The Hong Kong University of Science and Technology

Quality Assurance Council

Report of a Quality Audit of HKUST: October 2015

Progress Report: April 2017

The Hong Kong University of Science and Technology

QAC Quality Audit Report
[October 2015]

HKUST 18 Month Progress Report
[April 2017]

1   Introduction

1.1   The QAC second cycle *Report of a Quality Audit of HKUST* was published on 2 October 2015. A 3 month progress update and action plan was submitted to the QAC on 28 December 2015. In accordance with the QAC's Audit Manual requirement, this 18 month Progress Report indicates how the actions proposed in the 3 month report have been implemented; and includes details of other developments that have been progressed as the University has reflected on the outcomes of the QAC audit.

1.2   The Senate Committee on Teaching and Learning Quality (CTLQ) is responsible for considering the QAC Audit Report, recommending any actions to be taken and overseeing the preparation, implementation and monitoring of the University's audit progress reports and action plans. This 18 month report was approved by the CTLQ on 28 March 2017.

1.3   For ease of reference, the headings and *paragraph numbers in italics* below refer to those in the published Audit Report[1].

1.4   A summary of progress in regard to the audit report affirmations and recommendations is provided in ***Appendix 1***.

2   The setting and maintaining of academic standards

Setting academic standards through programme approval *[paragraphs 2.7 - 2.10]*

2.1   The Audit Panel concluded that "programme approval processes are both rigorous and thorough. In particular, the audit trail provided evidence that the extensive programme of approvals associated with the transition to the new 4-year curriculum is being conducted scrupulously and is serving the University well" *[paragraph 2.10]*.

2.2   The Committee on Undergraduate Studies (CUS) and the Committee on Postgraduate Studies (CPS) continue to scrutinise and endorse proposals for new programs and courses, after iteration with the relevant Schools and Departments as

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[1] http://www.ugc.hk/doc/eng/qac/report/hkust201510e.pdf

appropriate: these are then considered and approved by the Senate. New common core courses are recommended for approval to the CUS by its sub-committee, the Committee on Undergraduate Core Education, following prior scrutiny by the relevant Course Review Panel.

2.3   New program proposals are considered in two stages: submission of an Initial Proposal to the relevant committees, followed by a Final Proposal that indicates how the comments on the Initial Proposal have been addressed. The University considers this process to be rigorous, as evidenced by the detailed discussions recorded in the relevant Minutes and the responses to the initial feedback that are documented in the Final Proposals.

Annual school reports *[paragraphs 2.13 - 2.16]*

2.4   The Audit Panel concluded that "processes and procedures for annual school reports are well developed, widely understood and intelligently employed". And the Panel commended the University for "establishing a comprehensive and integrated annual reporting framework on learning and teaching which has been embraced by all levels of the University and leads to timely reporting of outcomes and shared understanding of good practice" *[paragraph 2.16]*.

2.5   As part of continual improvement, the CTLQ approved further refinements to the Annual Reports for implementation in 2015. Reports are now more focused: greater emphasis has been placed on identifying major areas for improvement or of concern arising from stakeholder feedback (e.g. from students via questionnaires or other channels, or from external feedback, including external review and accreditation); and reports now include sections on critical self-reflection. Action Plans continue to indicate how areas will be taken forward and monitored, with milestones and timelines, and identify responsibilities. Additionally, on the recommendation of the CTLQ, the Good Practice in Teaching and Learning website (http://qa.ust.hk/preparing_annual_reports.html) has been enhanced to identify good practices from annual reports by category as well as by year.

Periodic reviews and external accreditation *[paragraphs 2.17 - 2.22]*

2.6   The Audit Panel concluded that "HKUST has developed and implemented an effective process of periodic review for its undergraduate provision which invites external peer assessment of the University's academic standards and practices, providing advice and recommendations to the subject areas". However, the Panel considered that taught postgraduate provision had not kept pace with undergraduate provision in this respect and therefore affirmed the steps being taken to implement periodic review of all taught postgraduate programmes alongside undergraduate programmes as part of the quality improvement process *[paragraph 2.22]*.

2.7   The Senate approved procedures in 2013 for the review, with external input, of all taught postgraduate programs every five years. A schedule of reviews for 2014 -

2019 was agreed with Deans and approved by the CTLQ. As indicated in ***Appendix 2***, 17 of 32 taught postgraduate programs have been reviewed and a further four will be reviewed in 2017.

2.8   To date, all Panels have confirmed, *inter alia*, the following:

- that the syllabi and curricula, including program and course objectives, were up-to-date and appropriate;
- that the academic standards of the program awards were appropriate and internationally comparable;
- that students and/or graduates who met Panels had confirmed that they were provided with timely and appropriate feedback on their assessments and were generally satisfied with their programs and the support available.

2.9   The CTLQ has confirmed that Panels' comments and recommendations have been incorporated into TPg Program Review Reports and addressed appropriately. School and CTLQ monitoring of the implementation of program Action Plans continues via the Annual Reports on Teaching and Learning (paragraph 2.4 above refers). And the CTLQ has continued to forward good practices and areas of strength identified by Panels to the Committee on Postgraduate Studies, the Associate Vice-President for Research and Graduate Studies and all TPg Program Directors, for consideration as they deem appropriate.

2.10   The University considers the processes of implementing and monitoring taught postgraduate program review to be robust and effective, as evidenced by the constructive feedback from External Panels, and the Program Review and Annual Reports that indicate how recommendations have been actioned.

3   The quality of learning opportunities

Completion of the transition to the 4-year curriculum including the core curriculum
[paragraphs 3.4 - 3.13]

3.1   The Audit Panel concluded that "HKUST has responded to the requirement for a 4-year undergraduate degree enthusiastically and has taken the opportunity the reform brings to introduce additional contemporary educational practices which enhance the learning opportunities, experience and employability of students"; and that "substantial progress has been made in a relatively short time". The Panel therefore commended HKUST "for its creative, broad-based and detailed approach to implementing the 4-year degree programme and the transformative effect of the new tri-modal approach to undergraduate education that the University has adopted" *[paragraph 3.13]*.

3.2   A Working Group for Mid-term Review of the Four-year Degree, Chaired by the Associate Provost (Teaching and Learning), was established in 2015 to develop the scope, issues and processes for the Review, oversee implementation of the Review

and prepare a Report for consideration by the University. The Working Group established two sub-groups: one to consider the overall structure of the undergraduate degree, including the role of the University common core and English-language requirements, cross-disciplinary studies and delayed choice of major; and one to review the embedding of new pedagogies in undergraduate programs, including experiential learning and blended learning.

3.3   The Working Group undertook two major exercises: (1) a broad review of students' experience with the new undergraduate degree, including a questionnaire survey, focus groups and an evaluation of students' achievement of broader learning outcomes; and (2) a request to academic departments to provide a report through their Schools on the implementation of the new curriculum, in particular the department's major programs. These exercises were completed by September 2016.

