

The Measured Academic Quality controls in Ontario universities

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INTRODUCTION

With the promise of increased operating funding, the Ontario government has signalled its intention to negotiate new multi-year agreements – ‘contracts’ – with universities. These agreements likely will be more detailed than any agreements universities have had to sign in order to receive provincial funding. The government also is indicating a desire to build in more performance indicators as a means of measuring quality outcomes flowing from increased funding inputs, despite the reality that indicator-driven funding in postsecondary education is a controversial practice that, to date, has produced questionable results. The Ministry of Training, Colleges and Universities (MTCU) is consulting with the university sector to develop system-wide and institution-specific performance indicators in the following areas of focus: faculty and support staff recruitment; enhancement of education resources; student services; retention and graduation rates; and strategies for improved access and success for underrepresented groups.

Charged with the challenge of preserving quality education despite austere postsecondary education funding over the past decade, Ontario’s academic community has been among the first to support government commitments to enhance quality in our classrooms. This is an important issue for members of the academic community. However, it must be recognized, many attempts to measure quality are plagued by questions about the accuracy and adequacy of the exercise. Moreover, one impact of heightened accountability measures has been to place new burdens on faculty and staff without necessarily improving quality. There are also additional stresses on Ontario faculty as a result of increasing expectations over the past decade. The number of faculty available to teach an increasing student population, and the decline in the supports available to faculty, have had a significant impact on the quality of life for academics in Ontario’s university system. OCUFA wants to ensure the Ontario government does not repeat the mistakes of previous governments, in Canada and abroad. It is essential to balance the government’s desire for accountability with the need to respect the dual cornerstones of the university: institutional autonomy and academic freedom.

SECTION 1: How to preserve quality in Ontario universities

A university's primary mandate is to educate students and to expand knowledge through research. This discussion paper surveys a rich and diverse set of quality controls that are in place – and in regular use by faculty, students, and university administrators – in order to ensure Ontario's university students have access to high quality education that meets rigorous academic standards. Between peer review, student evaluations, and the myriad of institution-based means of measuring activities underway in Ontario's university system, it is fair to say the academic is among the most measured of professions. Yet the Ontario government has expressed a desire to implement more layers of accountability measures to monitor and ensure quality improvements within the postsecondary education system.

The challenge for the government lies in its ability to reach a common definition of “quality higher education.” How should we judge improvements in quality? For faculty, the answer is simple: how much further are we moving towards reducing Ontario's student-faculty ratio, which is the worst in Canada? Are these net new tenure-stream appointments, rather than limited-term and part-time hires? The latter represent stop gap measures rather than long-term commitment to quality. Are classroom sizes small enough to foster rich academic inquiry and exchange of ideas? Are there adequate staff and student resources to ensure future generations of university students have access to the best possible education?

The government also faces a second, serious challenge: to ensure new layers of accountability bureaucracy result in an assessment process that yields quality enhancements rather than simply giving the illusion that quality improvements are a natural result of increased accounting bureaucracy. Creating an inclusive, transparent process is important. The Council of Ontario Universities (2004) recommends government proceed through extensive consultation; articulate clear, shared goals for the system; keep performance indicators (PIs) to a minimum and ensure they are both meaningful and “reflect the diversity of Ontario's universities, recognizing that each university contributes in different ways to the government's objectives for the system.”

OCUFA agrees with these recommendations. At the same time, we recommend that the government take the following into account:

Enhancement of quality and accountability depends on appropriate government funding: For a discussion about quality in Ontario's postsecondary education to serve its purpose, the subject deserves to be rooted fully in its context: For the past decade, this province's university system has been in a state of constant change and chronic underfunding. Quality improvements can only take place if government provides needed resources; quality measurements cannot replace inadequate system funding.

Quality improvements and the development of measurements must be a collective endeavour including administrators, faculty, students, staff and government: Before moving forward, the government should engage the academic community in a public

debate on how to achieve a high quality postsecondary education system. This debate must include all major PSE stakeholder groups. University faculty have a substantial and direct impact on the quality of the education Ontario students receive – they must be consulted. Moreover, the pattern of ad hoc changes undertaken by this government and previous governments has had a negative impact on higher education in the province. The exchange of information regarding quality improvements in the postsecondary education sector will be strengthened when all major stakeholders are present at the decision-making table.

Eliminate current use of KPIs and indicator-driven funding: The Key Performance Indicators (KPIs) introduced by the previous government (employment after six months, after two years, and graduation rates), fail to monitor quality and quality improvements within postsecondary education. By using graduate employment rates, the emphasis shifts away from evaluating the development and dissemination of knowledge – pedagogy – and focuses instead on simple market outputs that are more contingent on general economic conditions than they are on what happens during a student’s time in university. Graduation rates track degree completion rates but they do not measure the quality of education the student receives. OCUFA recommends eliminating the requirement of all universities to report to the Ministry on these three measures. Similarly, OCUFA recommends the government eliminate the performance fund created by the previous government, ending the practice of indicator-driven funding and putting those funds into direct quality enhancements.

Government cannot ensure quality in postsecondary education without investing in quality faculty: If the government intends to ensure a high level of quality in postsecondary education, substantial investments must be made to facilitate teaching and research. For too long, universities have hamstrung academic staff from doing their jobs properly by loading up classes with a growing number of students. Large class sizes strain quality in higher education. Faculty members have been forced to teach with little or no assistance from teaching assistants, lab assistants, computer assistants and administrative support. Faculty members have been expected to produce results with limited equipment, drawing from underfunded libraries and, in some cases, antiquated resources. The burden can be even greater for sessional and part-time staff who are hired at a moment’s notice, whose workload is substantial, even excessive, and who have no guarantee of academic freedom because they are not tenured. For maximum impact, the government must direct quality funding to hire more tenure-stream professors; hire more academic librarians, librarian technicians and library support staff; reduce the student-faculty ratio and class sizes; and hire more teaching assistants and research assistants.

Quality indicators must be primarily local in orientation, reflecting the missions of institutions: Ontario’s universities are diverse in size, scope, and activity. System-wide quality indicators tend to ignore this fact. Quality indicators at a provincial level would encourage a deadening uniformity across all universities, and would undermine universities’ efforts to operationalize strategic plans created to reflect their mission and local needs. Locally driven performance monitoring should reflect a broad consultative process, including faculty and students around the decision-making table.

