE) has enforced that the public and private universities should make a revolution from the conventional F2F T&L method to fully OL in various digital platforms. This rapid move to the new approach of online T&L significantly benefits both the lecturers and students, which ensures continuous learning and the success in T&L processes (Dhawan et.al, 2020).

The COVID-19 pandemic witnessed the divergence of a new approach in the digitalization of the T&L methods. The integration of information technology in education slightly changed the conventional teaching method and it developed the new educational technology to be more global, unique, interactive, accessible, flexible, and sophisticated.

Educators face challenges due to the paradigm shift in which they must self-explore information technologies, create new digital teaching materials, establish online assessments, deliver the teaching contents, and interact with students in online classes. The only goals of these optimized actions are to accomplish the targeted learning outcome (LO) and programme outcome (PO) (Chik et.al., 2021; Fang et.al., 2020).

The creative and innovative approach adopted in OL during the pandemic enables lecturers to reach out to their students effectively and efficiently via open-access online apps such as chat groups, video meetings, online voting, file sharing, online assessment, online forms, and many more. These experiences lead to long-life learning which explores the variety of digital learning platforms, enhances new skills, and develops independent learning (Charles et.al., 2020) (Bakar, 2021).

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II. METHODOLOGY

A. Data Collection

UiTMCPP has established OKP as a mechanism for measuring and monitoring the achievement of students' performance every semester and year. The responsibility is given to the head of faculties in UiTMCPP as their yearly performance indicators.

All programme achievements were analyzed based on the OKP of UiTMCPP which were given as performance indicators to the head of faculties in monitoring their students' performance (Kualiti, 2020). Table 1 tabulated the detailed description of the OKP of UiTMCPP.

Table 1: Description of Student Quality Objectives of UiTMCPP

Student Quality Objectives	Descriptions
OKP 1	90% of full time Diploma and Degree program students graduated on time within the period of study (GOT).
OKP 2	80% of full time Diploma and Degree program students graduated with a CGPA of 3.0 and above.
OKP 3	2% of full time students achieved the Vice Chancellor's Award (ANC) upon graduation every year.
OKP 4	10% of full time students achieved the Dean's List (AD) upon graduation every year.

The study samples were taken from the examination results of undergraduate programmes (Diploma and Degree) students in UiTMCPP from the year 2019 to 2020. There are seven (7) faculties offering Diploma and Degree programmes in UiTMCPP in which the total number of programmes offered is 23.

B. Statistical Analysis

In this study, the statistical package for social science (SPSS) was used as a statistical analysis tool.

Analysis of Variant (ANOVA) test was conducted to determine statistically significant, which is, whether the students' achievement is influenced by the method of delivery in T&L.

For further analysis, the Tukey HSD Post-Hoc test was conducted to compare all possible pairs of means and to identify which T&L methods are different from the rest.

III. RESULTS & DISCUSSION

A. Achievement of OKP for Degree Programme

Figure 1 represents the analysis result for OKP 1 - percentage of degree students graduating on time (GOT) in 2019 and 2020.

Data revealed that the achievement was excellent which is above KPI in which it was 95%, or it reached almost 100% for all four semesters. A high percentage was found in the OL/ODL semesters whereby the percentage hit 100% (Oct 2020 ~ Feb 2021) and 99.8% (March ~ July 2020) respectively.

