

Conference 2014. Indonesia University of Education, Indonesia, 25 – 27 November 2014.

[19] Wang, F. and Hannafin, M.J., (2005). “Design-Based Research and Technology-Enhanced Learning Environments”. *Educational Technology Research and Development*, 53(4), 5–23

[20] Zhu, C., (2012). “Student Satisfaction, Performance, and Knowledge Construction in Online Collaborative Learning”. *Educational Technology & Society*, 15(1), 127–136.

[21] Kumar, S., & Tammelin, M., (2008). Integrating ICT into language teaching: Guide for institutions. Johannes Kepler University Linz.

[22] Brown, A. L., (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *Journal of the Learning Sciences*, 2(2), 141-178.

[23] Collins, A., (1992). Toward a design science of education. In E. Scanlon & T. O'Shea (Eds.), *New directions in educational technology* (pp. 15-22). New York: Springer-Verlag.

[24] Barab, S.A. & Kirshner, D., (2001). Guest Editors' Introduction: Rethinking Methodology in the Learning Sciences. *Journal of the Learning Sciences*, 10(1), 5-15. Retrieved September 22, 2018 from <https://www.learnlib.org/p/165497/>.

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