M-Track: Progress Tracking System for MOOC Development

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ABSTRACT

In 2014, the Ministry of Education initiated Massive Open Online Course (MOOC) pilot project at public universities in Malaysia. Universiti Teknologi MARA (UiTM) was selected among three public universities to develop the university's own MOOC. This pilot project is one of the initiatives by the Malaysian government to support the ninth shift of Malaysia Education Blueprint 2015 – 2025 (Higher Education): Globalized Online Learning, which is introduced to achieve the desired outcomes set by the National e-Learning Policy (*Dasar e-Pembelajaran Negara* or DePAN). All MOOCs are now available on the Open Learning platform and offered throughout the year. It is a huge task indeed to manage and monitor simultaneous MOOC development in all UiTM faculties and state campuses. Thus, a tracking system to monitor the progress of MOOC development by lecturers called the M-Track System was designed. This paper explains how the system was developed and implemented. The system facilitates e-learning administrators to monitor the quality of MOOC at all 26 faculties and 12 UiTM campuses throughout Malaysia before there were offered to the public.The system can generate several types of report and this ensures the duration of MOOC development is adhered to. The target users of the system are the MOOC developers, MOOC Coordinators, MOOC Managers at the institution and anyone who wishes to develop MOOC.

Keywords: MOOC tracking, MOOC development, MOOC monitoring, MOOC reporting

INTRODUCTION

The ninth shift of the Malaysia Education Blueprint 2015 – 2025 by Ministry of Higher Education (2015) focussed on Globalized Online Learning, which was introduced to achieve the desired outcomes set by the National e-Learning Policy (*Dasar e-Pembelajaran Negara* or DePAN). This initiative has brought about many changes in the development of online courses in Malaysian universities. Massive Open Online Course (MOOC) was part of the main agenda to transform higher education in Malaysia. MOOC has changed the perspective on higher education and helped focus attention on the teaching and learning process on campuses. Creating MOOCs gave way to experiment with blended learning (Holotescu, Grosseck, Cretu & Naaji, 2014; Gynther, 2016), flipped learning (Slomanson, 2014; Dix, 2016) and student mobility projects (Verbeken, Truyen, & Baetens, 2014) that are well-researched strategies for improving active learning in particular courses. For learners who are seeking skills, MOOC also provides an opportunity for low-cost training and self-learning for anyone interested. MOOC Credit Transfer is also made available for students.

Universiti Teknologi MARA (UiTM), Universiti Kabangsaan Malaysia (UKM) and Universiti PUTRA Malaysia were the three public universities involved in the pilot Massive Open Online Course (MOOC) project initiated by the Ministry of Education in 2014. The journey of MOOC development in UiTM did not stop at the pilot MOOC in 2014. After the success of 1 MOOC developed in 2014, 3 MOOCs were developed in 2015 and later, an addition of 13 MOOCs were developed in 2016. All these 17 MOOCs are now available at https://www.openlearning.com/uitm and open to all throughout the year. In 2017 through the Vice Chansellor's 2017 New Year Mandate, a new target was set, and the university was given the task to develop 450 MOOCs for the year 2017. This project was called MOOC450. There was indeed a drastic change in the approach of MOOC development in UiTM then.With this new target, the Department of e-Learning Technology at Institute of NEO Education (iNED) UiTM which was in charge of all e-learning activities for the university, needed to identify an approach that could manage and monitor the simultaneous MOOC development in all UiTM faculties and state campuses. Creating MOOC is not an easy task but managing MOOC development is even more challenging especially when 26 faculties and 12 UiTM campuses throughout Malaysia are involved (Anealka and Harrinni, 2017). Hence the development of M-Track System was very timely.

STAGES OF MOOC DEVELOPMENT

The first step of MOOC development in UiTM began with a selection of courses to be developed by each faculty. MOOC developers have to check for available courses that they can develop through another system called the *Semakan Kod* (SEMKOD) System, which was developed by Institute of Neo Education (iNED) in UiTM. This system can be accessed by all UiTM staff through a staff portal via the university's Learning Management System (LMS). This process will ensure that there is no duplication of MOOC for the same code as only one MOOC can be developed for a course.

Once a course was determined, MOOC developers can book a place in a MOOC Development Workshop by checking the online training system, SysiLearn System. Developers could sign up for related workshop that offered modules like storyboard development.

Next, the development of various MOOC materials takes place which include course content, instructional videos, activities and assessment items. Once ready, these materials are uploaded to MOOC platform, the Open Learning platform. In order to ensure the quality of MOOC materials, a test run and evaluation of MOOC will take place. Once the complete MOOC is available in the Open Learning platform, changes can still be made based on the suggestions before the MOOC is ready to be offerred (i-Learn Centre, 2016).

The process of MOOC development is straightforward and may be similar to the process adopted by other institutions. However, what makes MOOC development in UiTM different is the number of MOOCs, location of the developers and the timeline given for the MOOC450 project. Since the MOOC450 project is a university project, report on the development progress of all MOOCs need to be submitted on a monthly basis (Anealka and Harrinni, 2017).