Meanwhile, for semesters with the F2F learning, the percentage of students GOT decreased from 99.5% (March ~ July 2019) to 98.1% (Sept 2019 ~ Jan 2020). Overall, the change in the T&L delivery method from F2F to ODL is slightly significant in which there is an increase in the percentage of GOT for the Degree students in UiTMCPP. This indicates that they have managed to graduate within the period of study despite the global pandemic situation (Husnayati et.al., 2009).
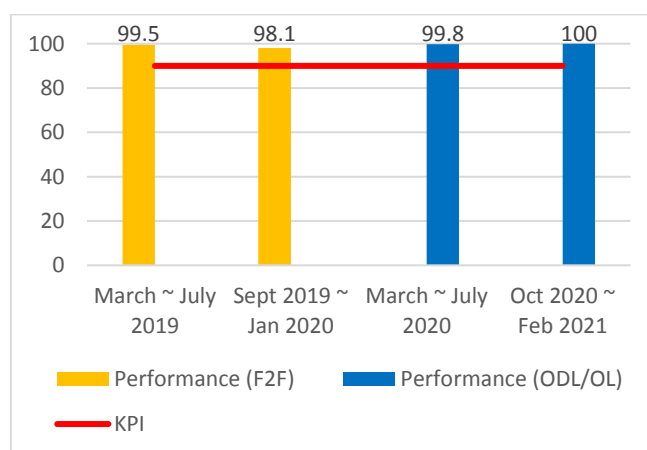

Fig. 1. Comparison of percentage for OKP 1 for Degree programme students in UiTMCPP

Figure 2 illustrates the analysis for OKP 2 - percentage of degree students who graduated with a CGPA of 3.00 and above.

The Semester with the F2F session (March ~ July 2019) displayed the lowest percentage of 77.2%, which is below the KPI. The following semester it increased slightly to 79.7%.

However, there was a reduction of 4.1% from semester (Sept 2019 ~ Jan 2020) to (March ~ July 2020) in the OKP2 when UiTMCPP implemented the ODL session. The researchers identified that the main reason for this drop is due to the inability of students to accept a change in the learning method during the pandemic. It is also influenced by the internet connectivity efficacy, internet reliability, internet data limitation, device limitation, and also students' commitment and discipline (Mahiswaran et.al., 2020; Wahab et. al., 2021).

However, the OKP 2 increased drastically by 12.8% comparatively in the second semester (Oct 2020 ~ Feb 2021). It can be concluded that the students have slowly adapted to the ODL scenario. Besides, several programmes were held by the government, MOHE, NGO, UiTM, and private sectors, such as cash, data plan, device/laptop assistance and so much more as other factors that contributed to student learning improvement.
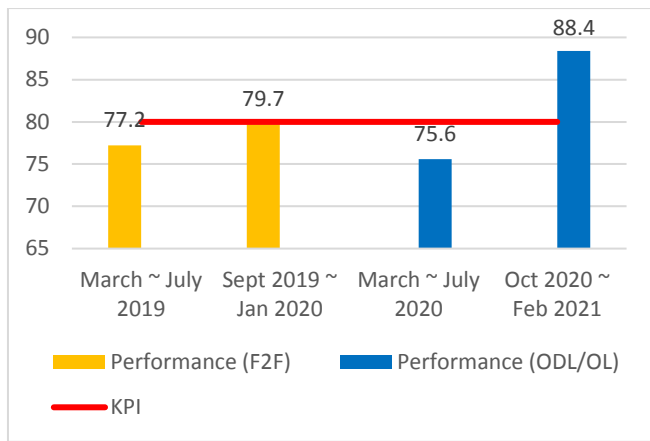
Fig. 2. Comparison of percentage of OKP 2 for Degree programme students in UiTMCPP

Figure 3 shows the analysis result for OKP 3 - students who achieved the Vice Chancellor's Award (ANC) upon graduation. It is an award given to students who achieved the Dean's List for the whole semester throughout their study. The figure shows that the percentage for all semesters was above the KPI.

