1. **Schweder, Sabine, and Diana Raufelder. "Students’ interest and self-efficacy and the impact of changing learning environments." *Contemporary Educational Psychology* 70 (2022): 102082.**
   1. The study investigated the relationship between self-efficacy and interest among two groups of students throughout a learning course. Results indicated that self-efficacy increased for both groups from pre-assessment to final assessment, with Group B consistently reporting higher self-efficacy levels than Group A. Interestingly, while self-efficacy rose, interest levels remained relatively stable across both groups, with Group A initially showing higher interest but experiencing a mid-assessment drop that returned to pre-levels by the final assessment. This inverse relationship between self-efficacy and interest suggests that students may be more engaged in areas where they feel less competent, as supported by existing literature. Group A's lower self-efficacy was linked to a decline in engagement, particularly during finals, while Group B's higher self-efficacy correlated with sustained engagement and interaction with course material. The findings highlight the complex dynamics between self-efficacy and interest, suggesting that while confidence in abilities can enhance engagement, it may not necessarily translate to increased interest in the subject matter. Overall, the study underscores the importance of fostering both self-efficacy and interest to enhance student engagement and learning outcomes.
2. **Hirshfield, Laura, and Debbie Chachra. "Experience is not mastery: Unexpected interactions between project task choice and measures of academic confidence and self-efficacy in first-year engineering students." *International Journal of Engineering Education* 35.3 (2019): 806-823.**
   1. The results of the study indicate that the project experiences at different university settings varied significantly, affecting students' engagement with tasks and their confidence levels. Statistical analyses revealed correlations between the time spent on specific task clusters and changes in engineering confidence or self-efficacy, with some tasks showing negative correlations, suggesting that increased time on certain activities did not enhance confidence. The conclusions drawn from the findings emphasize that experience does not equate to mastery, highlighting the need for equitable task distribution among team members and the importance of scaffolding to foster mastery experiences, while also recognizing that other factors contribute to students' self-efficacy in engineering.
3. **Fryer, Luke K., H. Nicholas Bovee, and Kaori Nakao. "Self‐efficacy latent growth trajectories' longitudinal links with achievement and interest: Both baseline and growth rate are important for interest outcomes." *British Journal of Educational Psychology* 92.2 (2022): 730-747.**
   1. The study's results revealed that self-efficacy beliefs maintained invariance across one semester, indicating that students' confidence in their abilities remained stable over time. However, the strictest form of invariance for interest was not supported, likely due to its developmental nature, suggesting that students' interest levels may fluctuate as they progress through the course. Mean difference testing showed a small but notable decrease in interest among students, while self-efficacy beliefs did not exhibit significant changes on average, highlighting a potential disconnect between interest and self-efficacy over time. Importantly, self-efficacy was identified as a strong predictor of knowledge gains, suggesting that students who felt more confident in their abilities were more likely to achieve better learning outcomes. Additionally, self-efficacy moderately predicted an increase in interest, indicating that as students' confidence grew, so did their engagement with the material. These findings underscore the critical role of self-efficacy in enhancing students' learning experiences, particularly in the context of foreign language education. The study calls for further research across various educational settings to validate these results and explore the dynamics between self-efficacy and interest more comprehensively. Overall, the conclusions drawn from the analysis suggest that fostering self-efficacy in students can lead to improved engagement and knowledge acquisition, making it a vital focus for educators aiming to enhance student learning outcomes.
4. **Talsma, Kate, Kimberley Norris, and Benjamin Schuz. "First-year students' academic self-efficacy calibration: Differences by task type, domain specificity, student achievement level, and over time." *Student Success* 11.2 (2020): 109-121.**
   1. The study analyzed the impact of self-efficacy and interest on students' understanding of star properties in undergraduate astronomy courses through both quantitative and qualitative methods. Descriptive statistics revealed significant positive correlations between interest, self-efficacy, and post-instruction knowledge scores, although the sequential multiple regression analysis indicated that interest did not significantly predict knowledge gains, suggesting a potential limitation in how interest was categorized. The qualitative component, involving instructor interviews, provided insights into the sources of self-efficacy, revealing that instructional design and implementation played crucial roles in shaping students' self-efficacy beliefs. The findings highlighted the importance of mastery experiences and performance-related feedback in enhancing self-efficacy, suggesting that while active engagement strategies improve learning outcomes, explicit identification of these opportunities is essential for maximizing their effectiveness. Overall, the study concluded that self-efficacy should be a more prominent consideration in the development of undergraduate science courses, particularly in large-lecture formats, to foster better learning gains and conceptual understanding.
