DIGEST 11

APPLIED RESEARCH AS A FORM OF EXPERIENTIAL LEARNING IN VET PROGRAM CURRICULA

This digest describes the last of five interventions in the AIRinVET project which explored one Canadian college's experience and provided recommendations for VET institutions with an interest in engaging students in applied research. The New Brunswick Community College (NBCC) approach is based on proven practices shared by other Canadian colleges. These practices were adapted for NBCC's environment over the course of ten years and helped them develop a research culture through a structured educational framework of experiential education. NBCC is now known for its success in engaging students in applied research. Intervention five extrapolated two frameworks, experiential learning and core employability competencies, from NBCC to other VET providers.

Canadian colleges engage in applied research to develop the talent employers need and provide the expertise required to develop or improve products, processes and services and enhance their partners' competitiveness, efficiency and sustainability. The Canadian applied research system in VET is at the forefront in this field. In the 2019-20 year, Colleges and Institutes Canada (CICan) reported the following:

- 8,000 research partnerships, the vast majority of them with SMEs;
- 42,000 students engaged in applied research activities as work-integrated learning (WIL); and
- over 5,500 new processes, products, prototypes and services, 85% of which were completed in under one year.

The intervention involved the facilitation of two online workshops. The lead of this intervention demonstrated to partners and others how to enhance the learning experience for students while also contributing to the socio-economic growth of their regions through frameworks for experiential learning and core employability competencies integrated into program curriculum. The intervention explored how core employability competencies and experiential learning can prepare learners for the future of work and how VET institutions can ensure effective integration of applied research in their educational programs.

Workshop 1: Applied Research and Experiential Learning began with an overview of how one Canadian college successfully integrated applied research as a form of experiential learning in program curriculum, while also drawing from the experiences of other Canadian colleges. It highlighted how student engagement in applied research develops professional, employability skills while also providing opportunities to practice technical skills. The frameworks were explained, with a focus on teaching and learning implications. Success factors for implementation were also discussed. This workshop was intended to appeal to VET leaders, project partners and others who were interested in enhancing the learning experiences for students while also serving the socio-economic needs of local companies and communities.

Workshop 2: Integrating Applied Research in Program Curriculum was an interactive session intended for VET instructors and curriculum developers. In this session, specific examples and tactics were shared on how to improve teaching practices and enhance student learning through the integration of applied research and program curriculum. The purpose of the second session was to equip participants with ideas and actions that could be implemented in their VET programs. Participants brought a course outline or syllabus to use in the workshop and they were invited to complete an optional post-program assignment.

Learning Outcomes

By the end of the two sessions, participants were expected to:

- Discuss the benefits of experiential learning and employability competencies for TVET students
- Explain how applied research is a form of experiential learning and work-integrated learning
- Recognize how engaging in applied research develops employability competencies and professional skills
- Describe the key components for successful integration of applied research in program curriculum
- Translate the framework and components to their institutional contexts
- Identify a potential applied research project that would meet expected course outcomes
- Demonstrate how applied research as a form of experiential learning can be integrated in a course or program
- Design an applied research project with an industry or community partner that is aligned with course content and meets course outcomes (optional)

