

Diverse Knowledge Practices through Personal Learning Environments – A theoretical Framework

Sabine Reisas

Department of Media Pedagogy/Educational Computer Sciences, University Kiel, Germany

sreisas@av-studio.uni-kiel.de

Abstract. The paper discusses the relevance of facilitating knowledge practices and personal learning environments in higher education. It describes the practice-oriented view of personal learning environments and defines knowledge practices as a socio-cultural practice. The focus in this paper lies on the main theoretical key concepts which the research of facilitating knowledge practices and personal learning environments is based on. It outlines the settings of the research and the used qualitative methods to explore implicit and explicit practices and the existing personal learning environments of students.

Keywords: personal learning environments, knowledge practices, sociomateriality, constitutive entanglement, practice-oriented approach, concept development.

Over the last few semesters we observed that students need much more time to adjust themselves to assignments, challenging new ways of thinking. Students struggle with a continuous and evolving progress of their work and it can be assumed that because of a lack of adequate practices it is difficult for them to solve ill-structured problems (e.g. developing collaborative learning environments). The outcomes at the end of a semester show that students are able to execute the given task with their existing practices, but this doesn't mean that they questioned the underlying assumptions, explored or understood the problem. It only shows that they are able to address the anticipated expectations and instructions of a teacher to deliver an outcome. If we want to prepare students for the knowledge working areas and an emerging technology-oriented life, pedagogy should provide concepts which enable students to be flexible, autonomous and facilitates them to take responsibility for negotiating social practices [1]. But Technology enhanced learning environments alone don't facilitate students to achieve the desired goals: Knowledge how to use tools don't help students in emerging and complex situations, it only supports unquestioned and routine activities.

Therefore the aim of this research is to provide requirements for new course concepts in higher education which facilitates students to "co-produce and refine knowledge practices and with it an emergent Personal Learning Environments" (PLE) [2]. Therefore the research explores the latent needs of students which arise out of context situations and the use of technologies within the given constraints. In addition to that reflective processes are important to make these needs visible to students and to

encourage them to develop and transform their own PLEs. Torff [3] stresses that these aspects “influence what will come to understand, value, and use from courses (...)”.

The research is also interested in the influence of perceived discrepancies on students' knowledge practices and on PLEs. Therefore the following propositions from a study in 2010, which explored the learning situation and the perceived discrepancies of students will be considered [2], [4]:

- “Students perceive learning as an externally determined process.”
- “Learning communities differ from academic communities and the students perceive no connections.”
- “Learning and scientific work do not appear as social activities. It remains unclear who is interested in student's academic qualifications and their produced artifacts.”
- “Professors are seen as facilitators of the absolute (scientific) truth.”

The research is based on the following underlying assumptions [2]:

- “Actual teaching and learning situations (in higher education) are affected significantly by personal learning environments and incorporated knowledge practices.
- PLEs as activity systems are helpful for students to articulate knowledge practices.”

Considering the underlying assumptions, this work is interested in finding answers to the following research questions:

- Is it possible to conceptualize a PLE as a sociocultural practice?
- Is a PLE in terms of the activity system a vehicle to make practices explicit and observable for empirical research?
- Which incorporated knowledge practices can become explicit?
- Which interventions facilitate reflective processes?
- Which kind of intervention is able to induce dissonance in specific situations to challenge practices and therefore the transformative development of PLEs?
- How do students recognize discrepancies between the systemic relations of an activity system and how do students deal with them?

Based on Barnes [5] practices are socially shared forms of actions which may develop as routines but also demands knowledge and experiences about the context conditions to be conducted by members, which is also the precondition of sense making. Furthermore he stated that it is important to know "what moves or inspires the human beings" to be involved in a practice. Human beings are defined as “interdependent social agents, linked by a profound mutual susceptibility, who constantly modify their habituated individual responses as they interact with others, in order to sustain a shared practice" [5]. Also Wenger understands knowledge practices as socially negotiated [1], [2].

