



School readiness measurement: an implementation of the nijmegen schoolbekwaamheids test (NST)

Fitri Ramadhini¹, Elsa Mutiah Nasution²

^{1, 2} Institut Agama Islam Negeri Padangsidimpuan, Indonesia
✉ f.ramadhini@gmail.com

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Abstract

Preparing children to enter elementary school is an important thing that must be known and understood by parents. Choosing to send children to school too early without paying attention to their ability and development will cause a fatal impact. Readiness for early childhood schools is certainly different from one child to another. Still, the readiness of children can be seen from the maturity of the different aspects of physical, motoric, cognitive, social, and emotional development that will directly help children in the learning process and adjust to their school environment. This research is a descriptive quantitative study to see the implementation of the Nijmeegse Schoolbekwaamheids Test (NST) as one of the various test tools to measure the readiness of a child to enter elementary school. The results and research findings get the readiness of children to enter elementary school is not only assessed from the age factor. The readiness of children to enter elementary school is assessed by motor skills, observation skills, concentration abilities, understanding abilities, and the ability to assess situations.

INTRODUCTION

Every child who is ready to enter elementary school should be based on the maturity of the readiness aspects, one of which is age. It has been regulated in Law Number 23 of 2003 that all Indonesian citizens aged seven to fifteen years, without exception, have the same right to obtain quality basic education (Indonesia, 2003; Rosyid dkk., 2019; Wathoni, 2020). Every child who is ready to enter elementary school is based on the maturity of his developmental aspects. Preparing children to continue their education to basic education must pay attention to aspects of child development (Damayanti & Paulina, 2016; M. A. Khadijah & Jf, 2021; Nafiah & Zuhudian, 2021). Understanding learning readiness in the community raises pros and cons between educators and parents. Many parents feel that the child's age is sufficient to describe the maturity of various aspects of child development (Afifah, 2021; Pardede, 2020; Romlah, 2016). On the other hand, the maturity of various aspects of child development is sufficient for school readiness requirements even though the child's age is less. The three factors proposed by (Agustina, 2018; Papalia dkk., 2008; Windayani dkk., 2021) relate to

school readiness influenced by genetics, the environment, and the maturation of the body and parts of the brain.

According to (Faqumala & Pranoto, 2020b; Santrock dkk., 2002; Sofyan, 2015), school readiness is integrated with aspects of child development. These developmental aspects include gross motor skills, fine motor coordination, recognizing basic skills such as; writing, and reading, arithmetic, communication or language, motivation to know new things, memory developments, especially with something that has been seen and heard, the ability to understand oneself, increase self-esteem, and also develop emotions. The theory above (Halimah & Kawuryan, 2010; Hurlock, 1980; Pratiwi, 2018) suggests that a child's readiness to enter school consists of the child's psychological and physical readiness. Children who are classified can enter elementary school or its equivalent, namely: children who can master the five senses and understand the language well; have a willingness to learn, and have maturity in work so that they can complete their tasks correctly and completely (Damayanti, 2016; Lailiyah & Nuraini, 2020; Susilarini, 2021).

School readiness often includes measurable academic skills that place children at a higher probability of success in kindergarten and formal school settings (Ghandour dkk., 2021; Jackson dkk., 2021; Rymanowicz dkk., 2020). Children who have a high level of intelligence and good academic skills will complete these tasks more quickly. Conversely, children who have a low level of intelligence will carry it out more slowly (Halimah & Kawuryan, 2010; Marwati dkk., 2017; Damayanti & Rachmawati, 2019). Thus, to enter the world of schools that have learning programs for a certain age, then at least a child has a level of intelligence that functions at an average stage (Damayanti & Paulina, 2016; Marwati dkk., 2017; Pratiwi, 2018)

Readiness is important because children who are ready to go to school will benefit and progress in further development (Halimah & Kawuryan, 2010; Deliviana, 2017; Muryani & Elshap, 2018). Meanwhile, children who are not prepared will be frustrated if placed in an academic environment. Various forms of behavior as a reflection of this frustration include withdrawing, acting indifferent, showing physical symptoms, or having difficulty completing tasks at school (Halimah & Kawuryan, 2010; Zaly, 2017; Marwati dkk., 2017). Children who progress in their learning process will not experience frustration in the academic environment and can complete their assignments well. Also, they will build a good self-concept and have a

high interest in learning compared to children who experience obstacles in the learning process (Deliviana, 2017; Mariyati, 2017; Raihana, 2018).