3.4   The Working Group's Final Report was reviewed and agreed in late 2016, and considered at the Deans' Meeting in March 2017. On the basis of stakeholder input and evidence of students' achievement of learning outcomes, the Report confirms that the four-year degree curriculum and related changes to the overall student experience had been implemented successfully. A number of recommendations for improvement were made, which will inform the consultation exercise leading up to the presentation of the University's Academic Development Proposals for the 2019-2022 triennium.

        E-Learning *[paragraphs 3.14 - 3.20]*

3.5   The Audit Panel concluded that the University "has not progressed sufficiently towards the development and implementation of a clearly articulated pedagogy for the use of technology" and found "little evidence of a comprehensive, systematic and contemporary e-learning strategy". While the Center for Enhanced Learning and Teaching (CELT) had provided courses on topics such as the new LMS, MOOCs and mobile learning, the Panel considered this to be "in the absence of a widely and well understood overall strategic approach to how e-learning will be used pedagogically at HKUST". The Audit Panel therefore recommended that the University enunciate and disseminate more explicitly and effectively the pedagogical underpinning of its e-learning strategy and expedite its implementation, integrating blended learning projects within the regular curriculum development process *[paragraph 3.20]*.

3.6   The Institutional response to the audit findings in the published Audit Report indicates that the above recommendation sets out areas of development in which the University is already fully engaged as components of the teaching and learning strategy, including new developments under the tri-modal framework. This strategy reflects the University's broad vision for innovative pedagogy that goes beyond the somewhat narrow concept of e-Learning.

3.7   In taking forward the recommendation, and as part of a review of the 4 year curriculum (see paragraph 3.2 above), two key strategies were identified for the enhancement of teaching and learning: embedding opportunities for experiential

learning to support achievement of program outcomes; and making the best use of blended learning to enhance undergraduate studies. The review provided an opportunity to reflect on how implementation of these strategies would work to enhance undergraduate programs. Implementation of these elements of the tri-modal educational framework are being overseen by the Associate Provost (Teaching and Learning) (AP (TL)) and the Center for Education Innovation (CEI): CEI was established in October 2015 following a restructuring of the Center for Enhanced Learning and Teaching (CELT) and other offices as part of the continual enhancement of provision to support the University's strategic objectives.

3.8   The strategy for using technology to enhance teaching and learning quality at HKUST is rooted in Schools'/Departments' course, curricular and program arrangements. By the start of 2017, every Department had delivered at least one MOOC course (or had planned to do so). Each MOOC and blended learning course has been supported by substantial financial resources for content and presentation development, staff support and teaching relief if needed. All MOOC courses that have been open to the world will be offered to HKUST students, either in a blended learning classroom setting or as a component of a regular lecture-based course. Apart from MOOCs and their re-adaptations, High Definition Remote Video Capture and DIY recording facilities have been provided by the Publishing Technology Center to enable faculty members to use flipped-classroom pedagogy in their courses. **Posting the recorded lectures online releases class time for more interactive, small-group discussions, debates and problem solving.** In addition, a team of Teaching Associates with expertise in pedagogical innovations has been recruited by CEI in the past two years, using Teaching Development Grant funds, to support faculty in developing these in-class interactive activities in both blended learning courses and courses using flipped-classroom pedagogy. CEI will continue to send Teaching Associates to conferences and workshops, to broaden their experience and extend their expertise, and to support other types of courses in the future. To further promote and obtain buy-in from faculty members, the AP(TL) has commenced a program of visits to each School's/Department's Undergraduate Committee meeting, to help identify courses in each major program that could benefit most from blended learning or flipped-classroom pedagogies: the visits will be completed by December 2017. The strategy is to have at least 1-2 courses in each major program delivered in blended or flipped-classroom mode and 1-2 faculty members in each department engaged in new pedagogical course delivery by 2018-19. This approach is part of the University's philosophy of building rapport with faculty and developing a congenial culture that embraces pedagogical innovation. In addition, with a view to building student capacity in different modes of T&L delivery, including blended and experiential learning, an introduction is given to all 1st year Engineering students in the non-credit-bearing compulsory academic orientation course ENGG1010. An online self-paced course on blended learning is also provided by CEI to share best practice in blended learning and help instructors improve their skills and understanding of combining face-to-face with online teaching and assessment.

3.9   In addition, a KPI relating to the number of student-credits earned from innovative pedagogical delivery such as blended and experiential learning is being considered

by the University as a potential indicator of the quality of the student experience, teaching and learning in the proposed HKUST Compact with the UGC.

3.10   The above initiatives demonstrate HKUST's commitment to e-Learning as a new framework to experiment with pedagogical innovation. E-Learning can be effectively combined with physical, in-class teaching; support the flipped classroom approach; and provide substantial data that offers direct insights into students' learning characteristics, and their interactions, team efforts and dynamics with their instructors. HKUST is very proud of its e-Learning initiatives. The University has set examples to many other institutions, not only in the region but also in the world, and earned the accolade, by the Coursera CEO and former Yale University President, as the most successful and recognized institution in Asia in MOOCs.

Faculty development *[paragraphs 3.21 - 3.26]*

3.11   The Audit Panel commended the University's "broad range of provision to enhance faculty development by Schools and Departments and by CELT [Center for Enhanced Learning and Teaching] staff, together with its use of a range of evidence of teaching effectiveness in recruiting and rewarding faculty" *[paragraph 3.26].*

3.12   Following the 2015 re-structuring (see paragraph 3.7 above), the Center for Education Innovation (CEI), under the leadership of the Associate Provost for Teaching and Learning (AP(TL)), is facilitating and promoting educational innovation in e-Learning (blended learning and MOOCs), experiential and service learning, and entrepreneurship and sustainability education. Expanding on the previous structure and work of CELT, a Faculty Advisory Board was formed, chaired by the Director (initially concurrently held by the AP (TL)) and with selected faculty members from across the disciplines engaged in experiential education and e-Learning. The new Faculty Advisory Board is working with all Schools and, with support from the CEI, is moving forward the tri-modal educational framework outlined in the University's ADP 2016-19: in particular, the implementation of experiential education and the e-Learning strategy at the University level.

3.13   CEI comprises the following functional teams:

- *The Professional Development Team*, originally under CELT, provides workshops and training for new faculty members, research postgraduate students and Teaching Assistants, and supports and evaluates Teaching Development Grant projects;

- *The Technology-Enhanced Teaching Team*, originally under CELT, has been expanded to support MOOCs, e-learning, the learning management system (CANVAS) and other enterprise systems (e.g. Turnitin, iPeer etc.);

- *The Experiential & Service Learning Team*, newly added, provides support to credit-bearing activities in experiential education. With the support of the Dean of Students and the Student Affairs Office (SAO), the HKUST Connect team

under SAO now reports to both SAO and CEI as an initial arrangement to jumpstart the experiential and service learning team. While CEI and SAO will focus mostly on credit-bearing and non-credit-bearing activities, respectively, the teams will work closely together and leverage on their shared experience.

