Title

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Academic Reading Attitudes during COVID; Preliminary Report of UCLA Students' Responses

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Abstract
Presented are preliminary findings from a new study of UCLA students' reading format attitudes during the COVID-19 pandemic. A study of UCLA's study of students' remote learning attitudes in spring 2020 did not include one question related to reading electronically or the library (https://teaching.ucla.edu/resources/keep-teaching/#student-perspectives). This study fills that gap and reveals that most students' attitudes towards reading in e-format did not improve during COVID. It is possible that the increased amount of time spent on their computers during remote learning in general caused a screen fatigue that lowered their ability and desire to read their course readings online.

Introduction
This preliminary report of UCLA students is part of a broader study of tertiary students' attitudes towards reading academic texts in print and online during the COVID-19 pandemic, which caused a sudden and forced transition to remote learning, the closure or drastic reduction of academic library services, and exclusive reliance on electronic texts.

Methodology
The Reading Attitudes Survey was created by Mizrachi, Salaz, Jane Secker (City University, London), and Naomi Baron, (American University), in Winter 2021. It consists of 27 multiple-choice, Likert-style, open and closed-ended questions, 13 of which gather demographic and contextual information. The study received UCLA IRB approval in February 2021. UCLA's Office of the Registrar created a random e-mail list of ~5,000 students to whom they sent participation invitations on March 2, and again on March 31. As of this report, we have received 235 responses from UCLA students.

Sample Population (n=235)
Gender: Female (55%); Male (37%); Non-binary/prefer not to say/blank (7%)
Age: 18-20 years (42%); 21-25 years (28%): 26-34 years (23%); 35 + years (6%)
Academic levels: Undergraduate (69%); Graduate (28%); Professional (health, business, etc.) (3%)
      Undergraduate levels (n=162): First years (30%); Second (22%); Third (31%); Fourth (16%); Fifth (1%)
Major/Field of study (multiple answers allowed, total responses=263): Arts (6%); Humanities (16%); Social Sciences (31%); Life Sciences (22%); Physical Sciences (6%); Math/Eng/Tech (17%); Bus/Econ (3%); Undeclared (0.4%)

FIELDS OF STUDY

- Arts, 6%
- Math/Eng/Tec, 17%
- Hum, 16%
- Bus/Econ, 3%
- Undeclared, 0.40%
- Soc Sci, 31%
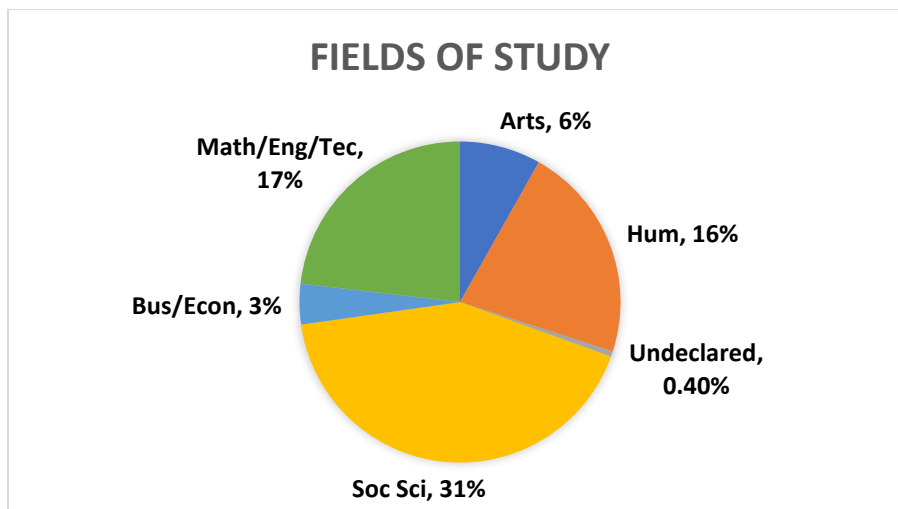
Results

Attitudes
Consistent attitudes can be seen across three of the five attitude statements.
1. "I get really tired of doing so much academic work electronically."
   - 84% agree or strongly agree; 10% disagree.
2. "I miss being able to use the library."
   - 87% agree or strongly agree (58% *strongly agree*). 7% disagree.
3. "I miss reading academic assignments in print."
   - 63% agree or strongly agree; 16% disagree.
4. "I now LIKE electronic reading more than I did before COVID-19 restrictions."
   - Study organizers hypothesized that students would find they liked reading electronically now more than before COVID. The increase in exposure/experience with e-formats would lead to adaptations of their reading strategies out of necessity, and they would come to appreciate/like e-reading more. This was not the case for the majority of respondents. Only 22% said they agreed or strongly agreed with this statement. 28% of respondents felt neutral, and 50% disagreed or strongly disagreed that they liked reading electronically now more than before COVID.

