

Low Class Primary School Students' Handwriting Readability Using Behaviorism Theory

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Abstract: Handwriting is a typical work result expressed in the form of letters, symbols and numbers. This research uses qualitative research methods with a case study design. The aim of the research was to determine the legibility of class 1 students' handwriting. The data collection instruments used were in-depth interviews, observation and document study. Researchers validated the data by triangulating data collection techniques and triangulating data sources. The results of the research are that behaviorism theory provides an understanding of how the legibility of lower grade elementary school students' handwriting develops through learning, experience and reinforcement. However, other factors also need to be considered in understanding the legibility of students' handwriting.

Keywords: Behaviorism theory; Handwriting; Low class

Introduction

Writing skill is a skill that must be mastered by children when they enter elementary school (Khair et al., 2022; Rini & Cahyanto, 2020). First grade students are required to be able to read and write because schools are trying to achieve learning goals that have been quite busy since first grade. Handwriting is a measure of achievement, apart from the fact that the clarity of writing will make it easier for others. Language skills can be trained through communicating with other people to find out the depth of students' mastery of knowledge. The level of communication skills possessed by each person is different, some are optimal and some are not optimal. For people who have optimal language skills, it will be easy to convey information to others (Akila, 2016).

Student written test results in writing the cursive letters are quite low. The written test shows that it still is many students don't pay attention accuracy, clarity and neatness writing. Most students struggle in arranging letters, students write with a large font size big and

small, sentences are not written with completeness and alignment of writing it's not tidy yet. A significant problem faced by students, that is, students do not memorize the cursive letters so that influence students to achieve competence in writing cursive letters continued. Based on guided practice regarding cursive writing of the 24 students there were only 6 people students who are able to write upright continued. If the percentage is 75% not yet able to write upright letters continued. Causes of low student numbers in writing cursive letters that is, teachers rarely teach students to write cursively on line five books and teachers have not applied behaviorism theory (Suardipa et al., 2021).

In detail, it can be described as a receptive to productive process consisting of listening, speaking, reading and writing activities. Receptive ability is an individual's ability to convey a topic directly or verbally. Meanwhile, productive ability is an individual's ability to convey a discussion in writing. In productive abilities with writing sub-activities, the assessment given to students is not only seen in the ability to compose sentences. However, also from the aspect of legibility of

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students' handwriting. The clearer the handwriting, the easier it will be for the reader (in this case the teacher or assessor) to understand the writing or work of the student. The easier it is to understand a piece of writing or work, the higher the readability level. Handwriting is a typical work result expressed in the form of letters, symbols and numbers. This characteristic is obtained because handwriting is a visual display given by a student that cannot be imitated exactly the same as others (Alamargot et al., 2020; Gosse et al., 2021).

Handwriting analysis is a way or approach to get certain information from someone's handwriting. The information obtained can be in the form of psychological conditions, traits or characteristics (personal), physical attributes such as gender, age or even detection of a disease. Handwriting analysis can also be used to determine how children write, which can later be used by psychological analysis experts to determine how to improve the quality of children's education. Handwriting is a manifestation of a person's subconscious and conscious mind which displays a picture of a person's initial character (Tang, 2024; Thomas et al., 2020). The reason for this research using first grade elementary school students as research subjects is because first grade students are in the early development phase of motor sensors and hand eye control which is quite mature.

The handwriting stores information that can identify a person's character, mental development, and level of health. In this branch of psychology, it studies the character and personality of a person by analyzing handwriting. Handwriting is a small stimulus that comes from the brain so that experts often say that graphology is brain writing. The teacher's role is quite important in the student learning process in student writing. The teacher acts as an example for students in writing (Barnhart & Goldinger, 2013). Apart from that, the teacher also corrects students' writing that is still wrong.

Behaviorism theory in the context of the readability of the handwriting of low-grade elementary school students can suggest that the ability to read handwriting is influenced by environmental factors and the learning experience gained by students. According to the theory of Behaviorism, learning is a process in which individuals change their behavior through learning experiences obtained from the external environment. In this case, students' ability to read handwriting can be improved through appropriate teaching and positive reinforcement (Duff & Goyen, 2013). Following are some of the principles of Behaviorism that can be applied to improve the handwriting legibility of low grade elementary school students.

Positive Reinforcement: Teachers can provide positive reinforcement such as praise, recognition, or

rewards to students who show progress in reading handwriting. This will encourage students to continue trying and improving their skills. **Repetitive Learning:** In Behaviorism theory, repetition or repetition is the key to acquiring new skills. Teachers need to provide continuous practice for students to read handwriting consistently. This exercise can be done through regular handwriting and reading assignments. **Models and Examples:** Teachers can be good models by demonstrating clear and legible handwriting. Teachers can also show examples of good handwriting from books or other sources to help students understand the expected handwriting standards. **Feedback:** Providing constructive feedback to students about their handwriting reading abilities is essential. The teacher must provide clear and specific feedback on aspects that need improvement, as well as provide suggestions for improving handwriting legibility. **Supportive Learning Environment:** Teachers can create a supportive learning environment by providing a variety of written materials, such as books, posters, or handwritten cards. This will help students get used to reading and understanding handwriting.