Government must respect university autonomy and academic freedom in its quest to encourage accountability, transparency, and quality improvements: Universities should be free to pursue inquiry while retaining the right to determine goals and programs within the context of their missions, as well as determining the means by which those goals and programs will be realized.

Quality indicators must be evaluative, not punitive, in orientation: If institutions are penalized for not meeting the performance standards set out by the government, the government risks yielding results it may not have intended. For instance, smaller institutions are put at a greater disadvantage in a punitive system. They are less likely to meet system-wide performance standards due to limited resources and a more narrowly focused mission. Performance funding requirements that are punitive often reward older, established, larger institutions; they miss the point that all universities need help to implement quality improvements. An undesirable result of punitive performance funding models is often that universities alter their behaviour – in contradiction to that institution’s unique mission – in a desperate attempt to secure funding. Or, a university may decide to sharply raise tuition, in order to make the required internal improvements, making tuition more unaffordable for students. A university may also decide to hire more part-time faculty to save money; eliminate faculty positions or even entire programs; and cut costs by outsourcing services to external providers. As a result, the quality of the education a student receives is compromised.

Measures should focus on quality education: It is essential that quality indicators measure what they purport to measure and do not simply measure whatever is easiest and most politically desirable. Utilitarian measures of employment and graduation fail to capture institutional quality concerns.

Finally, measures should also be designed to gauge both student satisfaction and faculty concerns about quality. If the U.S.-based National Survey of Student Satisfaction (NSSE) is to be used by Ontario universities, as intended by the provincial government, OCUFA recommends it be adapted to reflect the Ontario higher education context. A faculty satisfaction survey should also be developed to reflect faculty concerns about quality, and related concerns about teaching and research.

SECTION 2: What we mean when we talk about quality

There are as many definitions of quality education as there are approaches to teaching and learning. As the Government of Alberta (2005) – the first Canadian province to implement performance indicators to assess quality in its universities – acknowledged in 2005, “Quality is not a self-evident or universally accepted term. It is multi-dimensional and means different things to different stakeholders.” Indeed, many factors contribute to quality education in our universities – ranging from class sizes to excellence in research. This section captures the range of factors worth considering when defining quality in postsecondary education, beginning with the importance of the academic. Smith (2000a) reminds us of the significant influence of faculty in providing quality education:

It is faculty who help guide students' thinking through the relevant bodies of knowledge – challenging them to deepen their understanding of the world within and about them – and who provide evaluations of students' progress in chosen subjects. It is faculty who can have a powerful influence on the creative expressions, critical assessments and intellectual inspiration of students in advanced study. It is faculty who are major contributors to knowledge through their research and scholarly activity. Thus, the highest priority in sustaining and enhancing the quality of the university sector is the number and excellence of faculty.

A 2003 EKOS poll revealed the Ontario public views teaching “as the elixir of quality”, citing it as “the key factor that resonates most strongly in the minds of Ontarians when thinking about quality and the university.”

The results of the EKOS poll also illustrate the complexity inherent in the attempt to define quality, noting Ontarians also see a wide range of factors are important to ensure a high quality university education “and many see the need to allocate resources to improve quality.” According to the Ontario public, quality improvements include: A well-stocked library that makes use of leading-edge technology; well-maintained and equipped classrooms and programs of study; availability of co-operative, work placements, and internships; small enough class sizes to ensure classroom interaction between student and professors or instructors.

How the public defines quality			
Key factors in defining university quality in Ontario			
	Extreme importance	High importance	Low importance
Professors with high degree of teaching skills	79	19	2
Well stocked library	67	28	4
Well maintained, equipped classrooms and labs	55	42	3
Wide choice of courses, programs	49	43	8
Co-op, work placements	49	44	7
Small class sizes	47	38	14
Access to professors	47	44	9
Counselling, career planning	41	47	12
Opportunity for students to work with leading researchers	39	50	11
Internet to assist in delivering courses	30	52	18

Source: EKOS Research Associates Inc., Perceptions of Quality, February 2003, 28.

OCUFA polling results indicate Ontarians view the following elements as key to ensuring a high quality postsecondary education: More up-to-date technology, more government funding, expanded grant and loan programs, smaller class sizes, more full-time faculty, lower student-faculty ratio, and updated buildings and facilities, (OCUFA 2004 and 2005).

Results from student assessments of quality, reported widely in the National Survey of Student Engagement (NSSE 2004), make it clear that Canadian students consider a supportive campus environment, including contact with faculty, as key to a quality educational experience at university. Kuh (2001) points out that of all the research on student development in higher learning, the single best predictor of their performance is the amount of time and energy they devote to their studies. The implication, he concludes, is those universities that concentrate on fully engaging students provide higher quality education.

Bruneau and Savage (2002) offer a list of criteria that should be considered in assessing quality in postsecondary education. The list includes assuring academic freedom – the cornerstone of critical thinking and inquiry which makes quality education possible. It also includes focusing efforts to ensure that university senates, faculties, and departments exist in a society where concepts such as good teaching and research are “persistently and publicly debated – and decided” and where university mandates are publicly “discussed, revisited, and reinterpreted as often as possible”. Additionally, it includes adequate public financial support to keep tuition low; student access high; teachers’ salaries competitive; classroom sizes manageable enough to ensure faculty contact with students; a healthy physical setting in which to work and study; and excellent research supports.

The value in respecting university missions, traditions

Fallis (2005) documents how the modern Canadian university grew out of the understanding in the post-war era that higher education was a vital public tool to enable veterans to return to civilian life and contribute to the modern economy. It was understood governments would adequately fund public universities with the broader policy goal of widening student access and increasing participation.

Government would provide general policy direction to ensure our provinces were committed to higher learning. Professors would teach and they would conduct research that would lead to momentous innovative discoveries that have helped fuel Canada’s growing economy. Professors would provide service to society. In return, the university would have the institutional autonomy and the academic freedom to carry out free inquiry, “the *raison d’être* of the modern university” (Fallis 2005).

As a result of this mutual agreement, Ontario universities came to open their doors to an ever-increasing student population, with enlarged class sizes and heightened expectations. Universities came to play a central role in Ontario society, educating a more broadly diverse range of students, providing the research capacity required to compete in a knowledge economy, and ensuring quality higher learning even as government funding

was peeled back. Now that the government of Ontario is returning to its role of adequately funding postsecondary education, the question of quality is being revived. But instead of focusing on the quality improvements that need to be funded, the discussion is shifting to that of measuring quality. Before diving headlong into a search for new performance measurements of quality, it would be fruitful for public debate and serious policy deliberation to consider a basic question: do performance indicators improve quality or do they simply add another layer of bureaucracy in the name of quality?

