Analyzing student interest in using AI-powered audiobooks for mathematics learning

Jesi Alexander Alim [1*], Universitas Riau, Pekanbaru, 28293, Indonesia, jesi.alexander@lecturer.unri.ac.id, ORCID: https://orcid.org/0000-0002-4898-5983

Neni Hermita [b], Universitas Riau, Pekanbaru, 28293, Indonesia, neni.hermita@lecturer.unri.ac.id, ORCID: https://orcid.org/0000-0002-5084-8080

Muhammad Fendrik [c], Universitas Riau, Pekanbaru, 28293, Indonesia, muhammad.fendrik@lecturere.unri.ac.id, ORCID: https://orcid.org/0000-0001-6954-6448

Cici Oktaviani [d], Universitas Riau, Pekanbaru, 28293, Indonesia, cici.oktaviani3041@student.unri.ac.id, ORCID: https://orcid.org/0009-0004-2993-9385

Zetra Hainul Putra [e], Universitas Riau, Pekanbaru, 28293, Indonesia, zetra.hainul.putra@lecturer.unri.ac.id, ORCID: https://orcid.org/0000-0002-0860-1076

Dewi Nasien [f], Institut Bisnis dan Teknologi Pelita Indonesia, Pekanbaru, 28127, Indonesia. dewinasien@lecturer.pelitaindonesia.ac.id , ORCID: https://orcid.org/0000-0001-7932-0573

Abstract

Artificial intelligence is currently indicated as the fourth industrialization in education. Furthermore, learning about AI has become part of the elementary school curriculum in all countries. Audible books (audiobooks) are a valuable AI resource that can enhance students' interest in reading. Therefore, this study aims to analyze students' interest in using AI-based audible books for mathematics learning. Data were collected using a quantitative approach and statistical analysis. A total of 75 people consisting of 3rd, 4th, and 5th-grade Elementary students were selected as respondents. The results indicate that students show a strong interest in using audiobooks for mathematics learning. This interest is reflected in high levels of enthusiasm, enjoyment in reading, and a positive attitude toward using audiobooks, with most students expressing happiness, enjoyment, and a keen interest in this approach.

Keywords: Artificial intelligence; audiobooks; audible books; learning; mathematics

---

* ADDRESS FOR CORRESPONDENCE: Jesi Alexander Alim, Universitas Riau, Pekanbaru, 28293, Indonesia.
  E-mail address: jesi.alexander@lecturer.unri.ac.id

1. INTRODUCTION

Information and Communication Technology (ICT) which has a rapid development is mostly needed in modern society. This causes individuals to access various media such as newspapers, magazines, printed books, online books, radio, television, the internet, and others (Anwas, 2014). The ICT development enables books and printed material to become available online. Reading online becomes convenient and flexible for people because it tends to be accessed in the waiting room, public transportation, cafes, restaurants, canteens, or other places.

Furthermore, reading is considered one of the core competencies of education in Elementary School. According to Fletcher & Reese (2005), a propensity to learn can facilitate the development of other competencies such as verbal expression. Therefore, the development of reading skills needs to start at an early age (Watson, 2003). Reading picture books become an interesting and promising activity for Elementary students (Bus et al., 1995; Lever & Sénéchal, 2011; Papen & Peach 2021; Laliena & Tabernero Sala 2023). In learning, the development of technology brings about a change from printed materials to e-books such as digital pictures (Chiu et al., 2016; Huang et al., 2012; Huang & Liang, 2015). Several studies discussed the effects of e-books on changes in student learning, behavior, and experiences (Devika & Milton 2024; McGeehan et al., 2018; Serafini et al., 2016). In addition to the above digital picture books, audible books were developed.

An audible book (audiobook) is a form of recording media that is meant for reading a book's contents. The substance is the same as in science textbooks, fiction books, or others. An audiobook becomes very important for the intellectual development of students. In audible form, e-book helps students develop learning, spelling, music, and mathematic skills (Price, 2003; Zhang et al., 2021). Therefore, reading books containing mathematical concepts becomes important to improve students' literacy and numeracy skills.

According to Putra et al., (2020), learning mathematics is in the form of ordinary printed and digital materials. Reading books that have colorful picture stories attracts more attention, specifically from Elementary students (Gogahu and Prasetyo, 2020). The development of technology allows audible books to be part of AI needed to improve students' interests. Artificial intelligence is a smart digital that aims to revolutionize people's workplaces in the future (Horáková et al., 2017; Park et al., 2023). Currently, AI is indicated as the fourth industrial revolution in terms of education. Dai et al., (2020) and Knox (2020) emphasized that learning about artificial intelligence is part of the school curriculum. Therefore, AI helps to improve students' interest in reading textbooks, specifically mathematics.

1.1. Literature review

1.1.1. *Audible book*

In the 1930s, the American government introduced audible books for blind people (Mohamed, 2018). The audible book was first in the form of a cassette and later a CD. Along with the times and internet existence, audible books become a trend in the community because they can be easily downloaded. An audible book is a recorded text read by a person or group of voices (Rubery, 2011). The person who reads the audible book is often called the narrator. In printed books, the message content is not only in the form of text but also diagrams, graphics, photos, figures, and others. The narrator reads the content verbatim and interprets the figures and illustrations. This shows that an audible book is a recording of a book's contents in the form of text, images, photos, or sounds (Anwas, 2014).

Audible books have special features including saving time, making reading more comfortable, and observing familiar stories in new ways, as well as simultaneously providing skills to maintain attention for a long time (Mikidenko & Storozheva, 2021). Furthermore, an audible book is widely used in learning at all school levels (Larson, 2015; Rogowsky et al., 2016; Wolfson, 2008).

