Strengthening Ontario’s Centres of Creativity, Innovation and Knowledge.

A Response to the Honourable Glen Murray’s Discussion Paper on Innovation to make our University and College System Stronger

Submitted, October 1st, 2012
on behalf of the University of Toronto by:
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The University of Toronto – Overview

The University of Toronto is a vibrant and diverse academic community. It includes 12,000 colleagues holding faculty appointments, 200 librarians, 6,000 staff members, and 80,000 students across three distinctive campuses and at many partner sites, including world-renowned hospitals. More than a key resource to Ontario, the University is one of the most respected and influential institutions of higher education and advanced research in the world. Its strengths extend across the full range of disciplines: The 2011 Times Higher Education ranking groups the University of Toronto with Stanford, UC Berkeley, UCLA, Cambridge, Oxford, and the University of Michigan as the only institutions in the top 25 in all 6 broad disciplinary areas. The University is also consistently rated as one of Canada’s Top 100 employers, and, in North America, only Harvard and Yale are rated as providing better library resources.

Adopted in 1992 and continuously upheld since then, the University’s “Statement of Institutional Purpose” includes a succinct Mission statement: “The University of Toronto is committed to being an internationally significant research university, with undergraduate, graduate and professional programs of excellent quality.” Twenty years on, Toronto remains a research pacesetter not only for Ontario, but for the world: only Harvard publishes more. We are also a continental leader in knowledge-translation and entrepreneurship: Toronto students and faculty generated 25 spin-out companies in 2011 alone. And while we have long been a critical contributor for Ontario and Canada in graduate and professional education, degree holders from U of T undergraduate programs are in leadership roles across Ontario and around the world.

To reinforce the value of a baccalaureate in a world of ‘credential creep’, we have made intensive efforts in recent years to ensure that undergraduate education at our University is enriched by the same culture of inquiry, discovery, and creativity that is the life-blood of our research success. This enrichment is the touchstone for the creative and critical thinking skills that can help our students be successful no matter where they live and work. Ideally, this approach will give students the tools to pursue careers that have not even been invented or, better yet, to become the leaders who invent those new employment opportunities for their fellow Canadians.

While our Mission is unchanged, the accelerating shifts in our context led the University in 2007 to embark on the most extensive planning exercise in our 180-year history. Towards 2030 took both a shorter- and long-term view of the University’s position and strategies. Its coverage ranged from strategic differentiation across the three campuses, to renewal of undergraduate education and modes of managing medium-term fiscal challenges.

Within the last few months, the University’s Provost has completed a wide-ranging review of the progress achieved since adoption of that plan. The results, reported in much greater detail elsewhere, are extraordinarily encouraging.

We are recruiting outstanding young colleagues to faculty positions. Our mid-career and senior faculty members continue to win a strikingly disproportionate number of national and international awards for research excellence. We have created the President’s Teaching Academy and made major investments to support excellence and innovation in teaching and
learning. Our dynamic east and west campuses are evolving rapidly into comprehensive universities that combine innovative undergraduate programming with selective expansion of graduate and professional education as well as more on-site research.

Our renewed commitment to undergraduate education has been manifest in: a complete overhaul of recruitment strategies with dramatically positive results; curriculum renewal and academic restructuring in the major first-entry divisions; the pursuit of our novel Big-and-Small strategy to augment student engagement in the face of enrolment pressures; the expansion of our excellent and intensive First Year Foundation Programs across colleges, divisions and campuses; major growth in experiential learning; and an Undergraduate Course Development Fund to catalyze greater engagement with undergraduate teaching by top researchers in the professional faculties (Law, Medicine, Social Work, and others). Due to internal changes and investments as well as our outstanding partnership with MaRS, we have seen a remarkable flowering of student and faculty entrepreneurship, innovation, and knowledge translation.

Above all, we have never seen better students – not just from Ontario, but also in rising numbers from across Canada and around the world. Equally important, from the standpoint of putting students first in Ontario, some 40% of our domestic undergraduates are from low-income households. We invest over $147M each year in student bursaries and scholarships with one aim in view: to ensure that students can be admitted on merit, not on the basis of personal or parental income. In this, we are driven by an abiding belief that in every free and democratic society, higher education is the social institution that best aligns ambition and talent with equity and opportunity.