I NOW LIKE E-READING MORE THAN I DID BEFORE COVID

Neutral, 28%

Strongly disagree/Disagree, 50%

Strongly Agree/Agree, 22%
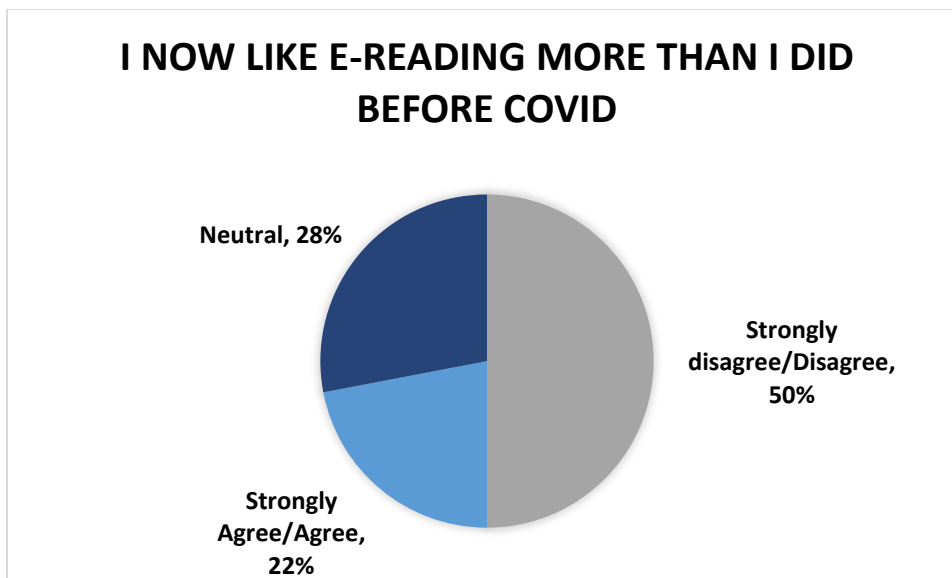
5. "I now DISLIKE electronic reading more than I did before COVID-19 restrictions."

- 40% of respondents say they DISLIKE electronic reading more now than before COVID. It is possible that some respondents, by necessity, have increased their exposure/experience with e-formats and found it worse than they thought before. 34% of respondents felt neutral, and 26% did not agree with this statement.

I NOW DISLIKE E-READING MORE THAN I DID MORE COVID

Neutral, 34%

Strongly disagree/Disagree, 26%

Strongly Agree/Agree, 40%
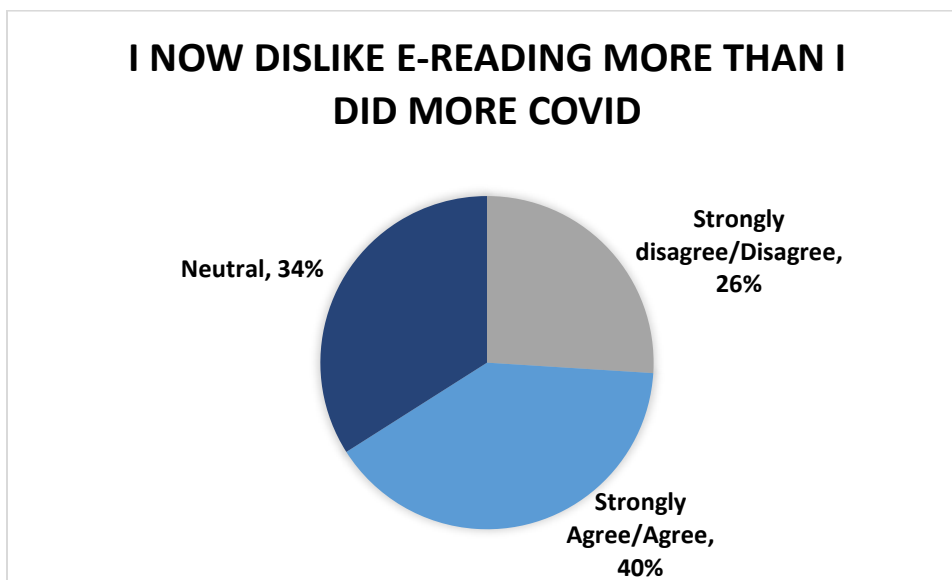
In sum, while approximately a third of respondents report no effect on their attitude towards e-text through COVID, slightly larger proportions of respondents report being more negative on e-reading through this experience. Slightly smaller proportions report being more positive on it. There seems to be a polarization effect at play, which could be explained by other aspects of the respondents' experiences. More analysis is needed.

