

Tracing the Development of Santri Proficiency in Reading The Book of *Fathul Qarib* With A Mathematical Model

Nur Shofa Ulfiyati¹ , Fahdina Yahadiana² , Rahmat Hidayat³ 

¹Sekolah Tinggi Agama Islam Al Yasini Pasuruan, Indonesia

²Universitas Islam Negeri Sunan Kalijaga Yogyakarta, Indonesia

³Universitas Islam Maulana Malik Ibrahim Malang, Indonesia

ABSTRACT

Background. Santri are the main object in the learning process of the yellow book. The success of the yellow book education cannot be separated from the aspect of the ability of the students to read and understand the book. One of the yellow books that are widely studied in all pesantren is the book of *Fathul Qarib*.

Purpose. This study seeks to trace developments in learning to read and understand the yellow book with a mathematical model approach. Mathematical models are a branch of mathematics that attempts to photograph and translate a phenomenon in life into a representation of mathematical equations that describe this phenomenon.

Method. This research is a combination of fieldwork and literature study. This research was conducted at Pondok Pesantren Al Munawwir Krpyak Komplek Q in Krpyak Hamlet, Panggung Harjo Village, Sewon District, Bantul Regency, Yogyakarta Special Region Province. The object of this research is the students of Al Munawwir Krpyak Islamic Boarding School Komplek Q Awwal Class, Tsani and Tsalis who are studying the book of *Fathul Qarib*.

Results. This research results that the mathematical model of the development of the students' ability to read the *Fathul Qarib* book at the Al-Munawwir Q Krpyak Islamic Boarding School, Yogyakarta is: $K(t) = 55e^{((0.1447)t)}$ and based on parameter estimates from year 0 of 55, Year 1 is 63.563, year 2 is 73.459, and year 3 is 84.897.

Conclusion. This means that the development of the students' ability in reading the book *Fathul Qarib* will continue to increase until the students can really master and understand the book.

KEYWORDS Mathematical Model, Reading the Yellow Book, The skills of Santri

Citation: Ulfiyati, S. N., Yahadiana, F., & Hidayat, R. (2024). Tracing the Development of Santri Proficiency in Reading The Book of *Fathul Qarib* With A Mathematical Model. *International Journal of Multidisciplinary Sustainability Asean*, 1(2), 130–142.

<https://doi.org/10.70177/ijmsa.v1i3.1194>

Correspondence:

Nur Shofa Ulfiyati,
shofaulfiyati@gmail.com

Received: July 29, 2024

Accepted: Augu 13, 2024

Published: September 5, 2024

INTRODUCTION

Kitab is the name given to religious writings written in Arabic characters. This term is used to distinguish other written works written in letters other than Arabic, which are referred to as books. What is meant by yellow Islamic classic books are books that are a source of learning in pesantren and other traditional Islamic educational institutions. The yellow books were compiled by Muslim scholars in the middle ages of Islam,



between the 16th and 18th centuries. It is called the yellow book because the book uses yellow paper. The term kitab kuning then becomes the name for this type of literature and also becomes a physical characteristic of the book.

As a learning resource, the yellowIslamic classic books are thought to have been used in Indonesia since the 16th century. The yellowIslamic classic books studied in kitab education have different styles from century to century, although the books studied still come from the group of books by medieval Islam.

One of the yellow books that are widely studied in all pesantren is the book of Fathul Qarib (Muqoyyidin 2014). This book is studied as a basic level fiqh book. Fathul Qarib was written by Imam Ahmad bin Husain bin Ahmad al-Asfahani as-Syafi'i who is popularly known as Abu Syuja', born in Bashrah in 433 H/1042 AD. Abu Shuja' is one of the experts in the Shafi'i school of fiqh, he studied Shafi'i fiqh for approximately 40 years. The book of Fathul Qarib authored by Abu Shuja' is one of the most beautiful works in the principles of Shafi'i fiqh. Despite its small form, the book, which is better known as Taqrib, covers a wide range of fiqh issues.

Santri is the main object in the process of learning the yellowIslamic classic book. The success of kitab kuning education is inseparable from the aspect of the santri's ability to read and understand the book. Dofier (1994) states that the high and low knowledge of santri is measured by the number of books they have studied and from which ulama they have studied.

