



Characterizing College Students' Multiple Source Use in an Argumentative Essay Task: A Profile Analysis

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Aim

This study aims to characterize students' differential processing profiles as they completed an online multiple source use (MSU) task as part of a real class activity. Specifically, this study focuses on capturing the patterns in students' text selection, notetaking, and text citation behaviors and their relations to essay quality.

Background

- The ability to effectively select, comprehend, evaluate, and use multiple information sources to achieve task goals has become a critical competency for learners today and is receiving increasing instructional attention.
- According to the Integrated Framework for Multiple Texts (List & Alexander, 2019), MSU tasks unfold in three phases: In the *preparation* phase, learners conceptualize task parameters and form default stances toward task completion, which affects the strategy use while processing multiple texts in the *execution* phase and the externalization of cognitive and affective outcomes in the *production* phase.
- As elaborated in the Cognitive Affective Engagement Model (CAEM; List & Alexander, 2017), four general default stances can be identified along the dimensions of behavioral disposition for source evaluation and affective engagement: disengaged, evaluative, affectively engaged, and critical-analytic.

Research Questions

- What distinct student profiles of multiple source use emerge in an argumentative essay task based on the number of sources accessed, read, and cited and the qualities of those sources selected to read and cite?
- How do students' source use profiles differ with respect to argumentative essay quality?
- What are the qualitative characteristics of notetaking and source citations for students demonstrating different multiple source use profiles?

Overall Profile Characteristics

- Unengaged:** accessed few sources and cited the minimum number of sources in their essays
- Compliers:** followed task demands but were uncritical of source credibility
- Case-builders:** mainly used position-consistent sources to strengthen their pre-existing positions
- Critical-analytics:** chose high-credibility sources and cited opposing views in writing

Method

Participants. Undergraduate students ($N=95$) from a mid-Atlantic university completed the MSU project as part of their educational psychology course.

Task. Students were required to use a library of 10 documents of varying source credibility and perspectives on a controversial topic: *Are students today overly dependent on technology to the detriment of their social, physical, emotional, and academic well-being?* The documents were organized on a Google-like search page. Students were asked to read at least 4 documents and produce an argumentative essay to justify their positions on the central topic. Students indicated their initial positions on the topic before reading and final positions after reading. During reading, they took notes in their journals.

Scoring. Essays were scored for the presence and quality of Claim, Justification, Counterargument, Sources, and Writing Quality, each on a 0-2 scale (interrater reliability $\alpha = .93$; maximum score = 10).

Cluster Analysis

- A Ward's minimum-variance hierarchical clustering analysis generated 4 distinct clusters.
- Internal validation:** One-way ANOVAs for each clustering variable were significant, $ps < .01$. A discriminant function analysis showed 94.7% prediction accuracy of cluster membership overall.
- External validation:** One-way ANOVAs showed significant between-cluster differences in total essay score [$F(3,91) = 9.18, p < .001$] and all subcomponent scores except Claim ($F_s > 3.00, ps < .05$), with unengaged students scoring lower than the other clusters ($ps < .05$).