5. **de Fátima Goulão, Maria. "The Relationship between Self-Efficacy and Academic Achievement in Adults' Learners." *Athens journal of Education* 1.3 (2014): 237-246.**
   1. The study examined the relationship between self-efficacy, gender, age, and academic performance among 63 students in an online learning context. The results indicated a reasonably high average self-efficacy score of 45.03, with a statistically significant positive correlation (rpb = .286) between self-efficacy and academic performance, suggesting that students with higher self-efficacy tended to perform better academically. Gender analysis revealed no significant differences in self-efficacy scores between men and women (t(63) = -.546, ns), indicating that both genders had similar levels of self-efficacy. The findings highlight the importance of self-efficacy in academic success, while also suggesting that gender does not play a significant role in influencing self-efficacy levels among students in this context. Overall, the study concludes that fostering self-efficacy could be beneficial for enhancing student performance in online learning environments.

It may be that the assessment structure was more aligned with Group B's learning style or study strategies,. IS THERE LITEARTURE EVIDENCE about chunked assessments and correlation with Learning Style or study strategies?? You have to have a reason for this speculation.

1. **Entress, Cole, and Aimee Wagner. "BEYOND" Hitting THE Books"." *The Science Teacher* 81.4 (2014): 27.**
   1. The authors found that breaking study material into smaller, manageable segments significantly enhances students' retention and understanding of the content. Their research indicates that engaging in 20–30 minute study sessions over several days, rather than cramming in a single session, leads to better long-term memory and improved transfer of knowledge to new situations. Consequently, they conclude that effective study strategies should prioritize distributed practice and active engagement, as these methods empower students to master academic material more efficiently and foster a deeper comprehension of scientific concepts.
2. **Harris, Andrew, Sarah Buglass, and Georgina Gous. "The impact of lecture chunking format on university student vigilance: Implications for classroom pedagogy." *Journal of Pedagogical Sociology and Psychology* 3.2 (2021): 90-102.**
   1. The results regarding the chunking format indicate that students who viewed lectures in shorter video units took more breaks and reported fewer attention lapses compared to those who watched a single long video. Findings revealed that this chunking format increased the perceived achievability of learning outcomes, which in turn led to higher engagement levels among students. Consequently, it can be concluded that dividing lectures into smaller, separate video units is beneficial for maintaining student attention and motivation, suggesting that future research should further explore the impact of chunking on academic performance and its applicability across different lecture formats.
3. **Lineweaver, Tara T., et al. "Introducing and Evaluating a" Study Smarter, Not Harder" Study Tips Presentation Offered to Incoming Students at a Four-Year University." *Journal of the Scholarship of Teaching and Learning* 19.2 (2019): 16-46.**
   1. The findings from the study suggest that students who employed effective study strategies, such as chunking material into smaller sections, reported a greater understanding and retention of information. Specifically, the "Study A Little A Lot" approach, which involves reviewing these smaller chunks regularly, was linked to more efficient learning and reduced cramming before exams. The conclusion drawn from the research highlights the importance of teaching these strategies to students, as they can lead to improved study habits, better academic outcomes, and a more organized understanding of knowledge across various subjects.
