

# Study on contexts in tracking usage and attention metadata in multilingual Technology Enhanced Learning

Riina Vuorikari<sup>1,2</sup>, Bettina Berendt<sup>3</sup>

<sup>1</sup>European Schoolnet, Brussels, Belgium,

<sup>2</sup>OUNL, Heerlen, Netherlands,

<sup>3</sup>KU Leuven, Belgium

riina.vuorikari@eun.org

bettina.berendt@cs.kuleuven.be

“Context” is widely accepted to be important for correctly interpreting user input and for improving predictive and possibly also diagnostic models. But what is context, and how can it be measured? By measuring we mean to operationalise the construct and data gathering to provide values for the desired variables.

In this study, we consider the intersection of the areas of digital learning resource repositories, digital libraries and social tagging systems where users from a variety of countries use technology enhanced learning (TEL) offerings in a variety of languages. We consider usage and attention metadata as an example of the wider notion of context adapting the definition of context as “any information that can be used to characterise the situation of entities” [Dey01]. We give an overview of dimensions of context that are relevant in TEL, specifically arguing that context comprises the usage situation and environment as well as persistent and transient properties of the user. Therefore, distinguishing between the macro-context and the micro-context of TEL is useful.

TEL and the analysis of the data it generates take place in different types of educational settings which we call the *macro-context* of TEL. We use the term *micro-context* to denote the context that is relevant for interpreting a specific user input and for designing adequate system responses and other output. The micro-context is subdivided into user models, material/environment models, interaction models, and background knowledge, showing that usage and attention metadata are of different types and play different roles for learning about context.

We then concentrate on teachers using learning-resource repositories as an important use-case example of TEL and focus on language and country as context variables. We describe different ways in which these variables are operationalised, and we outline ways in which TEL use such context information to improve the use and reuse of repositories by supporting users in a multilingual and multicultural context. A key theme of our article is the central role that social tagging can play in this process: on the one hand, tags describe usage, attention, and other aspects of context, on the other, they can help to exploit context data towards making repositories more useful, and thus enhance the reuse.