There was a sharp increase of 7.7% between the two sessions that implement the F2F approach (March ~ July 2019 and Sept 2019 ~ Jan 2020). On the other hand, during the ODL implementation (March ~ July 2020) it can be clearly seen that the percentage initially dropped drastically from 10.8% to 3.6%. Nevertheless, it gained its momentum in the following semester (Oct 2020 ~ Feb 2021) in which the percentage increased by 3.5%. The success factors that led to the excellent student's academic achievement were due to the support from lecturers, peers, and family (Muhammad Hakimi Tew Abdullah et al., 2022).
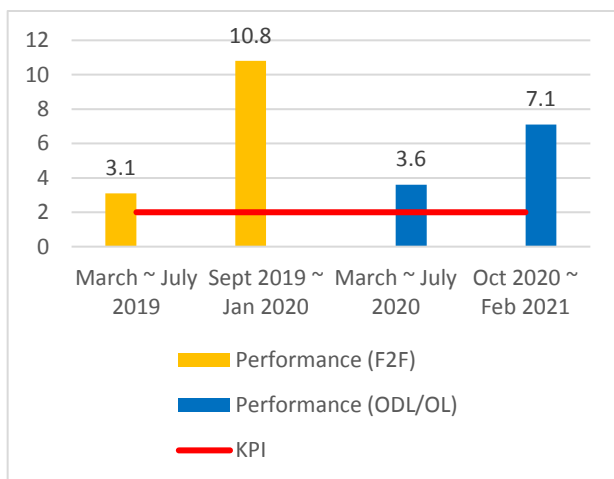

Fig. 3. Comparison of percentage of OKP 3 for degree programme students in UiTMCPP

Figure 4 displays the analysis result for OKP4 - student who graduated with a Dean's Award (AD).

There was an increase of 1.9% between the two semesters that carried out the F2F session (March ~ July 2019 and Sept 2019 ~ Jan 2020). However, the percentage increased drastically during the transition period from F2F to ODL, which is approximately 23.7% (from 17.2% to 40.9%). This is because the overall assessment which was initially 40% (coursework) and 60%(final examination) during the F2F session was changed to 100% coursework during the ODL session (March ~ July 2020).

However, there was a slight drop of 3.2% from 40.9% (March ~ July 2020) to 37.7% in Oct 2020 ~ Feb 2021. The drop could be the result of the changes of certain policies by UiTM to avoid imitation and plagiarism among the students (Polisi Pentaksiran Akademik UiTM, 2021; Hanim et.al., 2021).
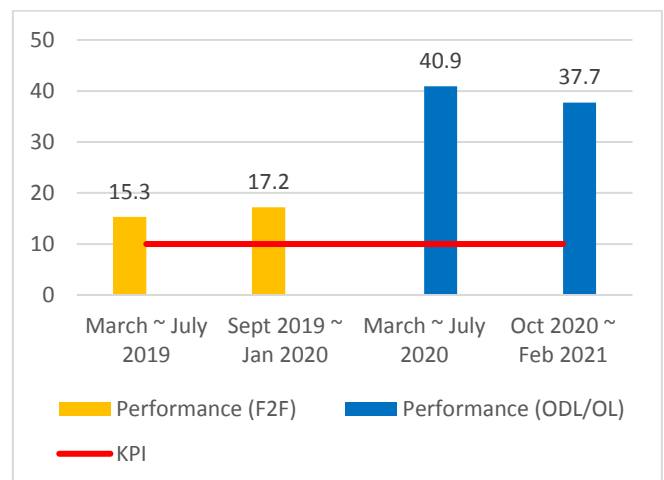

Fig. 4. Comparison of percentage for OKP 4 for degree programme students in UiTMCPP

Table 2 shows a summary of descriptive data on the percentage of students' achievement in the year 2019 and 2020 according to the five (5) OKPs listed in this study instrument. It also demonstrates the comparison of achievement for the degree programme between 2019 and 2020 based on the four (4) OKPs evaluated in the study instrument.

Table 2: Percentage of achievement for Degree programme students in UiTMCPP in 2019 and 2020.