PURPOSES OF M-TRACK

M-Track was designed and developed to ensure the basic requirement of UiTM MOOC is adhered to before it is offered to the public. Since the university was given 1 year to develop 450 MOOCs in 2017, the duration of MOOC development was the top priority in ensuring the completion of the MOOCs. Many parties were involved. The administrators, who have to monitor the progress of MOOC development at the faculty or campus level who are referred to as MOOC Managers and MOOC Coordinators, were given the task to monitor the developers. Each MOOC can be developed by at least one person but up to a maximum of six. The developers are mostly the Resource Person for the course. Lecturers teaching the course can also participate in the development of the course. For some courses, developers were among lecturers from two or three different state campuses. This team-based approach to developing learning environments allows each subject matter specialist to

contribute according to their expertise. In this way, lecturers no longer teach in solo and embrace a community-based effort that can ultimately open their minds to ways to apply team-based approaches to environments beyond MOOCs (Gangopadhyay, 2015).

Therefore the main objectives of M-Track are

- to assist MOOC administrators to monitor the development of MOOC for the university.
- to ensure the basic requirement of MOOC development is adhered to.
- to generate report to track the progress of MOOC development.

The M-Track System also enable users to choose the types of report to be generated.

- Individual reports for individual course
- Group report for faculty/campus
- Overall report on the whole MOOC project

THE FLOW OF THE M-TRACK SYSTEM

The M-Track System was developed to monitor the progress of MOOC development by MOOC developers of the project from all faculties and state campuses in UiTM. As the project required 450 MOOCs to be developed, a simple monitoring system with minimum human intervention was required. Figure 1 shows the flow of the system.

The flow begins with the person in charge (PIC) who would check the availability of the course to be developed as MOOC based on the application received. If the course is available to be developed as a MOOC, the PIC will reserve the course and create access password to the team leader to enter the M-Track System. The team leader will access the system and provide consent to the terms and conditions related to MOOC development. If agreed, a letter of appointment will be generated automatically. If the team leader disagrees, the system will automatically make the course available to other interested applicants and revoke the access password.

After the issuance of the digital appointment letter, the team leader can begin developing the MOOC with the team members. Generally, there are two major parts in the MOOC, the landing page and the content page. The team member needs to update the progress monthly until the completion of the MOOC development. Upon reaching 100% completion, the system will automatically mark the MOOC ready for the next stage, the evaluation process.

BASIC REQUIREMENTS OF MOOC DEVELOPMENT IN THE M-TRACK SYSTEM

The development of UiTM MOOC is adapted from the Guidelines of Malaysia MOOC Development and Delivery by the Ministry of Education (2017). There are two main parts: the landing page and the content page. The landing page of UiTM MOOC consists of these components: a montage, an introductory video, course synopsis, list of modules, course learning outcomes, pre-requisite knowledge, duration of the course, issuance of badges and certificates and a link to the MOOC. The M-Track System integrates all the components in the calculation of the progress of MOOC development. The system displays a monthly progress of the development.

Figure 2 shows a progress of a landing page development for a MOOC. The MOOC started to be developed in May 2017 and some components of the landing page were completed in June 2017. Date of completion for each component is also stated in the system. Having this feature in the system enables the MOOC developers to check whether they have included all the mandatory information.