1.1.2. Audible books based on artificial intelligence (AI)

AI is the system's ability to correctly interpret and manage external data, as well as to use the processed results for a specific purpose (De Sousa et al., 2019; Goralski & Tan, 2020). Audible book is part of AI that students use to learn in schools. The book enables students not to only read directly but also to listen to the message contents. This format makes books interesting since they can be heard by anyone at any age and anywhere.

1.1.3. Audible book as a medium for learning mathematics

The audible book tends to be used as an alternative medium for students to learn mathematics. Therefore, varied content is needed from textbooks and fiction books related to mathematical material. Audible books tend to be carried out individually because their making is relatively simple and inexpensive. Generally, learning through the media has two conditions, including 1) being materially correct and accountable, and 2) being packaged attractively (Anwas, 2014). According to Tsany (2021), audible books enable students to have a high interest in learning because they obtain a better contextual experience when audio is used as a tool.

Currently, the development of audible books can be used for educational purposes (Lee, 2020). This enhancement makes audiobooks an accessible and appealing medium for readers, as they offer the same value as printed books while providing a broader, more integrated experience (Dali & Brochu, 2020; Snelling, 2021).

1.2. Purpose of study

Reading about mathematical concepts in schools is often limited, as most available resources are in printed form. This format may not fully engage students or meet diverse learning preferences, highlighting the need for alternative mediums like audiobooks to enrich mathematical understanding (Alim et al., 2020, 2021). Therefore, this study analyzes students' interest in using AI-based audible books for mathematics learning. It used indicators including students' (1) feelings of pleasure to participate, (2) interest in reading, and (3) interest in using audible books.

2. METHODS AND MATERIALS

2.1. Participants

Data were collected using a quantitative approach and questionnaire. A total of 75 people consisting of third, fourth, and fifth-grade elementary students were selected as the respondents (Table 1).

Table 1
Respondents to measure students' interest in audible books

No.	Respondents	Total
1	Third Grade Students	27
2	Fourth Grade Students	19
3	Fifth Grade Students	29

2.2. Data collection tool

Students' interest was measured using a Likert scale comprising four ranking options. Statements with positive and negative items that are approved and not approved respectively have the highest score.

2.3. Data analysis

Data were analyzed using the Rasch Model. Therefore, it becomes possible to produce fit statistics with information on whether the data obtained are ideal, indicating that people with high abilities provide patterns of answers to statement items according to their level of difficulty (Sumintono et al., 2014).

The data processing begins by inputting results obtained from respondents and is later converted to an interval scale (Baharuddin et al., 2021). Data were tested using the Ministep application including Summary statistics and Person-Map-Item. Meanwhile, summary statistics comprises the efforts used to determine the respondents' quality, while Person-Map-Item consists of the efforts made to determine the easiest and most difficult statements to be approved. The following is the formula used for the testing.

$$\text{Average Score} = \frac{\text{Skor Perolehan}}{\text{Jumlah Skor Pernyataan}} \times 100\%$$

Table 2 shows the score percentage of a student having an interest in audible books.

Table 2

Assessment score interval

Score Percentage (%)	Category
25%-43.75%	Not interested
43.75%-62.5%	Less Interested
62.5%-81.25%	Interested
81.25%-100%	Very interest

Table 3 below indicates the instruments used to measure students' interest in audible books.

Table 3

Grid for measuring students' interest in audible books

No	Indicators	Number of Items
1	Feeling happy in following mathematics learning	3
2	Students' interest in reading books	12
3	Students' interest in using Audible Books media	8

3. RESULTS

Audible Books is a collection of illustrated and sound digital math storybooks. This audible book can be accessed online as long as people are connected to the internet through various devices such as smartphones, laptops, and computers. In the digital form, audible books are a learning platform that can be used by students at school, at home, and anywhere.

Figure 1

The main view of audible books

Based on ethnomathematics, audible books are digital storybooks that contain numeric material related to Riau Malay culture (figure 1). It enables students to be aware of the local culture despite learning mathematics. The following (figure 2) is the mathematical material contained in audible books.

**Figure 2**

 Material types of flat shapes

Setatak is a traditional game of the Riau Malay community which is often played by students. In this book, the concept of mathematical material shows this game is in the form of flat shapes (figure 3).

Figure 3

Material characteristics of rectangles and squares

Galah Panjang is a traditional game that Malay children play on a two-lane field. In this book, the concept of mathematical material shows the game is in the form of square and rectangular shapes.

Figure 4

Material of various angles
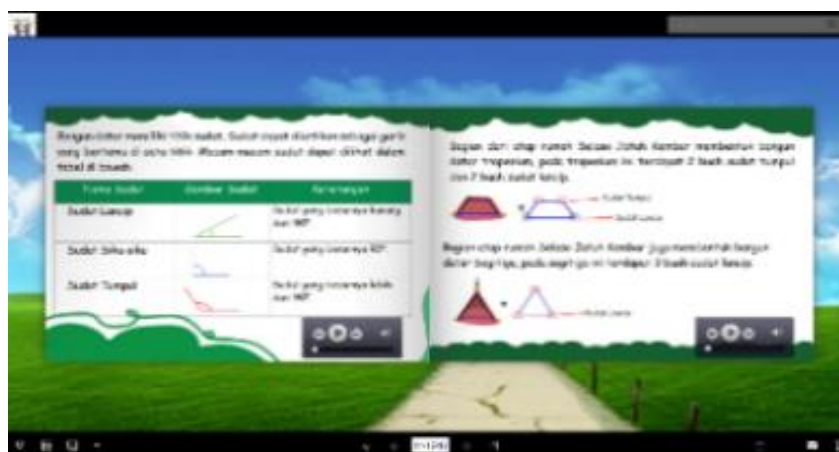
In this book, the concept of mathematical material is about various angles. This content is obtained from the shape of the Malay traditional house, selaso jatuh kembar. In this material, some parts of the house form a flat shape which enables students to learn various angles.