Nowadays, yellowIslamic classic book education in pesantren has received many challenges and spotlights. The main spotlight is related to the weak methodology used in learning the yellowclassical books in pesantren. This causes difficulties for santri in reading and understanding the yellowclassical books taught so that the essential aspects of the educational objectives taught by pesantren cannot be covered thoroughly. On the other hand, there is an effort to contextualize yellowclassical book learning by confronting it with the current reality. This has been done by a number of pesantren alumni, and has proven successful in enlivening a relatively new intellectual wave. Responding to this phenomenon, a tracking study is needed regarding the extent to which santri experience progress in learning to read and understand the contents of the yellowclassical books. The investigation is useful for mapping out what factors need to be improved in yellowclassical book education.

In contrast to the existing research, this study seeks to trace the development in learning to read and understand the yellow book with a mathematical model approach. Mathematical model is a branch of mathematics that tries to capture and translate a phenomenon in life into a representation of mathematical equations that describe the phenomenon. By solving the mathematical model, a qualitative analysis of the modeled phenomenon will be produced.

The mathematical model approach used in this study has the advantage of being able to predict the proficiency of students in reading the book of Fathul Qarib in the future. Likewise, through this research, it can be seen what factors need to be improved so that students are able to read the book of Fathul Qarib in a faster time as expected. Thus, it is hoped that this research can provide input to educators in managing the learning of the book of Fathul Qarib so that students can more quickly master the book so that the educational objectives taught by pesantren can be achieved.

RESEARCH METHODOLOGY

Mathematical models are a branch of mathematical science that seeks to capture and translate a phenomenon in life into a representation of mathematical equations that describe the phenomenon. To analyze the mathematical model, dynamic system theory is used (England, 2022). This theory

can be explained as follows. Suppose $x = (x_1, \dots, x_n)$ is a point of space of dimension $\mathbb{R}^n$ with x a function against time. The quantity x can be written as $x = x(t) = (x_1(t), \dots, x_n(t))$ for $-\infty < t < \infty$.

Furthermore, given the differential equation, $\frac{dx}{dt} = f(x)$ $x \in \mathbb{R}^n$ (1)

assuming that f has continuous partial derivatives. Equation (1) is a differential equation with n unknown variables. A quantity $x(t)$ is called a dynamical system if it satisfies the set of differential equations $\frac{dx(t)}{dt} = f(x(t))$ for the interval t . A point $x^* \in \mathbb{R}^n$ that satisfies $f(x^*) = 0$ is called a fixed point or equilibrium point (Wiggins, 2000).

The interpretation of the equilibrium point of a dynamic system is a condition in which the behavior of the system is static (tends to remain and does not change) in a state even though the variables that affect the system continue to change. In the context of proficiency in reading the yellowIslamic classic book, the equilibrium point can be interpreted as a condition where students are fluent in reading the yellowIslamic classic book. In this condition, the fluency of students in reading the books is static (stable), so that changes in factors that affect fluency in reading are not too influential.

The equilibrium point is obtained by solving the constructed mathematical model. Solving the model requires concepts and theories related to elementary differential equations and matrix algebra, such as eigenvalues, jacobian matrices and stability of dynamic systems.

RESULT AND DISCUSSION

Modeling Objects

The object used in this mathematical modeling is the santri in Pondok Pesantren, especially Pondok Pesantren Al Munawwir Krapyak Komplek Q located in Sewon, Bantul, Yogyakarta. The target objects to be studied are students who have not known the book Fathul Qarib before. In this case, the students studied do not have the expertise to read the book of Fathul Qarib (ability from zero) and will be seen the development of these students in reading the book of Fathul Qarib which is represented by their semester exam scores.

The development in question is the development of students from those who have not mastered until they really understand the book of Fathul Qarib. As for how to find out the development of these students, Al Munawwir Islamic Boarding School holds a reading test of the book Fathul Qarib at the end of each semester. The examiner of the test is the educator with the criteria of fluency and fluency in reading as well as in understanding in conveying explanations of information in the tested material.

Ability comes from the word capable which means power, can, able, can, in doing something. Ability according to KBBI is an ability to do something. Another definition states that ability is a person's ability to complete work or master new things that he wants to do in a new job.

Pesantren is a religious educational institution that has its own characteristics and is different from other educational institutions. Education in pesantren includes Islamic education, da'wah, community development and other similar education. Pesantren is a community in which there are a number of people where they live together with heart commitment and sincerity or willingness to bind themselves to kyai, tuan guru, buya, ajengan, abu or other names with moral standards that form their own culture or culture.