By applying the principles of Behaviorism, it is hoped that the handwriting legibility of low grade elementary school students can gradually increase. However, keep in mind that each student has a different learning pace, therefore teachers need to pay attention to individual development levels and provide appropriate support for each student. The legibility of lower grade elementary school students' handwriting can be explained using behaviorism theory (Bayat & Küçükayar, 2016). Behaviorism theory, developed by figures such as B.F. Skinner and Ivan Pavlov, focused on the relationship between external stimuli and the responses that arise as a result of those stimuli.

In terms of the legibility of students' handwriting, behaviorism theory can be applied by assuming that writing skills are the result of learning and experience. When a student is taught to write, they are given stimulus in the form of instructions, writing examples, and guidance from their teacher. Students then respond to this stimulus by trying to write using their own handwriting. During the learning process, students will experience positive and negative reinforcement based on the legibility of their handwriting (Bara & Morin, 2013). If their handwriting is easy to read and understand, they will likely receive positive reinforcement in the form of praise from teachers and classmates. Conversely, if their handwriting is difficult to read, they may receive negative reinforcement in the form of correction from the teacher or difficulty in understanding their own writing.

Through this process, students gradually improve the readability of their handwriting through iterative

learning and application of the feedback they receive. In the context of behaviorism, handwriting skills and legibility are seen as the result of forming appropriate responses through reinforcement. However, it is also important to note that other factors, such as gross and fine motor development, can also influence the readability of a student's handwriting (Apel, 2011). In addition, different learning approaches, such as the constructivism approach which places more emphasis on exploration and creativity, can also play a role in developing students' writing skills. In conclusion, behaviorism theory provides an understanding of how the handwriting legibility of low-grade elementary school students develops through learning, experience, and reinforcement. However, other factors also need to be considered in understanding the readability of students' handwriting. Assessing the readability of elementary school students' handwriting using behaviorism theory involves an understanding of how this theory relates to learning processes and human behavior (Apel et al., 2013).

Method

This study uses a qualitative research method with a case study design. The research location is SDI Al-

Azhar Malang. The research subjects were low grade students, namely grade 1. The aim of the research was to determine the readability of grade 1 students' handwriting. The research method used was a qualitative descriptive method with a case study design. The data collection instruments used were in-depth interviews, observation and document study. Data processing using the Nvivo application. Researchers validated the data by triangulating data collection techniques and triangulating data sources.

Behaviorism theory, developed by figures such as Ivan Pavlov, John B. Watson, and B.F. Skinner emphasized the importance of environmental influences and external stimuli in shaping human behavior (Alstad et al., 2016). In the context of handwriting legibility, this theory can be applied by considering the following factors. Classical conditioning: Classical conditioning focuses on the association between a neutral stimulus and a stimulus that triggers a particular response. In this context, students can develop relationships between certain letters or words and their sounds or meanings. For example, when students learn to write the letter 'A', they may associate the shape of that letter with the 'a' sound they heard during reading lessons.

