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:	Monitoring (i.e., evaluation of your own learning/performance), and control (i.e., regulation of study behavior) are key components of self-regulated learning (SRL). Because students' monitoring accuracy is notoriously low, regulation of study behavior suffers as well and consequently, SRL often leads to suboptimal learning outcomes. Therefore, researchers have sought ways of improving monitoring accuracy, and have identified several effective instructional interventions. One of those is asking student to self-explain during task performance. For learning from expository text it was shown that self-explaining is an effective strategy to help students to make more accurate judgments about their own learning. However, the effect of self-explaining on SRL during problem solving tasks is still unclear. In addition, because self-explaining is an extra task next to solving or studying a problem, the extra cognitive load caused by providing self-explanations next to solving a problem or studying a worked example should also be taken into account when investigating the self-explanation effect on SRL when learning to solve problems. Next, the effect of spoken vs. written self-explanations on the cognitive load and thereby on the effectiveness of self-explanations on self-regulation when learning to solve problems is also an open question. Therefore, in this project the effect of self-explaining on learning to solve problems in a self-regulated way will be investigated. The role of cognitive load and the type of explanations will be taken into account. 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. Journal of Educational Psychology, 110, 578- 595. doi: 10.1037/edu0000223 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. doi: 10.1016/j.stueduc.2018.05.010

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	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. Educational Psychology, 37, 810-834. 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. Applied Cognitive Psychology, 28(3), 382-391. doi: 10.1002/acp.3008 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. Learning and Instruction, 33, 92-107. doi: 10.1016/j.learninstruc.2014.04.004 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. Contemporary Educational Psychology, 38(4), 395-406. doi: http://dx.doi.org/10.1016/j.cedpsych.2013.09.001
Requirements of candidate:	**Background**: Educational sciences, educational psychology, cognitive psychology or similar domains; skilled in quantitative research methods, academic writing, SPSS and/or R statistical software packages. **Master's degree**: Yes **ESSB English requirements:** IELTS: 7.5 (min. 6.0 for all subs.); or TOEFL: 100 (min. 20 for all subs.)
Supervisor information:	Prof. dr. Fred Paas & dr. Martine Baars Paas@fsw.eur.nl **http://scholar.google.nl/citationsFredPaas** **http://www.egs3h.eur.nl/people/fred-paas/** 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. See below for list of recent publications:

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 overplay 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., Ouwehand, 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 Merrienboer, 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 Merrienboer, 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 Merrienboer, 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.

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Van der Zee, T., Davis, D., Saab, N., Giesbers, B., Ginn, J., van der Sluis, F., Paas, F., & Admiraal, W. (2018, March). Evaluating retrieval practice in a MOOC: how writing and reading summaries of videos affects student learning. In Proceedings of the 8th International Conference on Learning Analytics and Knowledge (pp. 216-225). ACM.

Wong, J., Baars, M., Davis, D., Van der Zee, T., Houben, G. J., & Paas, F. (in press). Supporting self-regulated learning in online learning environments and MOOCs: A systematic review. International Journal of Human-Computer Interaction.

Wong, M., Castro-Alonso, J. C., Ayres, P., & Paas, F. (in press). Be mindful of the gender gap in animation research: A reconsideration of spatial measurement. Computers in Human Behavior.

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. Educational Psychology, 7, 810-834.

Baars, M., Wijnia, L., & Paas, F. (2017). The Influence of affect and motivation on learning to solve problems in a self-regulated way. Frontiers in Psychology, 8:1346.

Bokosmaty, S., Mavilidi, M, & Paas, F. (2017). Making versus observing manipulations of geometric properties of triangles to learn geometry using dynamic geometry software. Computers & Education, 113, 313-326.

Castro-Alonso, J. C., Ayres, P., & Paas, F. (2017). Computerized and adaptable tests to measure visuospatial abilities in STEM students. In T. Andre (Ed.), Advances in human factors in training, education, and learning sciences (pp. 337-349). Springer.

Lin, P. H., Liu, T. Z., & Paas, F. (2017). Effects of spell checkers on English as a second language students' incidental spelling learning: A cognitive load perspective. Reading and Writing, 30, 1501-1525.

Mavilidi, M., Okely, A. D., Chandler, P., & Paas, F. (2017). Effects of integrating physical activity into a science lesson on preschool children's learning and enjoyment. Applied Cognitive Psychology, 31, 281-290.

Pouw, W., Aslanidou, A., Kamermans, K., & Paas, F. (2017). Is ambiguity detection in haptic imagery possible? Evidence for enactive imaginings. In G. Gunzelmann., A. Howes., T. Ten Brink., & E. J. Davelaar (Eds.), Proceedings of the 39th Annual Conference of the Cognitive Science Society (pp. 2925–2930). Austin, TX: Cognitive Science Society.

Pouw, W., Van Gog, T., Zwaan, R., & Paas, F. (2017). Are gesture and speech mismatches produced by an integrated gesture-speech system? A more dynamically embodied perspective is needed for understanding gesture-related learning. Behavioral and Brain Sciences, 40. doi:10.1017/S0140525X15003039

Raaijmakers, S. F., Baars, M., Schaap, L., Paas, F., & Van Gog, T. (2017). Effects of performance feedback valence on perceptions of invested mental effort. Learning and Instruction, 51, 36-46.

Ruiter, M., Loyens, S., & Paas, F. (2017). The effects of cycling on a desk bike on attention, retention, and mood during a video lecture. Applied Cognitive Psychology, 31, 593-603.

Sithole, S. T. M., Chandler, P., Abeysekera, I., & Paas, F. (2017). Benefits of guided self-management of attention on learning accounting. Journal of Educational Psychology, 109, 220-232.

Sweller, J., & Paas, F. (2017). Should self-regulated learning be integrated with cognitive load theory? A commentary. Learning and Instruction, 51, 85-89.

Van der Zee, T., Saab, N., Admiraal, W., Giesbers, B., & Paas, F. (2017). Effects of subtitles, complexity, and language proficiency on learning from online education videos. Journal of Media Psychology: Theory, Methods, and Applications, 29, 18-30.