According to scholarly opinion, the term pondok pesantren is two terms that contain one meaning. Javanese people call it "pondok" or "pesantren". It is also often referred to as "Pondok Pesantren" which means dormitories for students or dwellings provided for stopovers.

From some of these definitions, it can be concluded that between pondok and pesantren are two words that are identical (*have the same meaning*), namely a dormitory where students live or where students / students study.

Pondok Pesantren as the oldest Islamic educational institution in Indonesia has shown its ability to produce cadres of scholars who have contributed to the intellectual life of the nation. In addition, Pondok Pesantren has also become a center of educational activities that have succeeded in instilling a spirit of entrepreneurship and a spirit of independence that does not depend on others.

One of the oldest Islamic boarding schools in Yogyakarta is Pondok Pesantren Krapyak (Al-Munawwir) which is located in Panggung Harjo Village, Sewon District, Bantul Regency, Yogyakarta Special Region Province. Since the beginning of the establishment of this pesantren on November 15, 1910, it was originally named Krapyak Islamic Boarding School because it was taken from the position of this Islamic Boarding School in Krapyak Hamlet. This pesantren is divided into several complexes, one of which is Complex Q which will be the material in this research. The northern part of Complex Q borders the boundary of Yogyakarta City and Bantul Regency.



Figure 1. Complex Q Pondok Pesantren Al Munawwir Krapyak.

Santri in general is a term for someone who follows Islamic religious education in pesantren and usually stays in that place until his education is completed. Santri is the main element (important element) of an Islamic boarding school. According to the language, the term santri comes from the Sanskrit "shastri" which means holy book, religion and knowledge.

In addition to the two important components in a pesantren, there is also one component that cannot be left out in a pesantren "civilization community", namely the yellow Islamic classic books. Kitab Kuning is a term applied to Arabic books, which are commonly used in many pesantren as learning materials. Kitab Kuning or classical books are only found in pesantren because books printed in yellow color are one of the characteristics and "privileges" in the world of pesantren. The yellow book has been an educational tool used from ancient times to the present without timelessness so that it is still "eksisi" and rightly used to produce students who are qualified in religious knowledge.

The yellow book that will be studied here is the book of Fathul Qarib which is a book taught in many pesantren as a basic fiqh book. Kitab Fathul Qarib was chosen as the book studied because this book is more widely used by santri. This book is studied by new students to old students so that

the number of students who study this book is more than other books. This book is also the first book used in the sorogan method and the book is easy to understand because it contains basic fiqh. The following is an image of the book of Fathul Qarib.

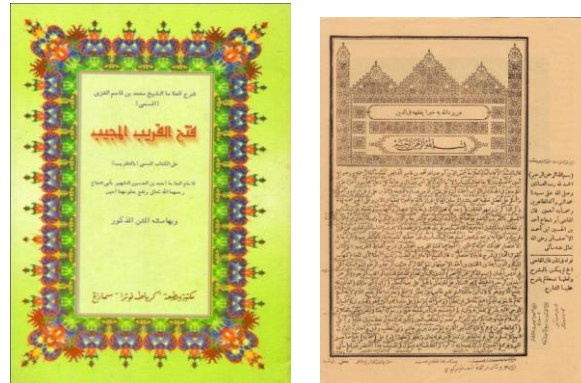


Figure 2. Kitab *Fathul Qarib*.

The author of *Fathul Qarib* is Imam Ahmad bin Husain bin Ahmad al-Asfahani as-Shafi'i who is popularly known as Abu Shuja', born in Bashrah in 433 AH/1042 AD. The name al-Asfahani refers to the city of Isfahan, one of the cities in Persia, Iran.

Abu Shuja' was one of the experts in the Shafi'i school of fiqh, and he studied Shafi'i fiqh for about 40 years. Abu Shuja' died in Medina and was buried in the mosque he built himself near Bab Jibril. He was blessed with a long life, which was approximately 160 years.

The book of *Fathul Qarib*, authored by Abu Shuja', is one of the most beautiful works of Shafi'i fiqh. The book, better known as *Taqrib*, covers a wide range of issues despite its small form.

The education of the book of *Fathul Qarib* carried out at Al Munawwir Islamic Boarding School is the sorogan method which is one of the traditional methods to help students in reading and understanding the book of *Fathul Qarib* which is considered still effective and applied at Al Munawwir Islamic Boarding School. The sarogan method is the santri facing the kyai or educator one by one thrusting the book to be read or studied with the kyai.