This media was tested in Elementary School to discover students' interest in audible books. Initially, the activity carried out first explained what audible books were, how students use this media, and the directions to independently operate.

Figure 5

Students using audible books

A total of 75 people consisting of third--, fourth-, and fifth-grade students were selected as respondents. The participants' answers are processed and tested to analyze their interest in audible books. This test was carried out using the Rasch model assisted by the Ministep application.

The statistical summary showed the respondents' quality of interest in audible books is 23.0, indicating that the majority of students agree with the statement. According to Sumintono et al., (2014), the participant tends to select agree as the statement answer when the measured value is > 0.0. This study showed that the instrument is accepted when the reliability numbers are between 0.67-0.80. However, the interaction between the respondent and the statement item is classified as good because Cronbach's alpha is 0.74. The consistency between statement items is accepted since the reliability value is between 0.81-0.90 (Sumintono et al., 2014).

Based on the data suitability, the tables in the INFIT MNSQ and OUTFIT MNSQ columns are 1.05 and 1.01, respectively. The results showed that respondents understand the instrument items because the value is getting closer to 1.00. Also, the assessment is considered unaccepted when the fit value is > 1.3 (Sumintono et al., 2014). The results of INFIT ZSTD and OUTFIT ZSTD are -0.10 and -0.17, respectively (Table 4). This shows that the model and the respondents' understanding are the same. For instance, the instrument quality is 0, while the ZSTD value ranges from +1.99 to -1.96 (Sumintono et al., 2014).

Table 4

Summary statistic

```
INPUT: 75 PERSON  23 ITEM  REPORTED: 75 PERSON  23 ITEM  4 CATS MINISTEP 5.1.7.0
---------------------------------------------------------------------------

      SUMMARY OF 75 MEASURED PERSON
---------------------------------------------------------------------------
|          TOTAL                      MODEL      INFIT       OUTFIT    |
|          SCORE     COUNT   MEASURE   S.E.    MNSQ   ZSTD   MNSQ   ZSTD |
|--------------------------------------------------------------------------|
| MEAN     72.1      23.0      .90      .30    1.05   -.10   1.01   -.17 |
|  SEM       .8       .0       .08      .01     .06    .21    .06    .20 |
| P.SD      7.0       .0       .69      .07     .55   1.81    .53   1.73 |
| S.SD      7.0       .0       .70      .07     .56   1.82    .53   1.75 |
| MAX.     90.0      23.0     3.73      .73    3.25   4.54   3.26   4.55 |
| MIN.     52.0      23.0     -.45      .23     .14  -4.81    .14  -4.73 |
|--------------------------------------------------------------------------|
| REAL RMSE   .34 TRUE SD   .60  SEPARATION 1.74  PERSON RELIABILITY .75 |
|MODEL RMSE   .31 TRUE SD   .62  SEPARATION 2.00  PERSON RELIABILITY .80 |
| S.E. OF PERSON MEAN = .08                                              |
---------------------------------------------------------------------------
PERSON RAW SCORE-TO-MEASURE CORRELATION = .96 (approximate due to missing data)
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .74  SEM = 3.58 (approximate due to missing data)
STANDARDIZED (50 ITEM) RELIABILITY = .90

      SUMMARY OF 23 MEASURED ITEM
---------------------------------------------------------------------------
|          TOTAL                      MODEL      INFIT       OUTFIT    |
|          SCORE     COUNT   MEASURE   S.E.    MNSQ   ZSTD   MNSQ   ZSTD |
|--------------------------------------------------------------------------|
| MEAN    235.2      75.0      .00      .16     .99   -.04   1.01    .11 |
|  SEM      3.3       .0       .08      .00     .04    .26    .05    .28 |
| P.SD     15.4       .0       .39      .02     .20   1.24    .23   1.33 |
| S.SD     15.8       .0       .40      .02     .21   1.27    .24   1.36 |
| MAX.    266.0      75.0      .76      .20    1.40   2.57   1.51   2.99 |
| MIN.    201.0      75.0     -.93      .14     .53  -2.91    .56  -2.52 |
|--------------------------------------------------------------------------|
| REAL RMSE   .17 TRUE SD   .36  SEPARATION 2.14  ITEM  RELIABILITY .82 |
|MODEL RMSE   .16 TRUE SD   .36  SEPARATION 2.22  ITEM  RELIABILITY .83 |
| S.E. OF ITEM MEAN = .08                                                |
---------------------------------------------------------------------------
ITEM RAW SCORE-TO-MEASURE CORRELATION = -.99 (approximate due to missing data)
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000
```