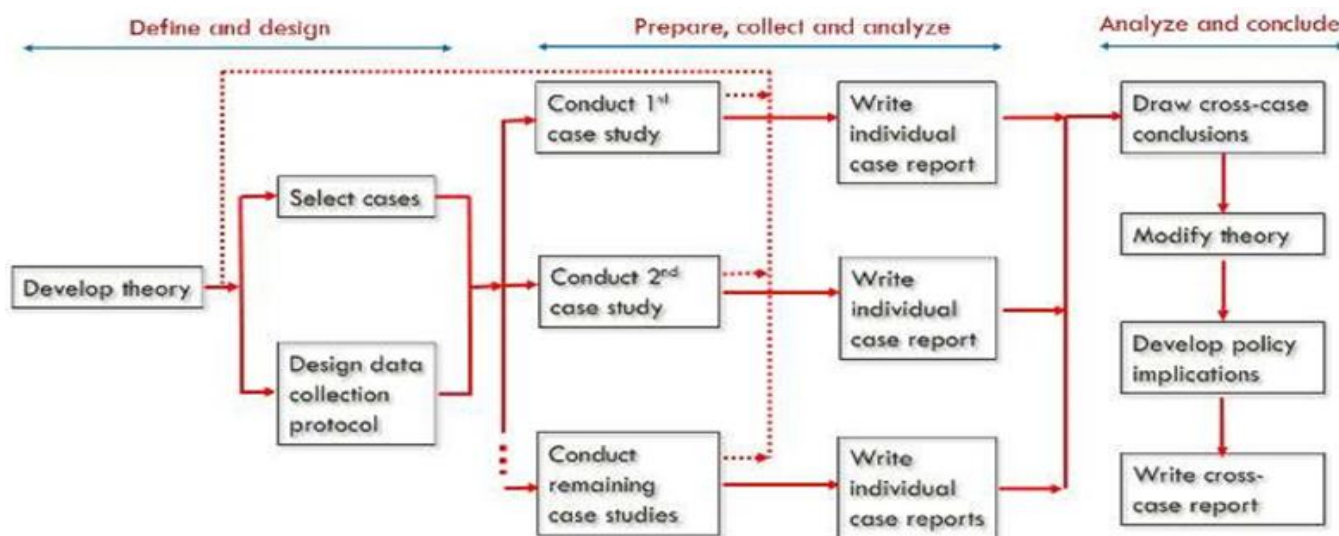


Figure 1. Research schema

Operant conditioning: Operant conditioning involves reinforcement or punishment to influence behavior. In this case, teachers or parents can provide positive reinforcement, such as praise or rewards, when students write clearly and are easy to read. This positive reinforcement can increase students' motivation and ability to write well. Habituation and practice: The theory of behaviorism emphasizes the importance of habituation and repeated practice in shaping behavior. In this context, students need to repeat letter and word

writing exercises regularly to get used to and proficient in writing by hand. The more often they practice, the better their ability to produce writing that is easy to read. Modeling: The principle of modeling in behaviorism suggests that individuals can imitate the behavior of others. In this case, students can observe the good handwriting of teachers or classmates who are proficient in writing. Through observation and imitation, students can improve the legibility of their own handwriting.

In addition, it is important to note that the ability to write with an easy-to-read hand can also be affected by physical factors such as finger muscle strength, hand-eye coordination, and proper writing posture. Practice and proper guidance from a teacher or parent can help develop the fine motor skills needed to write with a clear, easy-to-read hand (Calkins & Robb, 2015). By applying the principles of behaviorism in teaching writing, teachers can help elementary school students in lower grades improve the readability of their handwriting. In this case, conditioning, reinforcement, repeated practice, and modeling can be effective strategies in establishing good handwriting behavior.

Result and Discussion

Writing test results continuous upright letters shows that words, syllables, letters, and sentences are

not written with complete, each letter is too thin so it can't be read, some letters are not written parallel. Then based on reading data the continuous upright letters are students has the ability to read low so that it affects or hinder you from achieving it sentence writing competency use cursive letter in Indonesian language subjects. According to Behaviorism theory, learning is a process in which individuals change their behavior through learning experiences obtained from the external environment (Arif et al., 2024; Marougkas et al., 2023; Saracho, 2023). In this case, students' ability to read handwriting can be improved through appropriate teaching and positive reinforcement (Apel et al., 2018). The following are several principles of Behaviorism that can be applied to improve the legibility of lower grade elementary school students' handwriting.

Table 1. Principles of Behaviorism

Principles of behaviorism	Action	Examples of actions
Positive Reinforcement	Teachers can provide positive reinforcement	Such as praise, recognition, or rewards to students who show progress in reading handwriting. This will encourage students to continue trying and improving their skills.
Iterative Learning	Repetition or repetition is the key to acquiring new skills	Teachers need to provide continuous practice for students to read handwriting consistently. This exercise can be done through regular handwriting and reading assignments
Model and Example	Teachers can be good models by demonstrating clear, legible handwriting	Teachers can also show examples of good handwriting from books or other sources to help students understand the expected handwriting standards
Feedback	Providing constructive feedback to students about their handwriting reading abilities is essential	Teachers should provide clear and specific feedback on aspects that need improvement, as well as make suggestions for improving handwriting legibility

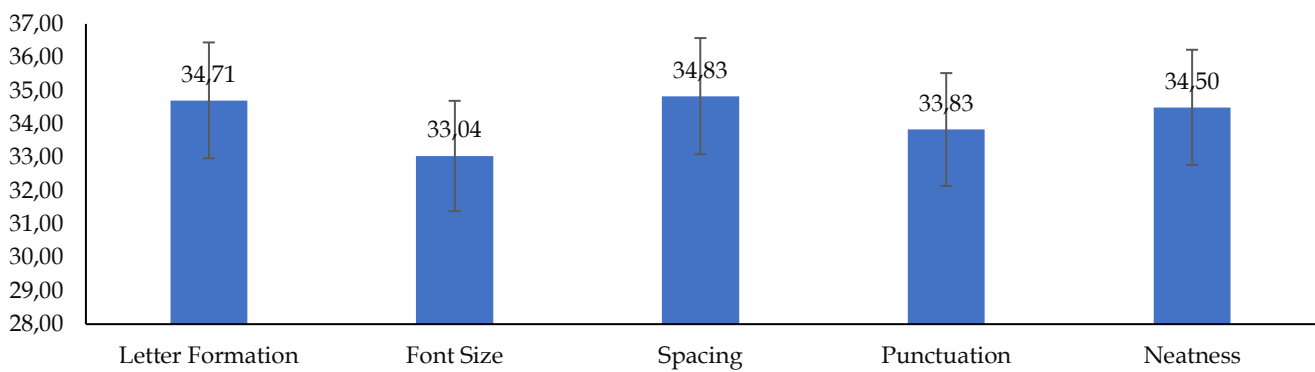


Figure 2. Handwriting readability average score results for continuous upright letters

Discussion

Supportive Learning Environment: Teachers can create a supportive learning environment by providing a variety of writing materials, such as books, posters, or cards written in good handwriting. This will help students get used to reading and understanding handwriting. By applying the principles of Behaviorism, it is hoped that the legibility of lower grade elementary

school students' handwriting can gradually increase (Lee & Lape, 2020; McPherson, 2022). However, it is important to remember that each student has a different learning pace, therefore teachers need to pay attention to individual development levels and provide appropriate support for each student. The legibility of lower grade elementary school students' handwriting can be explained using behaviorism theory. Behaviorism

theory, developed by figures such as B.F. Skinner and Ivan Pavlov, focused on the relationship between external stimuli and the responses that arise as a result of those stimuli. In terms of the legibility of students' handwriting, behaviorism theory can be applied by assuming that writing skills are the result of learning and experience. When a student is taught to write, they are given stimulus in the form of instructions, writing examples, and guidance from their teacher. Students then respond to this stimulus by trying to write using their own handwriting (Wiley & Rapp, 2021).

According to Skinner in learning the following things were found: First, the opportunity for the event to occur elicit a learning response. Second, the student's response. Third, the consequences is to use the response, both the consequences as a reward as well as reprimand or punishment. Skinner also distinguished between two types of responses as follows.

Respondent Response (reflexive response), namely the response caused by certain stimulants. Such stimulants which are called eliciting stimuli, give rise to relatively different responses fixed, for example foods that cause salivation. In general, such stimuli precede that response it causes. Operant Response (instrumental response), namely the response that arises and development is followed by certain stimulants. The stimulant this is called reinforcing stimuli or reinforcers, because these stimuli strengthen the response that has been carried out by the organism. Thus, such stimuli follow (and therefore reinforce) a certain behavior that has been carried out. If someone learns (has done an action), then gets a reward, then he will become more active learning (the response becomes more intensive/stronger).

The effectiveness of reinforcement in behavior depends on various factors, wrong one of which is the frequency or schedule of providing reinforcement (Mahmudi, 2016; Morse & Kelleher, 2022). There is there are four types of reinforcement schedules, namely:

Fixed Ratio, which is one of the schedules for providing reinforcement during reinforcement given after a certain amount of behavior. For example, a teacher said "If you can solve ten math problems quickly and that's right, then you can go home first." Variable Ratio, namely the number of behaviors required for various types reinforcement from one reinforcement to another. Number of behaviors required may be very diverse and students do not know the behavior which one will be reinforced (Rumjaun & Narod, 2020). For example, teachers don't just look at whether tasks can be completed, but also see the progress made at the stages of completing the task. Fixed Interval, which is given when someone shows that behavior desired at a certain time. For example, every 30 minutes. Variable Interval, namely the reinforcement given depends on time and a

response. From the explanation of operant conditioning above, conclusions can be drawn that, operant conditioning is a learning theory that explains that something followed by pleasant consequences would tend to be repeated.

During the learning process, students will experience positive and negative reinforcement based on the legibility of their handwriting. If their handwriting is easy to read and understand, they will likely receive positive reinforcement in the form of praise from teachers and classmates. Conversely, if their handwriting is difficult to read, they may receive negative reinforcement in the form of correction from the teacher or difficulty in understanding their own writing. Through this process, students gradually improve the legibility of their handwriting through repeated learning and application of the feedback they receive.

Conclusion

In the context of behaviorism, handwriting skills and legibility are seen as the result of forming appropriate responses through reinforcement. However, it is also important to note that other factors, such as gross and fine motor development, can also influence the readability of a student's handwriting. In addition, different learning approaches, such as the constructivism approach which places more emphasis on exploration and creativity, can also play a role in developing students' writing skills. In conclusion, behaviorism theory provides an understanding of how the handwriting legibility of low-grade elementary school students develops through learning, experience, and reinforcement. However, other factors also need to be considered in understanding the legibility of students' handwriting. Assessing the readability of elementary school students' handwriting using behaviorism theory involves an understanding of how this theory relates to learning processes and human behavior.

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In writing this article, the authors do not have any conflict of interest.

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