Kitab *Fathul Qarib* is taught for three years or in three classes, namely Awwal class, Tsani class and Tsalis class. The material presented in each class is different but still within the same level of difficulty. For the Awwal class (one) the material taught is starting from Chapter Thoharoh (purification) to Chapter Zakat. For the Tsani class (two) the material taught is starting from the Fasting Chapter to the Jinayat (crime) Chapter. For class Tsalis (three) the material taught is starting from Chapter Had (fines) to Chapter Law and Witnesses.

Modeling Objectives

The purpose of the modeling carried out is to determine the development of students in reading the book of *Fathul Qarib* from time to time so that a solution is obtained from the equation of changes in the development of students in reading the book of *Fathul Qarib*. In this case, the development of students will be seen from the exam scores that exist each semester and interviews with educators who teach at Al Munawwir Islamic Boarding School.

According to KBBI, development is to become large (wide, many); to become more perfect (about the person, mind, knowledge); to become a lot (evenly, widely). In modeling the development of santri, the development in question is how the development of the santri's ability to read the book of *Fathul Qarib* from time to time which is influenced by several factors so that the santri are increasingly able and develop in reading the book of *Fathul Qarib*.

Factors Affecting the Object

In the process of implementing the learning of the book of Fathul Qarib, it is necessary to pay attention to several factors that affect the development of the ability of students to read the book of Fathul Qarib. These factors have a very close relationship and must be really considered because these factors will determine the success of students in reading the book of Fathul Qarib.

These factors are:

Learner factors (santri)

The learner factor (santri) is a factor that greatly influences the implementation of the *Fathul Qarib* learning methodology. Among the factors of learners (santri) there is a willingness from the santri themselves and the santri have experience studying at the previous boarding school.

The willingness of the students plays an important role in the development of reading the book of *Fathul Qarib*. If the willingness in the santri is absent or lacking, the lessons received will be difficult to understand and will hinder the fluency in studying the book of Fathul Qarib.

In the implementation of learning the book of *Fathul Qarib*, what is meant by the santri's self-will is whether the santri have a level of willingness and readiness to understand the book of *Fathul Qarib* taught by the educators (kyai/ustadz/ah). When the educators (kyai/ustadz/ah) read the book of *Fathul Qarib* in front of the students, and the students are required to pay attention and listen well.

A close and harmonious relationship between educators and santri will affect the willingness to understand the book of *Fathul Qarib*. Santri place educators as "murabbi", which is more than just a teacher. The inner bond between kyai and santri is a prerequisite for the success of *Fathul Qarib* education in pesantren.

Santri who have experience studying at previous boarding schools are very influential on fluency in reading the book of *Fathul Qarib*. Santri who have experience studying at previous boarding schools are better able to understand the lessons delivered by the teacher compared to those who really started studying at Al-Munawwir Islamic boarding school, because in the previous boarding school they must have received lessons on reading the book of *Fathul Qarib*. So, students have enough provisions to continue learning the book of *Fathul Qarib* at Al Munawwir Islamic boarding school.

Educator factor (kyai/ustadz/ah)

Educators (kyai/ustadz/ah) are one of the factors that greatly influence the implementation of learning, especially in learning the book of Fathul Qarib.

The methods used by educators in learning the book of Fathul Qarib include the sorogan method and the method of giving meaning. The sorogan method, which is one of the traditional methods to help students read and understand the book of Fathul Qarib, is still considered effective and is applied at Al Munawwir Islamic Boarding School. The sarogan method is that the santri face the educator one by one thrusting the book to be read or studied with the educator.



Figure 3. Sarogan activity of Kitab *Fathul Qarib*.

The next method is the method of giving meaning where the educators read the meaning and the students record the meaning that the educators have read. Then at the end of the material the educator calls the students randomly to read back the meaning that the students have written.

The highest success achieved by educators (kyai/ustadz/ah), if he has succeeded in making students understand and master the subject matter taught in the field of *Fathul Qarib*. To achieve this success, educators must have the right strategy in teaching *Fathul Qarib*. Educators (kyai/ustadz/ah) must have patience in guiding students.



Figure 4. Activity of Giving Meaning to the Book of *Fathul Qarib*.

