

**EDEN Annual Conference Proceedings**

**“Yes we can!” – Digital Education for Better Futures**

EDEN 2023 Annual Conference

hosted by

Dublin City University (DCU), Dublin, Ireland

18-20 June 2023

Edited by

Josep M. Duarte, Elena Trepule

on behalf of EDEN Digital Learning Europe

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# A CONCEPTUAL MODEL TO ADAPT MICROLEARNING TO DESIGN DIGITAL TEACHING AND LEARNING PROCESS IN HIGHER EDUCATION

*Vindya Senadheera, Faculty of Graduate Studies, University of Kelaniya, Sri Lanka / Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka*

*Dileepa Ediriweera, Faculty of Medicine, University of Kelaniya, Sri Lanka*

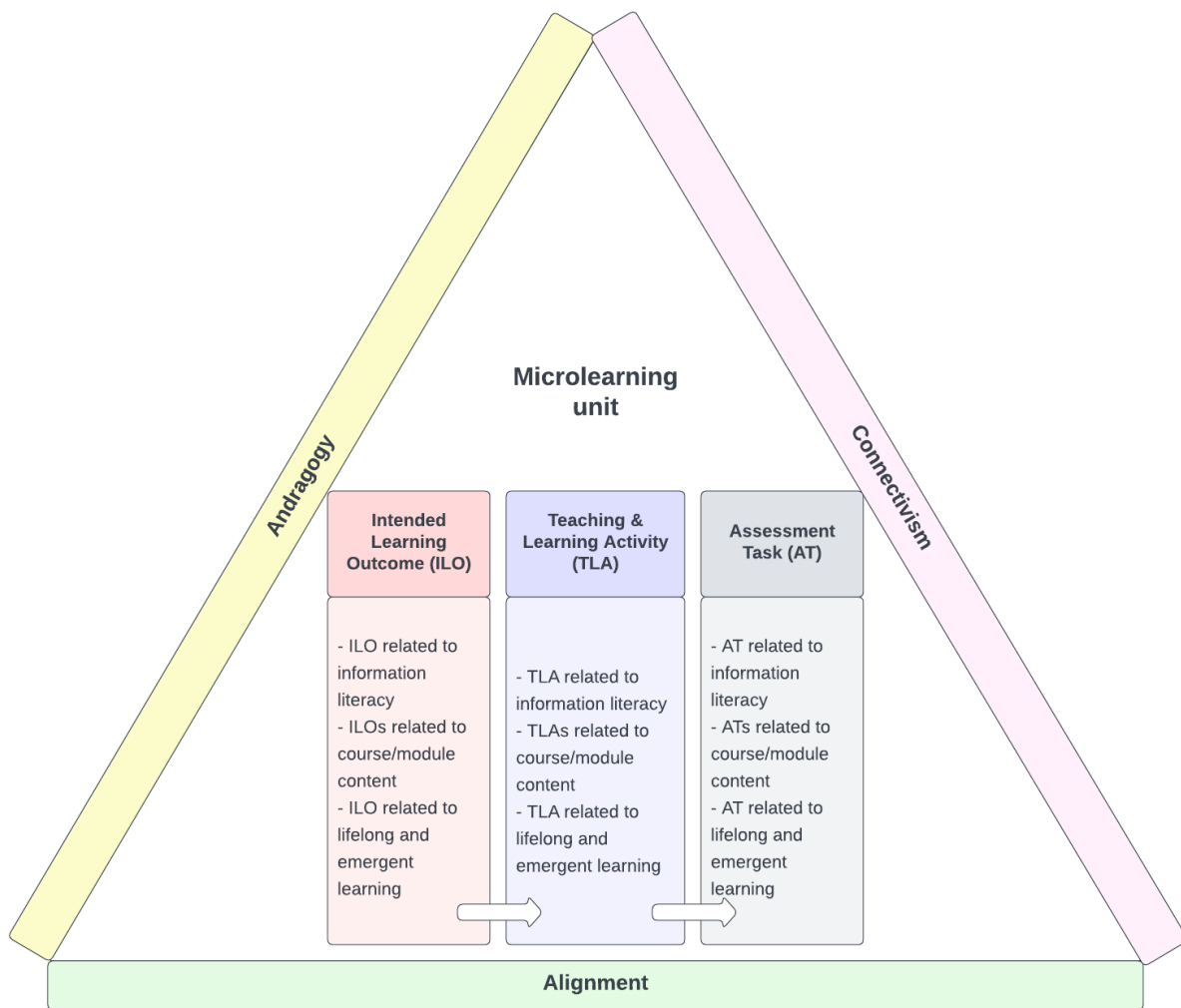
*Thilini Rupasinghe, Faculty of Computing and Technology, University of Kelaniya, Sri Lanka*

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## **Abstract**

Microlearning is an innovative pedagogy that is practiced in current higher education. It is the method of learning through small-sized, well-organized learning units and short-term learning activities (Hug, 2005; Allela, 2021). Each microlearning unit is designed to achieve a single learning objective (Wagner, 2002). A systematic review and meta-analysis conducted on the effects of microlearning in academic performance of students has showed a higher academic performance when microlearning is used compared to the traditional learning ( $p = 0.03$ ). The overall mean difference in academic performance in relation to post-test scores in theoretical examinations between microlearning and traditional learning groups has been 12.6 (95% *CI*: 1.2 - 23.9) (Senadheera et al, 2022c). This can be attributed to reducing cognitive load, providing flexible learning environment, promoting self-directed learning and by providing timely feedback (Senadheera et al, 2022c). Currently, university teachers are working towards re-designing the traditional teaching and learning activities (TLA) to digital courses using digital pedagogies, to address the learning needs of current students. Undoubtedly, this digital-transformation of formal higher education should be accompanied by a sound conceptual model to provide a meaningful education. The aim of this paper is to present a conceptual model to adapt microlearning to design digital teaching and learning process in higher education. A comprehensive analysis of literature was carried out in order to identify the components that should be integrated to adapt microlearning, to achieve the best outcomes in relation to performance and students' satisfaction. Accordingly, the 'CAA model' was designed which is presented in Figure 1.

Figure 1: CAA model to Adapt Microlearning to Design Digital Teaching and Learning Process in Higher Education



The following were identified as the main three design considerations of the proposed 'CAA model';

1. Connectivism
2. Alignment
3. Andragogy

Connectivism is a learning theory which explains how learning occurs in this digital age (Siemens, 2005). It was selected as the learning theory for the proposed framework because a scoping review we conducted showed that using connectivism to design T & L in higher education produces positive outcomes as; improve academic performance, foster creative thinking, enhance interactions with teachers and peers, promote collaborative learning, provide open and flexible learning environment, promote self-regulation of learning, facilitate action learning, improve problem solving and decision making skills, promote reflective practice and promote lifelong learning (Senadheera et al, 2022a). The integration of principles of connectivism in higher education has successfully incorporated informal learning into formal learning and enhanced skills required for emergent learning (Senadheera et al., 2022b). Therefore, in the 'CAA model', design of each microlearning object will be guided by principles of connectivism theory.

Alignment is a key principle in curriculum theory which states that assessment tasks should be aligned to what it is intended to be learned and with TLAs (Biggs and Tang, 2011). The principle of alignment was integrated in the

proposed framework because the literature showed that alignment between intended learning objectives, T & L activities and assessment method produces effective T & L as it ensures maximum consistency throughout the process (Biggs and Tang, 2011). When defining the intended learning outcomes (ILOs), apart from the ILOs related to the content of the course, CAA model proposes to integrate the specific skills required for the success of digital learning. Accordingly, an ILO to enhance information literacy skills of students is proposed in order to assure that students have the competency to obtain, critically analyse, evaluate and effectively use information required for digital learning. Moreover, an ILO to enhance lifelong and emergent learning skills are proposed in the framework because the information in this digital age is rapidly evolving it should be assured that students are equipped with most updated information in their learning.

Andragogy explains how learning occurs in adults as learners (Knowles et al., 2005). Those principles are included in the framework as it was observed that, designing the microlearning lessons according to the adult learning principles can further enhance the positive impact of microlearning on students' academic performance in higher education (Major & Calandrino, 2018).

### **Keywords:**

connectivism, microlearning, andragogy, alignment, digital age.

### **Summary**

The conceptual model presented in this paper provides an evidence-based outline to adapt microlearning to design digital T & L in higher education to achieve the best outcomes for the students in higher education in this digital age.

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