Increasing dislike of e-reading is being driven by the younger segment of the respondents. In correlation, increased "like" of e-reading among older groups. The number of respondents over age 34 are very few and due to the low number may not be reliable.

Attitude changes to e-reading by age group.

Age group	18-20 years	21-25 years	26-34 years	35+ years
% who DISLIKE e-reading more now	50%	41%	33%	20%
% who LIKE e-reading more now	18%	24%	30%	20%

In other studies, we have postulated that age correlations with format preference may be attributable to academic status, with undergraduates, especially lower division undergraduates, expressing a stronger preference for print than more advanced students (see Mizrachi, Salaz, *et.al.,* 2018; Li, Poe, *et.al.,* 2011). In this case,

Attitude changes to e-reading by academic status

Academic status	Undergrads	Graduates
% who DISLIKE e-reading more now	47%	31%*
% who LIKE e-reading more now	19%	21%**

*A meaningful difference.   ** No meaningful difference.

Likes and Dislikes about Print and Electronic Formats

In four open questions, students were asked to list one thing they liked and disliked about print, and one thing they liked and disliked about electronic format. These were required questions. Responses can be coded into categories consistent with earlier studies (Mizrachi and Salaz, 2020). Students like print because:

- Better learning engagement (highlight, annotate)
- Better learning quality (focus, attention)
- Health issues (easier on eyes, ergonomically better)
- Physicality, Tactile aspects (easier to flip through; smell)
- Convenience (no-tech; more portable)

They like electronic format because:

- Learning engagement features ('Find', highlighting/annotating)
- Cost less
- Less environmental waste
- Easier to access/Convenience
- Easier to organize, store (takes less space)
- Health issues (lighter weight than print, can adjust font size)

Selected comments favoring print:

- "I can visualize pages when recalling information and physically touching pages helps learn."
- "It's easier to have several books next to me while working on a paper electronically (rather than switching back and forth between tabs & windows)."
- "My eyes can actually read, I can feel the pages, it's a spiritual experience to experience print readings as a student."

Selected comments favoring e-format:
- "The convenient accessibility is what I like the most about electronic readings."
- "Perusall [management system for online group reading] lets me annotate with my classmates."
- "I don't like highlighting or writing in books, so easier to annotate and also takes up less space."

<u>Reading Engagement</u>
Students report their amount of overall reading engagement, as measured by highlighting/annotating readings and completing assigned readings, has decreased during the COVID pandemic and the forced move to exclusive e-reading. Most report no change in their *e-reading* behaviors as compared to before.

1. "Compared to before COVID-19, I now highlight and annotate my academic readings."
    - 48% report that they highlight or annotate their readings, in general, *less* often since the COVID pandemic, compared to before
    - 11% say they highlight more often
2. "Compared to before COVID-19, I now highlight and annotate my ELECTRONIC readings."
    - 23% say they do highlight and annotate their electronic readings *more* often
    - 33% less often
    - 44% no change
    - There seems to be a small contingent of respondents who have increased their engagement levels with e-text during the pandemic, perhaps out of necessity.
3. "Compared to before COVID-19, I now complete my assigned readings for my coursework."
    - 38% say they complete their assigned readings for class *less* frequently.
4. "Compared to before COVID-19, I now complete my assigned ELECTRONIC readings for my coursework."
    - 37% say they complete their e-readings less frequently,
    - 50% say they complete e-readings at the same rate as before.
    - A small percentage (13%) say they complete e-readings more often since COVID.

<u>Ability to Focus and Remember on Different Formats</u>
One question asked students to rate their ability to focus on a reading when using various devices: print, computer, tablet, e-reader, and smartphone. A second question asked them to rate their ability to remember information from a reading on the same devices.

Consistent with an earlier study of UCLA undergraduates (Mizrachi, 2015), 82% say the use of print makes it easy or somewhat easy to focus while reading; 78% say that the use of print makes it easy or somewhat easy to remember information. Below are comparisons between devices (neutral responses not included).

