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Original Article

Math Book Club – From Casual Reading to Learning Mathematics

Jerry Graveman

[1] *Department of Mathematics*
University of North Georgia–Gainesville
Oakwood
GA 30566, USA

Nham Ngo*[1]

[1] *Department of Mathematics*
University of North Georgia–Gainesville
Oakwood
GA 30566, USA

Abstract

In this paper, we present a pilot study exploring the relationship between reading activities and college students' learning, with a focus on mathematics. To investigate this connection, we organized a Math Book Club that engaged students in casual reading and discussions about mathematics, aiming to examine their reading habits and how these reading activities might influence their academic performance. Conducted at a university in the southeastern United States, our self-reported surveys showed that reading time among commuter students is relatively low. However, participation in the book club appeared to positively influence students' reading habits. Finally, we discuss potential interactions between casual reading and students' learning in mathematics based on evidence from our surveys.

Mathematics Subject Classification (2020). 97C30, 97D99

Keywords. book club, reading habits, learning mathematics, casual reading

1. Introduction

In today's digital age, students have access to a wide variety of information sources, including social media, blogs, online forums, webinars, and lecture videos. Despite these alternatives, reading remains one of the most effective methods for learning. It enhances concentration, improves cognitive function, and expands vocabulary as well as imagination. At the college level, research has shown that students who read more than their peers tend to achieve higher grades, participate more actively in class discussions, and demonstrate stronger reading comprehension and writing skills [3]. However, despite these well-documented benefits, many college students do not dedicate relevant amount of time to reading [3]. According to [1], only 20–30% of students complete their assigned readings. One contributing factor may be the lack of reading activities, particularly in mathematics.

Email addresses: Jerry.Graveman@ung.edu
*Corresponding Author.
Email addresses: nvngo@ung.edu
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To address this issue, we initiated a Math Book Club that encourages students to read accessible, non-textbook materials. This approach also aims to strengthen students' connections to mathematical ideas and foster greater motivation and engagement in learning mathematics [9][11].

Results found in [8],[4], and [7] showed that casual reading can positively influence mathematical skills for various age ranges. These findings raise important questions: Which topics or types of books are most effective? How much time should students devote to reading? When is the optimal time for reading to maximize its impact? This pilot study serves as the initial phase of our broader research considering these questions to uncover deep connections between casual reading and students' learning in mathematics. More explicitly, we begin by examining students' reading habits and then using the collected data to draw inferences on these interactions.

Although there is no direct research in the literature specifically examining the relationship between casual reading and learning mathematics, several published and unpublished studies suggest that book selection can influence student engagement and conceptual understanding (e.g., [9], [10]). In addition, some scholarly work has explored the integration of book club models into college classrooms as a means of enhancing student engagement (e.g., [7], [11]). The ultimate goal of our study is to contribute original research that captures as many aspects as possible within the domains of casual reading and mathematics learning, as well as potential connections between them. This paper serves as a preliminary report, and we aim to offer deeper insights in future papers.

The paper is organized as follows. Section 2 provides a detailed overview of the book club activities and their implementation in our workplace. In Section 3, we present and analyze the data collected from participants through surveys. These findings form the basis for the conclusions drawn in Section 4. Finally, Section 5 discusses various factors that may have influenced the results presented in the previous section.

2. Materials & Methods

Our study was conducted at the University of North Georgia (UNG). To investigate students' reading habits, we designed reading activities based on the approaches outlined in [7],[9], and [11]. Specifically, we established a Math Book Club for undergraduate students in the Department of Mathematics at UNG's Gainesville campus. The book club, launched in Spring 2024, meets once a week in a designated reading room. Each session, held outside of regular class hours, consists of approximately 30 minutes of reading together followed by a 10-minute discussion. Participation is entirely voluntary, and to create a welcoming environment, books and complimentary light refreshments (such as coffee, tea, and cookies) are provided.

During the 30-minute reading segment, all participants read the same book, though they are not required to read at the same pace. In the subsequent discussion, students are encouraged to share their impressions of the reading—whether they found it interesting, engaging, surprising, or thought-provoking. Materials used in the book club are non-textbooks about mathematics. Below are the books that we read together in the last three semesters:

(1) William Dunham, *Journey through Genius: The Great Theorems of Mathematics*
(2) Edward Frenkel, *Love and Math: The Heart of Hidden Reality*
(3) Yoko Ogawa, *The Housekeeper and the Professor*
(4) G.H. Hardy, *A Mathematician's Apology*
(5) Cedric Villani, *Birth of a Theorem: A Mathematical Adventure*

The majority of this book selection was based on recommendations from several faculty and staff members in the Mathematics Department at UNG who are avid readers and

have read extensively on mathematical topics. Additionally, a few titles were brought to our attention through [10].

All participants were enrolled students at the Gainesville campus of the UNG. A total of 14 students participated in the study, with the authors serving as the sole faculty members involved in the Math Book Club. Research data were collected through two anonymous surveys given to students at the beginning and end of each semester. Please note that the surveys were administered and handled in accordance with the guidelines provided by the UNG Institutional Review Board (IRB): https://ung.edu/institutional-review-board/index.php.

The Math Book Club weekly meetings were scheduled over the course of three semesters as follows:

- Spring 2024: Mondays at 2:30 PM
- Fall 2024: Wednesdays at 11:00 AM and Thursdays at 1:00 PM
  (Note that these sessions were for two different groups and everyone still met once a week.)
- Spring 2025: Tuesdays at 1:00 PM

3. Results

Here are statistical results on reading habits collected in the survey at the beginning of each semester before joining the book club activities:

Table 1

Time spent on reading per week	**Relative Frequency**
More than 3 hours	14.29%
2 – 3 hours	21.5%
1 – 2 hours	14.29%
Less than 1 hour	49.92%

- About 78.57% of students stated that they read at home at least 3 times a week.
- About 57.15% of students said that they do not fix any time to read. In other words, they read whenever they have time available.
- Half of them said they never read any (non-text) book about math before joining the book club.
- About half of students confirmed that they only read textbooks whenever they do homework.

After a semester joining the book club, students were asked to complete the other survey. Out of 14 members, there were 2 students who didn't finish the questionnaire. Overall, in every semester when the study was conducted, all participants attended over 10 weekly reading sessions (only missed a couple of sessions). All students enjoyed the time length of the reading session with only 25% preferring to extend the reading time. Other results are summarized in the tables below.

Table 2

Reading Activities	**Agree**
Book club is useful for students	83%
Book Club activities are enjoyable and reading is beneficial	75%
Read the book page-by-page	75%
Helps engage better in classes	50%
Book club changed reading habits	66.67%

Table 3

Effects on learning mathematics	**Agree**
Book club activities influence students' learning of math	75%
Students gained interest in math concepts discussed in the books that were read	66.67%

4. Conclusions

First, on the aspect of reading habits, Table 1 reflects that students spend relatively little time reading. In fact, the data show that book club members' reported reading time is significantly lower compared to the averages found in [6], which are 7.7 hours per week for academic reading and 4.24 hours for extracurricular reading. It's worth noting that 66.67% of students said that the book club has changed their reading habits explicitly in the following ways:

- Increased their reading time
- Expanded the type of books read
- Helped them realize they enjoy reading more than they thought

Our preliminary results indicate that most students (Table 2) viewed the reading activities as meaningful learning experiences that stood apart from traditional classroom routines. As emphasized by [5], such activities should be encouraged and supported to help students develop lifelong learning skills and habits.

Additionally, our study provides supporting evidence for results reported by other scholars on the effects of reading. In particular, survey responses revealed that students found books written for general audience more engaging and enjoyable than traditional textbooks, consistent with the observations in [11]. Among the reported benefits, a few students reported that reading and talking about mathematics improved their attention span and enhanced the ability to express their thoughts clearly. These insights align with the work of [8] about the positive impact of reading on cognitive brain functions. Last but not least, as seen from Table 3, our survey findings suggest influences of casual reading (about mathematics) on students' learning mathematics. Specifically, about 25% of the book club participants reported that the readings broadened their understanding of mathematical applications, increased their interest in various areas of mathematics, and provided new perspectives on how to approach learning mathematics. These encouraging responses have motivated us to keep exploring this line of research through the ongoing development of the Math Book Club.

5. Discussions and Plans for Continuation

The University of North Georgia (UNG) consists of five campuses—Gainesville, Dahlonega, Oconee, Cumming, and Blue Ridge—with a total enrollment of approximately 20,000 students as of Fall 2024. Although the Gainesville Campus has had the highest enrollment[†] of UNG's five campuses, our study's findings (conducted solely on the Gainesville campus) do not represent the entire UNG student population, but rather reflect the experiences of a subset of Gainesville students.

On the other hand, it is worth noting that Dahlonega is the only UNG campus offering student housing; the remaining campuses, including Gainesville, do not provide residential options. As a result, all students attending classes on the Gainesville campus must commute, which presents a logistical barrier to participating in extracurricular activities like our Math Book Club. This commuting challenge, along with the fact that many

[†]https://ung.edu/institutional-effectiveness-research-administration/institutional-research/quick-facts.php

Gainesville students maintain full-time jobs, significantly limits their availability for non-classroom activities. Some students expressed interest in participating but reported being unable to fit reading time into their busy schedules.

In the future, we plan to continue offering the Math Book Club as an optional activity for undergraduate students at UNG. A key objective for the next phase of our research is to increase the number of participants in order to better reflect the diversity of UNG students. One potential strategy is to collaborate with mathematics faculty at other campuses to host reading sessions at those locations. Additionally, to gain accessibility, we plan to offer multiple reading sessions at different times throughout the week. Finally, to obtain deeper insight into the relationship between reading and academic engagement, we will monitor participants' classroom involvement and academic performance following their participation in the book club. As a long-term goal, we aim to adapt our program into a form of reading intervention to support students who face challenges with reading—such as first-year students adjusting to college-level learning, students with mental health or behavioral concerns [2], and international students.

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Appendix

In this section, we show samples of the surveys used in our study.

Beginning-of-semester survey:

- *How much time do you spend on reading? Ex: 1 hour per day.*
- *How often do you read in a week? Ex: everyday or 3 times per week*
- *What type of book do you enjoy reading?*
- *Do you read at a fixed time of the day (ex. After having lunch, before going to bed, etc)?*
- *Beside textbooks, have you ever read any book about math? If yes, please list the book titles.*
- *(Multiple choice question) When solving a math HW problem that you don't know how to get it started, what do you usually do?*
  - *review lecture notes*
  - *read the textbook*
  - *ask the instructor*
  - *go to math lab tutoring*
  - *watch tutorial videos*
  - *give up*
  - *or else. Please give details if possible.*

End-of-semester survey:

- *How often did you attend reading sessions in Math Book Club?*
- *Did the time that the book club met work well for you? What time would you prefer the book club to meet if you may choose?*
- *Is meeting once a week enough for the book club? Would you like to meet more than once a week? Or should we extend the reading time to one hour?*
- *Does the reading activity make you feel interested in learning further the concepts mentioned in the chosen books?*

- *How did you read the book? Page-by-page or skim through the whole book and read the part that you are most interested in, or other?*
- *Has the book club changed your reading habits? If so, please be specific.*
- *What benefits do you think you have received from the book club or reading activity? Please be specific.*
- *Do you think our reading activity influences your learning mathematics? If so, please be specific.*
- *Does the reading activity help you to engage better in any classes (not necessarily math classes)?*
- *What do you think about the 10-minute discussion in our book club? Were you comfortable sharing your opinions with others?*
- *Do you think the book club is useful for students?*

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