4. **Spanjers, Ingrid AE, Tamara Van Gog, and Jeroen JG Van Merrienboer. "Segmentation of worked examples: Effects on cognitive load and learning." *Applied Cognitive Psychology* 26.3 (2012): 352-358.**
   1. The study investigated the effects of segmenting worked examples on cognitive load and learning efficiency. The findings revealed that students who engaged with segmented worked examples—where the material was divided into distinct sections—experienced lower cognitive load and achieved comparable or even superior learning outcomes compared to those who studied non-segmented examples. This suggests that segmentation aids learners in processing information effectively by visually grouping related content, which facilitates a better understanding of the relationships between concepts. In stark contrast, when students were instructed to actively segment the examples themselves, they reported a higher investment of mental effort without a corresponding improvement in test performance. This indicates that while the process of self-segmentation may encourage deeper cognitive processing, it can also lead to cognitive overload, detracting from the core learning task. The additional cognitive resources required for self-segmentation may hinder learners’ ability to fully absorb and comprehend the material. Therefore, the researchers concluded that providing information in a pre-segmented format is more advantageous for learning efficiency, particularly for learners with lower prior knowledge. Active segmentation might be more beneficial for advanced learners who possess the cognitive capacity to manage the extra demands without compromising their performance.
5. **Humphries, B., and D. Clark. "An examination of student preference for traditional didactic or chunking teaching strategies in an online learning environment. Res Learn 2021: 29."**
   1. Chunking is a strategy that involves breaking down information into smaller, more manageable chunks to improve learning and attentional focus. This technique differs from traditional lectures that present information as a single large block, as chunking reorganizes bulk information into smaller units for better retention and retrieval using short- and long-term memory. Chunking helps learners link related units of information and store them in long-term memory more effectively compared to larger blocks of information. By chunking information into smaller units, students can develop meaningful connections between literacy skills and recognize the relationships more easily. Research has shown that chunking strategies are successful in teaching various subjects such as chemistry, decision-making, communication, literacy skills, and specific languages. While chunking has been effective in improving cognitive learning, it may have limited success when teaching compound human movement sequences due to cueing errors. The chunking of information has been found to be beneficial in various educational settings, including blended learning, distance learning, technology-enhanced lecturing, multimedia learning, and instant messaging. Students often prefer chunk-style lectures over traditional didactic lectures, as chunking suits the learning preferences of digital natives. Chunking lecture material can improve attention, material completion, and reduce cognitive load compared to didactic lectures, making it a preferred teaching strategy for many students.

The fact that Group B's engagement with the course content was significantly higher during finals week suggests that the format of the final exam may have been more conducive to their study habits or preparation approach. BACKUP this STATEMENT WITH LITERATURE EVIDENCE that shows some correlation between chunking and study habits or preparation approach. You have to have a reason for this speculation.

1. **Wilkinson, Tracey, Mairead Boohan, and Michael Stevenson. "Does learning style influence academic performance in different forms of assessment?." *Journal of anatomy* 224.3 (2014): 304-308.**
   1. Educational research has been conducted to investigate the relationship between learning styles and academic performance. This study focused on the learning styles of first-year medical and dental students at Queen's University Belfast and examined whether these styles had an impact on their performance in different forms of assessment. The study used the Honey and Mumford Learning Style Questionnaire to assess the learning styles of the students. The results showed that the dominant learning style among the students was reflector, followed by theorist, pragmatist, and activist. However, there was little correlation between learning style and academic performance. In most cases, the correlations were not statistically significant, and in the few cases where they were significant, they were generally weak. The study concluded that although learning styles vary among students, they have little effect on academic performance, including in specific forms of assessment.
2. **Simonova, Ivana. "Assessment preferences and learning styles in ESP." *Journal of Language and Cultural Education* 4.3 (2016): 142-153.**
   1. The research aimed to explore the relationship between students' learning styles and their preferences for different assessment formats in English for Specific Purposes (ESP). The findings revealed that there was no significant correlation between the various learning styles—such as visual, auditory, read/write, and kinaesthetic—and the preferred assessment formats, with the exception of a verified preference for oral/written presentations among students with sequential processing styles. This outcome was surprising to the researchers, as they anticipated that students would have distinct preferences aligned with their learning styles. Additionally, nearly half of the respondents expressed dissatisfaction with the current assessment formats, indicating that these did not fully accommodate their individual preferences and, as a result, hindered their ability to effectively showcase their learning. Consequently, the researchers concluded that there is a pressing need to reevaluate and potentially redesign assessment formats to better align with students' diverse learning styles, ensuring that all students have the opportunity to demonstrate their knowledge and skills in a manner that suits their individual learning preferences. Future research is planned to further investigate these dynamics and improve the assessment process in educational contexts.