The educators who teach at this Islamic Boarding School must be serious in teaching the book of *Fathul Qarib*. Because if the ustadz does not have high competence in teaching the book of *Fathul Qarib* and the students are not serious in studying the book of *Fathul Qarib*.

Learning Support Factors

Among the factors supporting learning are:

Learning Materials

Learning materials are a very important factor in the implementation of learning. In this case, learning materials are materials that prioritize reading activities or use word symbols (printed materials or reading materials) such as handbooks for students and educators. The *Fathul Qarib* book used as learning material is starting from the books of fiqh, Sufism, tawhid, nahwu, shorof, balaghah, tafsir and other disciplines.

Learning Tools

Learning tools have a very important role because they are a bridge that connects educators (kyai/ustadz/ah) and students towards learning goals.

Tools that can be used in assisting the implementation of learning the book of *Fathul Qarib* include a blackboard, markers, erasers, projectors and others.

Environmental factors

Environmental factors are factors that greatly influence the implementation of learning the *Fathul Qarib* book. In environmental factors, there are factors of friendship and the atmosphere of the boarding school itself.

Friendship factor

A positive association in the students is if the environment can provide encouragement or motivation and good stimulation among the students so that the students are more eager to study the book of *Fathul Qarib*.

For new students, they are assisted by older students who have already read and understood one book for several months until they can stand on their own. This condition makes it easier for new students to learn the book of *Fathul Qarib*.

The atmosphere of the boarding school

The peaceful and comfortable environment of the pesantren greatly affects the learning process of the book of *Fathul Qarib*, so that a conducive learning atmosphere will be created. However, an atmosphere that is too calm can also have a negative effect on the students. So that the atmosphere of the pesantren is very influential on the learning of the book of *Fathul Qarib*.

Formation of Mathematical Model

Based on the factors described above, all factors increase the ability of students to read the book of *Fathul Qarib*. So that a diagram scheme can be formed that describes the mathematical model of the ability of students to read *Fathul Qarib* as follows

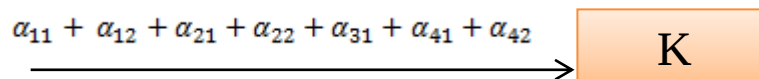


Figure 5. Schematic Diagram of Modeling

The following is a description of each parameter contained in Figure 4.7 above.

$K(t)$ = the ability of students to read the book of *Fathul Qarib* at time (t)

α_{11} = the weight of the students' factor on themselves (%)

α_{12} = weight of the student factor on experience (%)

α_{21} = the weight of the teaching factor on the learning method (%)

α_{22} = the weight of the teaching factor towards giving meaning (%)

α_{31} = weight of the learning tool factor (%)

α_{41} = weight of environmental factors on cottage friends (%)

α_{42} = weight of environmental factors on cottage atmosphere (%)

t = time

From the model diagram scheme, the model of the ability to read the book of *Fathul Qarib* is obtained:

$$\begin{aligned} \frac{d(K(t))}{dt} &= \alpha_{11}K(t) + \alpha_{12}K(t) + \alpha_{21}K(t) + \alpha_{22}K(t) + \alpha_{31}K(t) + \alpha_{41}K(t) + \alpha_{42}K(t) \\ \frac{d(K(t))}{dt} &= (\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})K(t) \end{aligned} \quad (2)$$

Model Solution

The equation model of the ability of students in reading the book of *Fathul Qarib* is a first-order elementary differential equation, so that the solution can be found with the integrating process. Based on the model obtained, then

$$\begin{aligned} \frac{d(K(t))}{dt} &= (\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})K(t) \\ \int \frac{d(K(t))}{dt} dt &= \int (\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})K(t) dt \\ \int \frac{d(K(t))}{K(t)} &= \int (\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42}) dt \\ \ln|K(t)| + c_1 &= (\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})t + c_2 \\ \ln|K(t)| &= (\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})t + c \\ K(t) &= e^{(\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})t + c} \end{aligned}$$

$$K(t) = e^{(\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})t} e^c \quad (3)$$

Furthermore, based on Table 4.6, it is known that the minimum score obtained by santri during the first grade exam is 55. This means that at $t = 0$, the ability of students to read the book of Fathul Qarib is 55, or $(t = 0) = 55$ so that it is obtained:

$$\begin{aligned} K(t) &= e^{(\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})t} e^c \\ 55 &= e^{(\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})0} e^c \\ 55 &= e^0 e^c \\ e^c &= 55 \end{aligned}$$