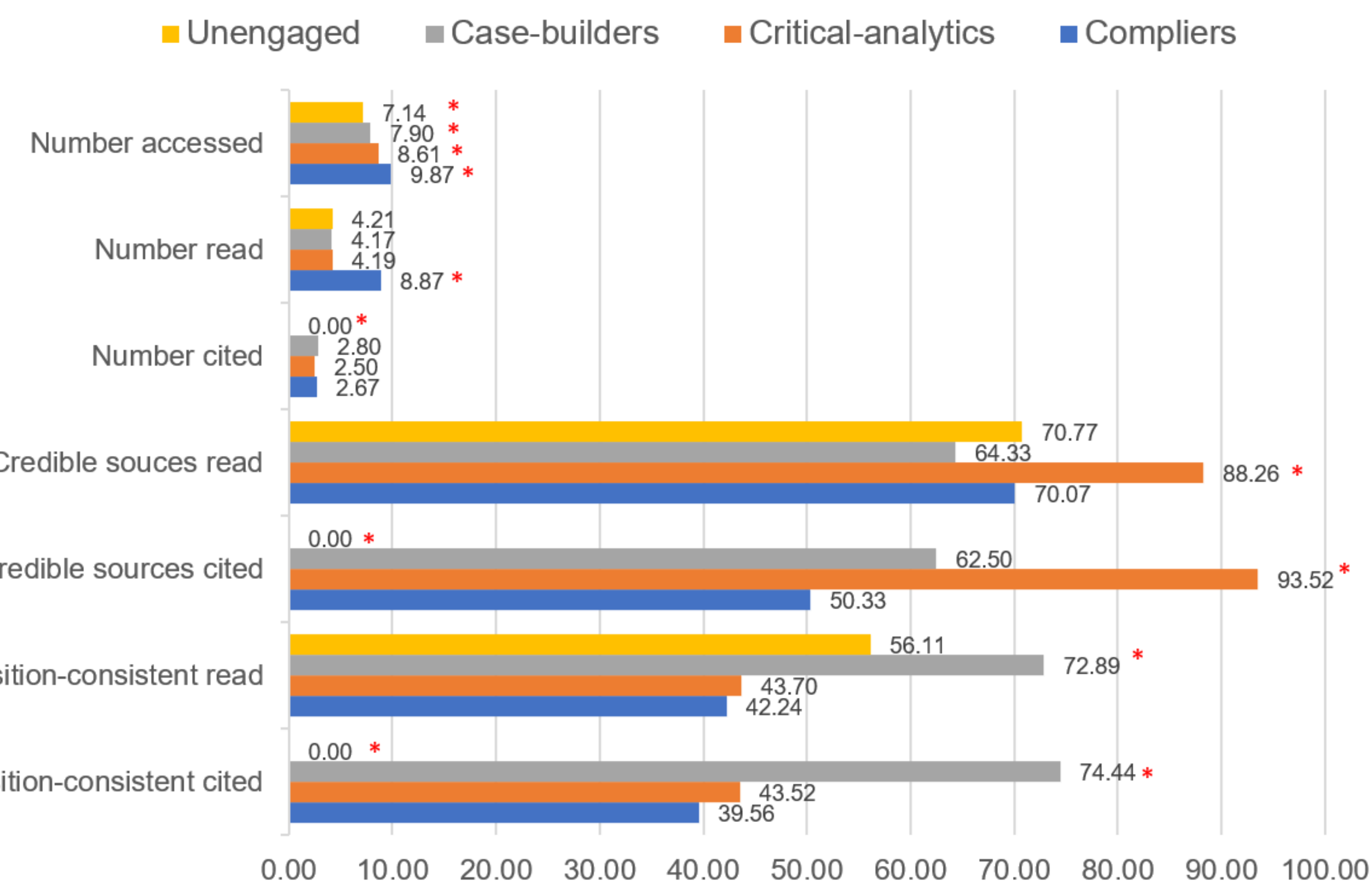


Figure 1. Means of clustering variables by cluster. Note: * indicates statistically significant difference.

Characteristics of MSU Profiles

A qualitative analysis of 10 randomly sampled cases from each cluster further revealed different characteristics of notetaking and source citations in essays.

	Critical-Analytics $n = 36$ (37.89%)	Case-Builders $n = 30$ (31.58%)	Compliers $n = 15$ (15.79%)	Unengaged $n = 14$ (14.74%)
Texts Accessed, Read, and Cited	<ul style="list-style-type: none"> Relatively high number of sources accessed; High percentage of credible sources read and cited; Relatively low percentage of position-consistent sources used. 	<ul style="list-style-type: none"> Moderate number of sources accessed; High percentage of position-consistent sources read and cited; Moderate percentage of credible sources used. 	<ul style="list-style-type: none"> Large number of sources accessed and read; Relatively low percentage of credible sources cited; Relatively low percentage of position-consistent sources used. 	<ul style="list-style-type: none"> Lowest number of sources accessed; No source cited.
Notetaking	<ul style="list-style-type: none"> Tended to summarize and paraphrase text contents; Notes included both major points and specific supporting evidence. 	<ul style="list-style-type: none"> Documented mostly specific evidence in an elaborated way, often copying text verbatim; Selected mostly position-consistent texts, but also noted some counterpoints. 	<ul style="list-style-type: none"> Documented general claims and specific evidence, but often included information from low-credibility sources without evaluative comments. 	<ul style="list-style-type: none"> Noted primarily major points in texts or author opinions and less supporting evidence.
Citations in Essays	<ul style="list-style-type: none"> Presented more critiques or comments on cited information vis-à-vis their own perspectives; Addressed counterpoints and counterevidence more explicitly and elaboratively in essays. 	<ul style="list-style-type: none"> Cited specific evidence in detail in support of their own arguments; Did not address counterpoints or counterevidence sufficiently, even though some counter evidence was noted in journals. 	<ul style="list-style-type: none"> Some primarily cited authors' conclusions without evaluation; Did not address counterpoints at all or only briefly; Incorporated low-quality/credibility information without critiquing. 	<ul style="list-style-type: none"> Did not integrate information from sources in the essay; Arguments largely built upon personal opinions or experiences.

Conclusions and Implications

- The four distinct profiles identified based on both behavioral (numbers accessed, read, cited) and quality (source reliability and attitude-consistency) indicators evidenced the discernable patterns of multiple source use as conceptualized in the CAEM and IF-MT.
- Students who took detailed notes of major points and specific evidence from both sides of the argument and who were critical of source and content credibility tended to write strong argumentative essays.
- The high percentage of case-builders who neglected opposing perspectives and counterevidence points to the importance of task analysis for argumentative tasks.
- Instructional emphases may be placed differentially for students demonstrating different profiles of multiple source use.