Abstract

In Learning Networks, learners need to acquire knowledge through knowledge sharing with other participants. However, without support, learners have to self-organize knowledge sharing by finding a relevant knowledge sharer, structuring the interaction and maintaining the communication process. According to cognitive load theory, these activities could induce extraneous load because they are not directly relevant to learning itself but to the learning environment. When working on complex tasks, extraneous load becomes detrimental to learning effectiveness and efficiency because learners have to simultaneously deal with the high intrinsic load of the complex tasks and the extraneous load of knowledge sharing activities. For such tasks, it is considered imperative to reduce extraneous load and we used a peer tutoring system to support knowledge sharing by matching learners together, providing role specifications and an interactional tool of wiki. This study investigated the effect of using this peer tutoring system to support knowledge sharing on different levels of task complexity in the Learning Network of Internet Basics. Based upon cognitive load theory, an interaction effect was expected that peer tutoring would reduce extraneous load and result in better learning effectiveness and efficiency only on complex tasks. In addition, we expected that using peer tutoring would result in better knowledge sharing on complex tasks. However, these hypotheses were not confirmed because of the limited number of knowledge sharing inquiries: this indicated that the peer tutoring support was not used sufficiently to have effects on cognitive load, learning effectiveness and efficiency. The major contributions of this study were i) we explored the effect of using different supports of knowledge sharing on humans’ cognitive system in a non-formal Learning Network by applying cognitive load theory, ii) we showed the challenges of data collection, especially for measuring cognitive load in such learning environments.