

Cognitive Load & 1st Year Occupational Therapy Doctoral Students' Experiences:

Examining the Effects on Wellbeing & Exploring Potential Solutions

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Motivation

- 5 online databases searched with only 1 research article found examining stress & wellbeing of occupational therapy students (OTS) ¹
- 18 articles analyzed as they pertained to the use of cognitive load theory (CLT), with 6 pertaining to health science education but only 1 on OTS ²
- Lack of research on effects of sustained cognitive load (CL) & the use of CLT for general OT program design

Methods

Mixed methods design

- QuestionPro survey emailed to all UTC 1st yr OTS
 - 86.95% completion rate (i.e. 20 students)
 - 35 questions: majority Likert scale
 - Correlational & descriptive stats run using SPSS
- Focus group discussions followed a semi-structured format and were hosted & recorded via Zoom
 - Two ~1 hr sessions hosted with total of 10 participants attending
 - Thematic coding utilized for qualitative analyses

Research Questions

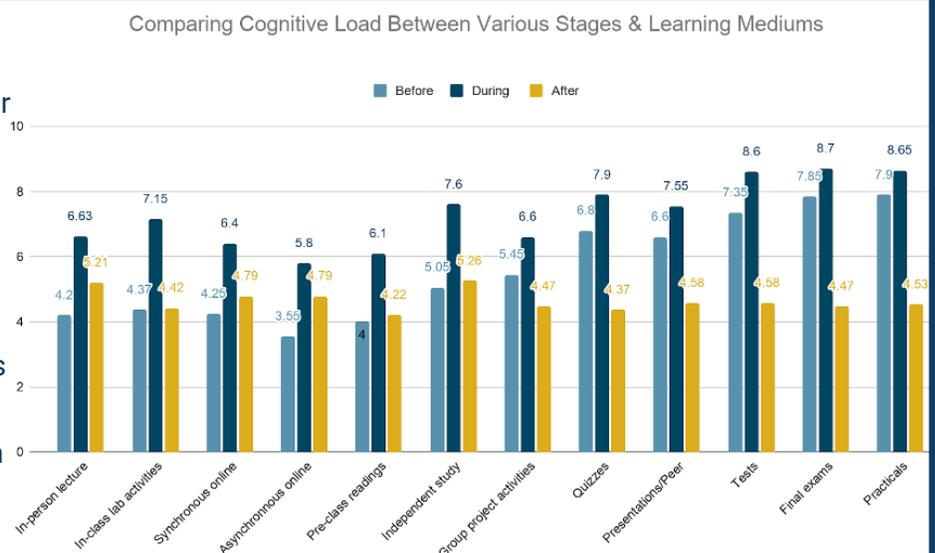
- While high levels of CL are expected in healthcare graduate programs,³ at what cost does this sustained level of CL impact a student's overall capacity to learn?
 - How does sustained CL impact overall mental and physical wellbeing?
 - What can be done by educators to minimize extraneous load, maximize germane load, and optimize intrinsic load to improve student wellbeing & academic performance?

Hypotheses

- Students perceived levels of CL reported will differ between 1st & 2nd semester
- In-person learning, as compared to online learning mediums, will result in differing perceived levels of CL, attention, & retention, with labs resulting in the greatest level of retention
- High levels of satisfaction with academic performance presumably will correlate to higher GPAs
- Students will report a decrease in satisfaction with mental & physical wellbeing & occupational balance, with increased rates of stress, anxiety, & depression as compared to undergraduate school
- Students will cite school workload as the main stressor

Results

Figure 1, on the right, illustrates students' perceived level of CL experienced before, during, and after various learning mediums using the 9-point Paas CL Scale, with 1 indicating "very, very low CL" and 9 indicating "very, very high CL". Thus, high levels of CL are seen during most learning mediums, and CL was greater before for graded activities. These findings support the research hypotheses regarding presence of high CL experienced by 1st yr OTS.



Results cont.

CL Findings

- No significant difference found between 1st versus 2nd semester with regards to perceived CL
- Synchronous online lectures & pre-class readings yielded the lowest levels of attentiveness & retention of all learning mediums
- Majority of students (80%) report benefitting from classroom breaks every 45 minutes to improve attention
- "Concern about workload for another class" was rated as the highest classroom distractor (35%) with only 10% indicating "social media/texting"

Implications on Wellbeing

- Participants report being "less satisfied" (50%) or "much less satisfied" (50%) with their school-life balance
- 80% of participants report <7 hrs of sleep/night
- High levels of stress and anxiety reported, with **majority of students experiencing inability to relax (100%), excessive worry (95%), persistent feelings of nervousness (90%), and feelings of burnout (90%)**
- Academic satisfaction does not correlate to GPA

Barriers to Learning

- Students report a significant desire to learn, with only 8% of students reporting desire for less workload
- Rather, focus group participants discussed extraneous stressors/barriers to learning listed below:

Barrier/ Stressor	%
Amount of Reading	80%
Inaccurate Expectations	60%
Uncertainty w/ Schedules	60%
Pressure of Grades	50%
Sense of Competition	30%
Extraneous assignments	30%
Lack of Communication	30%
Lack of Breaks in Calendar	20%
Unclear Instructions	20%

Discussion Potential Solutions

- Minimize extraneous load via optimizing instructional methods (i.e. more application based learning via pre-worked case studies) & decrease unnecessary assignments & changes/uncertainty in schedules
- Optimize intrinsic load via managing realistic student expectations & decreasing sense of competition amongst peers
- Maximize germane load via improving student coping skills through open communication between faculty & students regarding concerns such as anxiety, burnout, & imposter syndrome

Future Implications

- Future research needed regarding effectiveness of implementation of CLT strategies outlined
- Continued research regarding wellbeing of OTS and other health professional students using larger sample sizes & longitudinal studies

References

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2. Pociask, F. D., DiZazzo-Miller, R., & Samuel, P. S. (2013). Reducing cognitive load while teaching complex instruction to occupational therapy students. *American Journal of Occupational Therapy*, 67(5), e92-99.
3. Ghanbari, S., Haghani, F., Barekatin, M., & Jamali, A. (2020). A systematized review of cognitive load theory in health sciences education and a perspective from cognitive neuroscience. *Journal of Education and Health Promotion*, 9.

Key Take-Aways

- 90% of student participants reported experiencing significantly more CL in graduate school than undergraduate school
- High levels of stress, anxiety, & burnout are reported, as well as a lack of satisfaction with occupational balance
- However, an increase in CL is associated with increased attentiveness and increased retention
- Thus, high CL is not inherently bad & small changes to minimize extraneous load, optimize intrinsic load, & maximize germane load using CLT can have substantial effects on overall CL, & hopefully, subsequently on health & wellbeing of students

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