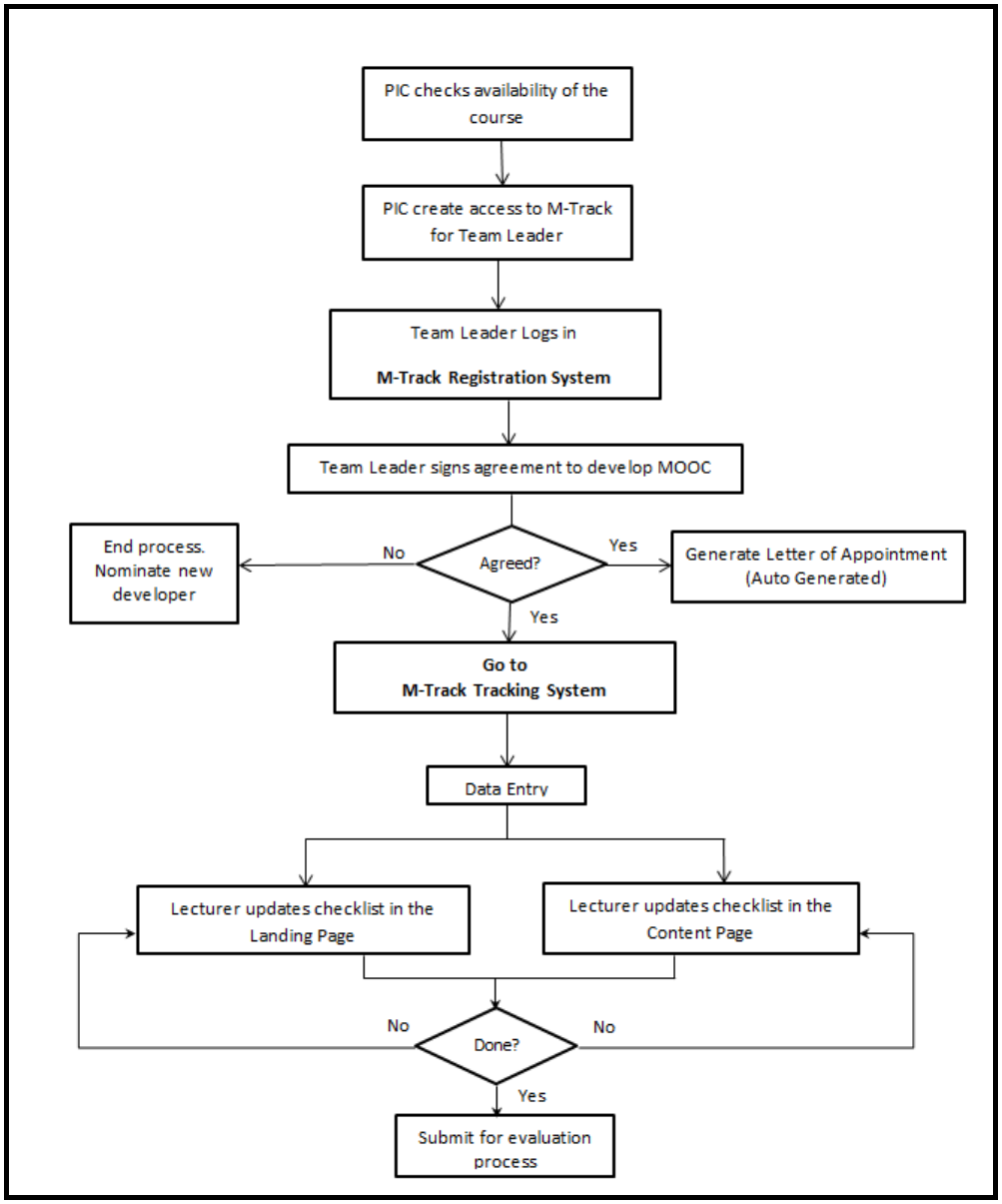
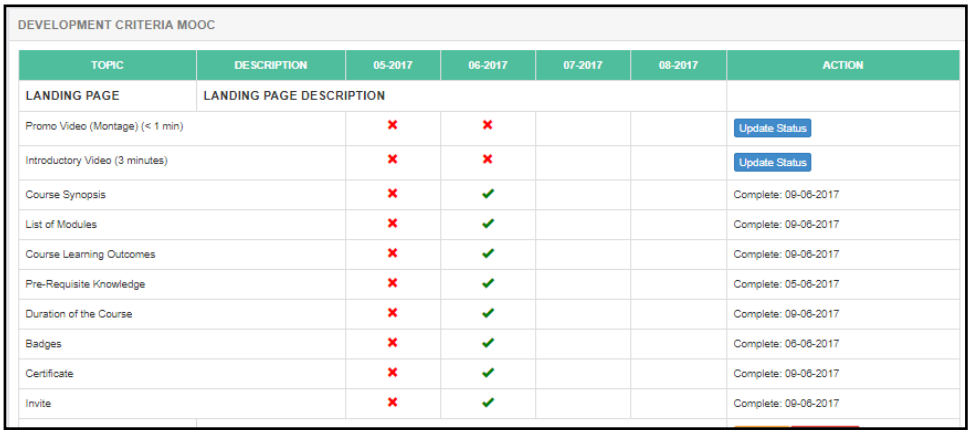


Figure 1: The Flow of the MOOC Tracking System (M-Track)



DEVELOPMENT CRITERIA MOOC

TOPIC	DESCRIPTION	05-2017	06-2017	07-2017	08-2017	ACTION
LANDING PAGE	LANDING PAGE DESCRIPTION					
Promo Video (Montage) (< 1 min)		✗	✗			Update Status
Introductory Video (3 minutes)		✗	✗			Update Status
Course Synopsis		✗	✓			Complete: 09-06-2017
List of Modules		✗	✓			Complete: 09-06-2017
Course Learning Outcomes		✗	✓			Complete: 09-06-2017
Pre-Requisite Knowledge		✗	✓			Complete: 05-06-2017
Duration of the Course		✗	✓			Complete: 09-06-2017
Badges		✗	✓			Complete: 06-06-2017
Certificate		✗	✓			Complete: 09-06-2017
Invite		✗	✓			Complete: 09-06-2017

Figure 2 : Components of a Landing Page

The content page of the UiTM MOOC consists of three sub-topics (contents), activities, assessments and links to other resources. The content page can be added to match the number of topics to be developed as MOOC. The M-Track System integrates all the components in the calculation of the progress of MOOC development. The system displays a monthly progress of the development. Figure 3 shows a progress of one of the topics in the MOOC. It can be seen that, the MOOC developer managed to complete the topic learning outcome, the first sub-topic, 2 activities and added 2 links to other resources related to the topic in June 2017.

