



STRATEGIC RESEARCH PLAN SUMMARY

Objectives of the Strategic Research Plan

The primary objectives of Nipissing University's SRP are:

- to provide the strategic directive to strengthen and support existing and emerging research, guiding Nipissing University into the future as a regional, national and international centre of research excellence in selected areas;
- to encourage and facilitate intra-, inter- and multidisciplinary research initiatives among the faculty and develop research clusters and centres based on strengths;
- to further enhance the research training of all students, and, in particular, to continue our commitment to undergraduate research;
- to pursue collaboration and partnership with other regional, national or international communities, industries, institutions, and government agencies to develop research activities which are of relevance and value to our local communities and our region; and
- to attract and provide increased financial resources and infrastructure to foster research excellence and innovation in designated areas.

Research Themes

Theme 1: “Near North” and Regional Studies

Nipissing Researchers in disciplines as various as sociology, criminal justice, social welfare, Native studies, nursing, biology, psychology, education, geography, and history are addressing the difficulties and challenges encountered by being located in a northern, rural society and economy. For instance, research on the social aspects of aging includes studies of family support systems among the elderly, transition to retirement, addiction and aging, impaired driving, care and management of older offenders, and fear and risk behaviours among older Canadians, paying particular attention to the role of locality and relying on regional institutions in their studies.

The Criminal Justice program's Institute for Applied Social Research (IASR) engages in applied research projects for government agencies, non-governmental social organizations and private business, often in association with criminal justice agencies such as the police, corrections and the courts. While some projects have a local focus, others extend more broadly across Ontario and include a longitudinal study of neighbourhood policing in Hamilton, Ontario (with McMaster and York), a province-wide study of mental illness among provincial inmates (with the Ministry of Health and Long-Term Care and the Ministry of Community Safety and Correctional Services), and evaluation studies for the Intergovernmental Committee on Aboriginal Youth Suicide, the Ministry of the Attorney General, the Ontario Provincial Police and the Ministry of Training, Colleges and Universities (MTCU).

As well, with new research capacity achieved as a result of NSERC and CFI grants, Nipissing University researchers in health-related disciplines are actively pursuing opportunities to

establish partnerships with regional health agencies, including the Northern Ontario School of Medicine.

In the SSHRC disciplines, the research theme of the Near North also finds expression. For example, SSHRC grant holders in the History Department promote research and writing on the history of the communities in the Near North and have expertise in community studies and oral history. Objectives are to increase exchanges between university researchers and those in the community who work in museums, libraries, or as individual researchers; collecting documents, oral histories, and research tools for the study of this area and making them available to researchers. In 2008 the University was awarded a CRC Tier 2 in Environmental History of Canadian communities and regions, which builds on existing strengths and provides a bridge between ongoing research in the departments of Geography and History. Nipissing University is poised to assume a leadership role in this field of study with research in Aboriginal, environmental, oral, community, and public history, as well as regional land use and resource planning, local and community historical geography, biogeography, and environmental quality.

In English Studies, research is being conducted on the representation of the North, as well as on regionalism and identity not only in Northern Ontario literatures, but also in Canadian, Western Canadian and Caribbean/postcolonial literatures, and Scottish and African diasporic traditions. Another interdisciplinary area that has emerged recently, is Digital Humanities in which English and Computer Science collaborate to develop courses and research programs.

Theme 2: Natural Sciences and the Environment

Nipissing University's research capacity in the area of natural sciences and the environment has recently undergone extensive growth both in terms of operation and infrastructure. Increase in funding from the Natural Sciences and Engineering Research Council and the Canada Foundation for Innovation have allowed scientists from the departments of Biology, Geography and Geology, and Psychology to form a consolidated, multidisciplinary research cluster that has shown considerable potential for growth and graduate program development. This cluster capitalizes on Nipissing's geographic location amid vast tracts of pristine natural environments and on expertise in areas that range from molecular genetics to large-scale spatial analysis.