Universities in Ontario (and elsewhere) express clear missions that reflect their unique values and local needs. There are two basic values guiding all university activities: institutional autonomy and academic freedom. Academic freedom is “that freedom of the individual scholar in his/her teaching and research to pursue truth, wherever it seems to lead without fear of punishment or termination of employment” (Berdahl 1985).

Academic freedom ensures universities are driven by the pursuit of knowledge for the sake of knowledge. While benefits may spill into the public and private arena – medical discoveries that save lives, technological inventions that are lucrative market commodities – academics are, at heart, compelled by the need to question, the need to seek answers, the need to know. Institutional autonomy has two important elements: “substantive autonomy” or “the power of the university in its corporate form to determine its own goals and programs” and “procedural autonomy” or “the power of the university in its corporate form to determine the means by which its goals and programs will be pursued” (Berdahl 1985).

Canada’s universities have thrived under the dual condition of institutional autonomy and academic freedom. Universities free to reflect and challenge the orthodoxies of the day experience a level of intellectual freedom that is not rewarded within the private sector where the requirements of the market prevail. As this report will illustrate, every university is unique. Each university will approach its own mission in its own fashion, but the values embedded within institutional autonomy and academic freedom inform all academic activities. They are fundamental to the question of quality in Canada’s postsecondary education sector.

Is quality quantifiable?

Critics of performance indicators have expressed a wide range of concerns about how PIs are used to measure performance in universities today. PIs and the accountability movement in general have been characterized as a means of implementing public funding cuts while asserting greater government control over previously autonomous institutions – some call it micromanaging, others call it an ideological attack on universities (Fisher et al 2000a). They express concern about an over reliance on quantitative indicators that serve as a poor proxy for quality and neglect those elements of academia that cannot be reduced to a simple indicator.

Whether for benchmarking or public accountability purposes, Bruneau and Savage (2002) observe that the use of PIs in many countries, including Canada, increased as

governments cut university budgets and focused on tax cuts rather than public services – leading them to assert: “PIs were never about quality. They were and are about cuts and control.” They write,

As PIs became more popular, public funding of post-secondary education in Canada, the United Kingdom, Australia, New Zealand, and part of the United States, dropped. In Canada, the drop was sometimes precipitous. Between 1994 and 2000, Federal cash transfers to public post-secondary education fell by \$3 billion, this after sharp cuts in 1984, 1986, and 1990. In the seven years ending 1997, Federal support for university research fell by 15%.

Which performance indicators measure quality?

Those who critique the use of performance indicators have documented examples where performance indicators have failed to indicate true quality improvements, or where PI use reinforced existing inequities in the system and sometimes resulted in punitive measures rather than improved performance (Bruneau and Savage 2002 and 2005, Fisher et al 2000a and 2000b, Atkinson-Grosjean et al 1999, Grosjean et al 2000, and the Association of Universities and Colleges of Canada 1995 offer cautions and caveats in the use of performance indicators). Wherever PIs are in place, there is disagreement about which measurements best serve the purpose of indicating quality in postsecondary education and there are widely cited examples of misused indicators that penalize some institutions and run counter to the stated goal of quality improvement.

On their own, performance indicators do not and cannot yield excellence and quality in higher education. Critics are concerned that, in many cases, PIs take the focus off quality in the classroom, overlooking or diminishing the intrinsic value of a university education that is focused on encouraging critical thinking. Fallis (2005) reminds us that understanding a university’s mission and local needs is key, but critics say performance indicators are often insensitive to these needs. Fisher et al (2000b) write: “For example, to maximize student accessibility, institutions are encouraged to accept promising but less-qualified students. This goal is incompatible with maximizing completion rates or postgraduate examination performance.”

Critics also raise concerns that PIs put bureaucrats with no specialization in higher learning in charge of universities. In a speech former Ontario Premier Bob Rae delivered in December upon receiving the 2005 David C. Smith Award by the Council of Ontario Universities, he said:

One the money side, this government has done a lot ...

But on the governance stuff, I have observed that governments still find that very difficult. It’s really interesting that there are two or three forces which make this happen. The first one is the political one. Every government likes to take credit for the money that it spends. Again I’m not being critical here. I’m speaking in a

sense almost like a recovering politician. I know the syndrome, I can recognize it, and I sympathize deeply with it. That's the syndrome that affects the political class; the other one has to do with a bit of an illusion, in thinking that we can do it better, that we can make it better, that somehow we can manage these outcomes better than anybody else.

The second one is the bureaucratic impulse. I know there are many, many friends of mine in the public service who are here tonight, but there's a bit of a tendency in government today to think, in the renewed climate of accountability, that somehow they can take incremental responsibility for every additional dollar that's now spent on universities, that there has to be some incremental result that they can point to on a chart and say, "We've given you this much money and this is the new result we're getting." Now some of that approach is good because getting a result is important, and the previous obsession that the province had with process and simply throwing money in was not a great idea.

But the pendulum can swing too far in the other direction. And you can expect too much from spending additional money, saying, 'We'll spend additional money but only if we get X.' Then there is this culture of filling out forms and producing documents – we've all been through it – that becomes very, very time-consuming, and I'm not sure how productive it really is at the end in terms of the result. I worry about that.

My view is that we should be concerned with quality. I suggested that the province set up a quality council that looks at the quality of the whole system and that does not try to micromanage little bits and pieces of this and that, but does in fact try to say how well Ontario is doing compared to where the province was five years ago. We also need the council to compare where the province needs to be in five or 10 years. Again, it's a matter of governance and letting go. ... (Rae, December 2005)

SECTION 2: Faculty quality controls

Quality higher education is predicated on quality faculty. For at least the last century, faculty have been at the forefront of ensuring the quality of the work produced by professors and academic librarians is measured at every stage of their career, in each and every endeavour they undertake, and quite often in a public and transparent way. The basis for these quality control measures is peer review, where experts in the field make informal assessments about what constitutes quality in a given department, in a given program, and in a given area of research. For governments seeking evidence of quality controls in higher education, they need look no further than the rich and intricate measures involved in the peer review process.