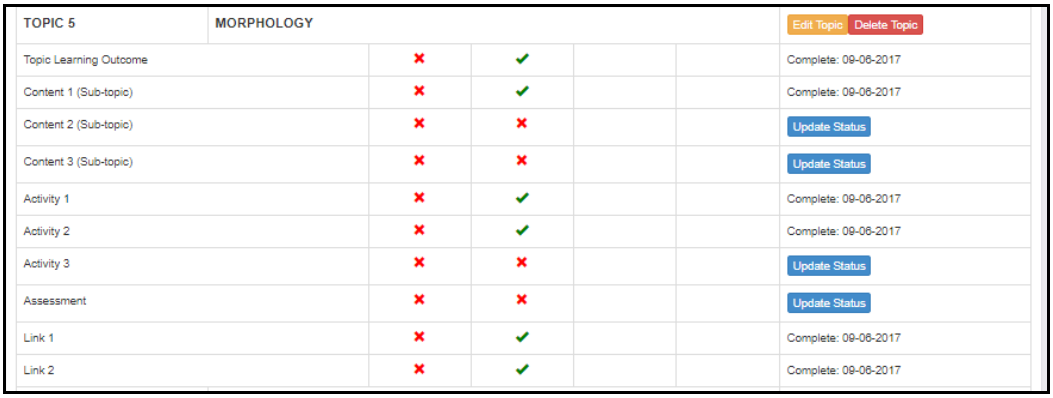


Figure 3: Components of a Content Page

TYPES OF PROGRESS REPORT GENERATED BY THE M-TRACK SYSTEM

There are three types of progress report generated by the system: the individual progress for MOOC developers, the group progress for the faculty / campus administrators and overall project progress for UiTM MOOC administrator. Both the individual and group progress reports are generated automatically by the system, while the overall project progress can be generated by the system administrator.

Figure 4 shows an individual progress report of a MOOC. This report displays the faculty/ campus that owns the MOOC, the course code, the course title, the MOOC URL, the group leader's ID, the dates on which the MOOC development begins and ends. It also displays the list of topics to be developed and the progress development of each topic in the form of of percentages. The MOOC developer can have a quick check on the topics that need more attention.

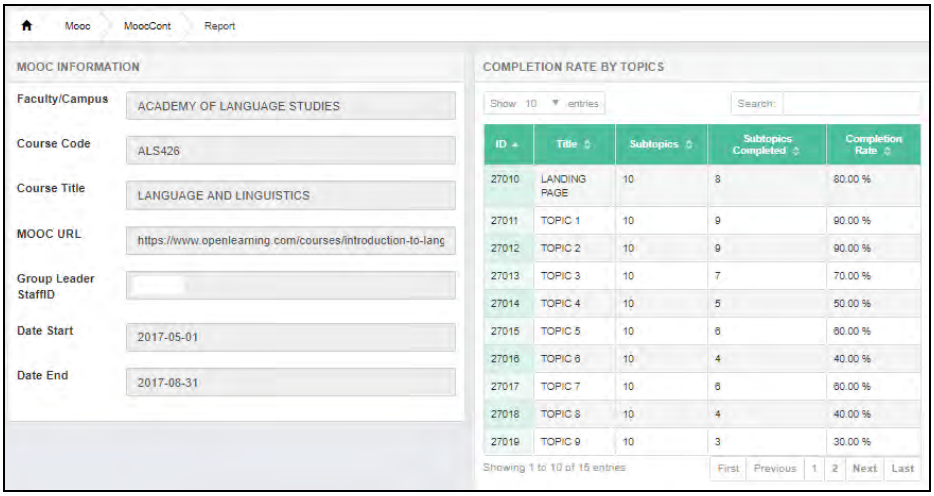


Figure 4: Individual Report 1

Figure 5 shows another format of individual report. The bar chart shows the completion rate of the development for every topic, while a pie chart shows the overall completion rate of the MOOC being developed.

Figure 5: Individual Report 2

Figure 6 shows the progress report for the faculty / campus administrator. The bar chart shows the progress of the different MOOCs owned by the faculty / campus. The pie chart shows the overall progress of all MOOCs owned by the faculty / campus.

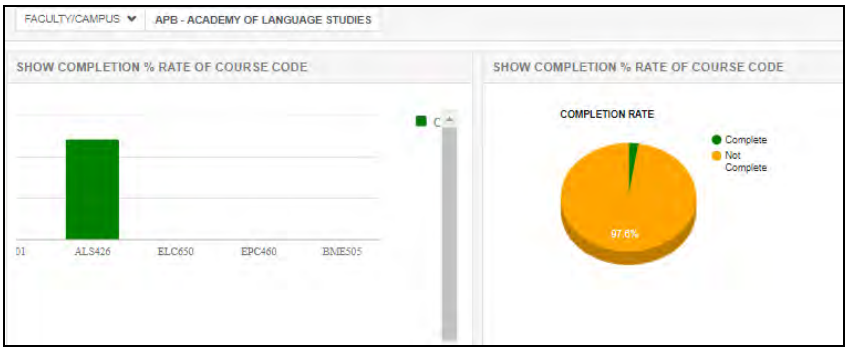
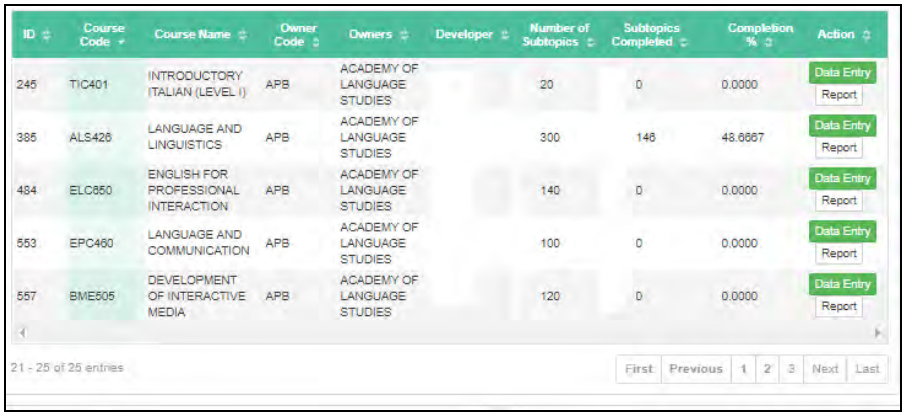


Figure 6 : Progress Report for Faculty / Campuses

Figure 7 is another format of group report. More information can be found in this format such as the list of course codes and course titles, the total number of sub-topics and completed sub-topics and the completion rate. Information in this report enables the MOOC administrator at the faculty / campus to remind the MOOC developers to update their progress in M-Track System or complete the remaining parts of the MOOC which are incomplete.



ID	Course Code	Course Name	Owner Code	Owners	Developer	Number of Subtopics	Subtopics Completed	Completion %	Action
245	TIC401	INTRODUCTORY ITALIAN (LEVEL I)	APB	ACADEMY OF LANGUAGE STUDIES		20	0	0.0000	Data Entry Report
385	ALS426	LANGUAGE AND LINGUISTICS	APB	ACADEMY OF LANGUAGE STUDIES		300	146	48.6667	Data Entry Report
484	ELC650	ENGLISH FOR PROFESSIONAL INTERACTION	APB	ACADEMY OF LANGUAGE STUDIES		140	0	0.0000	Data Entry Report
553	EPC460	LANGUAGE AND COMMUNICATION	APB	ACADEMY OF LANGUAGE STUDIES		100	0	0.0000	Data Entry Report
557	BME605	DEVELOPMENT OF INTERACTIVE MEDIA	APB	ACADEMY OF LANGUAGE STUDIES		120	0	0.0000	Data Entry Report

21 - 25 of 25 entries

First Previous 1 2 3 Next Last

Figure 7: Overall Progress Report for Faculty / Campus in UiTM

The system administrator can extract the whole M-Track information and export it to Microsoft Excel. Various reports can be generated from the data based on the objectives of the report. Table 1 shows the overall project development. The faculties and name of the campuses, the number of MOOCs being developed and the rate of progress are among the information generated.

Table 1:
The Overall Progress Report of UiTM MOOC Development

No	Fakulti	Bil. MOOC	% Pembangunan
1	AM	11	17.9
2	EE	25	14.4
3	APB	27	10.3
4	MC	12	8.9
5	AD	28	7.4
6	HS	24	6.5
7	EM	17	4.9
8	PH	5	3.0
9	MD	11	2.3
10	IC	16	1.6
11	EC	12	0.5
12	AP	17	0.5
		205	

No	Kampus	Bil. MOOC	% Pembangunan
1	UITM PERAK	39	42.8
2	UITM N.SEMBILAN	32	30.8
3	UITM MELAKA	17	26.4
4	UITM KELANTAN	21	22.9
5	UITM TERENGGANU	23	18.8
6	UITM KEDAH	22	13.2
7	UITM JOHOR	22	12.8
8	UITM P.PINANG	15	11.9
9	UITM SARAWAK	22	11.4
10	UITM PAHANG	15	3.5
11	UITM SABAH	18	2.3
12	UITM PERLIS	35	2.2
		281	

Figure 8 shows the overall progress of the MOOC project. It shows the number of MOOC at different progress rates. This information helps the UiTM MOOC administrator to report the MOOC progress for the top managemet.

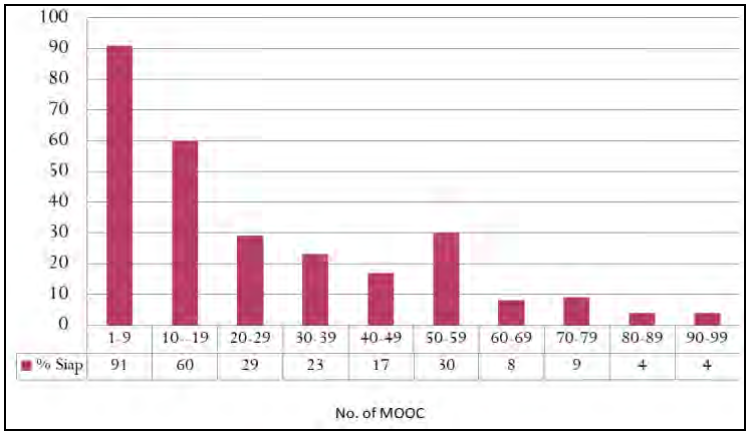


Figure 8: The Number of MOOCs and the Rate of Progress

CONCLUSION

Monitoring MOOC development for 24 faculties and 12 state campuses is not an easy task. Having to adhere to the deadlines given to develop 450 MOOCs in 2017 was what brought M-Track system to the frontline. This monitoring system makes the process of tracking the development of MOOC easier and more efficient. Getting a report from MOOC developers from the faculties and state campuses and ensuring all of the required components of MOOC are provided, can be done in seconds. M-Track System is available online and can be accessed by respective parties. It has been used since 2017 and is still being used today. It has indeed helped UiTM administrators to monitor MOOC development progress in UiTM. As at the moment, UiTM has over 500 MOOCs developed and open to public.

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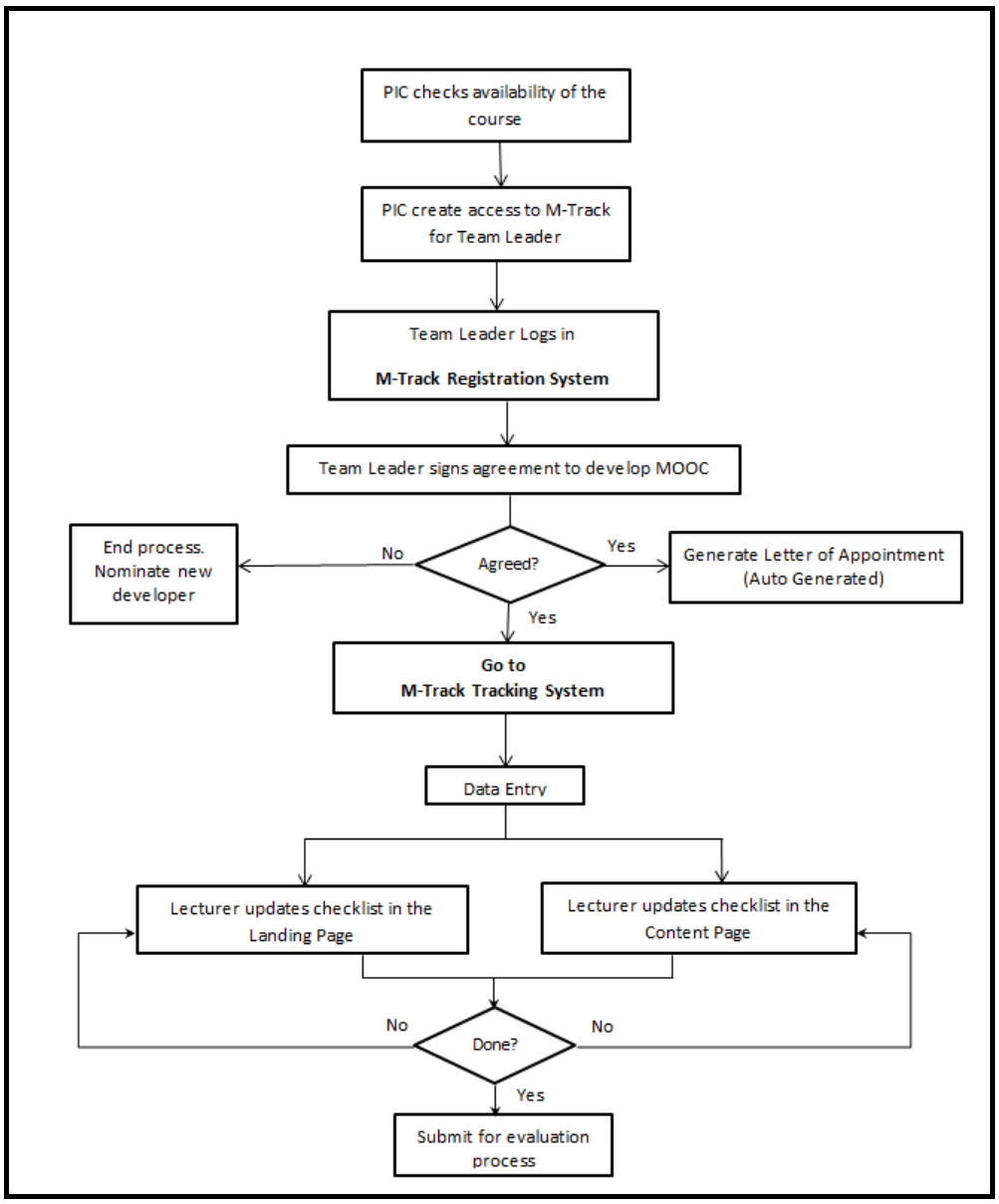
FIGURES



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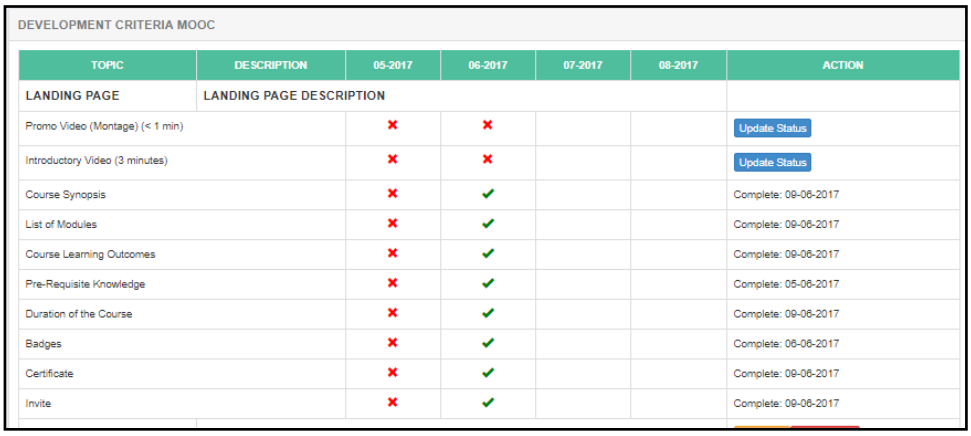
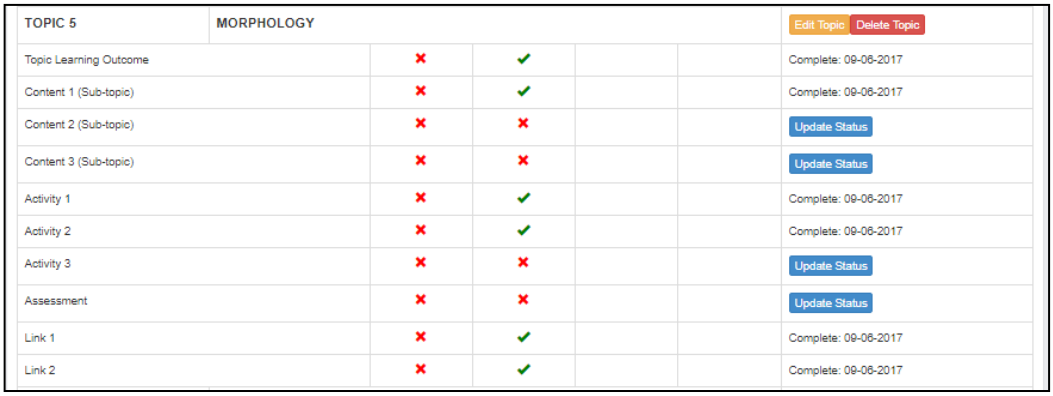


DEVELOPMENT CRITERIA MOOC

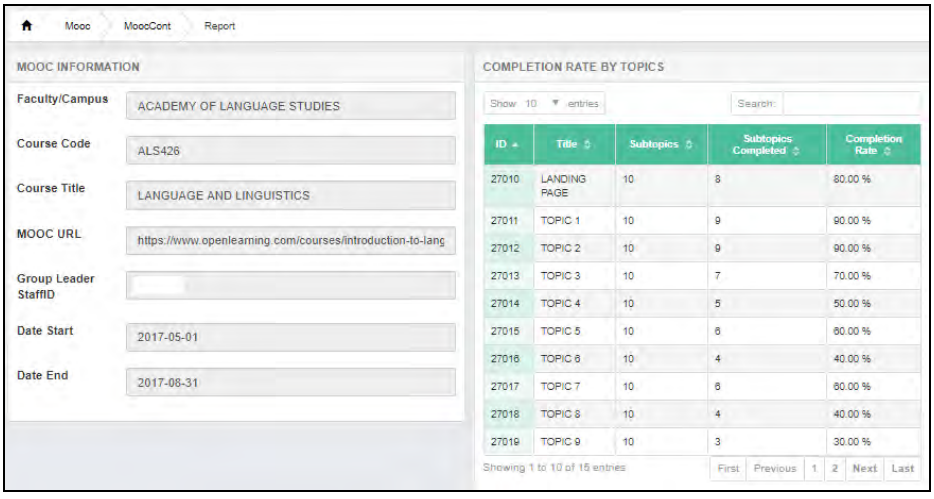
TOPIC	DESCRIPTION	05-2017	06-2017	07-2017	08-2017	ACTION
LANDING PAGE	LANDING PAGE DESCRIPTION					
Promo Video (Montage) (< 1 min)		✗	✗			Update Status
Introductory Video (3 minutes)		✗	✗			Update Status
Course Synopsis		✗	✓			Complete: 09-06-2017
List of Modules		✗	✓			Complete: 09-06-2017
Course Learning Outcomes		✗	✓			Complete: 09-06-2017
Pre-Requisite Knowledge		✗	✓			Complete: 05-06-2017
Duration of the Course		✗	✓			Complete: 09-06-2017
Badges		✗	✓			Complete: 08-06-2017
Certificate		✗	✓			Complete: 09-06-2017
Invite		✗	✓			Complete: 09-06-2017

Figure 2 : Components of a Landing Page



TOPIC 5	MORPHOLOGY					Edit Topic / Delete Topic
Topic Learning Outcome		✗	✓			Complete: 09-06-2017
Content 1 (Sub-topic)		✗	✓			Complete: 09-06-2017
Content 2 (Sub-topic)		✗	✗			Update Status
Content 3 (Sub-topic)		✗	✗			Update Status
Activity 1		✗	✓			Complete: 09-06-2017
Activity 2		✗	✓			Complete: 09-06-2017
Activity 3		✗	✗			Update Status
Assessment		✗	✗			Update Status
Link 1		✗	✓			Complete: 09-06-2017
Link 2		✗	✓			Complete: 09-06-2017

