



Strategic Research Plan v.2.5 November 13, 2006

Brock University Strategic Research Plan, 2006 — 2011

Extraordinary People and Ideas, Creative Solutions Intellectual, Social and Economic Impact

This Strategic Research Plan (SRP) supports the mission and mandate of the university and addresses key elements of the Brock University Vision Statement (2006). The foundation of the SRP is the recognition that research, scholarship, creativity and innovation are undertaken by highly creative people – faculty members, graduate and undergraduate students, postdoctoral fellows, technicians – working alone or in collaborative teams. The SRP, therefore, identifies areas in which Brock University's faculty members have created niches of excellence or that are viewed as strategic priorities for the advancement of research and scholarship at this university, in the Niagara Region and Ontario, and in Canada.

More specifically, the SRP supports the University's transformation process through which it is becoming a more research-intensive university that equally values teaching, research and innovation, and service to the Niagara region, Ontario, Canada and the world. This Strategic Research Plan acknowledges that the key assets in the development of scholarly, research and creative programs at Brock University are our faculty members, our students and research support personnel. The Strategic Research Plan recognizes that faculty members engage in scholarship, research and creative activities in many ways, all of which are valuable and contribute to the creation of new knowledge; the consolidation or integration of knowledge across disciplines to create new understandings of the intellectual, social, cultural, economic and physical worlds in which we live; the interrogation of different ways of viewing the world; and the dissemination of knowledge through teaching and mentoring of undergraduate and graduate students, publication in scholarly and professional media, and to community organizations, government agencies and industry.

The primary purpose of this Strategic Research Plan is to set a path that reaffirms Brock's commitment to openness in scholarly, research and creative pursuits while identifying key thematic areas in which Brock will strengthen or develop an international reputation for excellence.

This Strategic Research Plan is not intended to highlight individual programs, individual faculty members' research priorities, or departmental priorities. Instead, broad themes are identified around which a variety of specific existing and new initiatives cluster. The



Strategic Research Plan represents those broad research areas that will set the direction for Brock University's investments in scholarship, research and creativity over the next decade. Thus, Brock University's Strategic Research Plan will:

- reinforce Brock's commitment to the integration of research and teaching in all aspects of our activities,
- strengthen core research capabilities within disciplines and across disciplines,
- identify emerging capabilities and build upon strategic research priorities,
- strengthen research links between Brock faculty members and scholars in Canada and internationally,
- embrace the engagement of undergraduate and graduate students within the research enterprise at Brock University,
- promote partnerships between Brock, the Federal and Provincial Governments, industry and others in developing a knowledge-based economy in the Niagara region and Ontario,
- embrace knowledge mobilization and technology transfer opportunities across disciplines and receptors including government at all levels, nongovernmental organizations, not-for-profit organizations, and industry, in Canada and internationally,
- encourage and support the internationalization of our institution in research, teaching, learning and service, and
- maximize opportunities for our faculty, staff and student researchers by maintaining the flexibility and nimbleness to respond effectively to emerging opportunities.

Equity

Canadian universities have an obligation to the academy and the Canadian public to ensure that Canada Research Chairs are allocated in ways to recognize gender equity and the diversity of the Canadian population. In 2005, Brock committed to allocating no less than one-third of the Canada Research Chairs allocated to women candidates. Over the next five years, as new Chairs become available and Tier II Chairs become open for recruitment, the University will expand its commitment to encouraging diversity and inclusiveness amongst Canada Research Chair recipients to address other elements of diversity, including but not limited to race, ethnicity and aboriginality.

Strategic Research Themes

The development of strategic research priorities and themes places the developer between Scylla and Charybdis. It is neither possible nor desirable to have such a multiplicity of priorities and themes that one cannot distinguish what are the core research priorities. Nor is it feasible to place within priorities and themes the research interests of individuals or



priorities of individual disciplines or departments.

The research themes identified herein are broad, trans-disciplinary and future oriented. These themes are meant to capture the excitement of the transformational ideas and innovative processes created by faculty members and research students. The goal is to identify research rubrics or foci under which a diversity of disciplinary and interdisciplinary initiatives will constellate as Brock's research culture and enterprise continue to intensify.

The university is committed to supporting each and every faculty member with an active scholarly and research program with the core resources to undertake their scholarship and research. In some instances, these resources will be minimal (e.g., access to high quality library resources, robust inter-library loan program, internal research grants, or research students) while in other cases the resources will be substantial and in-line with the standards of the best-equipped medical, social science or scientific research laboratories in the world. In all cases, the University will encourage and actively support individual and teams of researchers to seek external, competitive research funding for their program of scholarship, provide assistance to their research students, acquire and maintain research equipment and laboratories, and translate and disseminate their research outputs in the methods most appropriate to their discipline and their ability and interest – ranging from conference attendance, publication in peer reviewed journals through to commercialization through spin-out companies and IP protection.

