



Erasmus University Rotterdam, the Netherlands

CSC PhD 2019 Project Description

Applying for CSC Scholarship: <https://www.eur.nl/en/prospective-csc-phd-candidates>

School/Department:	Erasmus School of Social and Behavioural Sciences (ESSB) Department of Psychology, Education, and Child Studies (DPECS)
Project Title:	The Role of Self-explaining When Learning to Solve Problems in a Self-regulated Way
Abstract:	<p>In modern society it is of vital importance to educate and develop oneself. Therefore, optimizing academic success is an important challenge for higher education. The main aim of this research project is investigating ways to support and develop self-regulation skills of students in order to enhance their academic success. Self-regulation is a crucial skill to promote academic success. To self-regulate their learning processes students need to be able to accurately keep track of their own learning process (i.e., monitoring) and use that information to regulate their learning process (e.g., choose the next task, or ask help). Yet, numerous studies have shown that students are not capable of accurately judging their own learning processes and use that to regulate further learning. Especially learning more complex materials can have a high demand on cognitive resources, leaving too little to also monitor and regulate the learning process. This battle for cognitive resources during the self-regulated learning process is the central challenge in the current project. From a cognitive load theory perspective, dividing the demands of learning a complex task over different learners who are collaborating can lead to a more effective and efficient way of learning. This could mean that collaborative learning could free cognitive resources that can also be used to monitor and regulate learning processes more successfully. In this project you will investigate the effect of collaborative learning on self- and co-regulation of the learning process when learning to solve complex problem-solving tasks.</p> <p>Previous studies on this topic: Baars, M., Leopold, C., & Paas, F. (2018). Self-explaining steps in problem-solving tasks to improve self-regulation in secondary education. <i>Journal of Educational Psychology</i>, 110, 578- 595. doi: 10.1037/edu0000223 Baars, M., Van Gog, T., de Bruin, A., & Paas, F. (2017). Effects of problem solving after worked example study on secondary school children’s monitoring accuracy. <i>Educational Psychology</i>, 37, 810-834.</p>

	<p>Baars, M., Van Gog, T., Bruin, A., & Paas, F. (2014). Effects of problem solving after worked example study on primary school children's monitoring accuracy. <i>Applied Cognitive Psychology</i>, 28(3), 382-391. doi: 10.1002/acp.3008</p> <p>Baars, M., Vink, S., Van Gog, T., de Bruin, A., & Paas, F. (2014). Effects of training self-assessment and using assessment standards on retrospective and prospective monitoring of problem solving. <i>Learning and Instruction</i>, 33, 92-107. doi: 10.1016/j.learninstruc.2014.04.004</p> <p>Baars, M., Visser, S., Van Gog, T., de Bruin, A., & Paas, F. (2013). Completion of partially worked-out examples as a generation strategy for improving monitoring accuracy. <i>Contemporary Educational Psychology</i>, 38(4), 395-406. doi: http://dx.doi.org/10.1016/j.cedpsych.2013.09.001</p> <p>Baars, M., & Wijnia, L. (2018). The relation between task-specific motivational profiles and training of self-regulated learning skills. <i>Learning and Individual Differences</i>, 64, 125-137.</p>
<p>Requirements of candidate:</p>	<p>Background: Educational sciences, educational psychology, cognitive psychology or similar domains; skilled in quantitative research methods, academic writing, SPSS and/or R statistical software packages.</p> <p>Master's degree: Yes</p> <p>ESSB English requirements: IELTS: 7.5 (min. 6.0 for all subs.); or TOEFL: 100 (min. 20 for all subs.)</p>
<p>Supervisor information:</p>	<p>Prof. dr. Fred Paas & dr. Martine Baars Paas@fsw.eur.nl</p> <p>http://scholar.google.nl/citationsFredPaas http://www.egs3h.eur.nl/people/fred-paas/</p> <p>Fred Paas is a Professor of Educational Psychology at Erasmus University Rotterdam in the Netherlands and a Visiting Professorial Fellow at the University of Wollongong in Australia. His main research interest is in using knowledge about the human cognitive and motorsystem in the design of instruction for learning environments. He has (co-) authored over 250 publications in (S)SCI listed journals, which been cited over 30.000 times.</p>

	See below for list of recent publications:
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A selection of recent publications from 2017-2018

- Baars, M., Leopold, C., & Paas, F. (2018). Self-explaining steps in problem-solving tasks to improve self-regulation in secondary education. *Journal of Educational Psychology*, 110, 578-595.
- Baars, M., Van Gog, T., De Bruin, A., & Paas, F. (2018). Accuracy of primary school children's immediate and delayed judgments of learning about problem-solving tasks. *Studies in Educational Evaluation*, 58, 51-59.
- Castro-Alonso, J. C., Wong, A., Ayres, P., & Paas, F. (2018). Memorizing symbols from static and dynamic presentations: Don't overlay the hand. *Computers & Education*, 116, 1-13.
- Chen, O., Castro-Alonso, J. C., Paas, F., & Sweller, J. (2018). Extending cognitive load theory to incorporate working memory resource depletion: Evidence from the spacing effect. *Educational Psychology Review*, 30, 483-501.
- Chen, O., Castro-Alonso, J. C., Paas, F., & Sweller, J. (2018). Undesirable difficulty effects in the learning of high-element interactivity materials. *Frontiers in Psychology*, 9:1483.
- Eielts, C., Pouw, W., Ouweland, K., Van Gog, T., Zwaan, R., & Paas, F. (in press). Co-thought gesturing supports more complex problem solving in subjects with lower visual working-memory capacity. *Psychological Research*.
- Hoogerheide, V., Renkl, A., Fiorella, L., Paas, F., & Van Gog, T. (in press). Enhancing example-based learning: Teaching on video increases arousal and improves retention and transfer test performance. *Journal of Educational Psychology*.
- Hoogerheide, V., Vink, V., Finn, B., Raes, A. K., & Paas, F. (2018). How to bring the news... peak-end effects in children's affective responses to peer assessments of their social behavior. *Cognition and Emotion*, 32, 1114-1121.
- Kamermans, K. L., Pouw, W. T. J. L., Mast, F. W., & Paas, F. (in press). Reinterpretation in visual imagery is possible without visual cues: A validation of previous research. *Psychological Research*.
- Khalil, M., Wong, J., de Koning, B. B., Ebner, M., & Paas, F. (2018). Gamification in MOOCs: A Review of the State of the Art. In proceedings of the 2018 IEEE Global Engineering Education Conference (pp. 1635-1644). Santa Cruz de Tenerife, Canary Islands, Spain.
- Liu, T. C., Chang, C., & Paas, F. (2018). Cognitive resources allocation in computer-mediated dictionary assisted learning: From word meaning to inferential comprehension. *Computers & Education*, 127, 113-129.
- Liu, T. C., Lin, Y. C., Gao, Y., & Paas, F. (in press). The modality effect in a mobile learning environment: Learning from spoken text and real objects. *British Journal of Educational Technology*.
- Mavilidi, M., Okely, A. D., Chandler, P., Domazet, S. L., & Paas, F. (2018). Immediate and delayed effects of integrating physical activity into preschool children's learning of numeracy skills. *Journal of Experimental Child Psychology*, 166, 502-519.
- Pouw, W., Van Gog, T., Zwaan, R., Agostinho, S., & Paas, F. (2018). Co-thought gestures in children's mental problem solving: Prevalence and effects on subsequent performance. *Applied Cognitive Psychology*, 32, 66-80.
- Raaijmakers, S. F., Baars, M., Schaap, L., Paas, F., Van Merriënboer, J. J. G., & Van Gog, T. (2018). Training self-regulated learning skills with video modeling examples: Do task-selection skills transfer? *Instructional Science*, 46, 273-290.
- Raaijmakers, S. F., Baars, M., Paas, F., Van Merriënboer, J. J. G., & Van Gog, T. (2018). Training self-assessment and task-selection skills to foster self-regulated learning: Do trained skills transfer across domains? *Applied Cognitive Psychology*, 32, 270-277.
- Raaijmakers, S. F., Baars, M., Schaap, L., Paas, F., Van Merriënboer, J. J. G., & Van Gog, T. (in press). Improving self-assessments with self-assessment feedback: Effects on subsequent self-assessment and task-selection accuracy. *Metacognition and Learning*.