The next step is to discover the statement items that are easier for respondents to agree with. This test uses Item Measures on the minister application. The results showed the easiest items students agreed on are P7, P2, P23, and P20 with the statement "I have to read because it makes me smart, I always follow mathematics learning, I like to learn mathematics using audible books, and I learn more independently by using the audible book". Therefore, students always follow numeric learning because it increases knowledge and makes them enthusiastic, as well as happy. Audible books are used to facilitate students to study independently at home because it is accessed anytime and anywhere. Table 5 shows the Item Measure results.
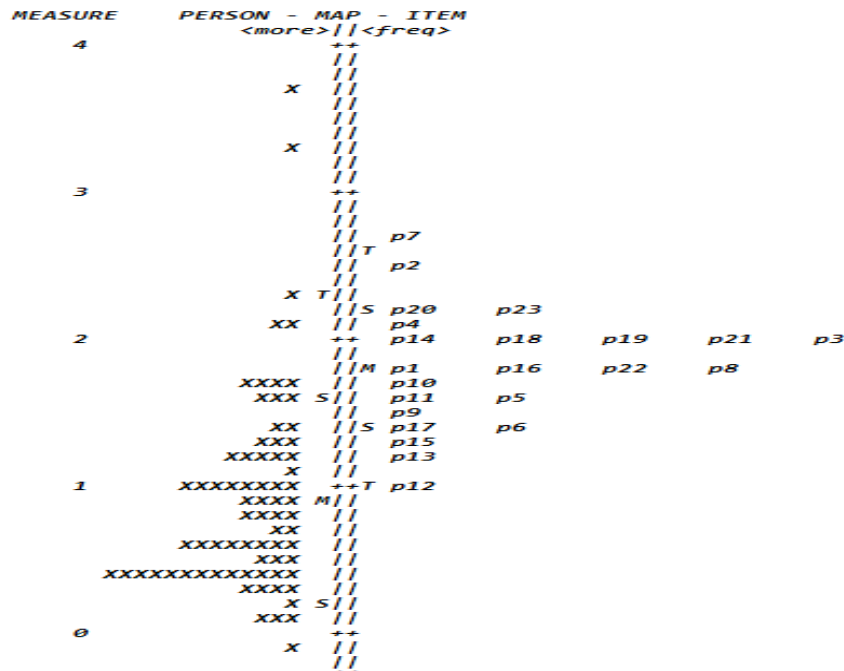
Table 5

Item measure

```
        ITEM STATISTICS:  MEASURE ORDER

--------------------------------------------------------------------------
|ENTRY   TOTAL  TOTAL    JMLE  MODEL|   INFIT  |  OUTFIT  |PTMEASUR-AL|EXACT MATCH|      |
|NUMBER  SCORE  COUNT  MEASURE  S.E. |MNSQ  ZSTD|MNSQ  ZSTD|CORR.  EXP.| OBS%  EXP%| ITEM |
|-------------------------------------+----------+----------+-----------+-----------+------|
|   12    201     75     .76    .14|1.40  2.57|1.51  2.99|  .29   .43| 36.0  42.1| p12  |
|   13    211     75     .57    .14|1.37  2.28|1.50  2.81|  .25   .42| 34.7  46.3| p13  |
|   15    214     75     .51    .14|1.38  2.29|1.44  2.48|  .34   .41| 37.3  49.1| p15  |
|   17    218     75     .43    .14|1.01   .09|1.05   .38|  .41   .40| 57.3  50.6| p17  |
|    6    220     75     .38    .15|1.01   .09|1.04   .27|  .29   .40| 54.7  51.0| p6   |
|    9    223     75     .32    .15| .89  -.62| .95  -.26|  .30   .39| 50.7  51.2| p9   |
|    5    227     75     .23    .15| .94  -.34| .90  -.54|  .45   .39| 54.7  51.9| p5   |
|   11    228     75     .21    .15|1.12   .72|1.24  1.32|  .28   .38| 53.3  52.2| p11  |
|   10    234     75     .07    .16| .79 -1.26| .76 -1.40|  .54   .37| 53.3  53.2| p10  |
|    8    235     75     .04    .16|1.13   .76|1.06   .41|  .40   .37| 48.0  53.2| p8   |
|    1    236     75     .02    .16| .70 -1.86| .70 -1.75|  .36   .37| 60.0  53.2| p1   |
|   22    236     75     .02    .16| .92  -.38| .92  -.42|  .31   .37| 60.0  53.2| p22  |
|   16    237     75    -.01    .16|1.12   .69|1.11   .65|  .38   .37| 52.0  53.2| p16  |
|    3    243     75    -.17    .17| .92  -.41|1.12   .67|  .27   .35| 52.0  53.9| p3   |
|   14    243     75    -.17    .17|1.13   .75|1.11   .63|  .39   .35| 50.7  53.9| p14  |
|   18    243     75    -.17    .17| .92  -.36| .94  -.27|  .41   .35| 62.7  53.9| p18  |
|   21    243     75    -.17    .17| .86  -.73| .80 -1.07|  .55   .35| 68.0  53.9| p21  |
|   19    245     75    -.22    .17| .90  -.51| .87  -.68|  .45   .35| 60.0  53.7| p19  |
|    4    246     75    -.25    .17| .88  -.61|1.02   .19|  .36   .34| 54.7  54.2| p4   |
|   20    251     75    -.40    .18| .94  -.25| .95  -.20|  .35   .33| 57.3  55.2| p20  |
|   23    251     75    -.40    .18| .92  -.36| .93  -.30|  .42   .33| 62.7  55.2| p23  |
|    2    259     75    -.66    .19| .53 -2.91| .56 -2.52|  .44   .31| 69.3  56.7| p2   |
|    7    266     75    -.93    .20| .90  -.47| .83  -.78|  .41   .29| 69.3  59.2| p7   |
|-------------------------------------+----------+----------+-----------+-----------+------|
| MEAN  235.2   75.0     .00    .16| .99  -.04|1.01   .11|           | 54.7  52.6|      |
| P.SD   15.4     .0     .39    .02| .20  1.24| .23  1.33|           |  9.3   3.3|      |
--------------------------------------------------------------------------
```

Figure 6 shows the Person-Map-Item test is used to determine that all statements that are agreed on. The most agreed and the most difficult statements to be agreed on are above and below 0, respectively (Baharuddin et al., 2021). Meanwhile, the easiest items to be agreed on are P7, P2, P23, and P20.
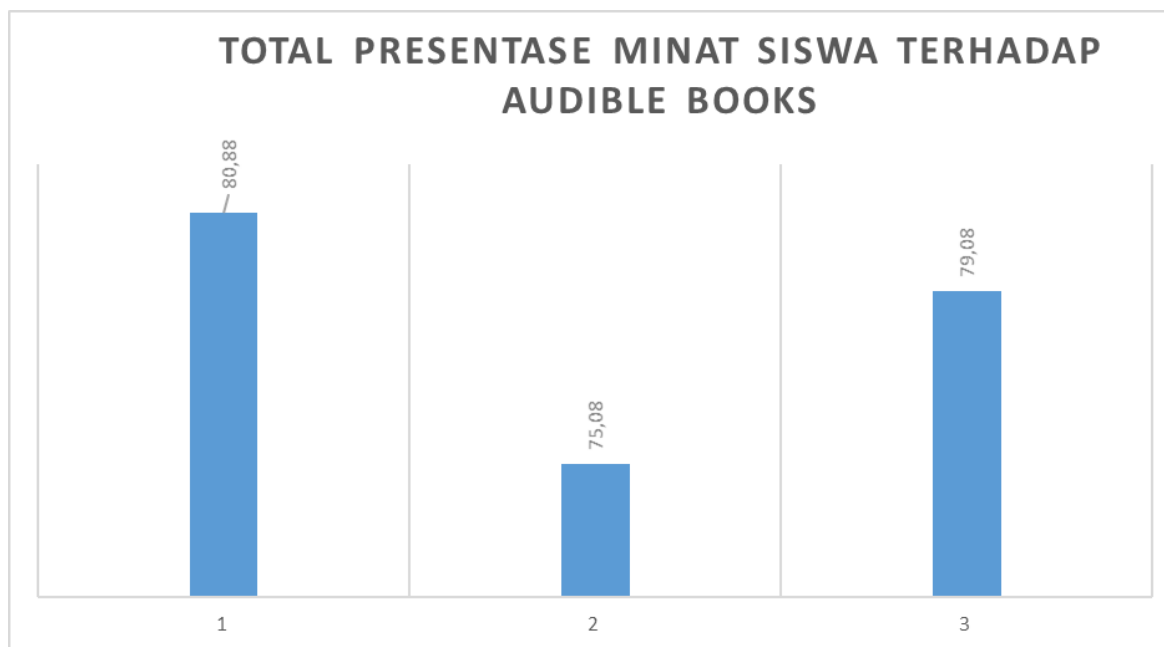
Figure 6

Person map item

The next stage is the total percentage obtained from students' interest in audible books. Table 6 shows these percentage results.

Table 6

Percentage results of students' interest in audible books

No	Indicator	Number of Statements	Total Score	Total Percentage	Description
1	Feeling happy to learn mathematics	3	728	80.88%	Interested
2	Students' interest in reading	12	2703	75.08%	Interested
3	Students' Interest in Audible Books	8	1898	79.08%	Interested
	Total			78.84%	Interested

Based on Table 6, students' interest in audible books is in a good category because the total percentage is 78.84%. This shows that students are interested in using audible books for learning mathematics. The following figure indicates these percentage results.

Figure 7

Percentage of students' interest in audible books

Based on figure 7, the 1st, 2nd, and 3rd indicators obtain a percentage of 80.88%, 75.09%, and 79.08%, indicating that almost all students are happy, enjoy reading, and become interested in mathematics books, respectively. This study's result showed that students have a good interest in the use of audible books for numerics learning. The following figure indicates a total of 75 students were selected to answer Strongly Disagree (STS), Disagree (TS), Agree (S), and Strongly Agree (SS).

Figure 8

Percentage of feelings of pleasure in mathematics learning
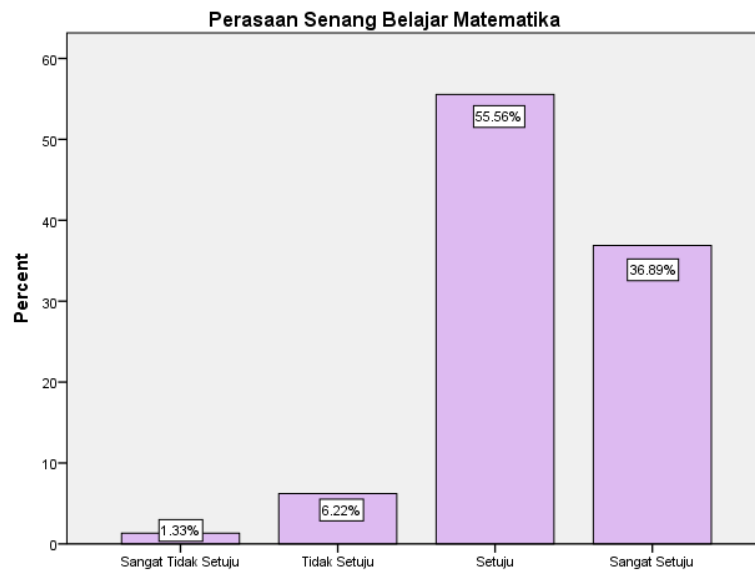
The study's analysis is carried out on the indicator of students having an interest in mathematics learning. Based on the results (figure 8), the percentage of those who answered agree and strongly agree is 55.56% and 36.89%, respectively, indicating they enjoy participating in this learning. These statements answered include students being passionate, always participating, and thinking that mathematics is not a difficult lesson.
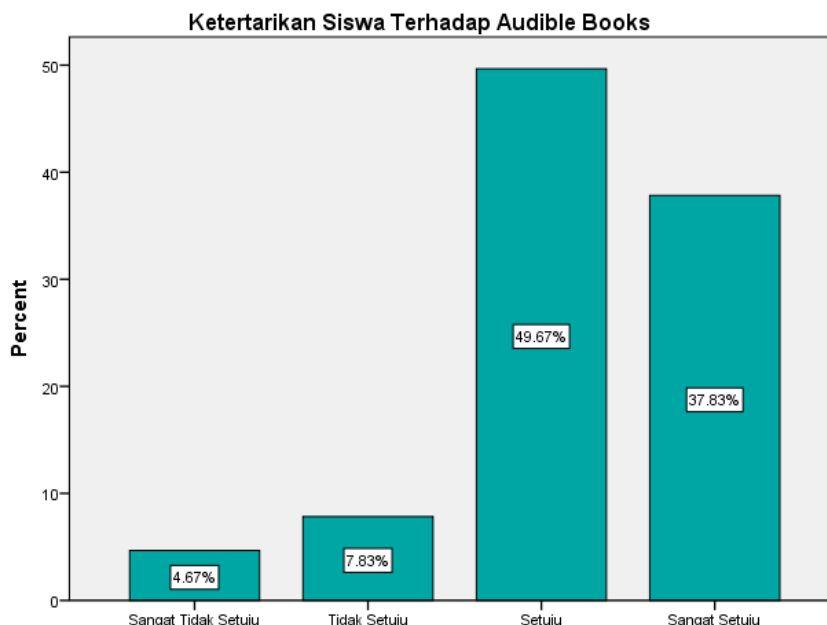
Figure 9

Percentage of students' interest in reading
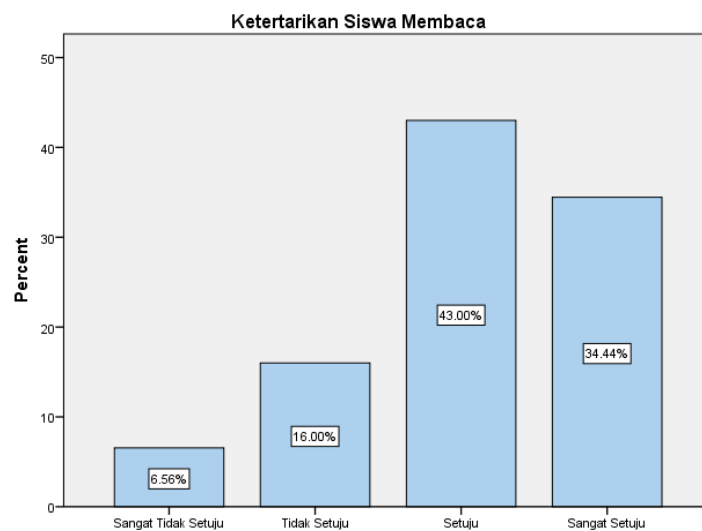
Furthermore, the analysis performed on the indicator of reading mathematics books showed that students who answered agree and strongly agree are at 43.00% and 34.44%, respectively. The questionnaire results (figure 9) indicated that students already like reading books, agree reading

increases knowledge, and failed to agree reading books is boring. Almost all students agree that they like reading books equipped with pictures.

Figure 10

Percentage of students' interest in audible books

The analysis performed on the indicator of having an interest in the use of audible books showed that students who answered agree and strongly agree were at 49.67% and 37.83%, respectively. Based on the results (figure 10), almost all children are interested in learning using audible books. All students agree that audible books make them feel excited and happy, as well as facilitate understanding of the material presented.

4. DISCUSSION

The findings of the analysis indicate that students have a significant level of interest in using audible books for learning mathematics. With a percentage of 78.84% in the "interested" category, it is evident that a majority of the students are intrigued by the idea of utilizing audible books for their mathematical studies. The indicators of happiness, enjoyment of reading, and interest in using audible books further support this conclusion. The high percentages of 80.88%, 75.08%, and 79.08% respectively demonstrate that students not only find happiness and enjoyment in using audible books but also have a genuine interest in incorporating them into their learning process.

This positive response from students suggests that the integration of audible books into mathematics education can be a beneficial approach. By leveraging the features of artificial intelligence, audible books provide an engaging and interactive learning experience for students. The inclusion of voice features assists students in understanding the material more effectively. Moreover, the enthusiasm shown by students highlights the potential advantages of using audible books for mathematics learning. The accessibility and flexibility of audible books enable students to engage with the learning materials at any time and from any location. This convenience encourages a deeper involvement in their studies and enhances their overall understanding of mathematical concepts.

It is important to note that while the majority of students expressed interest, a small portion may still prefer traditional reading-based learning methods. This diversity in preferences emphasizes the need for a balanced approach that caters to different learning styles and preferences.

5.   CONCLUSION

In conclusion, these findings indicate that students overall are interested in using audible books for mathematics learning. Students acknowledge that audible books make learning more interesting and engaging. They also demonstrate a high level of interest in using audible books equipped with voice features to aid their understanding of the presented material. The analysis reveals that students demonstrate a high level of interest in using audible books for learning mathematics. The positive response signifies the potential benefits of incorporating audible books into mathematics education, including increased engagement, enhanced understanding, and a more enjoyable learning experience.

Based on the findings of the analysis, the following recommendations are suggested:

1. Integration of Audible Books: Schools and educators should consider incorporating audible books into mathematics education. The use of audible books can enhance student engagement and interest in learning mathematics, as well as improve their understanding of mathematical concepts.

2. Training and Support: Teachers should receive proper training and support on how to effectively integrate audible books into their teaching practices. They should be familiar with the available resources and techniques to maximize the benefits of using audible books in the classroom.

3. Access to Audible Books: Schools should ensure that students have easy access to audible books. This may involve providing devices or creating partnerships with libraries or online platforms that offer a wide selection of audible books.

4. Continuous Evaluation and Improvement: Ongoing evaluation and feedback from students can help identify areas for improvement in the use of audible books. Educators should actively seek student input and adapt their teaching strategies accordingly to optimize the benefits of using audible books in mathematics education.

5. Collaboration and Research: Collaboration among educators, researchers, and technology developers is crucial further to explore the potential of audible books in mathematics learning. Continued research and experimentation can lead to the development of innovative approaches and tools that enhance the effectiveness of audible books in supporting students' learning outcomes.

By implementing these recommendations, educators can harness the potential of audible books to create a dynamic and engaging mathematics learning environment that caters to the diverse needs of students.

Alim, J.A., Hermita, N., Fendrik, M., Oktaviani, C., Putra, Z.H. & Nasien, D. (2024). Analyzing student interest in using AI-powered audiobooks for mathematics learning. *Global Journal of Information Technology: Emerging Technologies*, *14*(2), 57-71. https://doi.org/10.18844/gjit.v14i2.9508

REFERENCES

Alim, J. A., Fauzan, A., Arwana, I. M., & Musdi, E. (2020). Model of Geometry Realistic Learning Development with Interactive Multimedia Assistance in Elementary School. IOP Publishing. In *Journal of Physics: Conference Series, 1471*(1), 012053. https://iopscience.iop.org/article/10.1088/1742-6596/1471/1/012053/meta

Alim, J. A., Hermita, N., Alim, M. L., Wijaya, T. T., & Pereira, J. (2021). Developing a Math Textbook using a realistic Mathematics Education Approach to increase elementary students' learning motivation. *Jurnal Prima Edukasia*, *9*(2), 193-201. https://pdfs.semanticscholar.org/7089/5b5848200aa92edc552d226180c4fc4363f2.pdf

Anwas, O. M. (2014). Audiobook: Media pembelajaran masyarakat modern. *Jurnal Teknodik*, 54-62. https://jurnalteknodik.kemdikbud.go.id/index.php/jurnalteknodik/article/view/111

Baharuddin, B., Patras, Y. E., Sampaleng, D., & Hidayat, R. (2021). Analisis persepsi guru Indonesia terhadap sekolah sebagai organisasi belajar di era pandemi Covid 19. *JPPI (Jurnal Penelitian Pendidikan Indonesia)*, *7*(2), 251-268. https://jurnal.iicet.org/index.php/jppi/article/view/998

Bus, A. G., Van Ijzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of educational research*, *65*(1), 1-21. https://journals.sagepub.com/doi/abs/10.3102/00346543065001001

Chiu, P. S., Chao, I. C., Kao, C. C., Pu, Y. H., & Huang, Y. M. (2016). Implementation and evaluation of mobile e-books in a cloud bookcase using the information system success model. *Library Hi Tech*, *34*(2), 207-223. https://www.emerald.com/insight/content/doi/10.1108/LHT-12-2015-0113/full/html

Dai, Y., Chai, C. S., Lin, P. Y., Jong, M. S. Y., Guo, Y., & Qin, J. (2020). Promoting students' well-being by developing their readiness for the artificial intelligence age. *Sustainability*, *12*(16), 6597. https://www.mdpi.com/2071-1050/12/16/6597

Dali, K., & Brochu, L. K. (2020). The right to listen: A not so simple matter of audiobooks. *Library Resources & Technical Services*, *64*(3), 106-119. https://alatmp.sfulib5.publicknowledgeproject.org/index.php/lrts/article/view/7262

De Sousa, W. G., de Melo, E. R. P., Bermejo, P. H. D. S., Farias, R. A. S., & Gomes, A. O. (2019). How and where is artificial intelligence in the public sector going? A literature review and research agenda. *Government Information Quarterly*, *36*(4), 101392. https://www.sciencedirect.com/science/article/pii/S0740624X18303113

Devika, P., & Milton, A. (2024). Book recommendation system: reviewing different techniques and approaches. *International Journal on Digital Libraries*, 1-22. https://link.springer.com/article/10.1007/s00799-024-00403-7

Fletcher, K. L., & Reese, E. (2005). Picture book reading with young children: A conceptual framework. *Developmental review*, *25*(1), 64-103. https://www.sciencedirect.com/science/article/pii/S0273229704000474

Gogahu, D. G. S., & Prasetyo, T. (2020). Pengembangan Media Pembelajaran Berbasis E-Bookstory untuk Meningkatkan Literasi Membaca Siswa Sekolah Dasar. *Jurnal Basicedu*, *4*(4), 1004-1015. https://www.jbasic.org/index.php/basicedu/article/view/493

Goralski, M. A., & Tan, T. K. (2020). Artificial intelligence and sustainable development. *The International Journal of Management Education*, *18*(1), 100330. https://www.sciencedirect.com/science/article/pii/S1472811719300138

Horáková, T., Houška, M., & Dömeová, L. (2017). Classification of the Educational Texts Styles with the Methods of Artificial Intelligence. *Journal of Baltic Science Education*, *16*(3), 324-336. https://www.ceeol.com/search/article-detail?id=973736

Huang, Y. M., & Liang, T. H. (2015). A technique for tracking the reading rate to identify the e-book reading behaviors and comprehension outcomes of elementary school students. *British Journal of Educational Technology*, *46*(4), 864-876. https://bera-journals.onlinelibrary.wiley.com/doi/abs/10.1111/bjet.12182

Huang, Y. M., Liang, T. H., Su, Y. N., & Chen, N. S. (2012). Empowering personalized learning with an interactive e-book learning system for elementary school students. *Educational technology research and development*, *60*, 703-722. https://link.springer.com/article/10.1007/s11423-012-9237-6

Knox, J. (2020). Artificial intelligence and education in China. *Learning, Media and Technology*, *45*(3), 298-311. https://www.tandfonline.com/doi/abs/10.1080/17439884.2020.1754236

Laliena, D., & Tabernero Sala, R. (2023). Picturebooks and reader training in the 21st century. An ecocritical reading of canonical works of children's literature. In *Frontiers in Education, 8*, 1304027. https://www.frontiersin.org/articles/10.3389/feduc.2023.1304027/full

Larson, L. C. (2015). E-books and audiobooks: Extending the digital reading experience. *The Reading Teacher*, *69*(2), 169-177. https://ila.onlinelibrary.wiley.com/doi/abs/10.1002/trtr.1371

Lee, E. (2020). Study on the Educational Utilization Method of Audiobook. *Korea Digital Publishing Society*, *14*, 22.

Lever, R., & Sénéchal, M. (2011). Discussing stories: On how a dialogic reading intervention improves kindergartners' oral narrative construction. *Journal of Experimental Child Psychology*, *108*(1), 1-24. https://www.sciencedirect.com/science/article/pii/S0022096510001323

Alim, J.A., Hermita, N., Fendrik, M., Oktaviani, C., Putra, Z.H. & Nasien, D. (2024). Analyzing student interest in using AI-powered audiobooks for mathematics learning. *Global Journal of Information Technology: Emerging Technologies*, *14*(2), 57-71. https://doi.org/10.18844/gjit.v14i2.9508

McGeehan, C., Chambers, S., & Nowakowski, J. (2018). Just Because It's Digital, Doesn't Mean It's Good: Evaluating Digital Picture Books. *Journal of Digital Learning in Teacher Education*, *34*(2), 58-70. https://www.tandfonline.com/doi/abs/10.1080/21532974.2017.1399488

Mikidenko, N., & Storozheva, S. (2021). Audiobooks: Reading Practices and Educational Technologies. In *SHS Web of Conferences* (Vol. 97, p. 01016). EDP Sciences. https://www.shs-conferences.org/articles/shsconf/abs/2021/08/shsconf_teduvis2020_01016/shsconf_teduvis2020_01016.html

Mohamed, M. M. K. (2018). Using audiobooks for developing listening comprehension among Saudi EFL preparatory year students. *Journal of Language Teaching and Research*, *9*(1), 64-73. https://www.academypublication.com/issues2/jltr/vol09/01/08.pdf

Papen, U., & Peach, E. (2021). Picture books and critical literacy: Using multimodal interaction analysis to examine children's engagements with a picture book about war and child refugees. *The Australian Journal of Language and Literacy*, *44*(1), 61-74. https://link.springer.com/article/10.1007/BF03652065

Park, J., Teo, T. W., Teo, A., Chang, J., Huang, J. S., & Koo, S. (2023). Integrating artificial intelligence into science lessons: Teachers' experiences and views. *International Journal of STEM Education*, *10*(1), 61. https://link.springer.com/article/10.1186/s40594-023-00454-3

Price, F. (2003). Motion and Music Jungle Gym.

Putra, Z. H., Witri, G., & Sari, I. K. (2020, October). Prospective elementary teachers' perspectives on online mathematics learning during coronavirus outbreak. In *Journal of Physics: Conference Series, 1655*(1), 012057. https://iopscience.iop.org/article/10.1088/1742-6596/1655/1/012057/meta

Rogowsky, B. A., Calhoun, B. M., & Tallal, P. (2016). Does modality matter? The effects of reading, listening, and dual-modality on comprehension. *Sage Open*, *6*(3), 2158244016669550. https://journals.sagepub.com/doi/abs/10.1177/2158244016669550

Rubery, M. (Ed.). (2011). *Audiobooks, literature, and sound studies* (Vol. 31). Routledge. https://books.google.com/books?hl=en&lr=&id=zearAgAAQBAJ&oi=fnd&pg=PR2&dq=Rubery,+M.+(2011).+Audiobooks,+literature,+and+sound+studies+(Vol.+31).+Routledge.&ots=q2RaM_IsN9&sig=Pl2pGPj_Dp_2SI-HGkXVrhAiyNs

Serafini, F., Kachorsky, D., & Aguilera, E. (2016). Picture books in the digital age. *The Reading Teacher*, *69*(5), 509-512. https://ila.onlinelibrary.wiley.com/doi/abs/10.1002/trtr.1452

Snelling, M. (2021). The audiobook market and its adaptation to cultural changes. *Publishing research quarterly*, *37*(4), 642-656. https://link.springer.com/article/10.1007/s12109-021-09838-1

Sumintono, B., Widhiarso, W., & Mada, U. G. (2014). untuk Penelitian Ilmu-Ilmu Sosial. November.

Tsany, A. P. (2021). The implementation of a story or audiobook in teaching reading narrative text. *Jurnal Pendidikan Indonesia*, *2*(07), 1136-1145. https://japendi.publikasiindonesia.id/index.php/japendi/article/view/221

Watson, R. (2003). Literacy and Oral Language: Implications for Early Literacy Acquisition. *Handbook of Early Literacy Research*, *1*, 43.

Wolfson, G. (2008). Using audiobooks to meet the needs of adolescent readers. *American secondary education*, 105-114. https://www.jstor.org/stable/41406113

Zhang, X., Tlili, A., Shubeck, K., Hu, X., Huang, R., & Zhu, L. (2021). Teachers' adoption of an open and interactive e-book for teaching K-12 students Artificial Intelligence: a mixed methods inquiry. *Smart Learning Environments*, *8*, 1-20. https://link.springer.com/article/10.1186/s40561-021-00176-5