So the equation for the model of the ability of students to read the book of Fathul Qarib is

$$K(t) = 55 e^{(\alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42})t}.$$

Defined, $\alpha = \alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42}$, so that it is obtained

$$K(t) = 55 e^{at}. \quad (4)$$

Model Validation

Based on the parameter values in the model in Table 4.10, the following are obtained

$$\begin{aligned} \alpha &= \alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42} \\ &= 33.89 + 39 + 18.08 + 14.8 + 13.48 + 11.08 + 19.67 \\ &= 150\% \\ &= 1.5 \end{aligned}$$

So that the equation of the model of the ability of students to read the book of *Fathul Qarib* is obtained.

$$K(t) = 55 e^{1.5t}. \quad (5)$$

Thus, the ability of students to read the book of *Fathul Qarib* can be predicted using equation (5).

While based on the value of the ability of students to read the book of *Fathul Qarib* in years 0 to 3 is in Tables 4.5 - 4.7 obtained

Year to	Year 0	Year 1	Year 2	Year 3
Value (reading ability)	55	66	73,93	81,67

Table 1. Summary of students' reading ability scores.

The value of the predicted ability of students to read the book of *Fathul Qarib* in equation (5) and the actual reading ability value in Table 4.11 can be presented simultaneously in the following table

Year to	Year 0	Year 1	Year 2	Year 3
Model Prediction	55	246,5	1104,7	4950,9
Actual Value	55	66	73,93	81,67
Difference	0	180,5	1.030,77	4.869,23

Table 2. Comparison of predictions and actual values of students' ability to read the book of Fathul Qarib.

The difference in calculations in Table 4.12 above is still very large, so it can be concluded that the model constructed is not yet valid. This is because the parameters in the model are estimated with numbers that are too large. This can be overcome by transforming the data. Based on

the data conditions in Tables 4.5 - 4.7, the log x data transformation was chosen. The transformation produces the following data.

Average	Children		Teacher		Environment		Learning Tools
	Santri Self	Experience	Methods	Meaning	Friends	Atmosphere	
Children	1.126	1.026	1.036	1.101	1.069	0.917	1.315
Ustadz/ah	1.392	1.500	0.978	0.705	0.620	0.848	0.833
Total average	2.517	2.526	2.015	1.807	1.689	1.765	2.148

Table 3. Total weight after data transformation.

Based on the data in Table 4.15 above, the parameter values are obtained

$$\alpha = \alpha_{11} + \alpha_{12} + \alpha_{21} + \alpha_{22} + \alpha_{31} + \alpha_{41} + \alpha_{42}$$

$$= 2.517 + 2.526 + 2.015 + 1.807 + 1.689 + 1.765 + 2.148$$

$$= 14.47 \%$$

$$= 0.1447$$

So that the equation of the model of the ability of students to read the new *Fathul Qarib* book is obtained

$$K(t) = 55e^{(0.1447)t} \quad (6)$$

The value of equation (6) above and the value of the students' ability to read the book of *Fathul Qarib* in Table 4.11 can be presented in the following figure.