Graduate School: Determining whether an individual is equipped to take his or her place in the academy begins while he or she is still a doctoral candidate. A committee of the candidate's faculty peers, including the thesis supervisor and several experts in the

student's area of research, is struck to ensure that the student's doctoral thesis meets academic standards. At the oral defence of the thesis, an additional university representative from a different field of study and/or an expert in the discipline from another university may be added to ensure that both institutional quality standards and quality standards in the discipline itself are maintained.

Appointments procedure: Every Ontario university uses a peer review appointments model, where a committee of faculty who are experts in the discipline select the successful candidate for each appointment based on agreed upon quality standards.

The tenure process: At five to seven years, the probationary period for a faculty member is the longest of any occupation. Tenure evaluation is an extensive peer review process, involving not only the assessment by the peer review committee, but evaluations solicited from other members of the candidate's department, and even external experts within the candidate's field of study. In most universities, both teaching competency and research potential are evaluated by this committee.

Promotion procedures: With each additional rank within the structure that a faculty member wishes to achieve, the criteria and peer review processes become more detailed and stringent. For example, to achieve the rank of Full Professor, a faculty member will need the recognition of a number of external referees, who can attest that the quality of scholarship demonstrated by the professor meets the highest standards of his or her discipline.

Annual report (either separate from or combined with merit review processes): Each faculty member is obligated to submit to the department and to his/her Dean an annual report detailing all of his or her activities of the previous 12 months, covering all components of his/her responsibilities. In many institutions, the report is the basis on which merit evaluations are made.

Student evaluations: Ontario universities have developed a program of student evaluations of every course offered by the university to measure the quality of faculty teaching, and to provide feedback to faculty to improve their teaching effectiveness. The student evaluation process involves rigorous survey methodology and often includes both quantitative and qualitative measures of teaching quality. Some universities augment student survey evaluations with periodic peer reviews of teaching.

Research grant competitions: Every faculty member has the responsibility of undertaking scholarly activity, and should such activity require research funding, the faculty member is expected to compete for, and secure, grants from external organizations. The granting councils themselves use peer review processes to ensure that the limited funds available go only to research of the highest calibre.

Peer reviewed academic publishers and journals: To ensure published research meets the highest standards of a discipline, academic publishers and journals use peer review processes to determine whether a paper or book will add valuable knowledge to what is

already known about a topic. To ensure a fair and rigorous process, only the editor knows the identity of the reviewers and the authors. Even the academic journals themselves are ranked within disciplines, based on the extent to which they are able to attract and select only the research which goes on to make an impact in the field.

Citation indices: One measure of the quality of research is the extent to which other experts in the field are able to make use of it in their own work. Citing a research paper is an “after the fact” measure of the impact a faculty member’s research has had on his or her discipline. To measure the impact of research, extensive citation indices have been developed, allowing all faculty in an area to determine which research is of the highest quality, as measured by its use by the other experts in the field.

It’s clear from this summary that a diverse range of activities is underway in Ontario to ensure quality faculty and a high quality university education experience for students.

SECTION 3: Performance indicator use within Ontario universities

Universities have long been accountable. Almost every university in Ontario has a University Senate and a Board of Governors¹ charged with the task of ensuring that the university is fulfilling its mission, meeting local needs, and implementing quality education, and making fiscally responsible decisions. Fisher *et al* (2000b) observe universities also demonstrate their accountability to government, to students, faculty, staff, alumni, funders, donors, and the community at large. In carrying out these accountability activities, universities involve stakeholders “on decision-making bodies, institutional planning committees, presidential search committees and so on” (Fisher *et al* 2000b). There are university community relations committees, university websites, as well as annual reporting requirements to the MTCU, which include:

Enrolment Target Agreements; audited financial statements; audited enrolment reports; Capital Plan Investment reports; major Capital Support Program reports; Facility Renewal Program reports; Ontario Student Opportunity Trust Fund Status Report; Access to Opportunity Program reports; Ontario Graduate Scholarships in Science and Technology reports; Bilingualism Grants reports; Tuition Fee Set Aside Reports; Tuition Fee Survey; Tuition Fee Monitoring Reports; Accessibility Funding for Students with Disabilities reports; Quality Assurance Fund reports; Audited OSAP Compliance Reports; reports on Special Purpose Grants to individual universities, including: Aboriginal Education and Training Strategy Program Reports; Education Action reports; Interpreters Fund Reports; Women’s Campus Safety Grant Reports; Nursing – Compressed/Masters Expansion/Collaboration reports; Reports on Programs of French as a Minority Language; Graduate Survey (for the KPIs), USIS reporting, New Program Approval submissions. (Fisher *et al* 2000b)

¹ There are some variations. For instance, the University of Toronto has a Governing Council which combines the Senate and Board of Governor responsibilities.

The Council of Ontario Universities has noted universities have been tracking their performance for years (COU 2004). All Ontario universities are required to report on the province's three system-wide KPIs to the MTCU. There are performance indicators at every Ontario university to measure student recruitment, selection, admission, and retention efforts. As for public accountability, Ontario universities are required to publish annual reports, will be subject (effective June 13, 2006) to Freedom of Information and Privacy Protection laws, and are subject to scrutiny by the Auditor General's office. The provincial auditor has recently been given broader scope to conduct value for money audits in the postsecondary education sector, ensuring another level of accountability and transparency at Ontario universities. Universities also employ peer reviews for accreditation of professional schools and graduate programs. Peer review is also integral to evaluations of the teaching, research, and service components of faculty performance. As well, universities create annual business plans setting broad institutional targets and priorities that are reflective of their local missions.

Despite all of this rich and varied activity, there has been growing pressure on Ontario universities to develop additional performance indicators. Bruneau and Savage (2002) note that some Ontario universities implemented PIs in the 1990s knowing the provincial government would soon force institutions to monitor performance. Queen's University was the first to jump into the PI fray. "By 2000, seven iterations later, the Queen's PIs still retain their ingenuity, emphasizing the features of Queen's 'output' that make that University's quality visible to all." (Bruneau and Savage 2002)

The following section reviews the use of institutional PIs by Ontario universities. The review is based on a content analysis of seven institutions' websites. A report by the COU (2004) defines institutional PIs as "internal to the institution, chosen by the institution to reflect its individual mission and objectives, used internally to assess performance and progress toward objectives, and reported on as deemed appropriate by the institution." The content related to internal PIs has been reviewed, including reports of accountability monitoring on the websites of Carleton University, Ryerson University, University of Toronto, University of Western Ontario, Queen's University, McMaster University, and the University of Guelph. The mission statement of each institution has been located and each university's attempts to ensure and improve institutional accountability has been monitored (*See Appendix for a brief synopsis*). This analysis revealed great variability in how universities in Ontario use PIs, showing the practice of performance measurement is anything but a one-size-fits-all exercise.