Arising from the consultation leading up to this (currently draft) Strategic Research Plan was general agreement on the following five scholarly, research and creative priorities. These priorities and themes reflect some current research strengths of the university as well as areas in which the university has identified an interest in developing with the goal of becoming internationally known for excellence in scholarship, research and creativity. The brief description following each identified theme provides general parameters within each of which a range of research and scholarly activity can and will flourish.

Theme 1: Teaching and Learning

As a university, Brock is committed to being a centre for excellence in research on teaching and learning. Teaching and learning permeate our mission and the day-to-day activities of our faculty, staff and students. Understanding more fully the ways in which individuals and communities learn will have a major impact on our mission as a university, our students and the communities in which we live.

Research on teaching and learning is trans-Faculty and is embedded in the research and scholarship of individuals studying how communities and nations that are re-building civil societies not only learn from their experiences but integrate the knowledge and



understandings that arise from cultural and/or physical conflicts are able to contribute to intergenerational, inter-cultural and inter-racial understandings through to understanding teaching and learning across the lifespan as well as in more traditional and formal environments such as schools and universities.

The use of digital technologies for teaching and learning and the use of gaming/serious gaming for research in education and other disciplines is an emerging focus of research for faculty members in Education, Humanities, Social Sciences, and Mathematics and Sciences. This theme, therefore, encompasses learning and teaching across the life span in formal and non-formal environments and the utilization of different modalities.

Theme 2: Cultures, Societies & Life Long Development

Brock has strong research foci on cultures, societies and life-long development. Research in areas of culture and society is critical to developing our understandings of the historical, political, economic, psychological, educational, and social contexts in which we live and learn. Such research foci cross all Faculties and include but are not limited to understanding of business organizations and financial markets; evaluating and developing strategies to manage and ameliorate the social, economic and environmental stresses on communities in Canada and internationally; studies of cultures from ancient Greece to Canada's immigrant societies; assessing issues of social justice and cultural restoration in South Africa and Canada; and investigating the intersections of political and economic prerogatives and popular culture in Canada and elsewhere.

Theme 3: Globalization, Borders and Security

Even prior to September 11, 2001, terrorist incidents in Bali and London, and Canada's engagement in Afghanistan, issues of globalization, borders and security dominated our lives. Indeed, one might argue that Canada's political, economic and cultural life has always been dominated by global issues.

Brock is ideally situated to become a major research centre on globalization, borders and boundaries (physical, political, social and intellectual), and security (political, trade, economic, digital). Faculty members in all Faculties engage in research on the development and sustainability of communities and civil societies; trade, prosperity and competitiveness nationally and internationally, and security of individuals, communities, nation states and emerging states, and international organizations.

Globalization impacts on everything we do as individuals, communities, societies and nations. Globalization affects learning in our schools, the ways in which our health care systems operate and are resourced, the ways in which research and scholarship are conducted, and the relationships between religious or ethnic communities within cities and



between states, amongst others.

Theme 4: Environment, Healthy Peoples, Healthy and Prosperous Communities

The health of individuals, communities and the environment is a major concern for scholars and scientists at Brock University and will have a significant impact on the quality of life of individuals, communities, flora and fauna locally, provincially, nationally, and internationally. Brock University has core research strengths across all six Faculties that focus on the environment, health, and community development.

Research centres and institutes such as the Brock Research Institute for Youth Studies, the Centre for Healthy Development through Sport and Physical Activity, the Cardiac Rehabilitation Research Centre, Lifespan Development Research Centre as well as emerging centres and programs such as Social Justice examine social, economic, physical and educational factors that influence the health of individuals, communities, nations and regional and international collectivities.

Faculty members in Biological Sciences, Chemistry, Earth Sciences, Geography, History, Economics, Political Science, and Tourism and the Environment, for example, examine the physical as well as the social factors contributing to the health of the environment (e.g., water, land, air; for recreation, agriculture, urban growth, tourism, and transportation). Healthy peoples and prosperous communities include the cultural, social, economic, political, and environmental health of communities.

Theme 5: Fundamental and Applied Sciences and Allied Health Sciences

Brock has a strong tradition of supporting research in the fundamental and applied sciences. This focus has expanded beyond the traditional disciplines of biological sciences, chemistry, earth sciences and mathematics to physical education and kinesiology, community health sciences, psychology, and business. These research initiatives address fundamental, researcher-initiated topics that do not have obvious applications in business, government or industry. Moreover, Brock has developed a life sciences research focus that extends across three Faculties – Applied Health Sciences, Mathematics and Science, and Social Science.

