

An experimental replication on the effect of the practice of mindfulness in conceptual modeling performance

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Abstract. *Context:* Mindfulness is a meditation technique aimed to increase clearness of mind and awareness. In the 2013–2014 academic year, an experiment was carried out to test whether the practice of mindfulness during 4 weeks improved or not the conceptual modeling performance using UML class diagrams of 32 second-year students of Software Engineering at the University of Seville. *Objective:* An internal replication with some changes in the original design was performed in the first semester of the 2014–2015 academic year in order to confirm the insights provided by the original study and increase the confidence in its conclusions. The sample were 53 students with the same profile than in the original study. *Method:* Half the students (27 subjects) practiced mindfulness during 6 weeks, while the other half (26 subjects), i.e. the control group, received no treatment during that time. All the students developed two conceptual models using UML class diagrams from a transcript of an interview, one before and another after the 6 weeks of mindfulness sessions, and the results were compared in terms of conceptual modeling effectiveness and efficiency. *Results:* The results of both experiments were similar, showing that the practice of mindfulness significantly improves conceptual modeling efficiency. Regarding conceptual modeling effectiveness, an improvement is observed in practice, but the analysis shows that such improvement is not statistically significant. After a reanalysis of data, consistent results have also been obtained. *Conclusion:* After a replication that leads to the same conclusions as the original study, the adequacy of the original experiment is confirmed and the credibility of its results is increased. Thus, we can state that the practice of mindfulness can improve the efficiency of Software Engineering students in the development of conceptual models, although further experimentation is needed in order to confirm the results in other contexts and other Software Engineering activities different from conceptual modeling.

Keywords: Mindfulness, Replication, Conceptual modeling.

References

1. B. Bernárdez, A. Durán, J. A. Parejo and A. Ruiz-Cortés, An experimental replication on the effect of the practice of mindfulness in conceptual modeling performance, *The Journal of Systems and Software* (2016), <http://dx.doi.org/10.1016/j.jss.2016.06.104>