In-house performance indicators

All of the universities we examined are engaged in the practice of strategic business planning and reporting. Each institution houses an administrative office that compiles and presents institutional data, including or limited only to the university's performance standings on the government's KPIs. The collection of statistics found on the website of each university is relatively up-to-date, readily accessible, and contains information that covers a considerable span of time. Each university collects PIs in a unique way, due to

differences in mission statement, institutional goals, and action plans. In all, there were 120+ performance indicators reported among the seven universities. The universities organize their measures using a handful of core/primary categories or macro indicators, under which several supplementary indicators are slotted. Three of the seven universities have a few core categories and a fairly short list of PIs, while four of them have rather extensive lists with several core categories or macro indicators and over 30 supplementary PIs. Additionally, the universities conduct ongoing reviews of their chosen performance indicators to help keep them in line with institutional objectives in the face of an ever-changing academic environment. While this guarantees that the institutions' PI systems will remain at different stages of development relative to one another, there are a number of PIs that have had a long-lasting presence on each institution's list of performance indicators.

While there is great variability in the kinds of indicators Ontario universities are employing, there are some PIs used by almost all. The three most commonly used indicators found on the websites of the seven universities are: *undergraduate entering grades/entering grades for registered students* (used by seven universities); *number of first-year international students* (used by six of the seven universities); and *student to faculty ratio* (used by six universities).

A few universities provide a rationale for their choice of indicators. Some have attempted to use PIs that are explicitly aligned with aspects of the institution's mission and strategic action plan. Others' use of PIs is loosely linked with their mission. Most post statistical information as an act of transparency, to show how their university performed on each indicator for a given year and/or over a period of years.

Rationale for the most frequently used PI – *undergraduate entering grades* – tends to focus the need to attempt to measure “the degree to which we are successful in attracting well-qualified students” (University of Toronto) and enriching the university experience by ensuring “the participation of a talented and diverse student body” (University of Guelph). Western cited the desire to improve student recruitment by attracting those with higher entering grades.

The second most frequently used PI – *the number of first-year international students* – appears to be used by universities as a way of gauging attempts to diversify the student body, sometimes viewed as a way of “enriching the quality of the educational experience” (University of Toronto). In many cases, this PI is an element of the university's strategic plan to expand its complement of international students.

The third most frequently used PI -- *student to faculty ratio* – is viewed by many of the universities as an important measure of quality education. The University of Toronto cites the student-faculty ratio as an indication of “efficiency”, noting students are adversely affected when there exists a shortage of resources, including faculty.² The

² Performance Indicators for Governance, Annual Report, p. 64.
http://www.provost.utoronto.ca/userfiles/page_attachments/library/6/PI2004_final_Sept_16_9164_1976792.pdf

University of Western Ontario points out that by hiring more highly qualified, tenure-stream university professors, the quality of teaching and research will be improved.³ A related measure, *class size*, is used by several universities. For instance, the University of Toronto states the distribution of class sizes at each level should be assessed to ensure that all students “have an opportunity to participate in a variety of learning formats, ranging from individualized instruction through small seminars to lecture formats.”⁴

Areas of focus

Indicator use in the seven universities tends to fall into several areas of focus. For example, under an area of focus that could be termed Library Resources, the University of Toronto reported on the following indicators: *the number of volumes held* (in the university’s libraries), *the number of volumes added*, *the number of current serials received*, *total expenditures on library materials*, etc. Similarly, McMaster chose *library – acquisition* as one of its indicators. Queen’s used *library acquisition funding as a percentage of operating revenue* and *library funding as a percentage of operating revenue*. Ryerson chose *library expenditures as share of total operating expenditures* and *library expenditures per FTE*. Using this strategy to organize the entire list of in-house KPIs, the most common areas of focus for Ontario’s in-house PIs are: *student enrolment*, *research*, *undergraduate studies*, *graduate studies* and *library resources*.

All seven universities use performance indicators related to Student Enrolment. According to Carleton’s *Performance Indicator Report 2005 (Preliminary)* posted online by its Office of Institutional Research and Planning, the university uses eight PIs to measure its performance in student enrolment.⁵ Carleton has a history of using multiple indicators to measure institutional performance on this area of focus, dating as far back as 2000. Here is a small sample of the range of student enrolment indicators used by Ontario universities: *Mean admission averages of students applying directly from Canadian high schools*; *Undergraduate applicants per available space*; *Ontario scholars as a percentage of OAC registrants*; *Number of first-year, full-time undergraduates*; *Percentage of first-year students from provinces other than Ontario*; *Full-time graduate enrolment as a percentage of full-time enrolment*; *Total full-time graduate enrolment*; *Ratio of graduate to undergraduate full-time enrolment over time*; *Part-time enrolment as a proportion of total enrolment*.

All seven of the universities also employed a large number of PIs to report on institutional performance in the area of Research. Some of these indicators include: *Rank in research council funding, Canada and Ontario*; *number of peer-adjudicated research grants per eligible faculty member*; *value of peer-adjudicated research grants per eligible faculty member*; *portion of the total Canada Research Chairs*; *research dissemination (publication and citation counts)*; *number of licensing and royalties and cumulative patents*; *research funding as a percentage of operating revenue*; *amount*

³ Making Choices, <http://www.uwo.ca/univsec/SPTF2001/faculty.htm>

⁴ Performance Indicators for Governance, Annual Report, p.58.

⁵ The Year in Numbers – Performance Indicators Report 2005 (Preliminary) <http://oirp.carleton.ca/pi-2005/index/html/pi.htm>

received from Ontario Government Research Infrastructure Programs (relative to other universities).

