Optimizing Digital Transformation for Teaching and Learning

A response to “A Consultation on a Modern Copyright Framework for Artificial Intelligence and the Internet of Things”

September 2021
Colleges and Institutes Canada (CICan) is the voice of Canada’s publicly-supported colleges, institutes, cegeps and polytechnics, and an international leader in education for employment with ongoing programs in over 25 countries.

CICan’s members add over $190B to Canada’s economy each year and contribute to inclusive economic growth by working with industry and community partners to offer more than 10,000 programs to learners in urban, rural, remote, and northern communities.

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Submitted to:
The Government of Canada
(Innovation, Science and Economic Development Canada and Canadian Heritage)

Colleges and Institutes Canada (CICan) welcomes this opportunity to provide feedback in response to the federal government’s Consultation on how to ensure that Canada’s copyright framework continues to be effective with the digital realities of Artificial Intelligence and the Internet of Things.

Recommendations

• That the federal government enhance the Copyright Act to:
  o clarify fair dealing by making the list of exceptions illustrative.
  o permit circumvention of technological protection measures (TPMs) for purposes allowable under any exception defined within the Copyright Act.
  o add an exception for the purposes of repair (a Right to Repair).
  o clearly state that where the Act stipulates an activity as non-infringing, that activity cannot be deemed infringement by contract.

• That the federal government invest in tools and resources to further support copyright awareness and to create a more cyber secure post-secondary teaching and research environment.

• That the federal government continue to maintain a balanced copyright approach for both creators and users and support Canadian innovation by protecting Intellectual Property (IP) generated through artificial intelligence and applied research.
Introduction

CICan is the voice of Canada’s publicly supported colleges, institutes, CÉGEPs and polytechnics (hereinafter referred to as “college” or “colleges”). Its 139 members have a significant footprint in the country with over 670 locations in urban, rural, remote, and northern communities. Over 95% of Canadians and 86% of Indigenous people live within 50km of a college. The primary mission of colleges is to provide accessible, high-quality education and skilled workforce development that is responsive to local and regional economies. As part of their close link with industry and community partners, colleges serve as local gateways to the innovation ecosystem for thousands of small and medium enterprises (SMEs) and other organizations every year, specializing in research that solves technology, business and other innovation challenges.

Copyright and the importance of compliance to the Copyright Act matters to colleges, their students, faculty, and staff, as well as their research and innovation partners. Copyright legislation affects the way students and educators can access and use copyright-protected materials, and impacts teaching, learning and research. The Copyright Act must maintain an equitable balance between rights for creators and what is fair for users. The Supreme Court of Canada has consistently recognized the importance of both creators’ and users’ rights, but there remain elements within our existing copyright legislation that hinder such balance.

The COVID-19 pandemic has fast-tracked the digital shift for learning and work and underscored the vital need for anytime/anywhere post-secondary learning. To be successful in their mission, Canada’s colleges must be equipped with a digital infrastructure and innovation ecosystem capable of rapid technology transfer. Facilitating access to digital content and supporting this rapid technology transfer through new technologies like artificial intelligence or the Internet of Things, has never been more important than it is today to effectively address the skills and training needs of Canadians and the labour market.

Embracing emerging technology

Colleges are incredibly sophisticated providers of education and research services and play a leading role in Canadian innovation and prosperity. They respond quickly to the demands of today’s workforce changes and develop nimble training programs designed to meet the needs of employers and communities. With over 400 specialized research centres and laboratories from coast to coast to coast, colleges and their students work with thousands of partners in all sectors to develop or refine solutions, products, services, technologies, and processes. These institutions live on the leading edge of critical advances and, by embracing new frontiers, not only provide invaluable skills for students to take to the labour market but also support industry in its development and growth.
It is therefore not surprising that artificial intelligence (AI) and the Internet of Things (IoT) have been embraced by colleges across Canada. These emerging technologies are redefining teaching and learning by helping colleges develop innovative, intelligent, and autonomous solutions along with state-of-the-art products and services to help industry partners increase productivity and growth. Colleges offer numerous courses, workshops and programs focussed on AI and IoT. Many like Durham College, the British Columbia Institute of Technology (BCIT), Niagara College, Saskatchewan Polytechnic, and the Cégep de Sept-Îles, to name but a few, have related specialized research hubs.

In this digital age, it is imperative that the Copyright Act supports new creative endeavours, allows the dissemination of knowledge, permits access to education, embraces technological innovation, and is flexible enough to accommodate the evolving needs of students and educators. It must also recognize the growing interest in, and uses of, AI and IoT, both of which are increasing exponentially.

**Enhancing copyright for AI use**

Although applications for AI in education are in their infancy, they are already numerous. AI supports students and teachers by helping to automate processes such as: grading, enhanced communication and personalized help (i.e. tutoring and assisting with special needs). AI also greatly facilitates institutional research and applied research, especially through text and data mining which supports the planning, data collection, analysis, processing, design, prototyping and the development stages of new products and services for industry. These are examples of AI applications in applied research projects:

- AI application to measure customer satisfaction
- AI-based solutions for the health sector
- AI-based system for product and service deliveries
- AI based sales system to enhance sales
- AI systems to ensure accountability, confirm authorities, and support risk management practices.

Although the Copyright Act provides an allowable purpose for text and data mining of copyright-protected works under the fair dealing exception for research, this exception, like several others, is not comfortably evident. While text and data mining are clearly research activities, the lack of specific mention of these terms can negatively impact or prevent prospective research. Situating fair dealing as a list of illustrative purposes, through the language of “such as”, would enable users to have more confidence in using the exception. This improvement was recommended by the prior INDU Committee in the Copyright Review of 2018-2019.