The research and the definition of knowledge practices and PLEs are based on the following key concepts:

The sociological perspective of the ethnographer Garfinkel can be seen as a grounding intervention for this work [6]. He stated that utterances and activities are often unconscious and that how activities are produced and maintained can only be observed through disorganized interaction. Therefore he asked what can be done to make trouble to observe the underlying aspects of an activity. Based on Garfinkel it can be assumed that existing knowledge and latent practices can be made explicit through pedagogical intervention. This allows students not only to reflect their incorporated practices but also to refine them in each situation. But it implicates also that it is impossible to transfer practices from one person to another. Therefore this work don't want to provide strategies rather than intervention challenging the existing practices and facilitating the situated reflection of practices.

The socio-historical activity theory (AT) model by Engeström [7] is helpful to analyze and to understand how and why students interact in specific situations to achieve learning goals. It allows also an understanding of the role of epistemic artifacts in such contexts [7], [8]. The model provides six components of an activity: subject, object, tools, rules, community, and division of labor which are relevant for an analysis of activities [9] and to explore social knowledge practices. Activities are situated in given tasks which give "meaning to a situation" [10] and they are influenced by context specific artifacts that act as a mediator between the subject and the object of an activity. The rules and division of labor are further components which mediate also the interactions between the basic components (subject, object, community). Engeström [7] stated that the analysis of mediators identifies systemic conditions and frictions and gives an understanding of the relations of the components. Hence, reflection and friction can initiate a process of rethinking [11], a precondition for finding requirements and refining knowledge practices.

Therefore this research argues from a practice-oriented perspective and considers PLEs neither as a technological-oriented nor as a pedagogical-oriented perspective [9] but rather than as an approach that sees both perspectives as interwoven [2]. This approach assumes that there is no dichotomy between these two foci, because cognition and the use of artifacts are mutually dependent [10]. It can be said that tools or artifacts are a possibility to gain experiences with practices in contexts. And PLEs as activity systems serve as a vehicle to articulate these practices.

Furthermore it becomes apparent that technology isn't neutral: the use of technology produces cognition and culture and this in turn influences the development of technology. This is also Orlikowski's intention. She understands social, cultural and material environments as "constitutively entangled" [12]. This means that materiality and social practices are embedded in an epistemic process which can be described as the co-evolutionary perspective [13]. This understanding of sociomateriality is important for this research, because practices are produced and refined by human beings through the use of material. Therefore PLEs are intrinsically tied to practices [2].

The theoretical framework of "Legitimate Peripheral Participation in Communities of Practices", based on Lave & Wenger [14], constitutes a fundamental vision of how learning takes place in a socio-cultural environment. Communities of practice (CoP) are defined as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" [1]. From Wenger's point of view learning includes internalization of social norms, values and identities of a community of practice and is therefore a process of social participation and development

[1]. The interactions between members of a CoP can be described as epistemic processes. Therefore learning means becoming an expert in terms of novices are moving from "peripheral participation to full membership in a community" [14]. This requires that novices have to make themselves familiar with used artifacts, existing tasks, activities, structures, rituals and values of a community. Hence, becoming an expert means "becoming a full participant in a sociocultural practice" [1], [15]. In terms of the sociomateriality this implicates that students have to transform their PLE in order to grow into a CoP and in turn the CoP is possibly changing its materiality.

In conclusion this research considers a co-evolutionary (practice-oriented) perspective to provide requirements for intervention which allows observing students' activities and facilitates them to gain a deeper understanding of their own PLEs. Hence, a PLE is used in terms of an instrument which encourages students to articulate and reflect their socially negotiated and incorporated knowledge practices. The study aims to engage students to gain a broader repertoire of diverse knowledge practices and based on the sociomateriality a reflected transformation of students' PLEs. To achieve the aforementioned issues the research takes place in two seminar settings: The students will be confronted with ill-structured problems. This study is conducted through qualitative methods which observe not only cognitive aspects but also the social and cultural environment in which practices and therefore PLEs are embedded:

- The AT will be used to analyze the relations between the components of an activity and to explicit the underlying motives.
- The artifact analysis will be used to explain the epistemic role of artifacts.
- The conversation analysis and a half-structured interview will be used to identify existing knowledge practices, analyze the initiating intervention of reflection processes, identify what becomes operative, and to clarify how students deal with perceived discrepancies and how they negotiate knowledge practices.

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