

DATE: June 5, 2018

TO: Board of Trustees

FROM: Darrel Robertson, Superintendent of Schools

SUBJECT: Developing Core Competencies in Coding
(Response to Request for Information #017)

ORIGINATOR: Mike Suderman, Assistant Superintendent and Ron MacNeil, Assistant Superintendent

RESOURCE STAFF: Janice Aubry, Colleen Chwedoruk, Chelsea Erdmann, Terry Korte, Marilyn Manning

REFERENCE: April 10, 2018 Board meeting (Trustee Draper)

ISSUE

The following information was requested:

Given the huge role that technology plays in everyone's lives, how is Edmonton Public Schools preparing District students to not only be consumers of technology but drivers and producers, specifically in terms of developing core competencies in coding across all grade levels?

BACKGROUND

Edmonton Public Schools is committed to fostering growth and success for all students, through ensuring high quality learning opportunities. The District is also committed to ensuring that more students complete high school and are connected to career pathways that support their transition to post-secondary studies or the world of work. The District continues to strive to keep abreast of emerging areas for student learning, such as the development of competencies and skills related to technologies, including coding.

CURRENT SITUATION

There are currently many ways that District schools are developing competencies in coding with students, both during instructional time and outside of the classroom. There are a range of courses at the junior high and senior high level that provide opportunities for students. For example, Career and Technology Foundations (CTF) and Career and Technology Studies (CTS) courses are available that contain learning outcomes through which students develop computer programming, coding and/or robotics skills and knowledge development. In the 2016-2017 school year, there were 8,894 successful completions of high school computer science courses in which coding was embedded as part of the learning.

Schools are also embedding opportunities during the delivery of core subject area content. The emphasis on problem solving and finding solutions to real life problems by using coding, as opposed to focusing learning on the mastery of specific coding languages moves coding from uniquely being delivered through the computer sciences classroom into being integrated into other curricular areas. Although not explicitly identified in Kindergarten to Grade 12 core curricula, there are opportunities for students to use coding through many subject areas, such as mathematics, social studies and physical education. An increasing

number of District schools are establishing specific makerspace environments, which encourage students to engage with emerging technologies to design, create and invent in their regular classes.

Some schools are also providing opportunities for students outside of instructional time. The availability of the makerspace kits, along with District Technology's promotion of such coding initiatives as the Hour of Code, has encouraged the creation of coding and robotics clubs at many District school sites.

A growing number of elementary schools are offering these experiences.

Central supports from various departments are available to schools as teachers increase their own capacity and offerings to students. For example, the Technology Integration Planning and Support (TIPS) team in the District Technology department provides professional learning sessions, facilitates technology communities of practice, and provides in-school consultations that include supports for coding; these include sessions on makerspace, 3D printing and other tools and processes that support students to be technology producers. District Technology also lends makerspace kits to schools. TIPS promotes school engagement in external initiatives, such as the Hour of Code movement. From December 2016 to December 2017, over 4,800 students in 21 schools were identified as completing Hour of Code activities. Another initiative is Computer Science Edmonton, which is a collaboration between Edmonton-area Kindergarten to Grade 12 teachers and the University of Alberta. This initiative integrates computing science into the curriculum and provides professional learning sessions.

The Career Pathways team also offers professional learning sessions and summer institutes that include coding. For example, Career Pathways is offering a 2018 summer institute session called Exploring Project Based Learning and Science, Technology, Engineering, Arts, Math (STEAM). Career Pathways also communicates community-based initiatives to teachers, such as the Learning Partnership, which offers programs such as Coding Trek (for Grades 1 to 3) and Coding Quest (Grades 4 to 6), free of charge to schools.

Curriculum and Resource Support provides opportunities to develop the use of coding through the delivery of curricular outcomes. There are many areas through which students are enabled to be producers of technology to meet learning outcomes in the current provincial programs of study; the new draft learning outcomes for Kindergarten to Grade 4 also provide opportunities for teachers to embed coding activities while addressing the learning outcomes.

Opportunities are also being made available to ensure best practices are being shared with District leadership staff. For example, a pre-DLM session Championing Effective and Innovative Use of Technology was created to help administrators identify best practices and resources to support staff in meeting educational technology professional learning needs, including the development of coding competencies.

KEY POINTS

- There are currently many ways that District schools are developing competencies in coding for students, during instructional time and through providing opportunities outside of the classroom.
- Central supports from various departments are available to schools as teachers increase their own capacity and offerings to students.
- Although not explicitly mentioned in Kindergarten to Grade 9 core curricula, there are many areas through which students are enabled to be producers of technology to meet current outcomes.
- The new draft learning outcomes for Kindergarten to Grade 4 also provide opportunities for teachers to embed coding activities while addressing the learning outcomes.