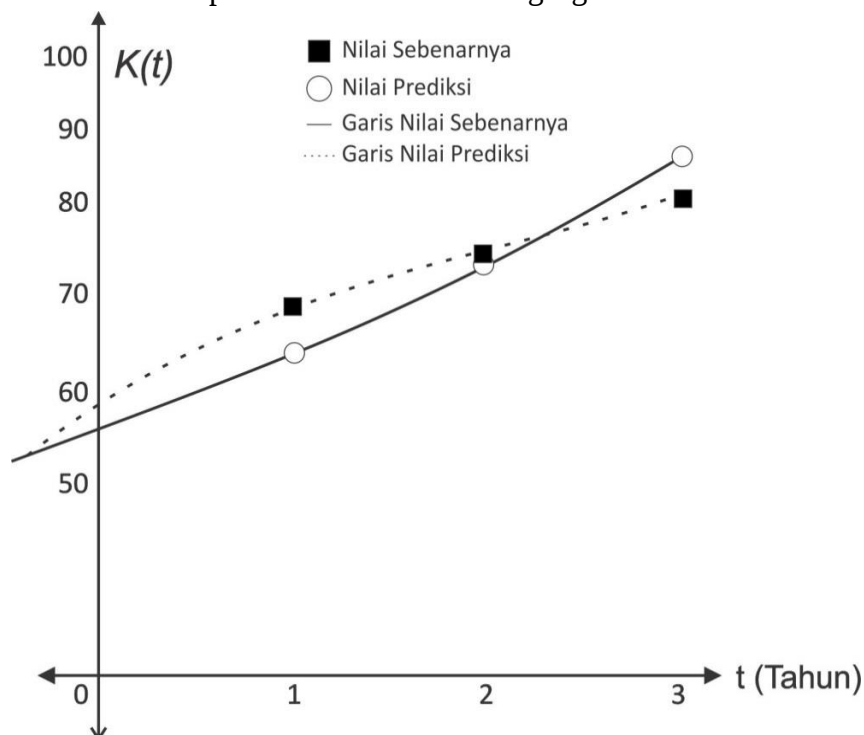


Figure 5. Students' ability to read Kitab Fathul Qarib.

In more detail, the following is a calculation of the ability of students to read the book of Fathul Qarib in years 0 to 3 according to model predictions and actual conditions.

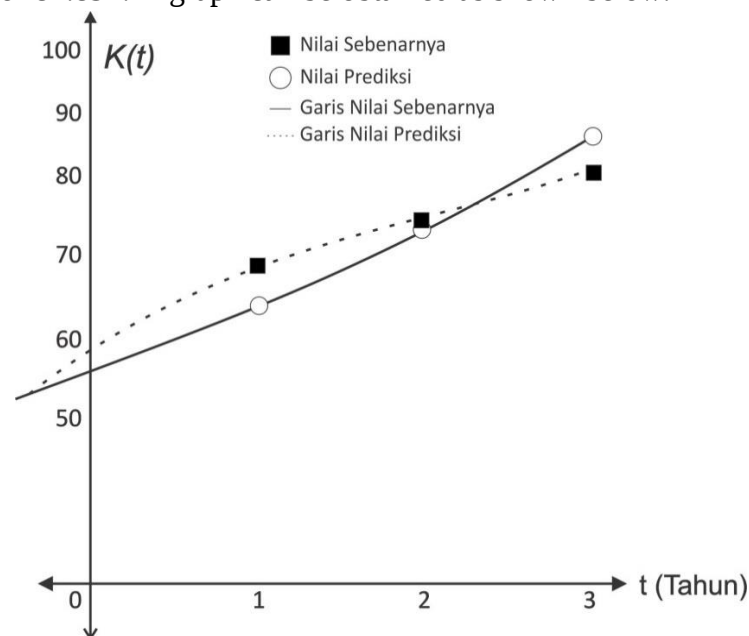
Year to	Year 0	Year 1	Year 2	Year 3
Model Value	55	63,563	73,459	84,897
Actual Value	55	66	73,93	81,67
Difference				

Table 4. Comparison of the ability of students in reading the book of *Fathul Qarib* according to model predictions and actual conditions.

Based on Table 4.16 above, it can be seen that the difference between the ability of students to read the book of *Fathul Qarib* according to model predictions and actual conditions is quite small, so it can be concluded that the model constructed is quite valid.

CONCLUSION

Based on the overall analysis of the development of santri's ability to read the book of Fathul Qarib at Pondok Pesantren Al-Munawwir Komplek Q Krapyak Yogyakarta, the following results are obtained: one, The mathematical model of the development of the ability of students to read the book of Fathul Qarib at Pondok Pesantren Al-Munawwir Komplek Q Krapyak Yogyakarta is: $K(t) = 55e^{(0.1447)t}$. Two, Based on parameter estimates from year 0 of 55, year 1 of 63.563, year 2 of 73.459, and year 3 of 84.897. A graph can be obtained as shown below.



From the graph above, it can be concluded that the development of the students' ability to read the book of Fathul Qarib will continue to increase until the students can really master and understand the book.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation;.