OKP OKP	Semester			
	F2F		ODL/OL	
	March ~ July 2019	Sept 2019 ~ Jan 2020	March ~ July 2020	Oct 2020 ~ Feb 2021
OKP 1	99.5	98.1	99.8	100.0
OKP 2	77.2	79.7	75.6	88.4
OKP 3	3.1	10.8	3.6	7.1
OKP 4	15.3	17.2	40.9	37.7

B. Achievement of OKP for Diploma Programme

Figure 5 represents the analysis result for OKP 1 - percentage of diploma students graduating on time (GOT) in 2019 and 2020.

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There was a sharp decrease of 14.6% in the achievement of OKP1 between the (March ~ July 2020) and (Oct 2020 ~ Feb 2021) semesters.

One of the reasons is due to the increase in the number of weak students (PTMS) in Oct 2020 ~ Feb 2021 from semester 1 to semester 5 as shown in Fig. 7 as compared to the PTMS students in the previous semester (Mac ~ July 2020) as shown in Fig. 6. Generally the PTMS students have a CGPA of less than 2.5 in which they have to resit for many subjects. This results in not graduating on time (GOT).
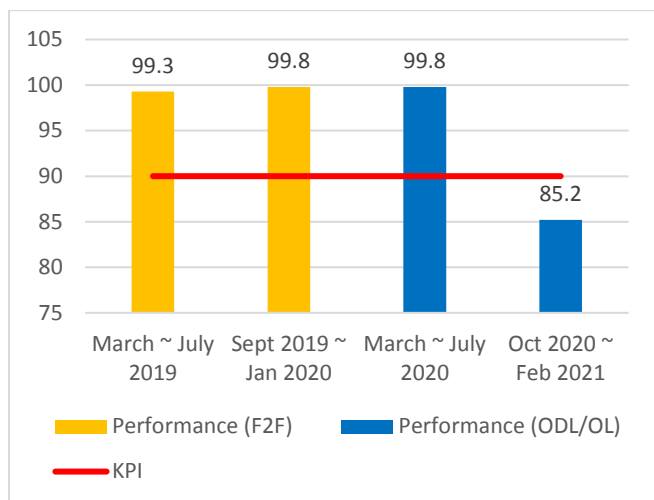

Fig. 5. Comparison of percentage of OKP 1 for diploma programme students in UiTMCPP
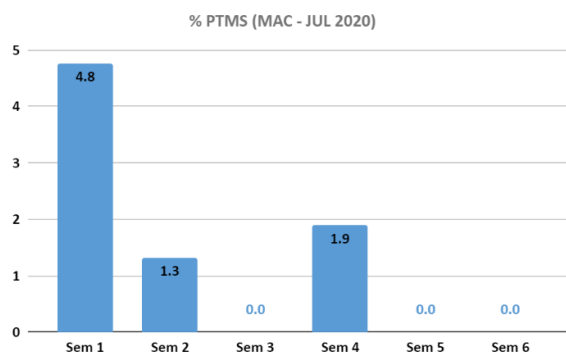

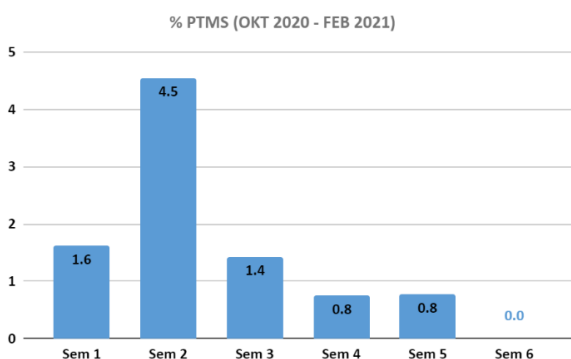Fig. 6 Percentage of PTMS student for Mac ~ July 2020

Fig. 7 Percentage of PTMS students for Oct 2020 ~ Feb 2021

Figure 8 reveals the analysis result for OKP2 - students graduating with CGPA 3.00 and above. The graph shows a

decrease of 1.5% during the ODL method, which is from 95.4% (March ~ July 2020) to 93.9% (Oct 2020 ~ Feb 2021). In contrast, there was an increase of 4.1% during the F2F sessions.