These indicators are best known as bibliometric measures (Grosjean *et al* 2000) that attempt to quantify the amount of research that gets published and the amount of funding grants that flow to a given university. For instance, in its 2004 annual report on performance indicators, the University of Toronto states, “The level of peer-reviewed funding awarded to University of Toronto faculty is a central measure of the University’s performance in achieving its mission to rank with the finest public research-intensive universities in the world.”⁶

The range of performance indicators for the Undergraduate Studies area of focus includes: *Undergraduate class size; Percentage of full-time 2nd year undergrads that completed their degree within one year of expected graduation rates; Percentage of undergraduate students recognized on Deans’ honour list; Proportion of first year, full-time students in Honours programs; Percentage of undergraduate graduants pursuing graduate and professional programs; First year undergraduate students year-after registration status: All first year classes; First year undergraduate students second year-after registration status: New full-time cohort; First year undergraduate students year-after registration status: New full-time cohort; Scheduling of classes after 4:00 p.m., first-entry undergraduate programs.*

Six of the seven universities also used multiple performance indicators to determine the quality of their graduate studies. Some of these indicators include: *Number of graduate students; Graduate time-to-completion; Completion rates of doctoral students; Status of post-graduate plans for persons who earned their Doctorate; Number and diversity of international students at the graduate level; Doctoral enrolment as a proportion of total enrolment.*

Two other areas of focus garnered a substantial amount of attention from universities: Student Financial Assistance and Student Satisfaction. In the case of student financial assistance, universities used performance indicators such as *total expenditure on student financial assistance (over a period of years)* and *all gross expenses for scholarships and bursaries as a percentage of total operating revenues*. Five of the universities included indicators related to Student Satisfaction.⁷ The University of Toronto states an explicit rationale for concentrating on this area of focus. It writes “Student satisfaction surveys allow institutions to identify aspects of the academic and student life that can be improved through changes in policies and practices as consistent with best practice in post-secondary education.”⁸ The U of T also reported most extensively on its results, based on a survey conducted in 2002 by the School of Graduate Studies. The survey was given to 2,843 randomly selected graduate students and received a 66 per cent response rate.

⁶ Performance Indicators for Governance, Annual Report, p. 32.

⁷ The five universities were Guelph, Queen’s, Ryerson, Western and University of Toronto.

⁸ Performance Indicators for Governance, Annual Report, p. 94.

Summary of university PI experience

Ontario's university system is remarkably diverse. This review illustrates the complexity of the process of choosing performance indicators to measure institutional performance in the context of each Ontario university's mission and objectives. It is evident that universities in Ontario are at different stages in this process. Some, such as Queen's University, have been at the forefront of PI use but the exercise continues to evolve. Some choose PIs clearly linked to their mission, others adopt more of a grab-bag approach. In most cases, the evolution of PI use has been slow and complex. For seven years McMaster University, for instance, was guided by the university's *Directions* planning documents.⁹ In order to continue to clearly set the university's strategic development, a refinement of *Directions* was undertaken in the Fall of 2002, and on June 12, 2003, the document *Refining Directions* received approval from McMaster's Board of Governors.¹⁰ From January to May 2004, a steering committee conducted consultations with key stakeholder groups and collected planned initiatives, linking academic and administrative unit level initiatives with the strategic institutional goals of *Refining Directions* with the purpose of implementing the objectives outlined in the document and choosing institution-specific performance indicators.¹¹ The summary of these developments can be found in McMaster's *Implementing Refining Directions*, presented to the University Planning Committee (UPC) in December 2004.

The McMaster experience illustrates the challenge of developing indicators that measure performance, adequately reflect quality factors, and still remain true to the university's mission, goals and objectives. It is clear from this overview that the task at hand is not straightforward. There have been significant attempts by universities to ensure public accountability and transparency. A number of institutions rely on different indicators to measure their performance – there appears to be no uniform approach, no institutional standard, no widespread agreement, no one-size-fits-all formula. Each university is unique. Each has its own definition of quality and how to measure it. Even when universities attempt to assess progress in similar issue areas, there can be considerable variation in how they carry out the exercise and in the PIs they choose to track change. Variation at this stage – whether it is variation in the process of arriving at PIs or whether it is variation in the PIs themselves – is indicative of rich activities of institutional self-inquiry and self-reflection. The practice of self-inquiry and self-reflection is critical as Ontario universities weather a changing political climate. It is critical within the context of the accountability debate underway in many OECD nations. But the unique approach each university has taken in its journey toward greater transparency is part of its strength. It is significant to note these exercises have been undertaken without any threat to either institutional autonomy or academic freedom. In fact, these exercises have tended to reinforce the university's autonomy and commitment to academic freedom because the university itself is at the steering wheel, forming the accountability measures that best reflect its own mission.

⁹ McMaster website, *Refining Directions* <http://www.mcmaster.ca/pres/refining/index.cfm>

¹⁰ *Refining Directions*, p 12, Acknowledgements

¹¹ Andrew Hrymak, *Implementing Refining Directions*, p. 2.

Whether the institutional PIs actually measure quality or simply indicate a university's attempt to be accountable and transparent is a separate consideration. The use of PIs at the institutional and systemic level in Ontario mirrors the experience in the U.S. and abroad: in many cases, the measurements chosen to assess 'quality' in education dance around the notion of quality but rarely actually measure quality. For academics, this serves as an important caution: any government consideration to expand the use of PIs should seriously take into account the challenge of defining what it is meant by quality in postsecondary education, and which process best reflects activities underway to enhance that quality. As the previous section documented, faculty and academic staff are constantly working to ensure the highest quality of education in Ontario's universities. The PIs in use in Ontario fail to reflect the richness, as well as the shortcomings, of these activities.

SECTION 4: The history of quality indicators in Ontario

Canada stepped into the debate on performance indicator (PI) models later than many other OECD countries (Fisher *et al* 2000b). And Canada's experience with performance indicators and performance funding is vastly different from its U.S. neighbour, the U.K., New Zealand and Australia. While provincial governments came to incorporate more accountability measures and value-for-money audits during the 1990s, Alberta and Ontario stand virtually alone in the exercise of collecting system-wide PIs and relating them to indicator-driven funding. This section reviews key quality measurement initiatives underway in Ontario. Performance indicators in Ontario have a long and storied past. They have been considered by Ontario governments under all three provincial parties.

In 1991, a 12-member task force led by William Broadhurst was mandated to develop recommendations for a framework to provide for the clear accountability of Ontario's universities to the public. Concomitantly, the Ontario government requested that the Ontario Council on University Affairs (OCUA) provide advice on "whether and how to establish a system of program review as a means of ensuring public accountability for academic quality in provincially-assisted universities."

In May 1993, the Task Force on University Accountability submitted its final report, *University Accountability: A Strengthened Framework*, recommending that the governing body of each university implement an institutionally based accountability framework. Two months later, the OCUA reported to the Ontario government that there is also a need for an independent "province-wide systematic quality review process [particularly] at the undergraduate level." Wells (2002) notes that the task force was comprised of 12 representatives from Ontario universities who felt it was time to improve the transparency of university operations while protecting the two pillars of higher education – academic freedom and institutional autonomy. Those recommendations were the impetus for more than a decade of interest in performance measurement in Ontario's universities. The Council of Ontario Universities (2004) observes "... universities voluntarily instituted improvements to their governance and accountability practices" based on the task force's recommendations.

Also in 1993, the Premier's Council on Economic Renewal and its Task Force on Lifelong Learning commissioned Edward DesRosiers and Associates of West Hill, Ontario to write a document entitled *An Information Framework Linking Educational Outcomes to Economic Renewal*. The report was released October 15, 1993. It recommended the creation of a unified and detailed performance indicator system that would cross all institutional boundaries in the public and private sectors.

These reports and recommendations were well-received by the NDP government of the day. On October 25, 1994, NDP Premier Bob Rae proclaimed:

Our standards and our achievements should be truly international in scope. We should draw comparisons in our testing and assessment of how we're doing and we should use these comparisons to improve how we do things. In most businesses, it's called benchmarking. And it's something the public sector should get used to (Bruneau and Savage 2002).

Rae considered benchmarking, performance indicators, and inter-university rankings as imperatives, concluding both schools and universities "must be held accountable" if they do not meet or exceed benchmarks.

During its 1995-2003 tenure the Conservative government cut back funding to postsecondary education. A long history of consultation with the higher education community ceased. Intermediary bodies such as OCUA and the Council of Regents were dismantled. New promises of increased funding were coupled with a focus on greater accountability "that would run parallel to the existing academic senates and governing boards and monitoring of programs by the Council of Universities" (Shanahan *et al* 2005).

In 1996, then-Minister of Education and Training John Snobelen sought the expertise of former Queen's University Principal David Smith. Smith was commissioned to lead the Advisory Panel on the Future Directions of Postsecondary Education. In December 1996, the panel submitted its report entitled, *Excellence Accessibility and Responsibility* (known as 'the Smith Report'). This document focused primarily on the adequacy of control and finance of Ontario universities. However, it also reiterated some of the same points enunciated by the Task Force on University Accountability, reaffirming the importance of instituting a system to monitor the quality of university performance. Axelrod (2005) points to the importance of the 1996 task force in determining the Conservative government's policy direction on higher education. Smith recommended a "greater degree of 'accountability' by Ontario's autonomous universities and colleges, and clearer assessments of institutional 'performance'."

The Conservative government introduced KPIs in the 1998-99 fiscal year. A joint Ministry of Training, Colleges, and Universities/Council of Ontario Universities Steering Committee was established to develop the indicators. On February 20, 1998, the MTCU announced that all postsecondary institutions were required to provide information for current and prospective students on these three KPIs: graduation rates by programs,

graduate employment rates and OSAP student loan default rates starting in 1999. In 2000, the Government of Ontario outlined details of its plan to tie postsecondary education funding to institutional performance. MTCU Minister Dianne Cunningham announced the university sector would receive a \$16.5 million Performance Fund for the 2000-01 year. These funds consisted of two envelopes: an accessibility fund and a performance indicator fund. The accessibility fund was based on enrolment growth each year and universities would only be able to access the fund if their admissions to first-year entry level programs exceeded or stood equal to the previous year's admissions. Initial criteria for the performance indicator fund allocations regarding employment and graduation rates were especially punitive and irrational. Institutions that ranked in the top one-third received two-thirds of the funding, those in the middle received one-third of the funding, and those at the bottom received no funding whatsoever. Often the difference between the top and the bottom was within the statistical margin of error. By 2001, a benchmark was set at 10 per cent below the system average for the three KPIs. Institutions at or above this benchmark would receive funding in proportion to their progress in meeting the target. Institutions below the benchmark would not receive funding.

In 2001, the Conservative government created a new quality assurance agency – the Postsecondary Education Quality Assessment Board – appointing business and community leader Dale Patterson as chair. The board's role is to advise the MTCU Minister on proposals for new degree programs offered by Ontario colleges and new institutions wishing to offer degrees in Ontario. The agency's mandate states its commitment to quality: “to establish clear benchmarks for assessing programs and organizations” and “to evaluate applicants against high standards and their own commitments.”

The 2003 budget allocated \$75 million to the Quality Assurance Fund, with a promise to increase the operating grant to \$200 million by 2006-07. The new funding would be allocated through a system of performance indicators. Universities would be required to submit an ‘institutional quality plan’ showing how the funding would be used for hiring new faculty, staff and teaching assistants, buying library materials and equipment, improving student services, developing new programs, etc.

In May 2004, the new Liberal government appointed former NDP Premier Bob Rae – a proponent of benchmarking and accountability in the university sector – to review the design and funding of Ontario's postsecondary education system. The Rae Review was mandated “to develop a strategic, fiscally sustainable long-term plan for postsecondary education that included recommendations on design, funding, accountability and performance measurement, as well as the role of international students.” In the final report released February 7, 2005, Rae recommended the government establish a Council on Higher Education. The council would report to the MTCU and “advise government on how to achieve its learning mission, set targets and measures for improvement, monitor and report on performance and outcomes, coordinate research on higher education, and encourage best practices.” He recommended the council:

- Advise on performance measures and improvement mechanisms suitable for inclusion in multi-year plans;
- Collect critical benchmark data on key aspects of higher education;
- Monitor, evaluate, and publicly report on quality and system performance, leading to a new quality assurance framework for higher education in Ontario;
- Lead a renewed focus on the pre-eminence of teaching and teaching excellence at postsecondary institutions.

In December 2005, legislation was passed establishing a Higher Education Quality Council with a mandate to develop and make recommendations to the Minister including advice on how to achieve targets to improve quality in postsecondary education and how to implement performance measures to evaluate the postsecondary education sector. As part of its quality monitoring and enhancement initiatives, then-Minister of Training, Colleges and Universities Minister Mary Anne Chambers indicated the Ontario government planned to introduce its new funding framework and multi-year agreements in the 2006-07 fiscal year. A memorandum outlined the government's plan to continue to build upon the Accountability and Funding Agreements (AFAs) used in the 2004-05 fiscal year. It indicated that the 2005-06 agreements would include:

- Government's goals for postsecondary education;
- Government's strategies and funding commitments in support of the goals;
- Institutional allocations for 2005-06;
- Institutional enrolment targets for 2005-06;
- Institutional strategies and results to improve quality and access; and,
- Reporting requirements to demonstrate commitments that have been met.