Today’s students, of course, are tomorrow’s alumni. While we are proud of our historical and massive ongoing contributions to research and innovation in Canada, it is ultimately our graduates who constitute our single biggest contribution to the strengthening of communities and the creation of successful and innovative societies. The University claims 500,000 alumni in 175 countries: they are in leadership roles on every continent and in every sphere of human activity with surprising concentrations of influence everywhere from Hollywood to Hong Kong.

The Discussion Paper Overview

This foregoing institutional overview is relevant in several dimensions, starting with one observation. The Discussion Paper released this summer by the Minister/Ministry of Training Colleges and Universities [MTCU] does not speak directly to the role of Ontario’s research-intensive universities. Indeed, while the Paper rolls up some appealing concepts into a general vision statement, it does not set out a vision for the Post-Secondary Education [PSE] system per se. Instead, it promotes discourse around ‘Innovation’ as understood by MTCU, takes its policy cues from the Bologna Agreement, and embraces technology and standardization as the keys to government-led system ‘transformation’.

More generally, there is no clear articulation of the concept of different roles and responsibilities for institutions in the PSE system. This omission is noteworthy on two levels. First, the principle of differentiation has driven greater efficiency and effectiveness for both teaching and
research in higher education world-wide. Second, that principle has also been part of the Government’s policy agenda. Nonetheless, the word ‘differentiation’ is nowhere to be found. Graduate and professional education get no attention. The word ‘research’ appears a handful of times. At no point is scholarship highlighted in a way that suggests students’ education can be enriched by encounters with great minds inside or outside a classroom. Whereas most definitions of experiential learning include participation in research projects or community volunteer activities, the MTCU frame is largely vocational. Moreover, while one reads in the Paper about learning outcomes in relation to a ‘renewed funding formula’, and sees an interesting suite of performance measures for entrepreneurship education, measuring or rewarding research excellence or superb graduate education is apparently not on the agenda.

While these emphases and omissions are concerning, we believe a number of the proposals embody elements of sound public policy if they can be implemented in a disciplined, rational, and fair fashion. Before addressing the questions in the Discussion Paper, a brief review of the current context may be helpful – along with further reflections on how the opening pages of the Discussion Paper have framed the issues.

Context

The change in Ontario’s PSE system in the last decade is striking: some 140,000 additional students; rising completion rates in both colleges and universities; the highest participation rate in Canada, and a major increase in graduate enrolment. Ontario can claim more leading research-intensive universities than any province, and a host of celebrated comprehensive universities and community colleges.

At the same time, Ontario still has the lowest per-student PSE operating grants among provinces. The rate of growth of Ontario’s per-student university grants between 2002 and 2012 has – after full adjustment for changes in enrolment mix – closely tracked general inflation. Per-student university funding in Alberta, Saskatchewan and Newfoundland is roughly double Ontario levels. Inter-sector comparisons are also unfavourable. For K-12 (measured as per-student funding) and to a lesser extent for Health (measured on a per-capita basis), Ontario’s spending tracks above the average of the other provinces.

The conjunction of outstanding PSE performance and high participation rates alongside low levels of Government funding speaks to a simple fact. By almost any measure, Ontario universities lead the country in productivity.

Unfortunately, the province continues to face very difficult fiscal circumstances. Ontario also faces a demographic challenge as the population ages and the economy shifts. To meet the needs of the knowledge economy, not only should participation in PSE rise among those aged 18-25. We need more adult learners re-tooling and building new skills, not least those who are marginalized or do not meet traditional institutional admission criteria.

As the Discussion Paper rightly implies, salaries and wages in the PSE sector on average have risen faster than CPI, a mismatch given that growth in adjusted per-student funding, as noted,
has tracked but not exceeded CPI. The difference between per-student funding and salary growth has been covered in part by tuition revenues. However, the coupling of salary increases to tuition increases is arguably overstated. On the one hand, posted tuitions have indeed outstripped CPI. On the other, given both provincial and institutional student aid, including tuition reductions for students with demonstrated need, the fees actually paid by tens of thousands of Ontario students are well below the ‘sticker price’. For example, at U of T, net tuition increases on average have been closer to 3% than the 5% cap on institutional average increases that is part of the current tuition framework.

Because revenue growth has not been sufficient to fully offset growth in expenses, student-faculty and student-staff ratios have risen at many institutions. Those employed in the sector observe that the levels of per-student funding were and remain comparatively low, and that workloads have also risen. In response, the Ministry observes that salaries are more than competitive with other jurisdictions, and that rising workloads are partly self-inflicted because budgets stretched by pay raises could not fund the new hires needed to respond to enrolment growth. There is no easy way to reconcile these viewpoints politically or economically.

Conceptually, however, a submission in response to the Discussion Paper has been made by Professor Ian Clark that offers a compelling reconciliation of the problem. Clark argues that the current funding formula is built around the presumption that all universities do very similar things, and operating grants for similar programs should be standardized. Based on the usual job description for the professoriate, about $850M per annum is drawn from Government operating grants to pay for research-related activities by professors. But block grants mean that funding is not allocated with reference to research mission and actual research and innovation performance. The productivity flaw in this arrangement for teaching has been illuminated with stunning clarity in Clark’s related analysis of California’s two-tiered public university system. The teaching-intensive California State system offers bachelors and some professional masters degrees. Tenure-stream Cal State professors teach more than their counterparts in the research-intensive University of California system (and more than their colleagues in Ontario). U Cal professors teach less in the classroom, but do more research and graduate supervision. When the two sub-systems are combined and averaged, California is far ahead of Ontario in both contact hours and research productivity.

Obviously, it is impossible for Ontario to adopt the California bimodal university system. The array of Ontario institutions is best understood by reference to a matrix of attributes rather than on a simple continuum where differentiation turns only on research-intensity and percentages of graduate and professional program students. But as Clark’s analysis highlights, the failure to separate research performance funding from educational grants has contributed meaningfully to the current woes of the Ontario PSE system.

Other jurisdictions have taken a different path. As but one example, the UK has created two tranches of operating grants for universities. One tranche supports the teaching mission. It reflects student mix and numbers, with some variable components based on high-needs students and innovative projects. The other tranche supports the research mission and graduate education. It reflects the results of peer review and transparent research metrics. Project-specific funding from the equivalent of our granting councils comes in on top of
those funds. So it is that, for 2012-13, Oxford’s initial allocation for education was about £43.4M. Its research allocation was £131.5M. An additional £2.9M was awarded from the innovation fund. Neighbouring Oxford Brookes University received a base grant of £23.7M for teaching and £3.5M for core research support with an allocation of £1.6M for innovation.

Small wonder the UK’s great research universities have sustained their place in the world, with more of them joining Oxbridge atop the league tables. Undergraduate education does not have to cross-subsidize research and research-stream graduate studies; class sizes can be kept down – as is also very much the case in institutions such as Brookes that have a stronger teaching/undergraduate focus. Conversely, at Oxford, high graduate enrolments can be maintained along with the recruitment of top-flight research-stream faculty members. We believe Ontario, as a single sub-national entity, can learn more from such national policies than from a multi-national exercise such as the Bologna Agreement.

The Paper’s Frame

These considerations bring us to the Discussion Paper’s framing of the issues and opportunities confronting the Ontario PSE system.

The Government’s vision (p7) is positive so far as it goes. Reading it in fiscal context, however, one is reminded of the old adage: ‘Good, fast, cheap – pick any two’. Its analogue in public policy is: Quality, availability, affordability – pick any two. The Paper anticipates short-circuiting these trade-offs through technological innovation and process innovation, i.e. wider adoption of ‘best practices’. Experience in sectors such as healthcare shows that the impact of technological and process innovation in cost-containment is critically dependent on both labour substitution and consumer acceptance. The corollary for PSE is clear as regards faculty, staff and student acceptance.

It is also noteworthy on two levels that the Discussion Paper seems to take its cue from changes successfully effected in the K-12 system. First, those changes unfolded through a multi-year strategy. And the path to reform was rendered easier by the relatively higher baseline spending on K-12 and declining enrolments – both of which contrast sharply with the PSE sector. Second, the direction of the Paper at times seems more appropriate to K-12 – a sector characterized by greater standardization, relatively less professional autonomy, no expression of collegial self-governance, and no research mission.

Bologna is prominently referenced. The 1999 Bologna Agreement was indeed a bold step to create a more unified PSE system across jurisdictions. However, its relevance as a touchstone is limited as there is no such accord across North America or even across Canada. Were such an accord to be created, it would be on the basis of four-year degrees.

Meanwhile, the Bologna vision and the reality on the ground appear to be diverging as time passes. In theory, credits are widely transferable; in practice, mobility is still restricted by institutional capacity and independent admissions standards. The Discussion Paper also offers a head-line claim that Bologna credentials are ‘high-quality’ and states: “For those countries and
institutions that previously operated on four-year or longer programs, the objective was not to compress existing programs. Rather, new three-year bachelor’s programs created comparable degrees across jurisdictions that were aligned with inter-jurisdictional trends in technology and the economy”. In contrast, a number of critics have argued publicly that compression is indeed what has happened, that students are stressed, and that the usual three-year degrees are not preparing students adequately for either the workplace or graduate studies.

It is easy, of course, to be tantalized by the excellent three-year undergraduate degrees at, say, Oxford, Cambridge, or Manchester. However, students enter those universities with an extra high-school year of A Levels and a degree of specialization that is more than equivalent to our first year of university. Meanwhile, in the USA, China, and Brazil, four-year degrees are the norm. Paradoxically, were Ontario’s top undergraduates to pursue MTCU’s preferred path of three-year degrees without compression, doors around the world would slam shut on them for graduate studies – not just at Harvard or Michigan, but at Oxford and Berlin inside the Bologna zone.

On a more positive note, the Discussion Paper endorses Australia’s national “diploma supplement”. Such transcript notations are already done by many Ontario institutions including ours, but could and should be strengthened. Caveats above notwithstanding, the Paper’s emphasis on experiential learning and entrepreneurship is welcome.

The section on Learning Outcomes is also a step forward in policy scope. There is massive experience with use of both process and outcome measures to enhance quality in healthcare. Process measures, in fact, are frequently much more efficient than outcome measures – particularly if they have been validated against outcomes. We would flag as well the danger of misleading results arising from differential enrolment of very weak or very strong students. That said, as outlined below, U of T endorses the concept of developing effective and efficient measures that can reflect student success, and is already working with partners on a made-in-Ontario instrument.

Last, on the matter of credit transfer, the Government proposes to make “100 percent of first and second-year introductory, general education, and core courses fully recognized across institutions”. In Alberta and British Columbia, credit transfer systems are based on inter-institutional agreements, not government fiat; and there is no such sweeping recognition in either of those jurisdictions. Assuming, however, that the PSE system in Ontario can and must make rapid progress with and through OnCAT, there remains – as in the Bologna arrangements– the problem of who will actually admit students, particularly non-traditional learners, and who will grant them a degree?

This last concern speaks to the very real possibility that stakeholders across the PSE sector were too quick to dismiss the concept of a new degree- and diploma-granting entity that might combine elements of the proposed On-Line Institute and Contact North to create a modified version of Britain’s Open University.
Specific Elements

Questions: “How do we further strengthen the culture of innovation in the sector in order to enhance quality and productivity? What are the barriers and roadblocks to innovation and productivity today? What measures could be taken to remove them? Are there some practices already in place that could be used as best practices to guide the sector?”

One key step for Government is to streamline its transactions with universities and colleges. This avoids wasting time and money better spent by both sides. It also increases administrative bandwidth for both sides to deal with a period of hectic change.

However, the single most important step is funding formula reform. K-12 type standardization of the formula would undo decades of differentiation and destabilize the system to no clear advantage. Instead, results-based reforms are urgently needed, using both research performance measures as proposed by Clark, and educational outputs/outcomes. These measures could be applied to enrolment growth funds, leaving existing envelopes frozen until the province’s finances improve. Existing envelopes, moreover, could be set up on a block grant basis, with a return to BIU corridors as well as enrolment corridors. This would allow the Government to ensure efficient diversification of roles and responsibilities across institutions, while leaving universities free to manage their finances and enrolments in a more nimble fashion.

Last, COU and CO should be encouraged to develop on-line directories of best practices as submitted by member institutions. We would be happy to contribute.

As already noted in our institutional overview, faculty and staff at the University of Toronto today continue a long-standing tradition of innovation in higher education. To add other examples, our outstanding teaching-stream faculty have made a huge difference to the effectiveness and efficiency of undergraduate program delivery. Toronto was the first Canadian University to be part of Coursera, the massively open online course [MOOC] consortium. As an example of our Big-and-Small Strategy combined with experiential learning, Engineering Strategies and Practice is an award-winning first year program that melds large lectures with design projects, pairing small teams of 4-5 students with a client and a faculty adviser. On the institution-wide front, the University’s relatively new (2006) budget model is an excellent example of an organizational innovation that encourages efficiency and frees up resources to enhance quality of front-line teaching and student experience. This model relies on the transparent delineation of revenues and expenses, and places decision-making authority in the hands of divisional leaders closest to the activities of teaching and research. Academic divisions have used the resulting transparency and alignment of incentives to be smart and entrepreneurial about ways to increase revenues and generate efficiencies, e.g. through increased summer enrolment, or decommissioning low-use space.

In brief, each university and college is finding innovative ways to move forward in the face of today’s fiscal pressures. We believe these stories should be shared so that each university or college may learn from, and adopt or adapt the innovations developed by their sister institutions.
Questions: “How can we improve on Ontario’s current range of credential offerings – for example, through three-year degrees, an increased focus on learning outcomes, and time to completion? How else could Ontario move forward to increase student choice and improve labour-market outcomes for students?”

We raised above the problems with a broad shift to three-year degrees at Ontario’s universities. A further problem is that the learning outcomes articulated in Ontario’s current degree-level expectations for undergraduate honours degrees are unlikely to be met in a three-year time-frame. Instead, as noted, the three-year bachelor degrees in Bologna-compliant countries have been criticized as insufficient either as a vocational qualification or as a prerequisite for graduate studies. In contrast, a four-year degree provides students with the time to participate in opportunities such as service learning, internships, co-op, international study, and co-curricular activities. And increasingly, such experiential learning opportunities are what our students expect and demand.

Completing a 20-credit degree within a three-year time frame does remain an option at the University of Toronto. Indeed, a specialized Fast Track three-year degree is in pilot stage, with academic enrichment offered to very accomplished students who can manage the faster pace. And some Ontario universities still offer a 15-credit, three-year degree as an option for students.

While we do not support a universal shift to three-year degrees for universities, it would seem timely for academically strong colleges to do more in this respect. Returning to an earlier theme for universities, more explicit differentiation of roles among colleges is overdue, and would be reinforced by asking some colleges to initiate or expand existing three-year degree offerings.

Last, while we welcome initiatives by the Ministry to broaden the range of options and models for credentials in Ontario’s post-secondary system, we suggest that such measures are best situated in the context of policies that clarify institutional roles and do not skew funding allocations. For the University of Toronto’s part, we are actively working to expand our own range of credential options by offering combined bachelors and masters/professional degrees – the best feature in our view of the Bologna project. Our bellwether in this regard is the University’s prestigious and successful Jeffrey Skoll BASc/MBA. By advanced acceptance into graduate courses, and some parallel tracking, students are then able to complete the two degrees on an accelerated basis.

Questions: “The government hopes to further improve credit transfer and student mobility between colleges, between universities, and between colleges and universities. What further steps should the province take to improve Ontario’s credit transfer system? What additional tools are needed? How do we ensure that Ontario credits and credentials remain compatible and competitive?”

Improving the ease with which students may shift from one institution to another is an important first step towards supporting student mobility. But facilitating mobility through credit transfer is not the end of the process. The ultimate goal for students, institutions, and the province is more appropriately focused on ensuring that students who wish to move between institutions in
Ontario are able to complete their studies and obtain the credential(s) they seek without unnecessary impediments. As noted, we believe that an Open University/College model has been discarded too quickly. Investment in such an entity would maximize the impact of OnCAT and could encompass any new On-Line Institute.

U of T also urges continuing investment in facilitated college transfer models, in which students receive intensive, personalized supports before, during, and after transfer to the University. On all three campuses, U of T has formed strategic transfer agreements with high quality, neighbouring colleges – an approach which responds to the major source of demand for transfer from college students, with the additional benefit of streamlining the administrative processes for students and the University.

As to inter-university credit transfers, each year academic divisions of the University of Toronto assess and give countless credits for undergraduate courses that our students have taken elsewhere. As well, the University recently joined six other Ontario universities in forming the University Credit Transfer Consortium – again with a view to streamlining administrative processes. Members of the Consortium are committed to ensuring that our students have access to a wide range of automatically transferable courses. Any first year Arts and Science-type course offered for degree credit by a member of the Consortium will be accepted for general credit by all member institutions providing the student has achieved a minimum course grade of 60%. Consortium members have further agreed to specific equivalency for a set of 20 high-enrolment foundational courses. The Consortium is committed to evaluating this initiative and expanding these agreements over the coming year.

While we endorse the importance of student mobility, our community takes seriously the quality of the degrees granted by the University of Toronto. We will continue to assess courses (and transfer applicants) independently and solely on their academic merits.

**Questions:** “What opportunities exist to provide year-round program delivery to more colleges and universities? How have some institutions in Ontario and around the world overcome challenges to year-round program delivery, such as attracting students to summer courses?”

The University of Toronto agrees that expanding summer learning options provides additional flexibility for students in completing their degrees. Our eastern campus has operated on a trimestered calendar since 2003. As a result of a planned expansion of summer offerings across all three campuses, last summer we had 27,668 students taking courses at U of T.

The University of Toronto plans to continue to expand its summer enrolments and further support year-round learning opportunities for our students. Our faculty and researchers hire as many summer students as their funding allows and the University of Toronto is self-funding the much-lamented Government of Ontario’s Work Study program which was cancelled in the last provincial budget.

We do note the following caveats regarding summer term operations. The majority of university space (90%), including libraries, study space, research laboratories, offices, administrative space,
etc., is utilized by universities year-round. This is particularly pertinent to the University’s St. George campus, which is more graduate- and research-intensive than the newer east and west campuses. Second, course enrolments and academic conference traffic together mean that, even in summer, the vast majority of formal classroom space is utilized to near capacity. Third, expanding summer learning options also comes with notable additional costs, most obviously in additional faculty and staff and in installing and/or operating cooling systems. In that regard, our experience has shown that to achieve greater efficiencies and cost savings depends on how the summer programming is designed. This experience is consistent with an Educational Advisory Board study in the US that found a discontinuous relationship between enrolments and cost savings from trimesterization. Similarly, a University of Waterloo study concluded that running summer courses to accommodate co-op students resulted in an increase of about 18% for instructional costs.

It may well be that, per the proposal above, universities and colleges can share best practices in the realm of trimesterization and efficient summer use of facilities.

Questions: “What are the competencies that you expect graduates of our institutions to have and how do you measure whether they have been acquired? How heavy a weight could learning outcomes have in a renewed funding formula?”

Ontario universities are strongly committed to excellence in teaching and learning, including rigorous measurement and assessment. To this end, universities have made the assessment of learning outcomes the backbone of the new Quality Assurance Framework. The extent of these activities and their relevance, both as regards general learning and discipline-specific elements, is sometimes overlooked as one hears or reads ‘horror stories’ about the numbers of US students who, on the basis of one or other standardized test, show little or no progress from 1st to 4th year. We believe that all partners in the sector, including institutions and government, could do a better job at communicating how learning outcomes are formally incorporated into the design, teaching, evaluation and quality assurance of undergraduate education.

It is also relevant to focus these efforts where they may add some value. For example, University of Toronto is a world leader in the evaluation of learning outcomes in health science students through the use of simulation labs and Objective Structured Clinical Examinations [OSCEs]. Most of those programs are externally accredited, as is also the case with Engineering among other professional schools outside the health sphere.

As to more standardized measures, a vast amount of thought over many years has gone into some of the common goals of a fine undergraduate education. This brief submission affords no space to debate what should or should not be in this basket of degree-related desiderata. Rather, we would simply highlight again that, even if one assumes that available generic instruments are accurate and precise at measuring what they purport to measure, the full range of confounding variables needs to be considered. Discipline-specific instruments in non-accredited programs have the advantage of a narrower focus for assessment, but their marginal value may be limited in a system with appropriate quality oversight. Feasibility is also a challenge. The Ontario
Collegiate Learning Assessment [CLA] pilot project was limited by weak student participation and illustrated the limited potential for adopting the CLA in Ontario.

As an alternative approach, U of T is currently in discussions with HEQCO about a different type of learning outcomes instrument. The survey-based instrument under development would represent a rigorous and innovative new approach to the assessment of broad learning outcomes; it will focus on arts and science programs and disciplines outside of accredited programs.

Longer-term views also matter. In 2012-13, the University of Toronto, along with 12 other Ontario universities, will survey its graduates five years after graduation on the impact of various elements of their educational experience. The survey results will provide valuable feedback on the status, experiences and perspectives of graduates related to learning outcomes.

Meanwhile, what is to be done? Obvious interim possibilities include measures of undergraduate and professional masters degree completion rates. On the other hand, pitfalls abound. We caution, for example, against extension of such measures to the doctoral stream (where there is marked disciplinary variation). Similarly, any use of a simple time-to-degree completion metric for undergraduates must be adjusted to avoid penalizing institutions for admitting students from lower-income households who may need to work part-time.

**Questions**: “In what ways are learning technologies best used to promote effective learning? How could a degree- and diploma-granting Ontario Online Institute interface with existing institutions?”

Learning technologies offer a range of new ways to connect with students and other members of the public. In utilizing learning technologies, institutions consider factors such as pedagogical objectives; the target audience; the needs of the student; costs; and quality.

Mindful of these factors, the University of Toronto continues to expand its suite of online courses and programs. Open.UToronto is the university’s platform for students and members of the community to find, use, create, and share openly licenced content, resources, and courses. Open.UToronto has a growing catalogue of online courses, lectures, and open access sites. We have posted thousands of pages of digital collections, open journals, a research repository, learning objects, and open courseware on this platform.

U of T currently offers 90 for-credit undergraduate and graduate courses online. Through the Online Undergraduate Course Initiative, U of T is increasing the number of online course offerings each year, with a goal of 30 re-designed undergraduate courses within three years. Ten new undergraduate online courses will be piloted in 2012-13. This initiative provides the seed funding, faculty supports, and technical course design resources necessary to ensure that new online course offerings meet the University’s standards with regard to quality and security.

We are also extremely pleased to be part of the Coursera consortium, and are offering five open access courses through this initiative. Within eight weeks after our partnership with Coursera was announced, U of T’s courses already had more than 100,000 registrations.
In addition to the growing suite of online for-credit and open access learning opportunities, the University is rolling out new student services for online delivery. For example, our new ‘Counseline’ initiative offers counselling online and on-site to Arts and Science students by graduate interns in the Factor-Inwentash Faculty of Social Work. The University also offers online health and wellness webinars on a variety of topics related to health, wellness, and healthy coping skills for students.

As is the case for any form of pedagogy, technology-enabled learning can be developed and delivered with varying levels of resources. Online learning in a for-credit context requires significant resources in the development of the course, testing and evaluation instruments, operations and technical support. We caution against the assumption that online learning is necessarily cheaper than other modes of instruction. Instead, our experience has been that online learning can be used as a means to improve quality and responsiveness only when appropriate resources are available.

Last, we observe again that many learners who might benefit from on-line resources will not be in the 18-30 year-old demographic that typically dominates undergraduate and graduate courses. Ontario needs to open up a wide range of PSE opportunities to these individuals who will have difficulty gaining admission to existing institutions. Absent degree- or diploma-granting capabilities for an Open University/College that has a special emphasis on distance/on-line learning, we believe that many of these learners will be stranded.

**Questions:** “The government is committed to providing new and dedicated support for Ontario’s young entrepreneurs. How can the postsecondary education system contribute to this objective through experiential learning initiatives? What kinds of curricula, programs, or support are needed to increase the labour-market readiness and entrepreneurship capacity of students graduating from Ontario colleges and universities? What lessons can be learned from the apprenticeship programs as we design new experiential learning opportunities for Ontario college and university students?”

As above, it is somewhat puzzling that the Paper focuses on entrepreneurial and experiential learning while ignoring graduate and professional education. And, as regards experiential learning, it adopts a relentlessly instrumental or vocational approach.

That caveat aside, we support the efforts by the Government and sister Ontario institutions in fostering the entrepreneurial spirit of Ontario’s students and graduates. While not every student will want to become an entrepreneur, entrepreneurial thinking drives students to ask questions, take initiative, and seek better answers and solutions. These values are core to the mission of the University of Toronto. And again as emphasized above, U of T believes that both undergraduate and graduate education are enriched by research, and that a culture of innovation is important in every discipline we teach. Successful enterprises depend on people who have not only the requisite knowledge or skills, but creative minds coupled with an innovative outlook.
We accordingly take the position, as with other elements of the Paper, that developing and delivering these programs should be a core part of each institution’s mandate and any financial support should be catalytic, amounting to seed funding.

Meanwhile, the University supports entrepreneurship in a variety of ways. For students we offer highly coveted academic courses and training programs; career resources; and opportunities to connect with seasoned entrepreneurs. For faculty and researchers we provide business incubator facilities, focused training programs and supports. The University and its hospital partners lead Canadian academe in the number of start-ups created – many led by students. To sustain that advantage, U of T has created the Innovations and Partnerships Office [IPO], which works with MaRS and with MaRS Innovation (a group of 14 universities, institutes, and hospitals in downtown Toronto that is sharing resources and expertise to identify and leverage the commercial potential of discoveries made by faculty, staff and students).

Space is already part of the equation. For example, several years ago the chemistry department converted five underused labs into state-of-the-art “pre-incubators” that have already nurtured five spinoff companies; one of these is StemSpec which has 50 employees and manufacturing facilities in Markham. Our students are the primary drivers in these companies and often hold the top leadership positions. These are home-grown jobs that now represent an important sector of employment for our graduates.

Moreover, the University is now setting up additional incubator and innovation space to be named The Banting & Best Centre for Innovation and Entrepreneurship. The Centre already has five successful U of T start-ups (ViveNano, 1 Degree Bio, Syletta, BioAspect and Bionym) as tenants and also houses our Innovations and Partnerships Office, Mitacs, Techna (from the University Health Network), and the Center for Commercialization of Regenerative Medicine. Students will be mentored through programs run by the BEST-IOS (Building Entrepreneurs in Science & Technology) group lead by chemistry professor Cynthia Goh, herself a veteran of three start-ups; activities include a three-week summer boot camp in “technopreneurship” with participation by recent graduates from across the province.

Last, Toronto is also home to a growing suite of educational programs designed to nurture the next generation of entrepreneurial leaders in Canada. The MaRS convergence centre offers “Entrepreneurship 101.” These weekly seminars cover topics such as how to make an effective pitch to potential investors or create a sales strategy. More than 1,800 people – many of whom are U of T faculty and students – take part in these sessions each year. We are now moving in partnership with MaRS to develop this into a course that will receive credit in our downtown Faculty of Arts and Science.

As to work-integrated learning opportunities, the University offers these through its co-op programs, Professional Experience Year programs, and other programs that include internships/practicum components. Just over 1,500 undergraduate students per year (1570 in 2011-12) are enrolled in co-op programs at UTSC. Students employed by local and international companies gain up to 12 months of industry experience relevant to their undergraduate degrees. The oldest and largest paid internship program in Canada, the Professional Experience Year [PEY] provides over 600 computer science, engineering, business and pharmacology students
(665 in 2011-12) with a year of valuable industry experience. Over 80 other academic programs at the University of Toronto include internships/practicum components. These programs range from term internships in the Master of Global Affairs program to the 160-hour practicum for the MScCH in Public Health Sciences.

The University of Toronto also offers opportunities for students to earn credit through experiential opportunities in community settings. Each year thousands of U of T undergraduate students connect with community organizations in co-curricular service placements organized by the Centre for Community Partnerships. Participating organizations gain students’ expertise while students learn to apply theory to real-world settings. Work placements range from developing educational materials for the Kidney Transplant Network to designing music programs for the disabled.

In brief, these are now part of our core mission. We expect it is very much the same at sister institutions. Thus, so long as the definition of experiential learning is broad enough to include activities such as research or community placements in the non-profit sector, we believe this field of institutional activity is moving forward well.