4 ELEMENTS OF APPLIED RESEARCH

01 INDUSTRY OR COMMUNITY PARTNER
02 PRACTICAL PROBLEM
03 PARTNER NEEDS & PARAMETERS
04 DELIVERABLE/ SOLUTION

Applied research attempts to find solutions to existing problems, such as creating new or making improvements to processes, products or services. For most colleges in Canada, applied research requires a partner with a problem to be solved. There are four key components of an applied research project, starting with an industry or community **partner's** practical **problem** based on their specific **needs** and parameters and ending with a **deliverable**.
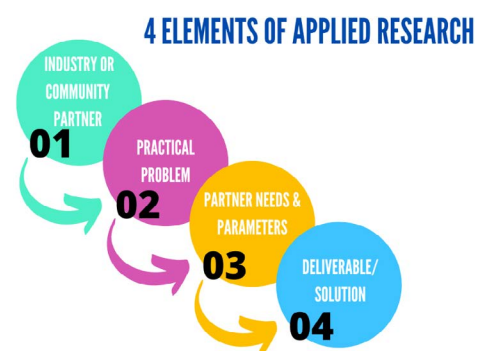
Applied Research and Innovation (ARI) benefits industry and community partners and has positive impacts on social and economic development. However, for VET institutions, the most important reason to engage in applied research is to enrich the learning experience for students. ARI in VET provides students with opportunities to engage directly with real-world problems. Applied research facilitated as a form of experiential education can increase student interest and motivation; real problems are more engaging than textbook cases. Students develop both technical and professional competencies, and they are better prepared for the workforce and further education. Employers are seeking graduates who have professional and employability skills, such as communication, collaboration, adaptability and problem-solving. Engaging in applied research can help students develop these skills.

Experiential learning is a highly effective pedagogy that has been shown to deepen, extend and enrich students' learning. Applied research is a form of experiential learning that, due to the involvement of an industry or community partner, is often considered career readiness or work-integrated learning. It can also be described as problem-based learning, project-based learning, challenge-based learning, and inquiry-based learning. Applied research projects attempt to solve a problem and can result in a new or improved process, product or service. Through applied research, VET institutions can engage with partners to enhance the learning experience for students **and** serve the socio-economic needs of local or regional companies and communities.

The Applied Research Project Process Diagram illustrates the key elements involved in developing an applied research project for vocational education and training programs. The diagram begins with **Problem Identification**, which involves finding a relevant problem that aligns with the course learning outcomes. This could be initiated by the partner, instructor, and or applied research staff. This is followed by **Partner Needs & Parameters**, where the partner is engaged to understand their needs, priorities, and constraints, and to define clear project objectives. Next, **Program or Course Learning Competencies** are reviewed by the instructor to identify relevant competencies within the curriculum, ensuring that the project objectives align with learning outcomes. Once the scope and details of the project are confirmed, **Solution Development** is facilitated by the student through collaborative discussions with the client on potential solutions, encouraging innovation and considering feasibility and sustainability. Finally, the student's work is assessed based on the relevant learning outcomes.
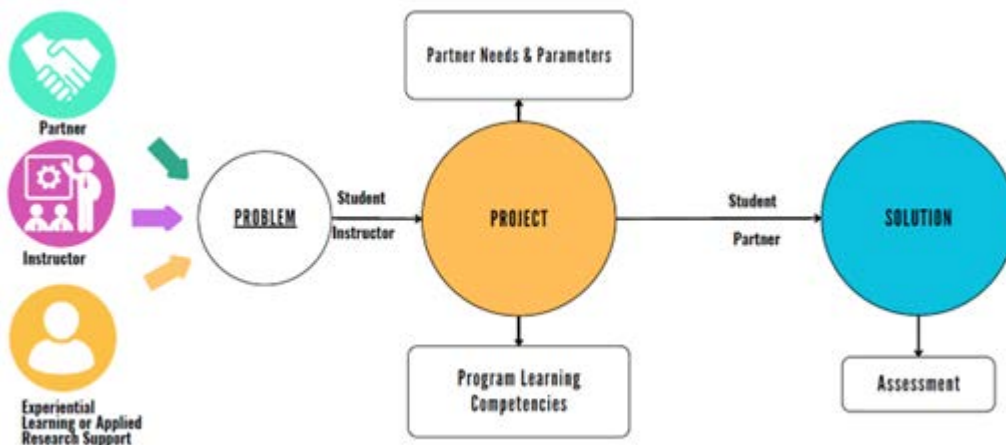
In order to embed applied research in the vocational education environment and culture, four success factors were identified and discussed: (1) institutional commitment and leadership; (2) instructor development and support; (3) curriculum and competency development; and (4) collaboration. Overall, the intervention shared NBCC's applied research approach, provided insights and recommendations for international VET providers, and facilitated knowledge exchange and collaboration among participants.