3.14   The co-curricular program team's new, dual reporting role in CEI's experiential learning team has facilitated the development of 14 faculty who led experiential/service learning courses/projects in 2015-16, engaging 385 students: these opportunities included in-class presentations on community related issues, liaison with community partners and the facilitation of student projects. HKUST Connect also facilitated over 3,000 service opportunities (student-time) in 135 service projects in 2015-16, including coordinating 15 service learning trips and work camps and offering 15 student civic fellow positions.

3.15   The Center for the Development of the Gifted and the Talented, originally housed under the School of Science, has been elevated to the University level and housed within CEI. In addition, CEI provides support for entrepreneurship education in collaboration with the Entrepreneurship Center, and for sustainability education. For example, in developing the University's capability for delivering an education in sustainability, CEI has provided resources and expertise to build relevant *blended-learning modules* incorporated in course SUST1000 (*Introduction to Sustainability).* These modules will also be available as components of other courses across the disciplines. Senior undergraduate students appointed as interns have made a major contribution to this effort.

3.16   Squarely focused on moving forward the University's teaching and learning strategies, CEI also acts as an interdisciplinary platform and provides support for all faculty members including, in particular, all teaching-track faculty members, to innovate, share and collaborate in new pedagogies and educational activities. In the past year, six staff shared their experiences with experiential and blended learning in formal seminars that were well attended by over 120 colleagues; and three have been supported for international conference attendance and presentation.

Teaching Assistants [*paragraphs 3.27 - 3.29*]

3.17   The Audit Panel "heard reports that the teaching ability and standards of English competency among TAs are variable and that improvements are required to safeguard the quality of the student learning experience". The Panel therefore affirmed the actions being taken to build English competence and provide training in teaching skills for all new research postgraduate students, and to enhance their transferable skills through the introduction of a Professional Development Course, which is a required course for all research postgraduate students *[paragraph 3.29]*.

3.18   The Senate Committee on Postgraduate Studies (CPS) has addressed the following skills-set areas for the training of Teaching Assistants (TAs) and research postgraduate students (RPgs):

English competence

3.18.1 The threshold Spoken English proficiency of all new RPgs whose mother tongue is not English or whose previous degree studies were not conducted in the medium of English has been raised. All new RPgs, except those exempted by the Center for Language Education (CLE), have to sit a Spoken English test conducted by the CLE. The Senate (9 December 2015) endorsed a recommendation from the CPS to raise the Spoken English proficiency for new RPgs: the threshold score for the Spoken English Sub-test of the English Language Proficiency Assessment (ELPA) devised by the CLE was raised from Level 3 to 4. Level 4 in ELPA is equivalent to IELTS 6.0 whereas Level 3 is equivalent to IELTS 5.5. Students who score below Level 4 in the ELPA Spoken English Sub-test are not permitted to serve as TAs who are involved in classroom interaction with undergraduate students until they have passed the English Language course LANG 5000.

3.18.2 To complete LANG 5000, students are required to attain at least ELPA Level 4 (Speaking). The LANG 5000 curriculum has been re-developed, to strengthen students' competence in communicating in English in classroom settings, thus making a positive impact upon the classroom communication skills of TAs. RPg students who take LANG 5000 and fail to reach ELPA Level 4 (Speaking) are required to re-take LANG 5000 in the following term: they are not permitted to perform TA duties that involve classroom interaction with students until they attain Level 4 in the ELPA Spoken English Sub-test. In addition, the CLE provides further English language support to these students through one-on-one pronunciation consultations, to reinforce the students' practice and learning opportunities. Together with the Graduate Teaching Assistant training workshops offered by the CEI to new RPgs, the strengthened language support will provide RPg students with effective and comprehensive training in language proficiency and communication skills. This new arrangement was implemented for the RPg cohort who joined the University in the Fall Term of 2016-17.

Training in teaching skills provided for TAs

3.18.3 CEI has modified its training program for TAs with a view to strengthening the teaching skills of new RPgs, all of whom will work as TAs during the course of their studies. Various workshops have been re-designed for this purpose.

3.18.4 For example, the long orientation sessions, taking up eight hours of the program time, were streamlined to 2.5 hours, with the first 30 minutes focusing on important details of the TA training program and the remaining two hours on specific arrangements and requirements of teaching duties within the department. While the orientation has become optional, the reduction in duration has made the event more effective and full of content. The attendance rate in 2016/17 was high at 89%, with over 90% of respondents in the post-session survey finding the session useful and informative.

3.18.5 The time reduced from the orientation has allowed the program to add two new workshops into the core program: TA122 (Classroom Management) and TA123

(Techniques for Interactive Teaching). This change has enhanced the diversity of the program and allowed more time for the instructors to showcase and model interactive techniques to develop TAs' skills for classroom engagement. Both workshops received a high satisfaction mean score of 4.3/5 in the post-workshop survey. In a non-compulsory, open-ended question asking about willingness to apply the skills learned into their teaching, 33% answered the question with everyone giving positive reviews.

3.18.6 The workshop offerings have been rescheduled. In the Fall Term of 2016/17, TAs were required to participate in four core workshops covering fundamental teaching theories and skills. In the Spring Term, when most TAs have already started teaching duties, they attend another two core workshops on skills requiring more hands-on experience and training. Responses in the end-of-year opinion survey have shown that students who received theoretical training on Effective Teaching Skills (TA111) in the Fall before the practical training on Techniques for Interactive Teaching (TA123) in the Spring developed significantly higher confidence in engaging students in learning.

3.18.7 Workshops have also been designed and re-designed by incorporating more interactive learning activities into teaching and case studies for discussion. More time is allowed for TAs to interact with materials and with their peers, to draw out good teaching practice and work out solutions to situational problems in different teaching contexts. These problems were extracted from real tutorial/lab teaching situations videotaped and documented through classroom observations and interviews with experienced TAs. The instructors demonstrated more teaching techniques, like think-pair-share, one-minute paper, problem-solving, discussions, poster drawing, fish bowl, etc., to teach by example. TAs now have more opportunities to experience the strategies from the students' perspectives and reflect on the experience in order to better assimilate the skills for application.

3.18.8 On average, in the post-workshop surveys, over 90% of TAs were satisfied with their learning experience in the training workshops (M = 4.3 - 4.5 out of 5). Generally, students were more engaged by the interactive nature of the workshops, the teaching examples of instructors, and the opportunities for peer interaction.

Enhancement of transferable skills of RPgs

3.18.9 The Professional Development Course (PDC) was introduced in 2013 as a mandatory course for all new research postgraduate (RPg) students. Work is continuing at School and Department levels to review the PDC program, with a view to providing an effective and efficient program that will enhance the transferable skills of RPgs under the broad categories of Professional Conduct, Communication Skills, Career Development, Entrepreneurship and Self-Management.

3.18.10 After running the PDC for two and a half years the University engaged an eminent scholar from Imperial College London, who is also an acknowledged expert in postgraduate professional development, to conduct a holistic review of the content, pedagogy and operation of the PDC in April 2016.

