1. **Report** Using Activity Theory for Modelling Transformative Digital Learning

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Abstract— In support of ongoing educational transformation in post-Soviet nations, this article positions activity theory (in the tradition of Engeström) as a framework for modelling changes towards innovative forms of collaborative, fully online digital learning. A strength of activity theory is that it adopts a holistic socio-technical perspective in which teachers, learners, technologies, pedagogical values, roles/identities and rules/cultures are considered together as interdependent elements of collective activity. An illustrative example is offered to model a current and envisioned (target) activity system. In addition, a few considerations to guide research are offered. These include an emphasis on measuring the general readiness of students and teachers, and the need to explore gender divides. The goal is to help envision program transformations towards online learning at two partner universities as part of Ukrainian and Latvian, government-funded projects.

Keywords—activity theory, educational reforms, online learning, transformative digital learning.

Content of the report

Fundamental changes in society and technology have disrupted traditional socio-economic activities and triggered educational reinvention. Millions of jobs may be lost or reconfigured in the near future owing to advances in machine automation and human-machine symbiosis as envisioned, for example, by Industry 4.0 [1]. At the same time, many new (and currently unknown) professional roles will emerge requiring a more diverse workforce to develop advanced technological knowledge and skills, a positive disposition towards environmental and organizational change, strong competences for collaborating with both humans and intelligent machine agents, and creative problem-solving abilities [2]. The old concept of mass education, designed for the assembly line, focused on transferring standardized content, and enforcing patterns of top-down control cannot satisfy the demands of a digitalized, globalized,

democratized, sustainability-focused and increasingly precarious world [3]. But how must education change to align itself with the needs, rights and expectations of citizens?

Transformative digital learning (TDL) shifts the educational focus from predefined outcomes to emancipatory, digitally-mediated and augmented, inquiry and knowledge construction— "the expansion of consciousness through the transformation of worldviews and specific capacities of the self" [4]. Within this perspective, learners move through ongoing processes of cognitive and social change, establishing intermediate contextual learning goals and rethinking them once they are achieved. Are educators, who have trained for an industrial model of top-down instruction and predefined answers ready for this approach? How might teachers transform their roles, competencies and values to facilitate TDL? What transformation model can be used to guide the transition to TDL? These questions guided our previous research on student and teacher readiness for TDL within the post-Soviet space [5], [6], [7], and many questions remain. In this article, we address the needs of two international partnership projects (Latvia-Canada and Ukraine-Latvia) dedicated to educational transformation in higher education.