Areas of research include biotechnology, neurosciences, material sciences (biomaterials), health promotion, life span, crop development, plant-based and synthetic pharma- and nutraceuticals, and bioproducts. In addition, Brock University is moving towards establishing a new engineering program to interface with existing research capacity, expertise and interests. Current fields under consideration include process engineering, mechanical engineering and bio-engineering. These engineering disciplines will support Brock University's mission to engage with the economic development of Niagara and



Ontario. These engineering programs will form part of the bridge between the developments in fundamental sciences and their application to new green industries.

Situated in a region that has a major economic investments and social and cultural interest in agricultural bioproducts, Brock is well situated to take advantage of Federal and Provincial governments investments in agricultural and agri-food research and local industry and the regional government's desire to attract high value, knowledge based industries and diversity the economic and social base of the region.

The allied health sciences rest firmly on fundamental sciences – human biology and physiology, chemistry, physics, and statistics, among others. Brock University has developed a major focus on human health sciences such as neurosciences, community and public health sciences, nursing, kinesiology, tropical and insect borne diseases, and epidemiology, and such research is embedded in all six Faculties.

Brock will continue to support selectively emerging areas of excellence in the fundamental and applied sciences and allied health sciences. We will aggressively seek out industrial, government and inter-university partnerships to expand collaborative research opportunities for our faculty and students to engage in innovative research projects. Such collaborations also lead to opportunities for enhanced knowledge and technology transfer functions with local enterprises, health systems, or national and international companies.

University-Industry-Community

Research, scholarship and creative activities necessarily engage the researcher with the world in which she lives. Engagement takes many forms, including but not limited to research with community organizations, non-for-profit organizations, school boards, arts organizations, government agencies and departments, and private industry.

Over the next five years, Brock University will identify ways to actively support the engagement of faculty members, graduate students, and undergraduate students in research activities that extend beyond the borders of the University to the communities in which we live, with a focus on fundamental and applied research that addresses key societal issues – the environment, democratic development and civil society reform, health and the lives of children, youth, and adults, economic development and trade, the arts, education and leisure and recreation.

Recognizing that Brock needs to diversify and expand its sponsored research base, over the next ten years, Brock will increase by 500% sponsored research partnerships with the private sector, nongovernmental organizations, community groups and the private sector. In this process, Brock will encourage and support innovation through the incubation and spinout of faculty- and student-owned research-based companies.



Research and Internationalization

Brock's Vision Statement reiterated our goal to become engaged in the world beyond Niagara, Ontario and Canada. Our location on one of Canada's most important border crossings and the importance of security underscores the need for international perspectives. Internationalization takes many forms and the research mission of the University acknowledges that all research is local and international.

By 2010, Brock will become known as one of Canada's leading and innovative institutions in research and development projects internationally. The University will successfully manage and implement five international research and development projects, funded through the national granting agencies, the Canadian International Development Agency, International Development Research Council, SSHRC, NSERC, CIHR, foundations and international agencies and programs.

Canada Research Chairs

The Canada Research Chairs Program provides major investments in research and scholarship at Brock University. Brock is committed to retaining its strategy of recruiting Canada Research Chairs from outside of the university in areas of strategic research importance to the University and in support of high quality undergraduate and graduate programs. Canada Research Chairs do and will be used to strength and/or to build specific priority research areas within the university. Canada Research Chairs will be allocated in a strategic manner across Faculties, responding to the themes identified herein and in Faculty-specific strategic plans. There are no entitlements to specific departments or Faculties.

Graduate Students as Partners in the Research Enterprise

With its transition from a primarily undergraduate teaching university to a more comprehensive, research intensive and graduate training institution, a new partnership has been forged between research faculty in all disciplines and a growing cadre of graduate students. While retaining our tradition of engaging undergraduate students in research, the importance of graduate students to the research enterprise cannot be underestimated. Under the mentoring of research faculty, graduate students provide the intellectual and human resources to advance the research mission of the University. Brock University is committed to the full integration of graduate students within the research enterprise, ensuring that they are provided with the intellectual and physical resources and policy framework to engage in advance research and innovation.

Research Infrastructure

Research infrastructure takes many forms: (i) human, (ii) physical and (iii) policy.



Human Research Infrastructure:

The human research infrastructure includes but is not limited to (a) faculty researchers, (b) undergraduate and graduate research students, (c) research technicians, support staff, post-doctoral fellows, research scientists and research associates, and (d) central research administration.