Nevertheless, when comparing the same cohort intake, that is for semester Sept 2019 ~ Jan 2020 (F2F) and Oct 2020~Feb 2021 (ODL), the achievement for OKP2 increased slightly by 1.3%. Generally, though the method of delivery changed from F2F to ODL, there was an increase in OKP2.
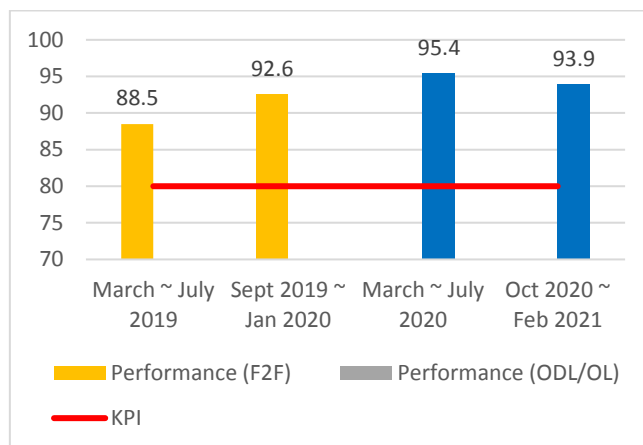

Fig.8. Comparison of percentage of OKP 2 for diploma programme students in UiTMCPP

Figure 9 is an analysis result for OKP3 - students graduating with a Vice Chancellor's Award (ANC). The achievement is rather uniform, which is 11.5%, 12.1%, 12.0% and 14.2% respectively. Overall, though the method of delivery has been changed from F2F to ODL, there is no significant changes in OKP 3.
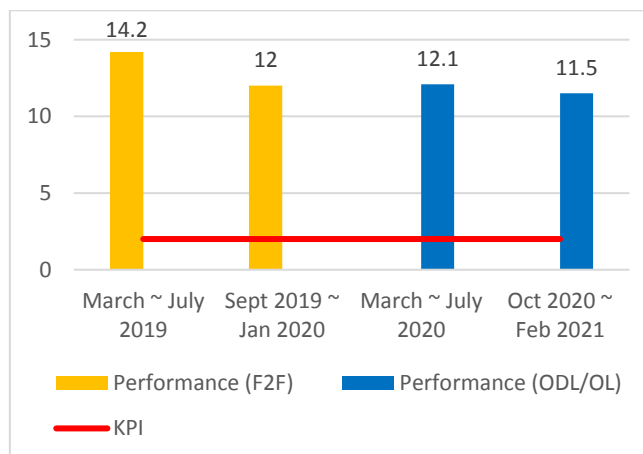

Fig.9. Comparison of percentage of OKP 3 for diploma students in UiTMCPP

Figure 10 illustrates the analysis result for OKP 4 - students graduating with a Dean's List (AD. There is an increase from 53.1% (Mac ~ July 2020) to 56.5% (Oct 2020~Feb2021). Meanwhile, for the F2F session, the achievement for OKP4 was 19.4% (Mac~July 2019) to 22.9% (Sept 2019 ~ Jan 2020).
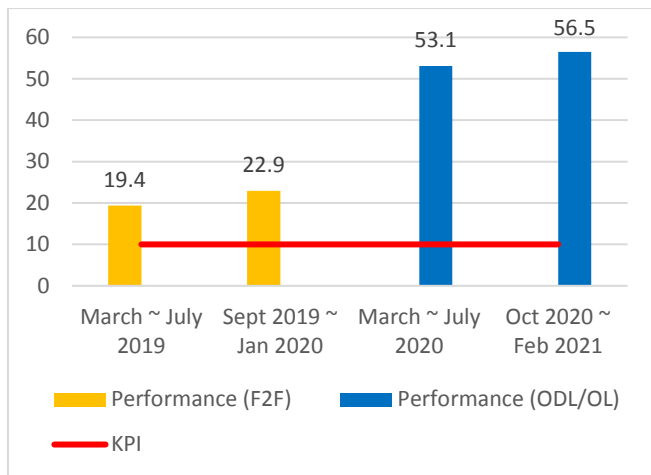
Fig. 10. Comparison of percentage for OKP 4 for diploma students in UiTMCPP

