

“Oh, the places you’ll go and the things you will see, when computational thinking comes naturally.”

TeachDigital LAB recently organized and co-sponsored a workshop for educators in collaboration with faculty at Laurier and Western University, and educators from Waterloo Region and Thames Valley. The workshop was titled, **Computational Thinking across the Curriculum**. Guest Leaders included:

Dr. George Gadanidis, Professor, Faculty of Education, Western University

Ms Lisa Floyd, Instructor, Faculty of Education, Western University, and Educator, (TVDSB)

Katrina Massey, Educator, Thames Valley District School Board (TVDSB)

Mr. Scott McKenzie, Educator, Waterloo Region District School Board (WRDSB)

Dr. Donna Kotsopoulos, Professor, Faculty of Education, Wilfrid Laurier University

Dr. Julie Mueller, Associate Professor, Faculty of Education, Wilfrid Laurier University

Eden Hennessey, PhD Student, Teach Digital Lab, Wilfrid Laurier University

SUMMARY

On Thursday, August 25, 2016 30 educators from Southern Ontario--with more on a waiting list-- attended an introductory, interactive workshop examining Computational Thinking (CT) across the curriculum in elementary education at Wilfrid Laurier University’s Faculty of Education.

Educators, instructional coaches, teacher education candidates, and administrators from across the region and beyond, along with faculty from Western and Wilfrid Laurier’s Education Faculties introduced concepts, learning tasks, and assessment approaches using “unplugged” and digital activities applicable to a spectrum of abilities, grades, and curriculum areas.

Dr. Donna Kotsopoulos started the day by introducing and defining CT as “an approach to solving problems, designing systems and understanding human behaviour that draws on concepts fundamental to computing” (Wing, 2006). She emphasized the importance of coding and CT in the future of education and innovation, and presented a pedagogical framework that included *unplugged, tinkering, making, and remixing*. These pedagogical steps served as the organizational structure for the day’s activities.

Dr. George Gadanidis conducted the *unplugged* session – a coin toss exercise that used CT-related skills and processes in the absence of an actual computer. This session highlighted how CT can be taught as a way of approaching problems without the involvement of technological devices.

Lisa Floyd led the group in an instructional session on the MIT coding software Scratch. In her session, Lisa focused on the *tinkering* process wherein learners alter existing code to examine how outcomes are affected.

Scott McKenzie conducted a session focusing on the *making* part of CT. In an interactive activity, teachers used Sphero software, in which they created and altered code to make a sphere shaped object hit a miniature bowling pin. Strike!

Lisa and Scott were joined by Katrina Massey for a session on remixing that was tailored to both primary and junior/intermediate level educators. Educators were able to try out versions of Scratch and Scratch Jr. on iPads and Chromebooks as appropriate to their own grade levels and subject areas.

Dr. Julie Mueller and Eden Hennessey ended the day highlighting findings from a research project on CT across the curriculum and how this will impact assessment. Results indicated that CT concepts and perspectives are present across disciplines in the Ontario Elementary School curriculum from Mathematics to Health and Physical Education. However, specific CT practices (e.g., debugging, abstracting) are virtually absent and should thus be incorporated into the existing curricula as tools and skills for problem solving that prepare students for the 21st century demands they face in a digital age.

The free workshop was a resounding success, introducing local educators to Computational Thinking and Coding in Laurier's newly refurbished Flexible Learning classrooms. Participants' responses were positive and suggested that there is tremendous value in hands-on learning of CT material and programs to develop "broader understanding" of what Computational Thinking is and how it can be integrated across disciplines from Kindergarten to Grade 12. Indeed, the on-line feedback survey indicated a growth in average self-rated knowledge from 1.95 before the workshop to 3.32 following the workshop (on a 5-point scale). Almost 80% of participants indicated that would like to participate in further research and collaborative learning related to CT.

Twitter Network: #comphthink

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@lisaannefloyd @georgegadanidis

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