New state-of-the-art research infrastructure, including the Central Analytical Facility, geomatics laboratory, satellite imaging laboratory, auditory processing laboratory, animal and plant housing facilities, advanced microscopy and imaging facilities, and a remote field station, supports research comprising two complementary conceptualizations of environment: studies of the environment *per se*, and studies of environmental effects on organisms.

Studies of the environment involve two unique approaches. The first, driven by research in psychology, includes research on auditory perception by aging humans in noisy environments, effects of social environment on neurological processes, and environmental effects on neurological determinants of learning. The second approach is based in environmental earth science, and includes research dealing with spatial studies of the geomorphic, hydrologic and biotic environment. Studies of environmental effects on organisms, with an emphasis on environmental stresses, focus on neurobiological and behavioural consequences in animals, physiological consequences in plants, and the implications for large-scale ecological processes.

In 2008 an NOHFC-FedNor Forest Bioproducts Research Chair was awarded to Nipissing University. An expert in the response of trees to environmental stresses is working to develop an ecologically-based inventory of the Boreal forest of northeastern Ontario and to supply management tools for the bioresources sector of trees and understory plants.

Our second Tier 2 CRC, awarded in 2010 is in Environmental Science, specifically Watershed Analysis. This addition to our researchers in Environment related disciplines has strengthened and increased our research capacity and led to the development of a graduate program in Environmental Studies and Environmental Science. The Watershed Analysis Centre, and Geomatics Lab provide the foundation for focused graduate and research programs around environmental themes relevant to regional, national, and international interests, and research training opportunities for students interested in communication science, from intracellular signal transduction to spoken language in humans, and spatial analysis of the natural environment. For instance some of our researchers obtained funding through NOHFC to improve agricultural productivity in Northern Ontario using earth observing satellites and remote sensing.

Theme 3: Culture, Gender, and Subjectivity

Nipissing University is committed to building on its research and teaching strength in foundational disciplines of cultural studies, social history and literary criticism. Cutting across departments and programs, Nipissing University scholars have had remarkable success at securing SSHRC funding through research projects and undergraduate programs in the broadly defined area of culture, gender, and subjectivity, a thematic focus which recognizes the centrality of interdisciplinarity to innovative research in the humanities and social sciences. Culture, gender, and subjectivity focuses on culture as an object of historical, critical and theoretical study, as well as a dynamic context for understanding how identities, beliefs, and lives are shaped. Although researchers in this cluster generally work independently their research benefits from a critical mass of scholars engaged in cross- and interdisciplinary discussion.

Research areas include North American studies, Aboriginal studies, collaborative studies, gender theory/history, pedagogical theory, critical cultural theory, and studies in visual culture. More specifically, scholars pursue research projects on the intersections of ethics and politics; queer theory and theatre history; science, literature and gender; class and genre; religion and sexuality; and oral, community and public history. Other research interests involve intercultural relations, inter-arts collaboration, international relations, and the motive forces in social change. Several of the disciplines under this theme plan colloquia and visiting scholar series to foster research.

Recognizing the considerable recent investment in the NSERC disciplines, in the form of lab facilities and equipment, Nipissing University has now developed the infrastructure for the support of SSHRC-based research in the form of in a stand-alone library facility and archive.

Theme 4: Education Research and Innovation

Nipissing's Schulich School of Education offers both consecutive and concurrent B.Ed. programs, a Bachelor of Physical and Health Education degree, a broad range of additional qualification courses, an M.Ed. program, and a PhD Program. The Schulich School of Education has become a regional centre for education research.

A continued focus of research across the School is the application of technology as it relates to both the potential and challenges of information and other digital technologies. Specifically, the

innovative use of notebook computers and educational software in our programs provides a unique opportunity to conduct research on computer-mediated programs. Research areas include: distributed learning; adaptive technologies; technological and pedagogical issues; design and mediation; and the impact of technologies on marginalized communities.