3.18.11 The Taskforce on RPg Education reviewed the expert's recommendations and recommended a revamp of the PDC structure. Subject to the University's approval, all RPg students from the 2017-18 intake will be required to take three hours of training on Professional Conduct (including copyright) and twelve hours of elective workshops at the University level. Workshops will be offered under the following five designated themes: Communication Skills (including Teaching Skills); Research Competency; Entrepreneurship; Self-Management; Career Development. Some Schools/Departments also offer additional workshops under the five designated themes, to cater for the needs of their own RPgs.

3.18.12 As the development of professional skills is progressive in nature, RPg students will be able to undertake courses and engage with the PDC throughout their studies, to allow them to develop these essential skills in a timeframe to suit their individual requirements and study plans prior to graduation.

Student support and guidance *[paragraphs 3.30 - 3.34]*

3.19 The Audit Panel commended the University "for implementing a tracking system designed to monitor the whole student experience, including progress through the curriculum, engagement with advisors, and participation in the co-curriculum". It also recommended that HKUST consider what additional communication and training in the system was needed to apprise students and faculty of its purposes and to clarify the ways in which both parties were required to make use of the system *[paragraph 3.34]*.

3.20 In response to the recommendation, Schools and Units reviewed how their communication and training schedules could be enhanced during student orientations. Efforts such as providing user manuals, embedding briefings/training in orientation events, etc. were improved/implemented to familiarize major stakeholders (i.e. first and second year students and academic advising personnel such as Faculty Advisors, Major Selection Counsellors, etc.) with the student record systems, for maximum usage and benefit.

3.21 A summary of School and Support Unit systems for tracking student progress was considered by the CTLQ in October 2015. The CTLQ, in noting that implementation of a university-wide tracking system, if approved, could take up to two years, depending on the system specification, established a Task Force to consider the audit recommendation and survey results.

3.22 The Taskforce reported in June 2016 and recommended (a) that Schools and the SAO should leverage on the application interface (API) developed by the Information Systems Office (ISO) to enhance their systems as far as practicable, with the communication and training strategies of Schools and Units concerned to be updated to take account of the new features and workflow adjustments arising from their discussions with ISO; and (b) that a Committee should be set up to consider developing a co-curricular transcript, taking into account the latest trends in local

and international institutions, alignment to the HKUST graduate attributes, and students' and potential employers' expectations for such a transcript.

3.23 The new Dean of Students, appointed in August 2016, took forward the second recommendation and convened a small working group to explore possible options for developing a co-curricular transcript, to inform the development of a University-wide student tracking system. The group visited the Education University of Hong Kong and PolyU in October 2016, and Lingnan University and HKU in November 2016, to identify potential good practice at local universities. In light of the variable experiences of sister institutions and after further consultation with Schools, it was considered premature to develop a co-curricular transcript *per se*: instead, it was agreed that a new small-scale central system to capture all the data that was currently stored in Schools and Offices should be developed. The central system would be in addition to the short-term enhancements to individual systems through APIs: it would provide a high level overview of available opportunities throughout the University, and of students' own records in different areas. The new system would enable students to define and devise their learning needs and strategies through co-curricular activities, and assist in student advising. The Senate Committee on Teaching and Learning Quality (CTLQ), at its meeting on 28 March 2017, considered and approved an Action Plan for carrying forward the development of Phase I of the new system, for implementation by August 2018.

The student voice *[paragraphs 3.35 - 3.38]*

3.24 Seeking and responding to student feedback continues to be embedded in the University's quality assurance framework. The Evaluation & Research Team (ERT), previously under CELT, was elevated to institutional level and housed under the Office of Planning and Institutional Research (OPIR) following re-structuring (see paragraph 3.7 above). In January 2017, OPIR was further reorganised into the Office of Institutional Research (OIR), to be more focused on expanding the breadth and depth of their research and analytical work to support the strategic and operational decisions of the University. All educational research, including data collection through various surveys, is now aligned with university planning at the institutional level. Staff of the ERT and CTLQ Secretariat visit all Schools/Departments annually in the Fall Term, specifically to discuss the outcomes of the Student Experience and Satisfaction Survey (SESQ) of the recent graduating cohort, as a prelude to Schools/Departments completing their Annual Reports on teaching and learning – Section 2 above refers.

3.25 The overall response rate for the SESQ 2016 was 50%, with a total of 967 graduating student respondents. In general, the results indicated gradual improvements from the past two years in students' perceptions of their overall university and academic experiences. In particular, significant increases ($p<0.05$ with medium strength of effect size) were noted in students' ratings of the effectiveness of their undergraduate programs in enhancing their general competences, broad-based knowledge, personal and moral development, and interpersonal skills. Although students reported lower levels of unmanageable study workload, they were not

particularly active in taking part in out-of-class activities, especially extra-curricular ones. The overall quality ratings of student-faculty relationships and student-student relationships remained above the mid-point value, with students indicating a higher frequency in discussing study/career-related issues with peers than that observed in the previous two years.

4   STUDENT ACHIEVEMENT

Employability and employer feedback *[paragraphs 4.13 - 4.15]*

4.1   The Audit Panel considered that, at institutional level, graduate destinations could serve as indicators of student achievement. The Panel found "strong results for HKUST graduates in respect of exit qualification, employment and progression to further study. Internationally accredited degree programmes confer global recognition of graduate achievement against international professional standards". And employers whom the Audit Panel met "reported that HKUST graduates are of high quality and are generally sought-after". The Audit Panel therefore commended the University on the "impressive standard of achievement of graduate employment and the proportion of its graduates pursuing further study" *[paragraph 4.13].*

4.2   Large numbers of employers (over 440 in 2015-16) continue to attend the on-campus recruitment fairs, with many attending year-on-year, demonstrating their satisfaction with the University's graduates. And a relatively large, and growing, number of HKUST graduates have started their own businesses - a clear indication of the sign of the times that reflects the University's strong support for entrepreneurship and innovation.

4.3   Entrepreneurship and innovation are promoted in the University's *5 Year Strategic Plan 2020,* recently launched (http://strategicplan.ust.hk/strategic-plan.html), which states one of five strategic objectives as: "*A Powerhouse for Innovation and Entrepreneurship*, evidenced by the successes of our faculty, students, and alumni".

4.4   Two strategies will support implementation of the Strategic Plan in this area. Firstly, the University will encourage and provide the best environment for nurturing entrepreneurship among faculty and students by:

(i) Developing an innovation and entrepreneurial ecosystem: by creating more platforms for developing an innovation and entrepreneurial ecosystem, and providing effective linkage support, mentorship training and venture capital fund raising for start-ups, technology transfer, and industry collaborations in order to realize research results from concepts to prototypes and to develop business plans.

(ii) Providing distinctive entrepreneurship education offerings and activities across disciplines: through developing an overall entrepreneurship education framework, as well as organising and promoting activities to stimulate and foster an entrepreneurship culture, such as the highly successful HKUST One Million

Dollar Entrepreneurship Competition that has expanded from our campus to multiple cities.

