

Coding to Learn and Create: Short Summary

Learning to code is increasingly part of the required curriculum for primary-level students in many countries today. In Canada, coding education is now mandatory in three provinces, and is an encouraged part of the curriculum in most other provinces. Much attention has been paid to the role that learning to code can play in preparing students for employment within the new digital economy. The additional value of programming in teaching life skills, developing social connections, and supporting creative expression—particularly for students with disabilities—has been under-recognized and under-researched.

Students with disabilities, especially those who struggle with language, learning, or cognitive difficulties, are often unable to participate in classroom coding activities, or are relegated to passive roles while their peers actively engage in and collaborate on solving problems computationally. Most of the educational programming tools and curricular resources currently in use in classrooms were not designed to be accessible to students with disabilities. Teachers need greater assistance in modifying learning resources to suit their students' needs, and students lack the ability to personalize their learning experience with these tools.

While coding is seen primarily as a means for developing skills that will support future employment and career opportunities, it is useful to consider the broader potential for coding education to contribute to the development of social, daily living, and creative skills—coding to learn. For all students, especially those with cognitive and learning disabilities, participation in coding lessons can help teach crucial collaborative and communication skills, strategies for problem solving, task sequencing, spatial awareness, and metacognitive skills such as those involved in giving instructions to others. Participation in coding activities also helps support a sense of belonging and equality with their peers in the school community. Perhaps most importantly, coding provides students with new ways to discover and create personal outlets for communication and creative expression. Learning to code can empower students to be active producers of their digital environments, rather than just consumers of prefabricated apps and games.

With these opportunities in mind, the goals of the Coding to Learn and Create project are to:

1. Provide a collection of open educational resources that offer strategies, tools, and techniques for teachers, which will help them adapt existing coding curriculum and programming environments to better match their students' diverse creative, social, and life skills development needs and to teach more inclusively.
2. Co-create, with educators, students, and their families, a new inclusive coding environment that will provide personalization features and scaffolding designed specifically for use by students with language, learning, and cognitive disabilities.