Technological Protection Measures (TPMs) also inhibit application of all statutory exceptions. Under the present law, circumventing a TPM is deemed infringement even
when the use of the underlying material is lawful. This has effectively obstructed lawful uses for research and education as executed by CICan members. TPMs are especially problematic when putting in place learning supports for people with disabilities. For example, in several provinces, providing closed captions for those with a hearing impairment is an accessibility requirement, yet colleges and users are unable to break digital locks to do so. The Government should revise the language in the Copyright Act and make it explicit that circumventing a TPM for a lawful and required use is not infringement.

The imposition of contractual obligations is another issue that interferes with the use of exceptions to copyright. Libraries routinely licence content (i.e. journals and e-books) but licencing contracts often forbid text and data mining, even though this would be permissible under fair dealing. If there is an allowable exception under the Act, it should not be overridden by contracts rendering it an infringement of copyright. We urge the Government to clearly state that no contract can render an activity as infringement if the activity is permissible in the Copyright Act.

Finally, the relevance of authorship and ownership using AI in the development of products is a growing area of concern. Colleges serve as local gateways to the innovation ecosystem, specializing in applied research that is partner-driven to solve technology, business, health, and social innovation challenges. In most cases, the IP that is developed remains with the partner/client whether created with the use of AI or not. The same usually applies to pre-commercial research data which also resides on the infrastructure and IT systems of the industry partner or client, and not with the college itself. However, the use of some methodologies in research and development, for example, AI algorithms and statistical methods, do create a conundrum. Since algorithms generally necessitate access to data sets, the copyright status of these data sets largely depends on their source. Given this uncertainty, the ownership of the algorithm, and hence the copyright implications, used to create the product or service is often not clear.

There needs to be more discussion to determine a flexible definition of ownership of works and products created with the use of AI and what specific results should be protected as intellectual property.

**The impact of IoT**

Today’s world is changing and is greatly focussed on smart phones, smart cities, smart transportation, smart homes, etc., all being transformed thanks to IoT. IoT offers endless possibilities for the development of remote processes and creation of faster, more efficient processes that facilitate learning, communication, research and development, production, and so much more. Two issues related to IoT are of concern to colleges: TPMs and cyber security.
Despite an exception in the Copyright Act, TPMs limit access to copyright-protected works even for the allowable purposes of teaching and learning. TPMs also restrict the repair of equipment and software. Although vendors used by colleges generally service training and operational equipment themselves, there is a problem when vendors, or rightsholders, no longer provide equipment servicing to the college and/or when equipment becomes obsolete. In addition, since colleges must deliver training to prepare graduates for a workplace that encompasses new and older equipment, these institutions should be allowed to circumvent TPMs when facing these challenges. Graduates will invariably need to deal with TPMs in the workplace especially where repair of products and services is needed. Their hands-on technical training must include the knowledge of how to address TPMs to enable qualified employees to perform effectively on the job. The Copyright Act should be amended to reduce impediments brought about by TPMs that restrict access when repair or servicing, regardless of embedded software, is required. A specific exception denoting A Right to Repair would be timely and of value to support small-and-medium-sized enterprises (SMEs) where staff may not be proficient in navigating the Copyright Act.

Colleges recognize the circumvention of TPMs can present risks. Like all sectors of the wider research ecosystem, colleges and their innovation partners are vulnerable to cyber attacks, IP theft, and other economic based threats to national security. Moreover, since most applied research partners are SMEs, they are not typically resourced to undertake research activities and research security on their own. Cyber security is therefore top-of-mind for colleges particularly in the following three key areas:

a) the growing need to access data and devices remotely
b) the need for sophisticated and secure systems to track access and use of certain materials, as well as the implementation of related audit trails
c) the development and adoption of secure protocols to protect against the unintended sharing of copyright-protected content.

In addition, Zero Trust architecture and access management into AI and data repositories will become an increasingly operational discussion. Models to determine access will need to be enhanced to ensure copyright terms and holders are appropriately working with data. To support a more cyber secure research environment and to protect Canadian IP generated through AI and applied research, more dialogue among stakeholders is necessary to discuss challenges and determine viable solutions.

We urge the federal government to facilitate such dialogues and continue to invest in tools and resources for colleges and their innovation partners.
Conclusion

To build on Canada’s already strong innovation ecosystem and inclusive growth, our labour market needs diverse, resilient, nimble, and sophisticated employees able to work alongside AI and robotics, and to embrace emerging technologies. Colleges provide accessible, high-quality education including re-skilling and up-skilling Canadians and they contribute to the development of a skilled workforce that is responsive to local and regional economies.

Technological disruptions like AI and IoT impact all sectors of the economy. Since these disruptions will continue to arise for generations to come, educational institutions need access to data and resources that support teaching and learning, and applied research and development in education. Legislation, processes, and procedures must be structured to address changes and the new technologies that will arise in the future; copyright law is no exception.

The Government is urged to consider the recommendations put forth to support teaching and learning in this digital era.
CICan Member Colleges and Institutes in Canada

Over 95% of Canadians live within 50 km of a college or institute.

This extensive network of post-secondary institutions serves students from all over the country where they live, whether it’s in urban, rural, northern or remote communities, thanks to more than 680 campuses or facilities across Canada.

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Manitoba
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- Colleges Ontario
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