Author 2: Writing - review and editing

Author 3: Data Collecting

REFERENCES

- Ahmadi, A. and Nur Uhbiyati. *Islamic Education Science*. Bandung: Pustaka Setia, 1997.
- Barmawi, M. The Role of Environment on the Spirit of Learning in the Khazanah Kitab Kuning, *Edukasia Islamika*, Vol. 1, No. 1, 2016.
- Handbook of Al-Munawwir Islamic Boarding School Komp. Q Krapyak Yogyakarta.
- Caldwell, J. and Douglas, K.S., *Mathematical Modeling: Case Studies and Projects*, Kluwer Academic Publisher, 2004.
- Danim, S. *Becoming a Qualitative Researcher*. Bandung: Pustaka Setia, 2002.
- Dhofier, Z. Pesantren Tradition: A Study of the Kyai's View of Life, Jakarta: LP3ES, 1994.
- Dym, C. L., *Principles of Mathematical Modeling*, Amsterdam: Elsevier Academic Press, 2004.
- Emzir. *Educational Research Methodology*. Jakarta: PT Raja Grafindo Persada, 2008.
- Epstein, J. M., *Nonlinear Dynamic, Mathematical Biology and Social science*, Reading: Adason-Wesley Publishing Company, 1997.
- Faiqoh, Teaching the YellowIslamic classic Book in Roudlotul 'Ulum Islamic Boarding School in Cidahu Pandeglang, *MIMBAR*, Vol. 28, No. 2, 2012.
- Fatoni, N. The Culture of Pesantren Relation of Kiai, Santri, and the YellowIslamic classic Book, *IBDA' Journal of Islamic Culture*, Vol. 9, No. 2, 2011.
- Hariyadi, Ki. Data Analysis Lecture Module, Yogyakarta: UIN Sunan Kalijaga, 2016.
- Marchi, S. D., *Computational and Mathematical Modeling in Social Sciences*, Cambridge: Cambridge University Press, 2005.
- Miles, M.B. and Hurnberrman, A.M. *Qualitative Data Analysis*. Translation of Rohidi Tj.R. Jakarta: University of Indonesia, 1992.
- Moleong, L. J. *Qualitative Research Methods*. Bandung: Teenage Workshop, 2009.
- Mubarak, M. The Application of the Sorogan Method in understanding the Book of Fathul Qarib at Al Munawwir Islamic Boarding School. Thesis UIN Sunan Kalijaga, 2012.
- Mukhtaruddin, Standardization of Mastery of the YellowIslamic classic Book (Study in Al-Anwar Sarang Islamic Boarding School, PP API Magelang, and PP Al-Fadllu Kaliwungu), *Journal of Analysis*, Vol.18, No. 2, 2011.
- Muqoyyidin, AW. Kitab Kuning and Pesantren Research Tradition in Nusantara, *IBDA' Journal of Islamic Culture*, Vol. 12, No. 2, 2014.
- Nur, F. *Pesantren Culture: The Relationship between Kiai, Santri and Kitab Fathul Qarib*, Thesis IAIN Walisongo, 2016.
- Rapoport, A., *Mathematical Models in the Social and Behavioral Sciences*, New York: John Wiley & Sons, 1983.
- Shohibi. Study on the students of madrasah Diniyyah Awwaliyyah Tarbiyatus Sibyan Wal Banat Kesambi village Mejobo sub-district Kudus district in 2010, Thesis IAIN Surakarta, 2011.
- Sugiyono. *Quantitative, Qualitative, and R & D Research Methods*. Bandung: CV Alfabeta. 2006.
- Supangat, Application of the CIRC Learning Model to Improve Students' Reading and Writing Skills in England, A. (2022). Quantitative and qualitative research methods. *Research for Medical Imaging and Radiation Sciences*, Query date: 2023-11-30 23:13:48, 71–96. https://doi.org/10.1007/978-3-030-79956-4_5
- YellowIslamic Book Subjects at Pondok Pesantren Nurul Huda Sukaraja, *Journal of Islamic Education Al Itibar*, Vol. 2, No. 1, 2016.
- Tamam, B. The Relationship Between the Ability to Understand the YellowIslamic classic Book with Oral and Written Skills in Arabic, *Syamil*, Vol. 3 No.1, 2015.
- Taufik, M. *Learning Methods of Kitab Fathul Qarib at Pondok Pesantren Sunan Giri Krasak Kec. Argomulyo, Salatiga city Thesis IAIN Salatiga*, 2016.
- Thoriqussu'ud, M. Development Models of YellowIslamic Book Studies in Islamic Boarding Schools, *Journal of Tarbiyah Science At-Tajdid*, Vol. 1, No. 2, 2012.
- Usman, H and Akbar, PS. *Social Research Methodology*. Jakarta: Bumi Aksara, 2009.

Copyright Holder :

© Nur Shofa Ulfiyati et.al (2024).

First Publication Right :

© International Journal of Multidisciplinary Sustainability Asean

This article is under:

