

University of teacher education State of Vaud, Switzerland (3LS Laboratory / CREAT laboratory)

Lesson or Learning Study in different cultural, subject and learning contexts

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**The role of lesson studies to foster a STEAM approach in education with textile design**

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This communication presents a research using *lesson studies* to improve a STEAM (Science, Technology, Engineering, Art, Mathematic) approach (Yakman, 2008) in education to foster textile design in compulsory schooling in the french speaking part of Switzerland.

To achieve such an endeavour, we used Lesson Studies to enable teachers in training programs to develop professional gestures centered on planning, analyzing and regulation of design activities, as part of their teaching process (Didier, Perrin & Vanini, 2016). *Lesson studies* contribute to the change of professional posture among teachers through the identification of specific professional gestures (Lewis & Hurd, 2011). Indeed, *lesson studies* allow to implement a collaborative and iterative process of planning, analyzing and revising a lesson (Takahashi & McDougal, 2015). The process of *lesson studies* promotes a professional change for different reasons : on the one hand collective planning allows to deepen the comprehension of the object of learning and on the other, collective analysis pushes to articulate and internalize the theoretical frameworks explaining what is being done (Davies & Dunnill, 2008; Soto Gomez, Servan Nunez & Capparos-Vida, 2016; Didier et al., 2016).

In this research, the STEAM approach was used to train textile design activities to enhance multidisciplinary learning. Design activities are defined as the ability to conceive material objects while anticipating their realization and their socialization (Bonnardel & Didier, 2020). Developing a STEAM approach in the teaching requires a change of paradigm in the education (Yakman et al., 2012). This change has to be supported by the identification of professional gestures, focused on the learning process of the pupils (Didier et al., 2016).

We compared piloted classes in compulsory schooling in the french speaking part of Switzerland and observed several issues related to the STEAM approach which have been overcome with the lesson study. The results of this study based on mixed research methodology will be presented. The results highlight the role of *lesson studies* in the construction of the professional gestures of teachers in order to improve a STEAM approach in the context of multidisciplinary learning with design textile activities.

**References :**

Bonnardel, N., & Didier, J. (2020). Brainstorming variants to favor creative design. *Applied Ergonomics Human Factors in Technology and Society*, 83, 102987. Retrieved from <http://hdl.handle.net/20.500.12162/3729>

- Didier, J., Perrin, N., Vanini De Carlo, K. (2016). Créativité et conception. Une Learning Study au service de la transformation de l'enseignement des activités créatrices et manuelles. *Revue des HEP, 1*, 113-128.
- Lewis, C., & Hurd, J. (2011). *Lesson study step by step: how teacher learning communities improve instruction*. Portsmouth: Heinemann.
- Takahashi, A., & McDougal, T. (2015). Collaborative lesson research : maximizing the impact of lesson study. *ZDM Mathematics Education, 48*, 513-526.
- Soto Gomez, E., Servan Nunez, M., & Capparos-Vida, R. ( 2016). The practicum and the degree essay as the scenario for reflective and cooperative creation. *International Journal for Lesson and Learning Studies, 5*(2), 116-129.
- Yakman, G, (2008). STE@M Education: an overview of creating a model of integrative education. Pupils Attitudes Towards Technology 2008 Annual Proceedings. Netherlands.
- Yakman , G., & Lee, H. (2012). Exploring the Exemplary STEAM Education in the U.S. as a Practical Educational Framework for Korea. *Journal of the Korean Association For Science Education, 32*(6), 1072-1086.