A. Research Faculty:

An underlying assumption of any university is the centrality of research to the mission and mandate of the university. As a result, it is expected that all faculty members are engaged in scholarly, research and creative activities which form their research agenda. Brock University's faculty members have a growing reputation for the quality and the intellectual and social impact of their research and scholarship. To maintain a vibrant and robust research environment, faculty members need to be providing with adequate time, facilities, research assistants and the opportunity to successfully apply for internal and external funds to support their scholarship, research and creative arts programs. The university is committed to increasing the number of externally funded research chairs. Such chairs bring to the university outstanding researchers, attract graduate students and post doctoral fellows, increase the research profile of the university, and contribute to the graduate and undergraduate teaching mission.

Core resources for research faculty members include the availability of high quality and able undergraduate and graduate research assistants and postdoctoral fellows.

B. Undergraduate and Graduate Research Student Assistants

Undergraduate research and graduate research assistants provide the workers to advance faculty-led research as well as engaging in their own discovery processes. Moreover, the mentoring of students through faculty-led research projects is one of the central mechanisms for the education and training of the next generation of scholars and scientists.

Brock has had a long tradition of engagement of undergraduate students in the research enterprise. In recent years this engagement has been encouraged and supported through the Experience Works/Experience Plus programs through which students work on faculty-led projects and are paid partially by an allocation from the tuition set-aside fund and the Brock University Undergraduate Student Research Assistants program administered through Research Services and funded by the NSERC Research Capacity

Development Program (2003-2008).

At the graduate level, student research assistantships are provided to students enrolled



in non-professional graduate programs through the Office of Graduate Studies. Faculty members are also expected to support graduate students through their peer reviewed research grants and contracts. As graduate programs expand, the numbers of graduate student research assistants will increase and the productivity level of faculty researchers should increase as well.

C. Post-Doctoral Fellows, research technicians and support staff

A major limitation in the research support program at Brock University is the availability of funds to support Post-Doctoral Fellows (PDF), dedicated research technicians, and research support staff. While some new funds have been made available through the Canada Foundation for Innovation (CFI) Institutional Operating Fund (IOF), these funds are limited and project and term specific. Faculty deans are encouraged to request operating funds and research faculty should consider pooling funds from their research grants to provide research technicians for a number of faculty members or core research facilities, thereby enhancing their capacity to maintain research equipment, run experiments for a number of faculty members' and monitor students' use of equipment, where appropriate.

Peer reviewed research grants allow some faculty members to recruit PDFs but most research grants are not large enough to do so on a continuous basis. The University is encouraged to consider the development of a central PDF/Research Associate Fund that would be highly competitive and allow researchers with outstanding research track records and external research grants to co-fund PDFs for a two-year period.

D. Central research support management and administration

Every successful, research-intensive university and most small institutions with a reputation for high quality scholarship and research has a well-supported, professional research management and administration. While the configuration of such administrations vary from institution to institution, it is important that such structures are provided with core resources from the central budget of the institution.

Physical Infrastructure:

Brock has expanded immensely its physical research infrastructure since 2000. However, even with the addition of Project 2000 and Plaza 2006, renovations to laboratories, and the purchase of new equipment through faculty-led CFI/OIT proposals, the University lags behind other research intensive universities in the quantity and quality of research facilities. The University has embarked on planning for additional research facilities and will work diligently to ensure that our faculty researchers and graduate students have access to the best physical resources possible.



Policy Infrastructure:

An often-overlooked area of infrastructure is policy. Up-to-date and robust policies provide an enabling environment within which faculty members undertake their research and scholarship. Brock is committed to ensuring that its research policy environment provides the superstructure within which our faculty members and research support personnel are able to undertake their scholarship and which is in compliance with provincial, federal and international regulations and best practices.

The Consultation Process

Consultation on the Strategic Research Plan began in the autumn of 2005. In late information was circulated to the Council of Academic Deans, Senate Committee on Teaching and Research Policy, and to all faculty members. A series of open consultation meetings were held in January 2006 and meetings were held with different Faculty councils and groups. The SRP was reviewed by the Deans of Faculties in January 2007 and by the Senate Committee on Research and Scholarship Policy. The present SRP reflects much of what was heard at those meetings and from written submissions.

Revision and Renewal

This Strategic Research Plan is not a document meant to be placed on a shelf. It is designed to be the initial phase of an on-going process of planning and consultation. This Strategic Research Plan will become the guiding document for the Associate Vice-President Research and International Development, Research Services and Brock International as well as Faculties and Departments. As such, Research Services will assess annually its services to faculty members in light of the objectives identified herein. Brock International, as the arm of the University responsible for international project development, will be responsible for support to research faculty in the development and management of international research opportunities.

The Associate Vice-President Research and International Development will report annually to the University Senate and the Senior Administrative Committee on the progress made to achieving the objectives identified herein.

At the end of the third year of the plan, the Associate Vice-President Research and International Development will lead a consultation on the Plan (academic year 2009-2010), report back to Senate through the Senate Research Committee.