New EPFL-ETH Zurich programme funded by the Jacobs Foundation

Mixed-reality technology could improve students' learning outcomes significantly; for example, in bioengineering courses in the Medicine curriculum.

Switzerland's two federal institutes of technology have teamed up to offer a new joint doctoral programme in the learning sciences. The new EPFL-ETH Zurich programme is being funded by the Jacobs Foundation.

How can the science of human cognition and learning help us to teach and learn? How can data science and artificial intelligence support the personalisation of learning? And how can we – especially in the age of flexible working – systematically evaluate the interaction between learners and physical spaces in different environments? These and similar questions will be intensively addressed by participants in the new joint doctoral programme in the learning sciences being offered by EPFL and ETH Zurich that starts in Spring 2022.

Made possible by the Jacobs Foundation

The learning sciences sit at the crossroads of several disciplines. They require experts from an array of fields who are eager to put their expertise to work to improve education while advancing the understanding of human cognition and learning. The new joint doctoral programme is especially aimed at Master's graduates from the STEM fields – science, technology, engineering and mathematics – who have a keen interest in learning and education.

The new EPFL-ETH Zurich programme lasts four years and is being generously funded by the Jacobs Foundation. "Collaboration is key to driving innovation, which is why we are delighted that these two high profile institutions are

jointly offering this programme which will shape the future of learning," says Simon Sommer, Co-CEO of the Jacobs Foundation.

A significant step

"Our goal is to train experts who can address education-related issues by drawing on a scientific background," says Pierre Dillenbourg, EPFL's Associate Vice President for Education and head of EPFL's Computer-Human Interaction in Learning & Instruction (CHILI) laboratory.

He conceptualized and designed the joint doctoral programme together with Manu Kapur, who holds the Chair of Learning Sciences and Higher Education at ETH Zurich and heads up ETH Zurich's Future Learning Initiative.

"Research shows that traditional methods of teaching are often not optimal," says Manu Kapur who has experience as a mathematics teacher himself. For example, the professor has shown that the systematic use of productive failure is significantly more effective than teaching by means of lectures. "Data science, artificial intelligence and robotics open up new research approaches that further promote such insights." He adds: "The joint programme is a significant step for the learning sciences in Switzerland, but also for science in general, as it sets the framework for joint programmes in other fields to be established."

In fact, this is the first doctoral programme offered jointly by the two universities, each of which has extensive experience in the learning sciences. "There are great synergies and opportunities between our schools and we look forward to more joint doctoral programmes in the near future", says Luisa Lambertini, EPFL's Associate Vice President for Postgraduate Education. And the Rector of ETH Zurich, Sarah Springman, says: "At the beginning of every innovation is learning. Our education system must build on current research knowledge at all levels – from childhood to adulthood – in order to meet an ever more rapidly changing world." In this regard, the new doctoral programme is an important step, says Springman: "It is only right that Switzerland's two leading technical and scientific universities continue to expand the basis for this."

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