3. **Stephenson, Sandria S. "Learning Styles Assessment Modalities Preferences Diagnostics (Lamp-D): A Framework Of Accounting Studentsâ€™ Preferred Learning Styles And Course Learning Assessments." *The Accounting Educators' Journal* 29.1 (2019).**
   1. The study on the relationship between learning styles and assessment styles reveals significant insights into how students' preferred learning modalities influence their assessment preferences and performance. It was found that individual case studies emerged as the most effective assessment method across various learning styles, while multiple-choice assessments were deemed the least effective, indicating a clear preference for assessments that require deeper engagement and critical thinking. The analysis highlighted positive correlations between specific learning styles—such as visual, auditory, kinesthetic, and tactile—and their corresponding assessment preferences; for instance, visual learners thrived in collaborative settings, auditory learners favored discussions, kinesthetic learners excelled in hands-on activities, and tactile learners tended to adopt more passive roles. Utilizing Structural Equation Mediating Modeling (SEM), the study assessed how learning contexts and modalities mediate the relationship between learning styles and assessment preferences, revealing that the context of learning significantly impacts students' preferred assessment methods. The findings emphasize the importance of students understanding their own learning styles, as self-awareness can empower them to adopt strategies that enhance their learning and improve educational satisfaction. Furthermore, the study advocates for educators to move away from traditional multiple-choice assessments, which may not accurately reflect students' understanding, and instead incorporate varied assessment methods, such as case studies and collaborative projects, that align better with students' learning styles. Ultimately, the research underscores the necessity of creating engaging and participative learning environments that cater to diverse learning preferences, as learning outcomes are influenced not only by individual learning styles but also by the context in which learning occurs, thereby promoting a more nuanced approach to teaching and assessment in accounting education.
4. **Hidayati, Elma Nur, Ara Hidayat, and Ukit Ukit. "Relationship Between Learning Style With Student Learning Outcomes on Structure and Function of Plants." *Pedagonal: Jurnal Ilmiah Pendidikan* 5.2 (2021): 94-105.**
   1. The study on the relationship between learning styles and student outcomes revealed that while a significant portion of students (72%) preferred visual learning styles and approximately 75% achieved satisfactory learning outcomes, there was no statistically significant correlation between the two, as indicated by a significance value of 0.111, which exceeds the conventional threshold of 0.05. This suggests that learning styles accounted for only 3.8% of the variance in student performance, implying that a vast majority (96.2%) of the factors influencing learning outcomes were not related to the students' preferred learning styles. The findings highlight the importance of considering other influential elements such as student motivation, teaching strategies, and the overall learning environment, which may play a more critical role in determining academic success. Consequently, the study concludes that aligning teaching methods with individual learning styles may not significantly enhance student performance, challenging the common assumption that such alignment is essential for effective learning. Instead, it advocates for a more comprehensive approach to education that encompasses various factors affecting learning, suggesting that educators should focus on diverse teaching strategies and fostering student engagement rather than solely catering to specific learning styles. This calls for further research to explore these other factors in depth, ultimately aiming to improve educational practices and student outcomes in a more holistic manner.
5. **Simonova, Ivana. "Emerging Technologies and Assessment Preferences in Learning English Through CLIL/EMI." *Emerging Technologies for Education: Third International Symposium, SETE 2018, Held in Conjunction with ICWL 2018, Chiang Mai, Thailand, August 22–24, 2018, Revised Selected Papers 3*. Springer International Publishing, 2018.**
   1. The research utilized two tools, the Learning Combination Inventory and the Assessment Format Questionnaire, to explore the correlation between individual learning styles and assessment preferences. Results indicated statistically significant correlations between preferred assessment formats and learning styles, particularly in essay writing and group discussion formats that required critical analysis and application of previous knowledge. The study set 18 partial hypotheses to examine correlations between learning styles and specific assessment formats, such as answering questions from a predefined list and presenting project results on exam day. While the correlation between learning styles and preferred assessment formats was low overall, statistically significant values were found in certain assessment formats, such as group discussions and essay writing, for different groups of learners. The research findings suggest that there may be a relationship between individual learning styles and preferences for certain assessment formats, highlighting the importance of considering students' learning preferences when designing assessments in English language learning contexts.