(iii) Recognising entrepreneurship and knowledge transfer achievements: by all members of the University community and promoting and encouraging broader participation to forge stronger synergies in advancing entrepreneurship. In nurturing an innovation entrepreneurship culture, the focus is on transferring the knowledge gained from our education and research endeavors for societal benefit.

(iv) Mobilising alumni in supporting innovation and entrepreneurship: by strengthening links with our graduates around the world, many of whom have become successful innovators and experienced entrepreneurs, and involving them in University entrepreneurship initiatives in varying capacities.

4.5 Secondly, the University will advance its social responsibility (including community service) and provide leadership in social entrepreneurship to benefit society. This will be achieved through supporting the start-up of social enterprises and promoting community service, thus raising civic awareness of social entrepreneurship and setting up an ecosystem to support social enterprise start-ups. In addition, the University will strive to reach out to more students and faculty and encourage them to actively participate in community service programs.

4.6 HKUST has conducted broad surveys of employers in the past but discontinued this method of data collection in favour of working with employers who have direct knowledge of its graduates and who were committed to providing input to the University: the University considered this approach to be more effective. However, given HKUST's stated mission to assist in the economic and social development of Hong Kong, the Audit Panel was concerned that the decision to discontinue the regular and systematic collection of and response to larger scale quantitative data from employers and other independent external stakeholders may not be in the best interest of future graduates. The Audit Panel therefore recommended that the University review and revise, as appropriate, its strategy for gathering and responding to employer feedback to strengthen further the tri-modal undergraduate and postgraduate learning environment, student achievement and curricula of all programmes *[paragraph 4.15]*.

4.7 The Audit Panel was informed that the University's decision was to discontinue the previous method of data collection of surveying SMEs and interviews with large enterprises and not to discontinue obtaining feedback data from employers. The methods previously used had a number of difficulties, including getting to direct-line supervisors and respondents not knowing which of their staff were HKUST graduates: thus responses were more about Hong Kong graduates in general and not about HKUST graduates specifically, as was intended. The University therefore adopted a strategy based on data collection from School/Departmental/Program panels of invited employers who would provide feedback on a more regular basis and whom the University had, or would build, a richer relationship beyond that of

feedback on HKUST graduates' competencies (e.g. as employer members of School/ Department/program advisory boards). The University considered this to be a more effective method of engaging with employers and seeking their feedback on its curricular and the effectiveness of learning modes.

4.8   In view of the Panel's recommendation, the University will continue to conduct large-scale surveys periodically to seek feedback from employers, including those who are HKUST alumni. Improvement measures were implemented in 2016/17 in regard to the survey distribution channels: an online survey tool (Qualtrics) was used (instead of face-to-face or telephone interview formats) to seek employers' views of HKUST "fresh" graduates, *inter alia*, on their knowledge, skills and attributes, and how they compared with graduates of other universities. The survey was launched in December 2016 and closed on 5 March 2017. The overall response rate was 11% (295/2803). About 42% (123/295) of the respondents indicated that they had directly supervised or worked closely with HKUST graduates in the past three years. The results will be compiled into a report to the CTLQ, to inform the continual enhancement of the learning environment, student achievement and curriculum development of HKUST programmes at the institutional level. Where appropriate, data will be provided to Schools/Units/Offices, to facilitate their review and enhancement of programs and services, with implementation being monitored through the Annual Reporting procedures (paragraph 2.4 above refers).

4.9   A Graduate Employment Survey is also conducted annually by the Career Center, to collect information on the first job destinations of fresh graduates. And the Office of Postgraduate Studies (PGSO) undertakes an annual exercise to collect the latest job information of all research postgraduate graduates from their thesis supervisors via a customised webpage developed specifically for the purpose: responses are compiled and a summary report produced and shared with members of the University and RPg alumni. The PGSO also administers a Career Development Survey every three or four years, aimed at tracking the career advancement and professional achievements of all RPg alumni, and maintaining contact with them. A report of the latest RPg Career Development Survey, conducted in 2016, will be shared with the University community towards the end of the 2016-17 academic year.

5   QUALITY ENHANCEMENT *[paragraphs 5.1 - 5.10]*

5.1   The Audit Panel concluded that HKUST "has responded positively to the previous QAC recommendation on benchmarking. While there was a heavy reliance on peer review and qualitative benchmarking, the University is aware of the importance of comparative performance and is increasingly making appropriate use of benchmarked quantitative data alongside qualitative benchmarking to achieve its goals. Data from external sources, predominantly other Hong Kong universities, are regularly used to assess HKUST performance. Benchmarked data are reported and discussed at Council as part of performance metrics. Comparable data are gathered

from other institutions through a range of mechanisms to inform planning and to improve areas of concern" *[paragraphs 5.10]*.

5.2   The University welcomed the Audit Panel's affirmation of "the steps HKUST is taking to extend external benchmarking across all facets of the University, to routinely include data-based comparisons in addition to peer-review benchmarking" *[paragraphs 5.10]*. These efforts have been enhanced by increasing the University's data analytics and benchmarking capabilities, and by extending the data warehouse to encompass a wider range of domains, including students, staff, teaching and learning, research and student feedback surveys. These capabilities have enhanced institutional planning, management reporting and evidence-based decision making. Performance indicators and metrics dashboards are made available through a Performance Analytics, Intelligence and Reporting (PAIR) portal, along with regular management reports. This enables senior management, Schools, Departments and offices to analyse multi-year performance trends and benchmark with peer institutions. At the Management Leadership retreat in January 2016, senior staff was provided with a wide range of teaching and research data to facilitate discussion of the University's strategic directions. The Office of Institutional Research continues to facilitate the use of data and analytics to support planning and decision-making processes.

5.3   The University has continued to strengthen external benchmarking practices, through both quantitative and qualitative sources. Benchmarking capabilities with other Hong Kong institutions have been further developed through quantitative sources such as the Common Data Collection Format (CDCF) data from the UGC; and with international institutions through sources such as i-Graduate's Student Barometer. The University has continued to monitor the latest trends and developments in the global and local higher education sectors, institutional directions and strategies, and best practices as a means of qualitative benchmarking. For example, the Office of Institutional Research has established a small network of counterparts in Hong Kong, who meet on a regular basis to share best practice and exchange views on the latest issues. The group has met twice since August 2016. Member institutions value the exchanges and discussions, and plan to continue to meet periodically. The Information Technology Services Center also undertakes qualitative benchmarking through collaborating with the IT centres of the UGC-funded institutions via the Joint Universities Computer Center (JUCC). This includes joint development and maintenance of the Hong Kong Academic and Research Network (HARNET), and collaboration on securing favourable agreements for the provision of IT supplies, software licences and services. The JUCC also participates in activities organized by similar organisations overseas including EDUCAUSE (US) and CAUDIT (Australia and New Zealand), for the timely exchange of experience and best practices. These exchanges have prompted the adoption of cloud-based modern learning management systems and cybersecurity technologies.