Table 3 illustrates the comparison of achievement for diploma students between years 2019 and 2020 based on the five (5) OKPs evaluated in this study.

Table 3: Percentage of achievement for Diploma programme students in UiTMCPP in 2019 and 2020.

OKP OKP	Semester			
	F2F		ODL/OL	
	March ~ July 2019	*Sept 2019 ~ Jan 2020*	*March ~ July 2020*	*Oct 2020 ~ Feb 2021*
OKP 1	99.3	99.8	99.8	99.8
OKP 2	88.5	92.6	95.4	95.4
OKP 3	14.2	12.0	12.1	12.1
OKP 4	19.4	22.9	53.1	53.1

C. Statistical Analysis for OKP4

The OKP4 (10% of full-time students achieving the Dean's Award (AD) upon graduation every year) presented in Table 2 and Table 3 revealed a drastic increase between the transition of F2F and ODL learning methods for both the Degree and Diploma programmes. The statistical analysis of ANOVA and Tukey HSD tests were conducted to evaluate the significant difference between the learning methods and students' achievement.

The ANOVA test found that OKP 4 has a probability value, p-value less than 0.05. Therefore, the statistical analysis rejects the null hypothesis, Ho. The hypotheses used are as follows:

H_o: $\mu1 = \mu2 = \mu3 = \mu4$ (There is no difference between semesters)
H_1: There are differences between semesters

Hence, the ANOVA test has revealed that students' achievement varies significantly between semesters.
Furthermore, a Post-Hoc Test was conducted to find out the specific groups (semesters) which were significantly different.

Table 4 and 5 show the summary obtained from the Tukey HSD test for the Degree and Diploma programmes respectively. The Tukey HSD test shows two groups in which the mean values were significantly different from each other. The mean value for the F2F method ranged from 16.943 to 27.873, whilst the ODL method was in the moderate range, varying between 48.143 to 56.187.

Table 4: Tukey HSD for Degree students

Sem	Subset for alpha = 0.05		
	N	*1*	*2*
Mar - Jul 2019 (F2F)	7	16.943	
Sept - Jan 2020 (F2F)	7	20.571	
Mar - Jul 2020 (OL/ODL)	7		48.143
Oct - Feb 2021 (OL/ODL)	7		48.857

Table 5: Tukey HSD for Diploma students

Sem	Subset for alpha = 0.05		
	N	*1*	*2*
Mar - Jul 2019 (F2F)	15	23.400	
Sept - Jan 2020 (F2F)	15	27.873	
Mar - Jul 2020 (OL/ODL)	15		54.547
Oct - Feb 2021 (OL/ODL)	15		56.187

It can be concluded that the ODL method of presenting students' performance has increased in line with the development of digitization in T&L and the impact of lifelong learning (Wahab, 2021). This shows that students' performance and Dean's List Award(AD) is influenced by the learning method.

IV. CONCLUSION

This paper reveals the significance of the ODL method towards students' performance. The findings of this study found that the acceptance level of ODL among students is moderate. Students have managed to GOT within the stipulated period. Most of them improved their CGPA in the second semester of ODL, and the changes in assessment also influenced their academic performances. However, from the results, a minority of students were unable to manage their studies through the ODL method thus resulting in an increase in the number of students with a CGPA below 2.5. This category of students require special attention and treatment in their learning process. Overall, ODL has significantly improved the T&L achievement in UiTMCPP for both the Diploma and Degree programmes.

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