Chunked vs unchunked exam

1. **Wiseheart, Melody, et al. "22 Enhancing the Quality of Student Learning Using Distributed Practice." (2019).**
   1. The results of studies on distributed practice indicate that spaced learning sessions lead to better retention and comprehension compared to massed practice (cramming). Findings show that the optimal interstudy intervals depend on the retention interval, with spaced rereading being more effective for delayed tests. The conclusion drawn is that educators should implement distributed practice strategies in their teaching to improve learning outcomes, as it has been ranked highly among educational interventions.
2. **Gutmann, Brianne, Noah Schroeder, and Tim Stelzer. "Effective grain-size of mastery-style online homework levels." (2018).**
   1. The study focused on a preparatory physics course using mastery-style online homework, where a challenging level on uniform circular motion was split into two smaller levels. The results showed that students who completed the split levels had a significantly higher mastery rate (about 70%) compared to those working on the whole level (around 30%). Despite both groups spending similar total time on homework and assessments, students in the split levels experienced less unnecessary practice time—meaning they spent less time redoing problems they had already mastered. This reduction in unnecessary practice time, alongside the increased mastery rates, suggests that smaller levels can help students feel more successful, thereby reducing frustration and enhancing their confidence in their abilities. The findings also highlight that students who practiced on the split levels were more efficient in their learning, mastering the content in fewer attempts. This suggests that breaking down content can provide students with clearer pathways to success, aligning with the principles of mastery learning that emphasize manageable chunks and achievable goals.
3. **Doolittle, Peter E., Lauren H. Bryant, and Jessica R. Chittum. "Effects of degree of segmentation and learner disposition on multimedia learning." *British Journal of Educational Technology* 46.6 (2015): 1333-1343.**
   1. The study investigated the impact of segmentation in multimedia learning by dividing instructional content into varying numbers of segments (1, 7, 14, or 28). Key findings revealed that as the degree of segmentation increased, students exhibited better recall and application of the material. This suggests that breaking down information allows learners to process smaller chunks more effectively, which aligns with cognitive load theory; it reduces overload and frees cognitive resources for deeper understanding. However, while segmentation improved learning outcomes, student perceptions varied. The highest degree of segmentation (28 segments) was viewed negatively by learners, who found it annoying and less appropriate, despite achieving better recall. This indicates a paradox where an instructional method that enhances performance can simultaneously lead to dissatisfaction. Essentially, while segmentation is beneficial, there is a threshold; too much segmentation can hinder the learning experience by causing frustration. The implications of these findings suggest that educators and instructional designers should consider the optimal number of segments when creating multimedia content. Striking a balance is crucial, as excessive segmentation may disengage learners even if it theoretically supports learning.
4. **Méndez-Carbajo, Diego, and Scott A. Wolla. "Segmenting educational content: Long-form vs. short-form online learning modules." *American Journal of Distance Education* 33.2 (2019): 108-119.**
   1. The study by Diego Méndez-Carbajo and Scott A. Wolla, published in the American Journal of Distance Education, examines the impact of breaking down long-form online learning modules into shorter segments on student outcomes. Their research demonstrates that shorter modules lead to higher completion rates, improved learning gains, enhanced retention, and better information absorption. Specifically, students are more likely to finish courses when content is divided into digestible pieces, with completion rates rising from 90% to 94%-98%. This format also benefits medium-to-high-knowledge students, who experience notable learning gains, and supports better retention of material, reinforcing the relevance of cognitive load theory in instructional design. By managing cognitive load effectively, chunking content helps prevent information overload, leading to a 1%-9% improvement in information absorption at the item level. The study highlights that shorter, concise modules not only foster deeper understanding but also reduce misunderstandings, contributing to diverse positive learning outcomes. Ultimately, the findings advocate for the integration of evidence-based design in online education, pushing for content segmentation strategies that promote adaptive learning paths and continuous improvements in e-learning frameworks.