

Self-regulated learning and off-task thoughts in online learning: Investigating the interaction during learning from videos

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1 Introduction



Figure 1: Student mind wandering

- Mind wandering is a distractions from self-regulated learning (Brady et al., 2021)
- Mind wandering occurs ~30% of the time during learning and has a negative relationship with learning outcomes (Wong et al., 2022)
- Self-regulated learners adapt to distractions

2 Background

Off-Task Thought: Two types of off-task thoughts (Stawarczyk et al., 2011)

- Mind wandering (task-unrelated)
- Task-related interference (task-related)

Meta-Awareness: Learners can become aware of their off-task thoughts (Schooler et al., 2011)

Self-Regulated Learning: COPES model chosen to underpin thesis because it is based on metacognition (Winne & Hadwin, 1998)

3 Research Questions

- RQ1:** How often does task-related interference occur during learning?
RQ2: How strong is the relationship between task-related interference and learning outcome?
RQ3: How does self-regulated learning influence off-task thoughts when learning from a video?
RQ4: How does self-explanation during video watching influence off-task thoughts compared to interpolated testing?
RQ5: Is the relationship between self-regulated learning and off-task thought frequency consistent or different when comparing naturalistic (case study) and controlled (experiment) settings?

4 Model

Co-Authors: Caitlin Mills, University of Minnesota & Phil Winne, Simon Fraser University

- Learners react to their realisation of off-task thought
- Learners' reactions depend on the type of off-task thought

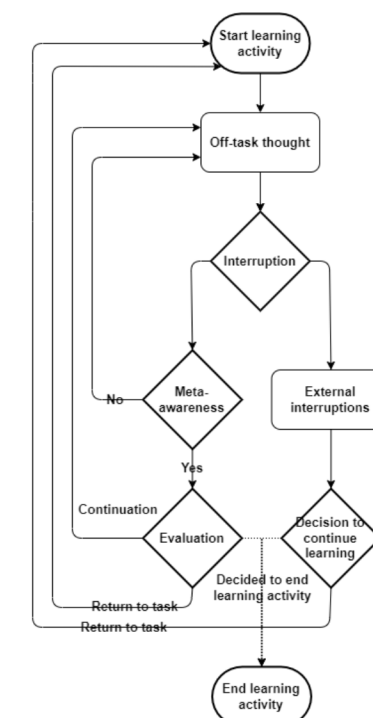


Figure 2: Self-regulated learning and off-task thoughts interaction model

6 Case Study (RQ3)



Figure 4: Student mind wandering

- Off-task thought has mostly been studied in laboratory settings, in which learners could not react to their off-task thoughts
- This study is in a naturalistic setting and learners can react to their off-task thoughts

7 Experiment (RQ4)

Interpolated Testing vs Self-Explanation



Figure 5: Laptops showing interpolated testing and self-explanation pop-ups

- No difference between the groups of control, interpolated testing, and self-explanation writing on knowledge gain or number of thought reports.



Preregistration

5 Meta-Analysis (RQs 1+2)

Co-Author: Andrew Zamecnik, University of South Australia

- Meta-analysis on the frequency of task-related interference and relationship with learning outcomes.

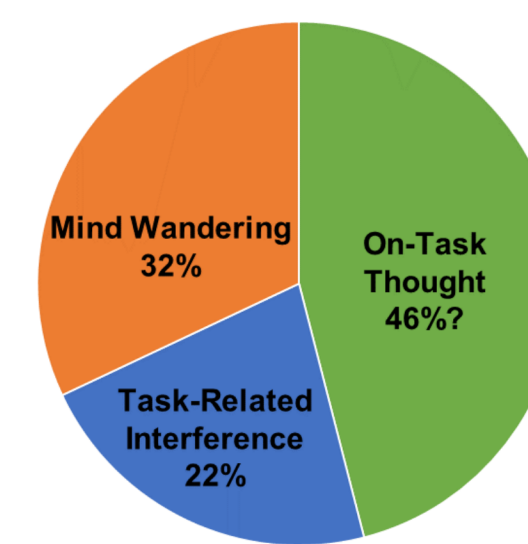


Figure 3: Thought type distribution



Preregistration

8 Comparison (RQ5)

Experimental vs Naturalistic



Figure 6: Student mind wandering while learning during an experiment and at home

- Unclear to which degree results from experimental studies can be transferred for use in a naturalistic setting
- Compare learners off-task thoughts across settings based on their self-regulated learning skill

9 Contribution

Self-regulated learning and off-task thought interaction model

Mind wandering meta-analysis by Wong et al. (2022)

Task-related interference meta-analysis

Description of how often learners need to react to which kind of off-task thought.

compare to

Case study results of how often off-task thoughts occurred in a naturalistic setting

Experiment results on how learning activity influence off-task thought occurrence

Results can be used to design self-regulated learning interventions to reduce off-task thought and improve learning outcomes.

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The images in the panels 1, 5, 6, and 7 were generated using DALL-E 3 by OpenAI.