Focus

Device (n= number of users)	Easy/Somewhat easy to focus	Somewhat hard/Hard to focus	Don't use for academic reading
Print (n=235)	82%	7%	0%
Computer (n=235)	21%	65%	0%
Tablet (n=131)	31% of users	45% of users	43% of all respondents
E-reader (n=81)	31% of users	45% of users	65% of all respondents

Smartphone (n=123)	2% of users	89% of users	47% of all respondents

Remember

Device (n= number of users)	Easy/Somewhat easy to remember	Somewhat hard/Hard to remember	Don't use for academic reading
Print (n=235)	78%	3%	0%
Computer (n=235)	36%	33%	0%
Tablet (n=131)	29% of users	37% of users	43% of all respondents
E-reader (n=81)	26% of users	40% of users	65% of all respondents
Smartphone (n=123)	11% of users	63% of users	47% of all respondents

In sum – despite being almost universally accessible in the United States and readily available 24/7 for individuals who possess one, Smartphone reading is reported in this group as being the most difficult for focus and information retention. This could be because inherent features of the format (small screen size, for example) – require more scrolling and correlate with other known e-reading-negative interface factors. It could be that e-reading software isn't widely optimized for phone reading. If it were, favorability of this format among this group of readers could improve.

<u>Physical Effects</u>
- 84% of respondents report experiencing MORE eyestrain since COVID
- 56% experience more frequent headaches
- 78% experience more back, neck, or other body aches
- 49% report more frequent physical effects of an unspecified nature.

<u>Internet Access</u>
- 77% of respondents report regular access to reliable internet
- 23% report variable issues with no or intermittent access, slowness, or other difficulties.
- Difficulties, as detailed in comments, include:
    - Live in a fire hazard area
    - Multiple power and internet outages
    - Multiple household users.
    - Travelling/living abroad
    - Multiple moves since closure of campus housing
- Selected comments:
    - "I have lost internet connection during several classes & during one final, but so far all of my professors have been understanding."
    - "My internet routinely fails, so it's scary to take exams and not know if my internet will crash."
    - "I get kicked out of zoom meetings once a week and my wifi becomes too slow to load anything a few times a week."
    - "I didn't have stable internet, but my neighbors have been unbelievably helpful and gave me their passwords."

<u>Other Circumstances</u>

- 92% of respondents have their own electronic devices for academic work and have not needed to borrow one during COVID.
  - Device most commonly borrowed: Mifi Hotspot
- 27% report that they share their devices with another person at least some of the time.
  - Device most commonly shared: Printer
- 33% of respondents report working in paid employment at least 10 hours per week.
- 9% of respondents report having primary caretaking responsibilities for a dependent.

Comments
27 students supplied additional open comments at the end of the survey. These ranged from the succinct:
- "I hate online school."
- "Electronic>print"

To the alarming:
- "I feel like I am more stressed."
- "I am consistently distracted and do not enjoy any aspect of remote learning."
- "I have no will to do anything anymore."

Five comments could be categorized as expressing attitudes/suggestions for the library. Examples:
- "Please make more academic books, article, etc., available electronically. Personally, I can only afford to live far away from campus, so it costs me considerable amount of time and money commuting to the school library. Electronic access to academic materials is an issue of equality."
- "I miss libraries because I didn't have to pay expensive prices for books."

Ten comments expressed attitudes/observations about reading in either format. Examples:
- "I miss reading real papers and actual books..."
- "I also like the built-in videos and quizzes that often come with an online textbook."
- "Screens hurt. They hurt students' eyes, they inhibit the ability to discuss, they make absorbing information that much harder. I feel that we should all be given stipends to print our readings; especially as graduate students who have to read a lot more readings, grade a lot of student papers, as well as write our dissertations."

Four other comments were general suggestions or observations.

Points to consider
A couple students observed that it may not be the actual e-reading that is so tiresome, but the total screen time. For example (from the open comments section):

> "It's hard for me to say that the physical impacts are from reading texts online. I think the largest impact is that it feels much more tedious and less motivating to go to my readings after a long day of all screens. The nature of sitting and looking at screens all day I think is more to blame, as it's a longer duration of my day, than perhaps specifically the reading of academic texts component."

> "I like having more academic reading online, … However, since covid started, I very much dislike doing readings online, since I am now spending all of my time looking at a screen and it gives me headaches. This is especially a problem when the online readings are poor photocopies with not much contrast, and I have to really strain my eyes to read."

It is quite possible that undergraduates spend more "class" time on zoom than the more advanced students, and are therefore feeling the effects of the amount of screen time, including e-readings, more acutely. I see a need to perform a follow-up study in a year or two after returning to more in-person learning and compare the differences.

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