

From Distraction to Reaction: Exploring Self-Regulated Learning and Off-Task Thoughts in Online Learning from Videos

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1 Introduction

- Mind wandering is a distraction 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



Figure 1: Student mind wandering

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: The COPES model was chosen to underpin the thesis because it is based on metacognition (Winne & Hadwin, 1998)

Part I: Theory Development & Meta-Analyses

3 Aim & Research Questions

Aim: Develop a model on how learners react to their off-task thoughts

RQ1: What is the frequency of TRI, and how are these thoughts associated with learning outcomes?

RQ2: What is the frequency of off-task thoughts, and how are these thoughts associated with learning outcomes?

4 Model

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

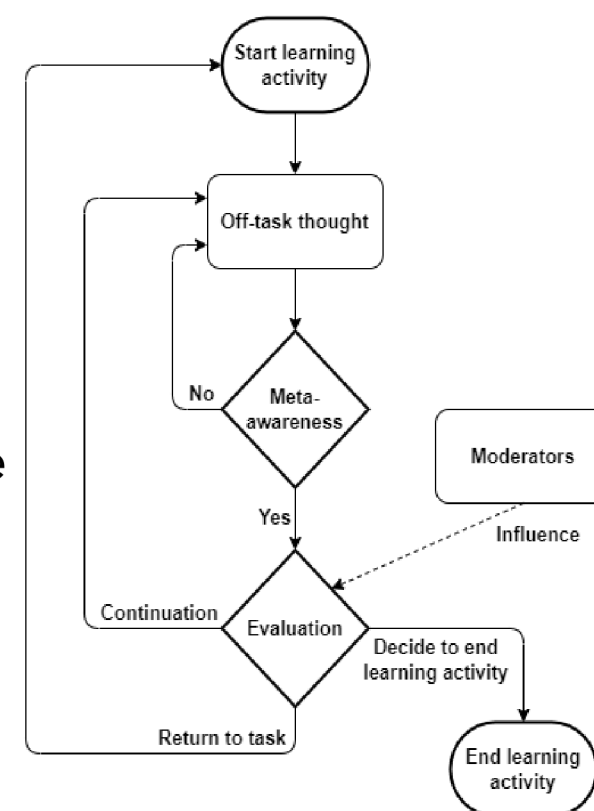


Figure 2: Self-regulated learning and off-task thoughts interaction model

5 Meta-Analyses (RQs 1+2)

- Meta-analysis on the frequency of task-related interference, off-task thought, and their relationship with learning outcomes.
- Task-related interference does not influence learning outcomes.

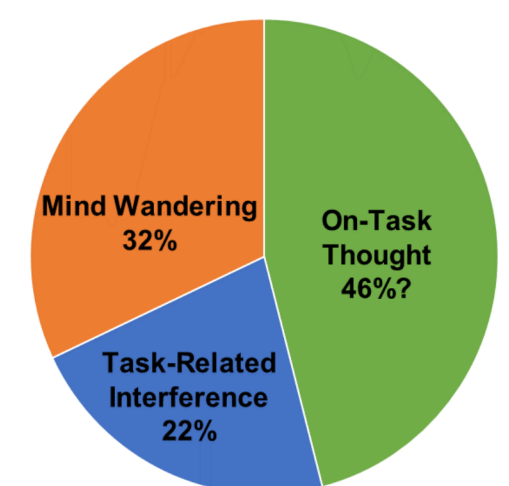


Figure 3: Thought type distribution

Part II: Exploring self-regulated learning and off-task thoughts during video learning

6 Research Questions

RQ3: Is there a relationship between self-regulated learning and meta-awareness during video watching?

RQ4: Do self-regulated learners rewind the video they are learning from after they realize they are off task?

RQ5: How does self-explanation during video watching influence off-task thoughts compared to interpolated testing?

RQ6: Does rewinding a video after off-task thoughts offset the negative effect of off-task thoughts on learning outcomes?

RQ7: Is the relationship between self-regulated learning and off-task thought frequency consistent across study designs?

7 Case Study (RQs 3 + 4) - Completed



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
- No relationship between self-regulated learning score and number of thought reports
- 15 out of 317 thought reports were followed by a reaction

9 Rewinding (RQ6) - Planned



Figure 6: Video player showing a rewind

- In previous experimental studies learners often did not have the option to react to their off-task thoughts.
- Self-regulated learners might want to react to their off-task thoughts.
- Experiment with three groups:
 - Control (no player control)
 - Optional rewind following off-task thoughts
 - Mandatory rewind following off-task thoughts

10 Comparison (RQ7) - Planned

- Gathered across all studies:
 - Self-regulated learning questionnaire scores
 - Self-caught thought reports
- Comparison across studies of relationship between self-regulated learning scores and number of off-task thoughts.
- Examining the link between students' self-regulated learning skills and their off-task thoughts, accounting for differences across studies.

8 Experiment (RQ5) - Completed

Interpolated Testing vs Self-Explanation

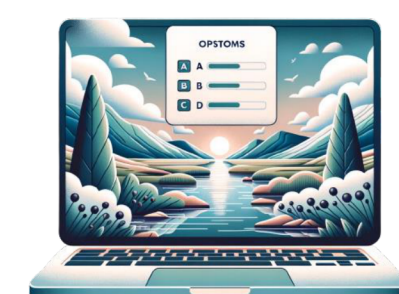


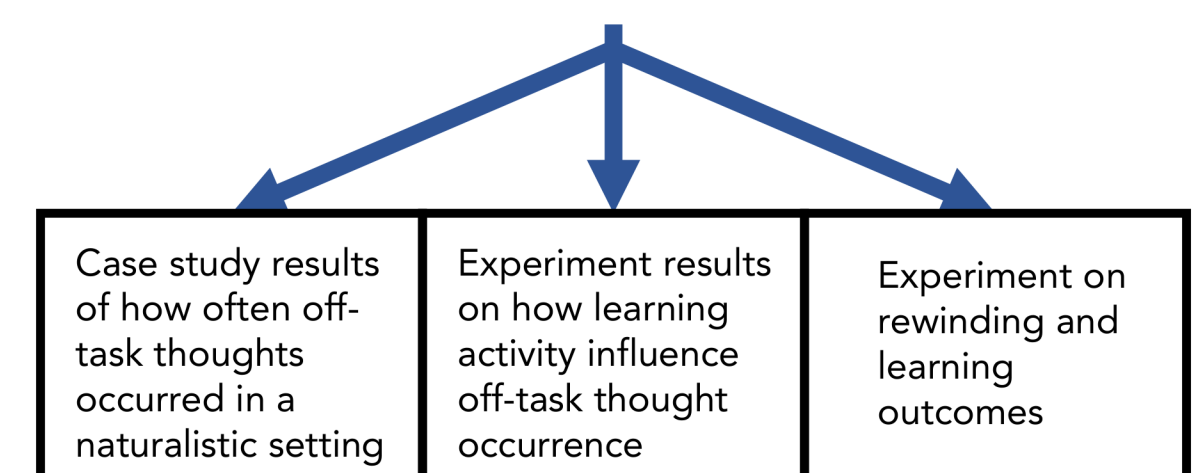
Figure 5: Laptops showing interpolated testing and self-explanation pop-ups

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

11 Contribution

Self-regulated learning and off-task thought interaction model	
Mind wandering meta-analysis	Task-related interference meta-analysis

Compare frequencies and learning impacts of different off-task thought types across meta-analyses and study results.



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

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