

A case study on 360 Degree Evaluation of Programme Performance Indicators to Enrich Student Learning Experience at Middle East College

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Abstract

The purpose of this study is to explore the programme performance indicators so that the student experiences on teaching and learning can be enhanced at Middle East College(MEC). Improving the quality of education depends on the different parameters. Determining the objective for each indicator that measure the performance levels of students is necessary for maintaining quality assurance. In order for the department to maintain high standards, administrators and faculty members must identify all the performance indicators. The programme management team has set the action strategies to achieve the performance indicators based on the programme objectives. This research paper captures the action strategies implemented in the programme and a complete review of those activities to analyse the program performance which could be used for all education institution.

Keywords : *Framework, Blended Learning, Technology, Virtual Reality, Employability.*

1. Introduction

The AY 2020-21 was very crucial for the programme team as we rolled out the new programme, while all other programmes were suspended. Though the team was very happy to bear the fruit of hard work rendered in developing the new programme infused with all possible flavors of success, but did not forget the associated challenge of meeting the closure of 3 active programmes and hence the plan, approaches, and vigor to gear up to success was evident throughout the academic year to meet up the standards and performance indicators in line with the vision, mission and strategic plan of MEC is highlighted in this report.

The primary focus for AY 20-21 was to encompass the new programme by strengthening it in terms of admissions, progression, graduation and employment in addition to the objectives set in the last annual Program Monitoring report(AY 2019-20): to increase the progression percentage by decreasing the students on probation and enhance the employment rate (E1). The achievement of these factors are briefed in this paper.

2. Literature Review

In academic institutions, quality assessment and monitoring of the key performance indicators facilitate a sustainable model to evaluate programmes' quality objectively. Programme performance Indicators are considered the guide values for deciding whether a programme has achieved its goal or not[1].The key indicators for evaluating educational programmes are the teaching and learning activities, the quality of faculties, and the research initiatives [2]. The periodic assessment of academic programmes using the performance indicators supports reshaping the existing programme structure and activities to strengthen the programme's objectives [3]. A study in Australian universities discusses the significance of setting measurable action strategies for achieving the programme performance indicators. The action strategies of academic programmes are linked to teaching and learning, industry engagement, and staff development [4]. Qualitative and quantitative measurement techniques are essential for assessing the outcome of these action strategies to decide the programme's quality and for further planning of academic activities [5]. Furthermore, evaluating programmes using key performance indicators and reframing existing operational plans is essential in achieving the graduate attributes to prepare students for the professional workspace. The theories support the significance of evaluation of programme performance indicators and the knowledge achieved can be converted into an institutional asset and maintained for effective management of academic programmes[6]. A complete evaluation of programme performance indicators also serves as a diagnostic instrument. Furthermore, it aids the programme management team revise the existing quality management framework set for teaching and learning activities by identifying the gaps[7].

3. Focus on Programme Management and Programme Performance Indicators:

Students being actively involved in learning and taking a lead in their own learning are key ideas behind creating meaningful learning experiences.

The main objective of the Programme Management Committee(PMC) is to enhance the Programme Performance Indicators(PPI) and thus the student experience. To achieve this:

- Programme Operational Plan(PoP) focusing on the objectives were created.
- Action plans and targets to achieve the objective were distributed across all the PMC members as measurable goals in the institutional Performance Management system(PMS) based on the competence of the team member.
- A clear understanding on goals is set initially so each member contributes to the success of the PPIs.
- In addition to the measurable goals, the checklist from last academic year covering all the actions to enhance the module performance, stakeholder feedback redressal with action plan and status, industry engagement activities, Research teaching nexus and internationalization was circulated to PMC members before the beginning and at regular intervals in the semester.

These interventions helped the PMC members to start the academic year with a clear direction, with a preset goals and activities to follow up on. The same acted as a guide to prepare module review form and PMR every semester which was always praised by the External Examiners(EE) and Link tutors(E4). In addition, all the new modules were seamlessly delivered through proper planning(from POP) and execution through goals and action plans.

In addition, the academic and professional support members in the PMC were effectively utilized for supporting the PPIs through action plans in PMC meeting 1 and followed up in consecutive meetings. This helped in getting student counselling through Students Success Center(SSC) for decreasing the students in probation, leads on internship through career services, alumni and External Affairs department and tailor made academic workshops from Center for Academic Writing(CAW), seamless support for student enrollment activities from media and communications department etc. through these interventions, the number of students on probation decreased compared to the last academic year, internship numbers increased, there was good response for the student enrollment activities and students assessment submission quality was praised by External Examiners.

Subsequently all PMC meetings carried a brainstorming session where the best practices were discussed and shared across the team. The best practices range from different user-friendly tools adopted during online teaching and learning sessions. The tool OneNote was used for conducting collaborative activities and online compilers were used for programming modules. The tools Jotforms and Google's free and open-source Data set – Kaggle, supported embedding research components in level 2/3 modules. Using GenMymodel for modelling and tools like smart draw, Creately ,Cacoo, socrative, kahoot and Edmodo created a positive impact on module delivery . The use of GitHub supported students in enhancing their practical skills in some of

the theoretical modules in software programmes. The usage of digital badges helps students to promote professional skills. The incorporation of online competitions on business ideas promoted entrepreneurship. All these practices adopted across the programme led to an increase in student satisfaction from the last academic year(Graph1). With these value-added teaching and learning skillsets, the team is positive to face the upcoming challenging academic year ahead.

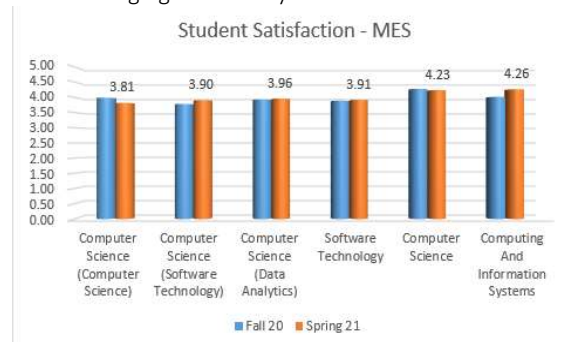


Figure 30 Graph1: Increase in student satisfaction in Module Evaluation Survey

In its simplest terms, enrollment management is “a comprehensive process designed to achieve and maintain the optimum recruitment, retention, and graduation rates of students” (8). Thus, the focus of an enrollment management plan is to look at students from beginning to end, taking into account the student’s entire college career from the admissions process to career placement upon graduation. The success of this type of strategic plan, however, requires the involvement, communication, and collaboration of many different academic and administrative areas within an institution). In short, “any factor that influences a student’s decision to attend or to continue enrolling” (8) is a necessary consideration for an enrollment management team.

4. Student Admissions

With rolling out of new Computer science programme, the other running programmes were discontinued and hence the objective and challenge for this AY in terms of admission, was to ensure to balance the strength of all 5 discontinued B.Sc.s. programmes in the new programme. To achieve this, a comprehensive enrollment management approach was adopted to achieve and maintain the optimum recruitment. Thus the programme team decided to come up with a focused enrollment plan with the involvement of students, different academic and administrative areas within the institution. Accordingly a clear student enrollment plan was drafted. These events were widely publicized and hence the number of participants overall was around 2000 for the whole AY. the participants were distributed with feedback which listed their interest to be contacted to enroll in the programme. The programme team immediately contacted all those interested participants and enlightened them with the

programme highlights and connected them with admissions team in order to make their admission process easier. This effort was appreciated by Media team and also has given rise to 40% more admissions in single new programme compared to 5 BSc programmes(graph2) in the last AY.

Though the admission target is achieved collectively, when we look at individual pathways there is a disparity in the admissions across the three pathways.

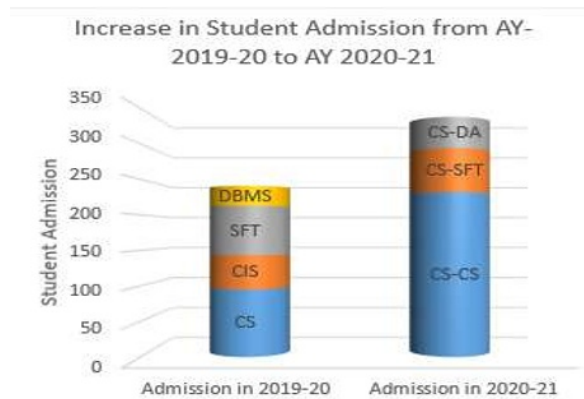


Figure 31 Graph2: Increase in student Admission compared to last AY

CS is the upper hand compared to DA and SFT and hence in the next AY, more focus to be ensured on DA and SFT to obtain a balanced admission trend in all three pathways. In addition to the new intakes, the current students from the discontinued programmes were also seamlessly mapped to the new programme so that they take advantage of the recent trends covered in the new programme. A clear mapping was developed by the DMC which lead to more than 70% of the current students to be migrated to the new B.Sc. – CS, this was a win-win for both programme management and students. This was one of the effective strategies, not done so far for any other programmes at MEC.

5. Teaching and Learning in the Programme

With teaching being completely online in-lieu of the pandemic for the whole AY, the programme team geared to use approaches in line with the institutional teaching and learning strategy focusing on active learning, student led learning and community of learners. The objective of our teaching and learning practices are focused on enhancing the student experience by increasing the progression rate of the programme. To achieve this objective various student led teaching approaches in line with our Institution led flipped learning pedagogy were adopted.

5.1 Student led teaching approaches:

The key objective of Student-led teaching approach is to foster a learning environment where students feel the powerful sense of ownership and creates opportunities for self-direction and ability to explore topics. Mind

Mapping Flipped Teaching Approach is adopted, where all the topics were spread across pre-class, in-class and post – class activities mapping the entire breadth of the topic. Technology based teaching and learning is also adopted where wide range of tools to promote interaction among students such as one-note, Creately, Cacao, socrative, kahoot, Padlet and Edmodo, were deployed in class. In addition, all PMC members were assigned with goals to create new activities conducive to the online environments in their modules and to attend all the teaching and learning workshops organized by CAP and incorporate the learning in the module. Accordingly it was evident from the module review reports that many new activities were created and documented in the PMR. Instructional designs were also practiced, where Alumni/peer mentoring, peer tutoring and peer group discussions based on the need of the topic were organized considering the background of the students. Adaptive learning focusing on new explorations such as cacao, creately, online editors, Jotforms etc. considering the current situation, enlightened the students' interest to pursue the modules without hindrance. Remote lab access with proprietary software and high-end systems were provided for all laboratory modules. In addition digital badges were also introduced to encourage students to participate and benefit from the activities.

5.2 Embedding Cascaded Academic writing skills in the programme:

The following strategy was presented, discussed and followed to incorporate a progressive approach to embed and strengthen the academic writing skills in the programme.

- Year 1: ESP – Workshop on Referencing and Reflective writing
- Year 2: Operating Systems & Cloud – Workshop on Components of research paper
- Year 3: Software Quality Assurance – Workshop on Literature Review
- Year 4: Communication Skills – Workshop on Documenting research findings

They were also analysed at the end of spring 21 to find the effectiveness of the approach, based on the reflection from the ML and EE/LT report, the students have produced excellent report with good quality and published Many research papers(Figure 6Graph4).

5.3 Strengthening the subject expertise of PMC members:

To enhance the subject expertise and prepare for new programme, and to deliver modules according to the industry and professional body standards, A series of staff development were planned and approved in Principles of Programming and incorporated in the PMS of the respective members and followed up interim. Accordingly:

- 29 staff developments were completed among 13 staff. 10 more are in progress to be completed in Summer21. Some of the professional certifications achieved are Google Data Analytics, Block Chain technologies, AWS

Cloud Foundation, Machine Learning Expert, Machine Learning with Python, Data Analysis Using Python, Big Data, Hadoop and Spark Foundations etc.

- 2 PMC members published book chapters
- 3 patents were published.

These certifications and achievements enhanced the staff skill matrix in the programme and aided the new modules being delivered flawlessly.

5.4 Follow up on bottleneck module and increasing progression rate:

In continuation to the action plan of last AY, to reduce the probation percentage and increase the progression rate of the programmes, bottleneck modules were identified at the end of each semester and followed up with effective action plan. Interim status and challenges were also discussed in every PMC meeting until closure of actions. SSC interventions were also sought for extreme cases. The effectiveness of practicing these strategies in the programme is evident through the student satisfaction rate in the MES(Graph2), decrease in the probation rate and increase in the pass percentage rate leading to achieving those PPI.

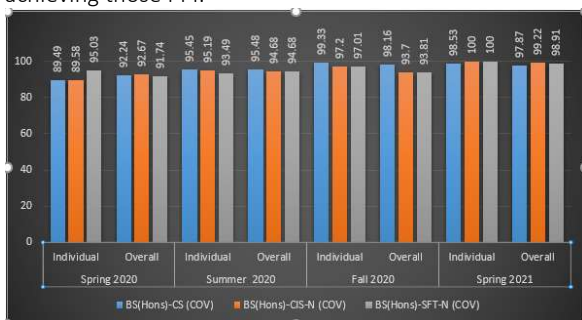


Figure 32 Graph3 – increasing trend in pass percentage of suspended CS, CIS and SFT

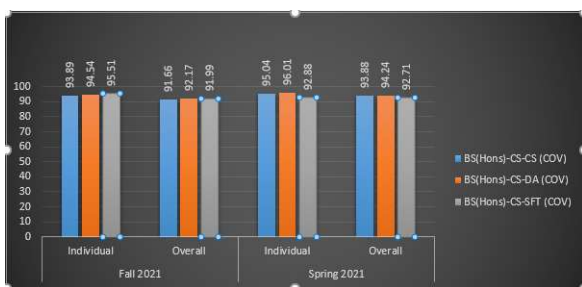


Figure 33 Graph4 – Comparison of pass percentage in new programme CS-CS, CS-DA and CS-SFT

In order to further strengthen the programme, A skill set matrix defining all the necessary skills needed for student to be employed in the computing related industries such as programming and system development skills, Design and analytical skills. Skills with their measuring topics and activities covered in the programme were also developed, which shall be used as students portfolio to identify the students strength and weakness through the programme. This shall be deployed once it is finalized and approved by the governing bodies. This matrix will also act as a

mechanism to measure the strength of the programme and to incorporate relevant measures during programme review.

6. Employability

Project-based curriculum promotes student-centric form of instruction, grounded on the constructivist principles: context-specific learning. Active learners are evolved in the learning process who achieve their objectives through shared interactions and exchange of knowledge and understanding(9). It also enhances the prospects of employment among graduates. In order to imbibe the 4IR concepts in students project, Project Souq was conducted, where emerging research topics were discussed for all project planning students. More than 40 Workshops per semester were conducted on various project specific and domain specific topics to support students achieve their project objectives. All the workshops and presentations were recorded and made available per week in MEC-Learn as a separate module named Computing student workshops accessible to all project students. In order for the project students to connect with industry, Online Poster sessions were arranged in 6 breakout rooms to get feedback Industry experts in addition to faculty members and peers. The industry experts commended the quality of the projects. The ongoing pandemic has not stopped us from conducting any event, indeed we have increased the vigor and taken advantage of the situation to go beyond the expectation. The number of live projects also were considerable even in pandemic, 27 in CS, 18 in CIS and 15 in SFT. All these measures have given rise to increase in the URG submissions compared to last year(Graph 5) and many research papers from project findings(Graph 6). Bachelor projects will be offered for the new programme in the next academic year, the team is gearing up with real-time and research problems specific to specialization in the next AY.

7. Research Teaching Nexus in the Programme:

The ability to understand the requirement of information literacy, independent learning, application, analysis and critical evaluation are crucial in a curriculum for graduates to find a strong position in the increasingly competitive global graduate labor market(10).Accordingly the objective of the programme, in terms of research teaching nexus is to have a clear mechanism to progressively embed research component in the curriculum to increase the research output. To implement the objective, a systematic approach is adopted as below: this approach was discussed in PMC and implemented, the status and effectiveness is tracked in the PMC meetings.

The approach focused on imbibing Research culture in the beginning of the curriculum and further strengthened so that students can start to get their hands dirty in level 2 and they are coached to write research papers and assessed for preparing a research report, thus they are moulded to publish research

papers. Tailor made CAW workshops also complemented this cascading research embedding approach.

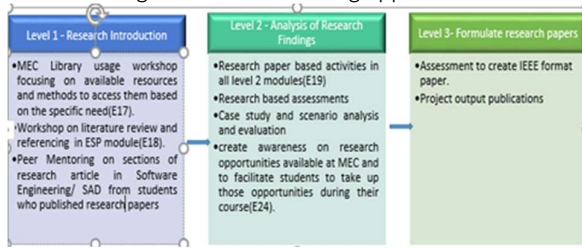


Figure 34: Cascading Research Approach Action Plan for AY

The effectiveness of this approach is tested in a level 3 module and the students were able to produce good report and EE acknowledged the same in post moderation report. In addition, the research output in terms of student publications (graph 6) and URG submissions (Graph 6) is also found to have increased compared to the last academic year proves that the adopted strategy is effective. However, the number of staff/student publications used in class and assessments seems to be less in the programme. So, in order to promote in-country value, the staff student publications will be encouraged to be used in next AY.

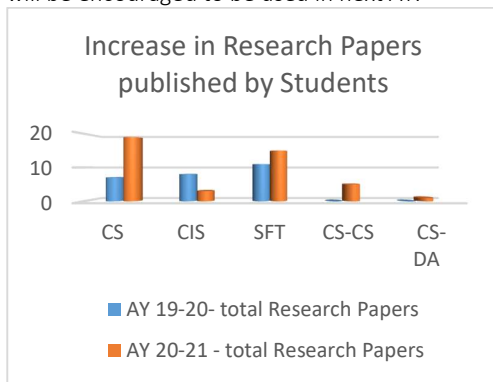


Figure 35 Graph 5: Comparison Research paper among AY 2019-20 and AY 2020-21

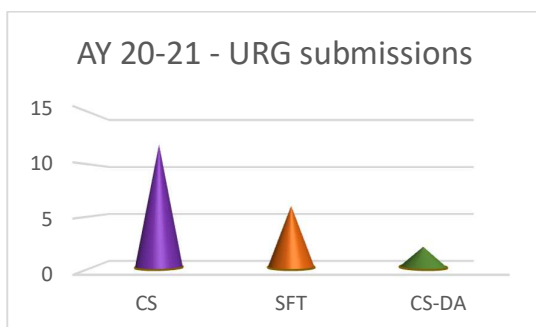


Figure 36 Graph 6: Comparison of URG in AY 2020-21 among programmes

2.6 Industry Engagement to support employment

Lessons from the last AY proves that Industry engagement and Internationalization is going to be challenging considering the ongoing pandemic. We were not able to achieve the KPI of internship and industry visit in the last AY. So considering all these factors the objective for

industry engagement is set to achieve at least one industry engagement activity per module, maximize Alumni utilization and to achieve 25% internship among the eligible students. In order to achieve the objective, related goals of PMC members set in PMS, activities calendar approved in PoP and module checklist acted as a guideline. Hence 47 Guest Lectures were arranged online out of which 16 were conducted by alumni. 7 virtual industry visits were arranged; Amidst the pandemic and lockdown, the team tirelessly identified and conducted all the guest lectures and industry visits and took advantage of the situation by recording the session and made available to all students through MEC Learn (Learning Management System) for later usage and for absentees to view at their convenience which was not possible in a regular semester. With proper planning and execution, the PMC has achieved double the industry engagement activities compared to previous AY even in the midst of pandemic evident in the graph 7.

The new programme roll out is one of the leading factors which promotes employment, the same is affirmed by industry experts in Programme Advisory Committee. In addition, a series of career guidance from industry experts focusing on the industry expectations and opportunities was organised.

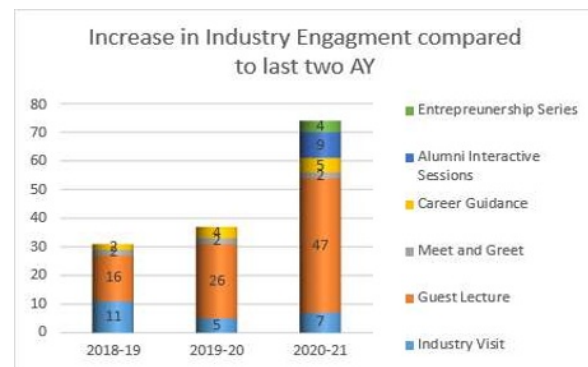


Figure 37 Graph 7: Increase in Industry Engagement

Overall 5 Career guidance programmes and 9 Alumni talks were arranged for sharing the industry expectations from fresher and preparing the students for life after college. Other Curriculum activities such as “Effective CVs and Cover letters with Intel”, “Grow your network profile with Intel”, and “Interview workshop with Intel” were also arranged. Further to make our students industry ready, Student portfolio creation workshop was conducted in Spring21, focusing on Significance of student portfolio to accumulating their skills and achievements from year 1 of their curriculum and Tools for building such portfolio, which can be embedded in their CV and shared to employers at the end of their curriculum, Such portfolios will not only increase their employment opportunity, but also help them to understand their strength and weakness for development.

In terms of Internship, all the computing PMC members were given 5 internships for this set of programmes dividing the number of eligible students. In

addition faculty members were asked to explore the possibility of MOUs with organizations to have sustainable internship opportunities forward, Which were all well achieved.

Upon analysis, we found that the Internships are not spread across different software programmes, so to streamline, we have created a database to collect all the eligible students for both internship and employment and this shall be used whenever we get opportunity for internship/employment in the upcoming AY.

7.1 Internationalization

The objective for internationalization was to start student chapter with an international professional body and explore possibilities of online engagement with Partner University through COIL projects to promote intercultural engagement. To materialize the objective, BCS(British Computer Society) student chapter was established with students and staff memberships and many national and international events were organized under the chapter. To further enhance the professional body engagement, a strategic partnership with Redhat was established, which paves way for students to get trained and certified which will enhance their employment prospects in the next AY. In addition, we have become active members with Mozilla Campus club with 21 members and organized 11 events for the club with active student member participation. Students and staff members attended free webinars and forums from experts in these professional bodies. Set of modules were identified and aligned with the courses of professional body. To strengthen these professional partnerships and formally align them in the programme to maximize student participation and certification will be action plan for the next AY.

To further explore internationalization, COIL projects are planned to promote intercultural engagement together with professional body engagements. Accordingly 6 COIL proposals from the programme were submitted to the Link tutor and a series a meeting were organized with the coordinators of CU to kick-off the projects and will be further continued.

Many organizations are adopting digitalization in response to the pandemic, and they are looking for outsourcing the IT and IT enabled services to small SMEs. Hence system development and app development related start-up companies are going to be on high demand in close future. Keeping this in mind, to strengthen their entrepreneurship skills of students, a series of 4 workshops organized by employee from Ministry of Commerce and Industry. These workshops majorly guided students to materialize their ideas into business, conduct market survey to analyze the business, processed to register their start up, financial options, and marketing the start up. This initiative will prove to be helpful to take advantage of the situation and to become employer after they graduate.

To embed lifelong learning and to enhance employability, MOOC was incorporated in all level 2 and 3 modules in the programmes. To maximize the student

certification, MOOC based tasks were included in the assignments. This has given rise to good number of student certification and supported the programme to achieve the PPI.

The industry engagement activities and MOOC courses were conducted on module basis, however, to achieve a programme focused skill development, A more standard activities calendar mapping the respective activity, MOOC and events to the modules in a systematic way to achieve progressive embedding of such activities was prepared and approved together with our PoP for the next AY which is way forward.

7.2 Community Engagement in the Programme

Community engagement is an opportunity for students to learn and reciprocate to the community, in-line an objective of maximizing the number of student and alumni participation compared to last AY was set so they shall act as medium to convey the programmes to prospective schools and public. Accordingly activities enhancing the student participation were planned such as MOOC based Engagement, where students from MEC and UTAS, were engaged in "Urban Innovation: Sustainability and Technology Solutions", a free online course. Overall, 28 community engagement events were conducted by the PMC members with 40 student 2 Alumni participations from this programme. All possible community engagement activities carried an introduction of the college and the highlights of the programme which also acted as a student enrollment strategy. The number of community engagement events and student participation increased compared to the previous year, however the number of Alumni participations needs to be enhanced in the next AY.

8. Conclusion

All the interventions and approaches adopted in this AY has shown tangible increase in the progression rate, graduation rate, industry engagement activities, student and staff skill set, internship, internalization opportunities and admission rate of the programmes, thus achieving all the PPIs and incorporating agile learning skills in the curriculum. The tangible effectiveness of these approaches could be seen in enhanced student performance in the national and international Arena

The team is hopeful that the employment rate will also be increased by the end of this AY. The future plan for the next AY is to focus on enhancing student skill set and strengthen agile learning in the new programme. We are also gearing up for professional body accreditation with BCS, the initial ground work and mapping is completed, as per their guidelines, after the first set of graduates for the new programme, the accreditation document will be submitted.

Acknowledgements

This research and outcomes are adopted based on MEC's strategic plan and programme performance indicators. MEC is the sole owner of all the data presented.

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