6   POSTGRADUATE PROVISION

Research postgraduate provision *[paragraphs 6.3 - 6.8]*

6.1   The Audit Panel commended HKUST "for the actions it has taken to establish and foster a rich research environment that provides strong local support for the development of students as future researchers". In line with its aspirations toward teaching excellence, the Audit Panel recommended that HKUST consider how it might further enhance the learning environment of research postgraduate students through systematic development and appraisal of faculty supervisory abilities. *[paragraph 6.8]*

6.2   In May 2016, an eminent professor of civil engineering from Imperial College London gave a workshop entitled *Developing a Successful Academic Career via Effective Supervision of Research Postgraduate Students* to faculty members of the University. As reflected in the evaluation, participants found the workshop very useful via the sharing of first-hand information by a well-established professor, with vast experience in academia and insights into becoming a successful academic through supervising postgraduate students. Similar workshops on other disciplined areas will be organised in 2017-18.

6.3   Additionally, the Center for Education Innovation (CEI) has provided an on-line program entitled *Supervising Doctoral Studies* for faculty supervisors to develop their ability to mentor RPg students effectively. The program is made available on the University's learning management system (*Canvas)* for easy self-access by faculty. Currently there are 476 registered users, of whom 336 (70%) are active (i.e. multiple page views). Activity mainly occurs one week before and two weeks after the start of the Fall and Spring Terms as new tenure track staff take up duties.

6.4   The RPg Student End-of-Program Survey, which all students complete as a condition of fulfilling their graduation requirements, provides clear evidence of high quality RPg student supervision and support, and the provision of a high quality student learning experience at HKUST. In 2015/16, RPg students expressed a very high level of satisfaction in responding to the following questions (average scores of 442 respondents, on a 4 point scale, are provided in parentheses, with 4 being "strongly agree" and 1 being "strongly disagree"):

- "My supervisor(s) stimulated my lateral and critical thinking and enabled me to create new knowledge and discoveries" (3.77);
- "My supervisor(s) stated to me clearly the standard of work expected" (3.76);
- "My supervisor(s) provided helpful feedback on my progress" (3.75);
- "I learned much about research skills from my supervisor(s)" (3.72);
- "Members of the Thesis Supervision Committee were accessible when I needed their advice" (3.74);
- "Overall, I am happy with the thesis supervision received at HKUST" (3.73).

Taught postgraduate provision *[paragraphs 6.9 - 6.16]*

6.5   The Panel was made aware of the range of quality assurance practices and procedures that applies to <u>all</u> taught programs and noted that *"many of HKUST's (TPg) programmes are highly selective and are all subject to as rigorous a process of programme approval as any undergraduate programme" [paragraph 6.10].*

6.6   The Audit Panel also noted that, while extensive work had been put into the adoption of outcome-based education at undergraduate level, this approach had not yet been systematically applied to the taught postgraduate experience. The Audit Panel therefore affirmed the decision taken by HKUST to roll out quality assurance processes available to undergraduate programmes to taught postgraduate programmes. *[paragraph 6.15]*

6.7   TPg programs at HKUST have always undergone the same robust design, approval and change processes as for Ug programs; all TPg programs collect and utilise student feedback via the SFQ, the TPg Exit Survey and other means, e.g. SSLCs and focus groups; all SBM and some Engineering TPg programs are subject to periodic external accreditation; Deans/DIPO receive an Annual Report on TPg education from all TPg programs in their Schools/IPO which indicate, *inter alia*, how programs have responded to student and other stakeholder feedback; School/Departmental Advisory Committees/Boards periodically comment on TPg program provision; and all TPg programs are scheduled for external review every five years, with formal monitoring of action plans in response to the review reports being undertaken by the Committee on Teaching and Learning Quality (CTLQ) and the Committee on Postgraduate Studies (CPS). For each external review, the Program Director: produces a thorough Self-Evaluation Document that includes critical analysis of the program's curriculum design, program and course delivery, student intake quality and performance, stakeholder feedback, and assessment, for discussion with the Panel; coordinates a visit by the Panel (Chaired by a senior academic external to HKUST) that engages major stakeholders including the Dean/Head of Department and other senior Program managers, faculty, students and those with responsibility for quality assurance; develops an Action Plan to carry forward the Panel's recommendations; and summarizes progress of action items via the Annual Reporting on Teaching and Learning exercise for School/CTLQ review. The documentation made available to the Panel (i.e. the Senate-approved TPg program review procedures, the TPg program review website and guidance documents/forms, the four TPg program review reports with External Panel Reports and Action Plans for 2014, the CTLQ Minutes that indicate how good practices from the four TPg program reviews have been identified and shared with all TPg Program Directors, and the 5-Year review schedule) demonstrated the effectiveness and robustness of the external review procedures. The equivalent documents produced since the QAC audit confirm that the TPg program review procedures continue to be effective and robust, and form an embedded component of the quality assurance and enhancement of the University's TPg provision. See also paragraph 2.7 above and ***Appendix 2***.

6.8   The University's extensive range of quality assurance and enhancement processes continue to be applied to <u>all</u> taught programs. Sections of the Audit Report and recommendations that relate to TPg provision were considered by a Special Taskforce on TPg Education Enhancement and monitored by the Committee on Postgraduate Studies. The application of an outcome-based approach to student learning at the taught postgraduate level was considered by the Taskforce on 28 May 2015. Action was taken to apply program intended learning outcomes (PILOs) across the University's taught postgraduate programs; and the CEI conducted five workshops on PILOs in the Fall of 2015 for taught postgraduate program directors.

6.9   In the first quarter of 2016, four workshops were held for program directors and course instructors on the preparation of course intended learning outcomes (CILOs) and their mapping against program intended learning outcomes. PILOs for all taught postgraduate programs are now in place; the development of CILOs and the necessary mapping against respective PILOs was completed in December 2016. The CILOs will be published on-line in the Summer of 2017.

6.10   The Audit Panel considered that the strategic vision for the development of the taught postgraduate portfolio articulated by senior managers was not widely or well understood across the University. In light of the work underway at undergraduate level, and the aspirations of HKUST, the Audit Panel concluded that there was an urgent need to consider the taught postgraduate learning environments across all disciplines in a similar manner. Given the value that was accorded to this provision by senior managers, the Audit Panel therefore recommended that HKUST develop and promulgate a strategic vision and strategic plan for taught postgraduate provision that can be embraced by the broader academic community.

6.11   The Audit Panel was informed that it was the University's view that decisions to offer TPg programs rested primarily with individual Departments, based on faculty strengths and expertise, and community need, subject to the University's formal approval processes. This was in the overall strategic context whereby senior management annually reviews data and information provided by the Office of Postgraduate Studies (PGSO), to make decisions on the planning of TPg programs for future years. In such an exercise, qualitative and quantitative information is made available to Deans' Meetings. Decisions are made based on data, which includes the popularity of programs and the quality of applicants. Deans' Meetings also take into consideration resource issues related to the presence of a large number of full-time TPg students on campus, including reviews of usage of student-related campus services and facilities, so as to make informed decisions on TPg student intake. This was part of the University's strategic planning for TPg programs. Much work therefore goes into the planning and monitoring of TPg programs, which has resulted in restrained growth of the full-time TPg population in the past few years. The University therefore considers its strategic vision and strategic plan for taught postgraduate provision to be clear.

6.12 Notwithstanding the above, a Taskforce on the Review of TPg Education was established in response to the Panel's recommendation, to develop the strategic vision and plan for TPg Education, taking on board the mission and strategic plan of the University and recent developments in the local and global environments. A *Strategic Framework for TPg Education at HKUST,* charting the strategic vision, mission and general direction for the medium- to long-term positioning and development of TPg education and incorporating *Guiding Principles for the Development of Taught Postgraduate Programs*, was approved by the Senate in December 2016. The Framework, as a high-level policy statement, was made available in December 2016 to the University community, and to members of the public via the PGSO website.

6.13 A strategic objective in the University's *5 Year Strategic Plan 2020* is to be "*A Leader in Education and Research*, setting the trends for the future and with a drive towards a comprehensive transformative educational experience to support motivated and effective learning" (http://strategicplan.ust.hk/strategic-plan.html). This will be achieved through a number of strategies, which include strengthening the support for postgraduate education. The Strategic Plan emphasises that the University "will also **review the offerings, position and role of our taught postgraduate programs to ensure full alignment with our mission and vision**". The *Strategic Framework for TPg Education at HKUST* supports the University's Strategic Plan in this area of its Mission.

6.14 The CTLQ, at its meeting on 28 March 2017, noted that the Action Plan to take forward relevant parts of the Audit Report concerning TPg education and included in the three-month audit progress report had been fully implemented.

7a   AUDIT THEME: ENHANCING THE STUDENT LEARNING EXPERIENCE *[paragraphs 7.1 - 7.5]*

7.1 The University was pleased with the Audit Panel's conclusion that HKUST's "policies and procedures for enhancing the student learning experience are fit for purpose and noted the energy and commitment of HKUST to enhancing the student experience" [*paragraph 7.5]*. These policies and procedures are continuing, and will be enhanced as deemed appropriate as part of the continual commitment to enhancing the student learning experience.

7.2 For example, the University will pilot a residentially-based First-Year Experience program in 2017-18, which will be expanded to include the participation of all first-year students in 2018-19 and beyond. The program will place first-year students in peer groups of 15-25, all living in proximity in a Residence Hall, under the guidance of specially trained senior year peer mentors who will report regularly to the Resident Master, a senior member of the HKUST academic faculty. The goal of the First-Year Experience program will be to provide enhanced learning experiences for a close-knit group of first-year students, including opportunities for general advising about the transition from high school to the University, quality peer mentorship, co-curricular engagement, the development of interpersonal skills, increased exposure to fellow students of different backgrounds and cultures, out-of-class exposure to

members of the faculty, and structured opportunities to reflect on first-year experiences in a group.

7b   AUDIT THEME: GLOBAL ENGAGEMENTS: STRATEGIES AND CURRENT DEVELOPMENTS *[paragraphs 7.6 - 7.17]*

7.3   The 2010 QAC Audit Report affirmed HKUST's "continuing efforts to provide" opportunities to enhance students' global understanding and workplace readiness. Since then, much work has been done and the programme of activities is now significant in both quantum and impact. The 2015 Audit Panel therefore commended "the substantial and successful efforts of HKUST to provide international service learning and exchange opportunities for its students". While the University acknowledged that opportunities varied depending on School, the Panel noted "a clear commitment to ensure equivalent if not identical experiences and a desire to develop opportunities that transcended boundaries between Schools in line with the vision of '1-HKUST'". The Audit Panel therefore encouraged HKUST to press on in pursuit of these goals *[paragraph 7.12]*.

7.4   The adoption of the following two core values, extracted from the 5 Year Strategic Plan 2020, confirms the University's commitment to the above goals:

- **"Global Vision and Local Commitment:** the University positions itself as a focused elite research university at the cutting edge in all target fields of pursuit with global influence. We bring together global thought leaders to foster interaction, and partner with government, business and industry, to make significant contribution to the economic and social development both locally and nationally. In addition, we encourage and commend our faculty, staff and students to dedicate themselves to service to the local community;

- **1-HKUST:** the entire HKUST family work together as an integrated and holistic team. By bringing together the different ideas and roles of our people (students, faculty, staff, alumni, Council/Court, and friends of HKUST) and strengths of different academic and professional disciplines, we strive to make the whole of our university's mission bigger than the sum of its parts."

7.5   The Audit Panel also found evidence that "policies and procedures for global engagement are being successfully implemented and that HKUST is actively working to expand opportunities for students". It noted "a large number of international agreements covering student exchanges and internships, joint programmes, and research collaborations"; and that the "University's strong global rankings give credence to its claim to a culture of academic excellence". The Audit Panel therefore commended the University on its "proactive efforts in securing a large number of international agreements" *[paragraph 7.15]*. This expansion has continued, and the University now maintains over 500 active, international agreements covering student exchange and internships, joint programs, and academic and research collaborations. Over 220 undergraduate students participated in international

service learning trips in each of the last two academic years; and 950 and 986 students went on exchange in 2014/15 and 2015/16, respectively, representing increases of 8% and 12% compared with 2013/14.

7.6 After investigating the impact of international perspectives on the curriculum, the Audit Panel recommended that faculty and TAs be trained in cross-cultural competency in formal and informal learning, teaching and assessment, given the significance of this area to HKUST *[paragraph 7.15]*.

7.7 The Senate Committee on Teaching and Learning Quality (CTLQ: 26 October 2015) agreed that the Center for Education Innovation (CEI) should be asked to consider the above recommendation and bring forward suggestions to the committee for consideration. The CTLQ considered that these might include, for example, incorporating cross-cultural competency in formal and informal learning, teaching and assessment in CEI's orientation activities for new faculty and TAs, etc. The Committee also agreed that the CEI should liaise with the Student Affairs Office (SAO), the Global Student Programs Office and Schools in regard to how students' awareness of cross-cultural issues was being raised (e.g. through student-led initiatives and groups).

7.8 The SAO incorporates elements of cultural diversity in a number of its programs, activities and workshops, including the REDBird and Connect ACE programs, overseas service learning trips, the Cultural Exchange Program to the Pearl River Delta and the President's 1-HKUST Student Life Award. And the Student Housing and Residential Life Office (SHRLO) regularly organises social gatherings to encourage and facilitate cross-cultural integration in an informal manner.

7.9 Parallel to these efforts, the Associate Provost (Teaching and Learning) consulted the SBM and SHSS Associate Deans to identify faculty with expertise/experience in conducting research/training on cultures and diversity, to lead focus groups with students of different cultural backgrounds, with the aim of identifying any difficulties or issues that students had faced in their studies arising from or related to cultural differences. The input collected would be used to inform an online survey, to be distributed to all undergraduate students in the Fall of 2017, the results of which would provide information for Schools and DSTO to develop further opportunities for student engagement with cross-cultural issues, as deemed appropriate. Meanwhile, a workshop/seminar will be arranged in May 2017 to allow faculty and TAs who may have encountered problems in group projects, labs, classes, etc. to share their experiences and insights in building a congenial student learning environment. CEI is leading this project and will identify 2-3 Teaching Associates to support the faculty hosting the student focus groups in March-May 2017.

7.10 The CTLQ, at its meeting on 28 March 2017, considered and approved an Action Plan to carry forward the above initiatives in 2017, the feedback from which would inform actions in the next stage of development.

7.11   The Center for Education Innovation will also offer sharing sessions and seminars by experts for teaching staff and Teaching Assistants, materials from which will be used to produce online resources so as to provide on-demand teacher development in this area. The Center is also looking to make this a part of a broader initiative on internationalisation in the curriculum, through collaborations in the current call for proposals under the UGC's Teaching and Learning Funding Scheme.

<u>3 April 2017</u>

Progress in taking forward the 2015 QAC Quality Audit Report
Affirmations and Recommendations

Notes:
1. Paragraphs numbers in italic parentheses refer to the QAC Quality Audit Report
2. Paragraphs numbers in bold italic parentheses refer to the 18-month progress report

Affirmations

The Audit Panel affirms the steps being taken by HKUST to implement periodic review of all taught postgraduate programmes alongside undergraduate programmes as part of the quality improvement process. *[2.22]*	17 program reviews conducted to date: 4 (2014); 5 (2015); 8 (2016); 4 to be conducted in 2017 – see **Appendix 2**.
The Audit Panel affirms the actions being taken by HKUST to build English competence and provide training in teaching skills for all new research postgraduate students, and to enhance their transferable skills through the introduction of a Professional Development Course, which is a required course for all research postgraduate students. *[3.29]*	The Office of Postgraduate Studies, Center for Language Education and Center for Education Innovation have revised their respective courses/workshops/requirements for RPg students. *[3.16]*
The Audit Panel affirms the steps HKUST is taking to extend external benchmarking across all facets of the University, to routinely include data-based comparisons in addition to peer-review benchmarking. *[5.10]*	Efforts include increasing our data analytics and benchmarking capabilities, extension of the data warehouse, inclusion of performance indicators and metrics dashboards through a Performance Analytics, Intelligence and Reporting (PAIR) portal, quantitative sources such as the Common Data Collection Format (CDCF) data from the UGC, with international institutions through sources such as i-Graduate's Student Barometer and market intelligence research. *[5.2 - 5.3]*
The Audit Panel affirms the decision taken by HKUST in a recent review to roll out quality assurance processes available to undergraduate programmes to taught postgraduate programmes. *[6.15]*	A Special Taskforce on TPg Education Enhancement, monitored by the Committee on Postgraduate Studies, devised an Action Plan on the application of an outcome-based approach to student learning: intended learning outcomes were specified for all programs by January 2016 and for courses by the end of October 2016. PILOs and CILOs have been required as part of the approval process for new programs and courses from 2016/17. *[6.7 - 6.12]*

Recommendations

The Audit Panel recommends that HKUST enunciate and disseminate more explicitly and effectively the pedagogical underpinning of its e-learning strategy and expedite its implementation, integrating blended learning projects within the regular curriculum development process. *[3.20]*	Two key strategies identified for the enhancement of teaching and learning. *[3.7]*
The Audit Panel recommends that HKUST consider what additional communication and training in the system is needed to apprise students and faculty of its purposes and to clarify the ways in which both parties are required to make use of the system. *[3.34]*	Considered by Task Force on Student Tracking System; taken forward by Schools/Departments, Dean of Students, Associate Provost (T&L) and CEI. *[3.18-3.21]*
The Audit Panel recommends that the University review and revise, as appropriate, its strategy for gathering and responding to employer feedback to strengthen further the tri-modal undergraduate and postgraduate learning environment, student achievement and curricula of all programmes. *[4.15]*	• Evaluation & Research Team continues to undertake alumni surveys periodically; and, in consultation with relevant offices, has sought views of employers of HKUST graduates. *[4.4]* • In addition to the End-of-Program Survey conducted by

	the Career Center, the Office of Postgraduate Studies continues to use research postgraduate (RPg) students' supervisors as sources of information to help track the latest career development of RPg graduates. *[4.5]*
The Audit Panel recommends HKUST consider how it might further enhance the learning environment of research postgraduate students through systematic development and appraisal of faculty supervisory abilities. *[6.8]*	A Special Taskforce on RPg Education, monitored by the Committee on Postgraduate Studies (CPS), developed an Action Plan for enhancing the learning environment of RPg students. Implementation is being overseen by the CPS and the Office of Postgraduate Studies. *[6.2 - 6.4]*
The Audit Panel recommends that HKUST develop and promulgate a strategic vision and strategic plan for taught postgraduate provision that can be embraced by the broader academic community. *[6.16]*	CPS (7 September 2016) and Senate (7 December 2016) approved a *Strategic Framework for Taught Postgraduate Education* and *Guiding Principles for the Development of Taught Postgraduate Programs*, which was promulgated widely in December 2016. *[6.12]*
The Audit Panel recommends that faculty and TAs be trained in cross-cultural competency in formal and informal learning, teaching and assessment, given the significance of this area to HKUST. *[7.17]*	Actioned by Associate Provost (T&L), CEI and SAO. *[7.8 - 7.9]*

Taught Postgraduate Program Reviews: 2014 – 2019

2014
SSCI: MSc in Financial Mathematics
SENG: MSc in Information Technology
SBM: MSc in Information Systems Management
SHSS: MA in Social Science

2015
SENG: MSc/GD in Civil Infrastructural Engineering and Management
SENG: MSc/GD in Environmental Engineering and Management
SBM: MSc in International Management
SBM: MBA (Hong Kong)
SBM: MBA (Shenzhen)

2016
SSCI: MSc in Biotechnology
SENG: MSc in Intelligent Building Technology and Management
SENG: MSc in Mechanical Engineering
SBM: Kellogg-HKUST EMBA
SBM: MSc in Economics
SBM: MSc in Financial Analysis
SBM: MSc in Investment Management
IPO: MSc/GD in Environmental Science and Management

2017
SENG: MSc in Chemical and Biomolecular Engineering
SENG: MSc in Engineering Enterprise Management
SBM: HKUST EMBA
SBM: MSc in Global Operations

2018
SSCI: MSc in Environmental Health and Safety
SENG: MSc in Electronic Engineering
SENG: MSc in IC Design Engineering
SENG: MSc in Telecommunications
SBM: MBA - Saudi Arabia
SBM: MSc in Accounting
SBM: MSc in Global Finance
SBM: MA in Social Science
SBM: MSc in Global China Studies

2019
SSCI: MSc in Financial Mathematics
SENG: MSc in Information Technology
SBM: MSc in Information Systems Management
SHSS: MA in Chinese Culture
SHSS: MA in International Language Education