For the 2005-06 fiscal year, the Ontario government has allocated \$124.2 million to a "Quality Improvement Fund" for universities. The fund is intended to enhance the learning experience of students across the province by supporting quality and excellence initiatives. Money for the fund is targeted to hiring new faculty and staff, and expanding educational resources and student services. Institutions are requested to report on measurement indicators commonly used by other jurisdictions to assess quality, including those related to student retention, average class size and student-faculty ratios.

Critique of Ontario's KPIs

In its background document describing performance-related funding changes to universities, the previous Conservative government asserted "this new approach to funding will benefit those institutions that are responsive to student and community needs by providing relevant and high quality programs" (Government of Ontario 2000). But OCUFA has long been highly critical of the indicators the Ontario government chose to employ – and it has also been critical of indicator-driven funding. The three KPIs fail to monitor student response, community needs, and high quality programs. Indeed, Smith (2000b) contends "The government's three mandatory indicators are a limited, incomplete approach to recording institutional quality." Axelrod (2005) says Ontario's KPIs fail "to account for such factors as academic innovation, the quality of student

scholarship, or the university's service to the community." He cites Ann Dowsett Johnson, former editor of *Maclean's* Canadian university ranking issue, as calling Ontario's KPI system "nothing but folly, parading in public as accountability." The Council of Ontario Universities (2004) contends "The current performance funding regime reflects the tendency of government to artificially accentuate differences among institutional funding levels, while failing to recognize the impact of differences in program mix and mission on indicator levels." Despite the criticism, the current government has retained both these performance indicators and the performance fund.

The history of performance indicators and performance funding use in Ontario has not been stellar. This report outlines the myriad of quality controls in use every day in Ontario universities to ensure the highest quality of education and to ensure universities are both transparent and accountable for what they do. Adding to an already flawed system of performance measurement would open the door to even greater government micromanagement without ensuring quality improvements in a system that has endured chronic government underfunding for more than a decade. The academic community supports accountability and the need for quality improvements – but the issue has more to do with the necessity for adequate multi-year funding than it has to do with creating new performance measurement criteria.

Appendix

Queen's University: Queen's University's website provides a 2001 report entitled *20 Indicators of Performance*, which details the university's performance on its 20 indicators slotted under five broad categories: *Students, professors, research, supporting the learning environment, and student satisfaction*. However, in the university's most recent on-line posting of its Annual Financial Report, Queen's reported on only five "indicators of performance": undergraduate applicants per available space; Ontario scholars as a percent of OAC registrants; average entering grades of full-time first year students; student assistance funding as a per cent of operating revenue and library funding as a percent of operating revenue.¹²

University of Guelph: The University of Guelph monitors PIs in 11 core categories, using 45 indicators¹³. The university asserts that its in-house PIs are most useful in "measuring and managing the university's progress to achieve the strategic directions outlined in its multi-year business plan." According to the *University of Guelph Macroindicators Report, 2004 Edition*, the university states that the concise difference between Guelph's in-house key performance indicators and the government's is that the former reflects the diversity of macroindicators associated with issues of quality as defined by the university itself, and not just utilitarian measures of employment or graduation.¹⁴

University of Toronto: While the U of T acknowledges "no set of aggregate measures can capture the complexity, diversity and richness of the University of Toronto or indeed of any university" it selects measures of performance that "relate to central dimensions of our mission" (University of Toronto 2003). In its December 2005 strategic planning document, *Performance Indicators for Governance: Measuring UP*, the U of T collects a wide and diverse range of performance indicators directly linked to its mission. Of particular interest is the university's decision to select five measures to report on the experience of its students. The measures include: student:faculty ratios, class size experience for first- and fourth-year students, National Survey of Student Engagement (NSSE) measures, Graduate and Professional Student Survey (GPSS) measures, and international experience¹⁵.

University of Western Ontario: Western posts PIs in 24 core categories¹⁶ and has uploaded documents leading to more PIs.

¹² Queens' University Annual Financial Report 2003-2004,

<http://www.queensu.ca/fins/annualreport/2004/performance.html>

¹³ *Integrated Planning: Operational Guidelines for First Five-Year Plan 2006 – 07 to 2010 – 11*, p. 17-18.

<http://www.uoguelph.ca/president/pdf/IntergratedPlanningOperational.pdf>

¹⁴ *University of Guelph Macroindicators Report, 2004 Edition*,

http://www.uoguelph.ca/analysis_planning/images/pdfs/macroindicators2004.pdf

¹⁵ *Performance Indicators for Governance: Measuring UP* (December 2005). University of Toronto, Office of the Vice-President and Provost.

¹⁶ Western's 2005 annual report to the Board of Governors, *Performance and Activity Indicators*, presents 24 core indicators, stating that these indicators have been drawn from a much larger set of indicators, all of which will be available on the university's website at a later date.

Ryerson University: As of 2005, Ryerson's University Planning Office reported that the university employs 29 performance indicators that are classified into four major categories: *Strategic direction, financial capacity, effective management, and university profile.*

McMaster University: McMaster University is still in the process of determining its final set of core indicators. In 2004, *Implementing Refining Directions* – a report summarizing some of the activities that were done in support of the implementation of the university's strategic plan, *Refining Directions* – was drafted and submitted to McMaster's University Planning Committee. *Implementing Refining Directions* lists a handful of the indicators that are being considered at this stage of the university's on-going development process.

Carleton University: Carleton proved to be somewhat of an anomaly in that it created and reported on two different sets of performance indicators for the academic year 2004-05. One set of indicators can be found in Appendix A of the President's Report to Members of the Board of Governors 2004-05. These performance indicators correspond with the university's 2004-05 five strategic themes: *Ensure student academic success; ensure an outstanding university experience for students; promote a high level and quality of research and scholarship; recruit and retain the highest quality of faculty staff and exercise effective stewardship of university financial and capital resources.* The second set of performance indicators is posted by Carleton's Office of Institutional Research and Planning as part of the university's annual collection of multi-year quantitative reports.¹⁷ According to this set of reports the university uses 22 PIs, classified into six primary categories: *Student enrolment, internal balance, retention, graduate programs, co-operative education programs and the classroom.*

¹⁷ Performance Indicators – An Annual Collection of Multi-Year Quantitative Reports, <http://oirp.carleton.ca/html/pi.htm>

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