Figure 3: Components of a Content Page



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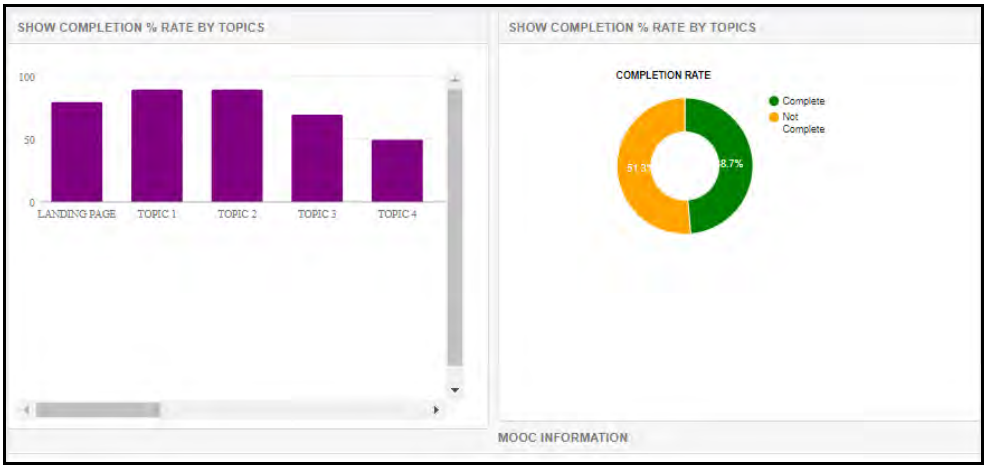


Figure 5 : Individual Report 2

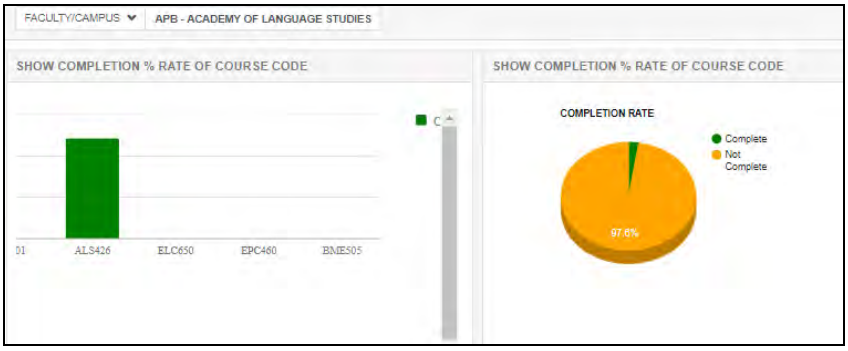
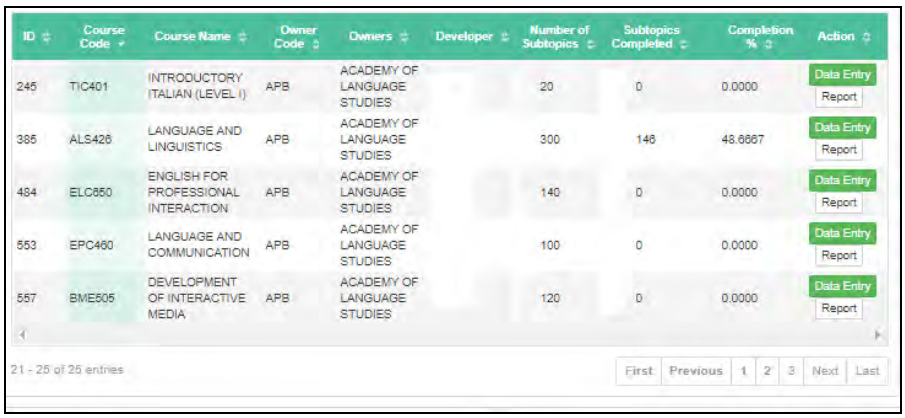


Figure 6: Progress Report for Faculty / Campuses



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557	BME505	DEVELOPMENT OF INTERACTIVE MEDIA	APB	ACADEMY OF LANGUAGE STUDIES		120	0	0.0000	Data Entry / Report

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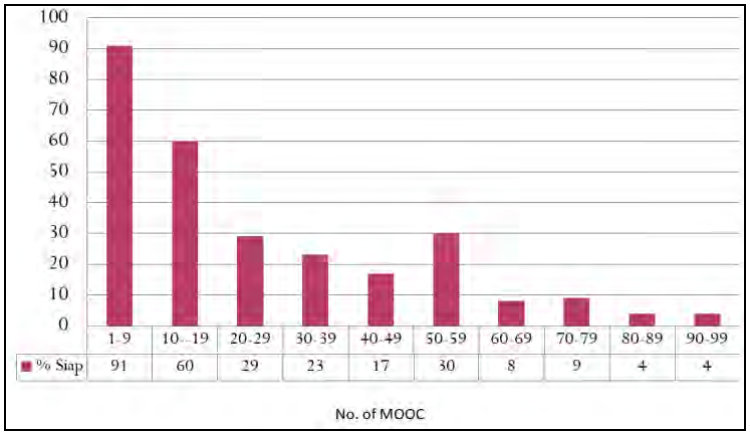

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11	EC	12	0.5
12	AP	17	0.5
		205	

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5	UITMTERENGGANU	23	18.8
6	UITM KEDAH	22	13.2
7	UITM JOHOR	22	12.8
8	UITM P.PINANG	15	11.9
9	UITM SARAWAK	22	11.4
10	UITM PAHANG	15	3.5
11	UITM SABAH	18	2.3
12	UITM PERLIS	35	2.2
		281	