A new research emphasis is at-risk students within the school system, but also incorporating the entire educational mosaic within the region. To this end, in 2005 Nipissing University launched *Biidaaban* (the Ojibwe for “dawn”), a major 5-year project saw community service learning become a cornerstone of the Nipissing University experience. Initially supported by a 1.3 million dollar grant from the J. W. McConnell Family Foundation, *Biidaaban* expanded to include many BEd students as well as students across many Arts & Science disciplines, who work with numerous community and Aboriginal groups to define and complete a wide range of service learning experiences.

Finally, the Schulich School of Education houses an endowed Thorn Literacy Chair. The mandate of this Chair is the enhancement of literacy and supports research on multi-literacies within the School. Scholars in the Physical and Health Education program examine the ways in which health literacy can be enhanced within schools and elsewhere while other researchers specifically examine the impact of gender on education at all levels.

Theme 5: Mathematical Sciences and Information Technology

Nipissing University is already internationally recognized for its topology research cluster. Members of the cluster, all of whom hold NSERC awards, are studying general and geometric topology, functional analysis, dimension theory, continuum theory and dynamical systems. Currently, the group’s collaborators include mathematicians from the Czech Republic, Japan, Mexico, Poland, Russia, South Africa, the Ukraine and USA, many of whom visit Nipissing annually to attend our spring workshops. During each of the past six years, the department has also hosted a visiting topology scholar, to further stimulate research activity. Future aspirations include adding computational topology capability and developing a second research cluster area.

On a related note, there are presently two primary international topology conferences held annually: the Spring Topology and Dynamics Conference and the Summer Conference on General Topology and Its Applications. In 1997, Nipissing became the first Canadian university to host the (12th) Summer Conference, with participants from around the world. Since then, Nipissing University and Auburn University have collaborated to publish *Topology Proceedings*, a refereed journal dedicated to the proceedings of these two important conferences.

Other Nipissing faculty members are conducting research across a broad spectrum of IT-related and quantitative fields of inquiry. Research areas in computer science and computational disciplines include computational geometry, graph theory, optimization, image recognition, neural networks, robotics and role-based collaborative systems. In our School of Business, there is research on the use and impact of IT in buyer-supplier relationships, as well as quantitative research on applied multivariate modeling. As well, Nipissing’s geographers focus on spatial data acquisition, analysis, and database management for urban and rural environments, using GIS, remote sensing, and spatial modeling, areas which also overlap with the second theme,

above. Together with our topologists, this group puts Nipissing in a strong position to develop research excellence in spatial analysis and the study of large data sets.

Theme 6: Health and Wellness Studies

Nipissing's introduction of programs in Nursing and Physical and Health Education has resulted in hiring new faculty, which in turn has enhanced research capacity in Health. In particular, the Physical and Health Education program, housed in the Schulich School of Education, has grown rapidly and as a result there has been investment in the expansion of our athletic facilities and in research spaces for integrated health education. Phase I of this expansion has been completed, and Phase II, the building of the research facility, will be completed in fall 2013. The facility will provide a central place for researchers who can be clustered under the areas of Exercise Physiology, Biomechanics, Modeling, Neurocognitive Function, Sport-Related Concussion, Youth Development and Physical Activity, Physical Activity and Health Promotion, Learning and Psychology of Physical Activity, Physical Activity and Cancer. This listing represents a portion of the spectrum of research on health-related topics. In addition, the Sociology and Psychology Departments house researchers working on aging and health-related issues. The Behavioral Health Sciences Lab, the Northern Centre for Research on Aging and Communication, and Health Informatics for Palliative Care support researchers working in different areas related to the quality of life. Faculty are engaged in research on topics such as: child development and family; the Canadian health care system; social gerontology; the sociology of health, illness & mental disorder; and social determinants of health. Faculty in the school of nursing research areas such as: qualitative expertise (grounded theory and ethnography, photography); quantitative methodologies including epidemiology, environment and women's health and subjective well-being; breast cancer screening and re-screening; pandemic flu preparedness; nursing history; and palliative care/nursing issues. Because the topic of health is inter- and multi-disciplinary, it needs to be noted that medical imaging, and applications of service systems technology in health care, are also areas in which some of our computer scientists are engaged in solving problems.