The quality of parental involvement in home learning activities consistently predicts a child's school readiness. Still, it is not associated with parental school involvement or engagement practices in early childhood education (Arnold dkk., 2007; Rymanowicz dkk., 2020; Barnett dkk., 2020). In addition to parental involvement, the facilities and infrastructure in the classroom are also related to children's school readiness in every material that children learn (Harianti & Amin, 2016; Pianta dkk., 2020; Al Hakim & Azis, 2021). One solution that can be given is to carry out a readiness test to enter elementary school for children when they continue to the realm of elementary school (Afifah, 2021).

To determine the readiness of children to go to school, a test called the *Nijmeegse Schoolbekwaamheids Test*, better known as the NST, was used. It is one of the various tests used to measure the readiness of a child to enter elementary school education. Prof. Dr. FJ Monks, Drs. NH Coffie, and Drs. H. Rost figure who made this test. Nijmegen Nederland is where the *Nijmeegse Schoolbekwaamheids Test* (NST) was developed in Germany (Mariyati & Affandi, 2016; Hairina, 2017). The purpose of using the *Nijmeegse Schoolbekwaamheids Test* (NST) is to determine a child's level of maturity and readiness to enter elementary school education. The second is to predict a child's school achievement in school, and the third is to determine the abilities of children who are mature or not and require training or enrichment or development or improvement (Mariyati & Affandi, 2016; Hairina, 2017; Susilarini, 2021). The NST test is a tool used to measure and determine the maturity of various aspects of development, including motor, cognitive, and social, emotional aspects (Damayanti, 2016; Damayanti & Rachmawati, 2019; Faqumala & Pranoto, 2020).

The topic of this research is certainly not a new thing. Several previous studies on the concept of character education have been carried out by (Damayanti, 2016; Susilarini, 2021; Marwati dkk., 2017; Pramudyani & Maharani, 2018; Mariyati & Affandi, 2016) which discusses children's school readiness. However, those studies present overviews of school readiness and show the maturity of aspects that support children's readiness to enter elementary school based on the *Nijmeegse Schoolbekwaamheids Test* (NST).

The school readiness test (NST) is non-verbal, and is presented individually (Halimah & Kawuryan, 2010; Hairina, 2017; Hikmawati, 2018). This test is intended for students or children aged 4-6 years to see their maturity in motoric, cognitive, emotional, and social

aspects (Sudarmo & Mariyati, 2018; Hasibuan dkk., 2020; Susilarini, 2021). Furthermore, Supartini explained that to determine a child's school readiness, the child must be asked to do the entire test, then a lottery is given an assessment of the test results. The correct answer is given a score of 1 (one), and the wrong answer is not given a score of 0 (zero). The scores on each subtest will be input into the profile table for each subtest which will be assessed in the readiness norm. This table shows the norm of decency will judge that children are in the category of ready to enter elementary school, quite ready or considered, and not ready to enter elementary school (Supartini, 2006; Mariyati & Affandi, 2016; Pratiwi, 2018).

METHODS

The research was carried out in the second semester of the 2021/2022 academic year, from May to December 2021. The method employed was descriptive quantitative, and the sample in this research was 37 students of TK B at TK IT DH Padangsidempuan in the academic year 2021/2022.



Figure 1. Research Steps

The data collection technique used was the *Nijmeegse Schoolbekwaamheids Test* (NST) to collect data on test scores and documents from students who have taken the school preparation test. The analysis technique implemented in this research was descriptive statistics. The data analysis technique used was descriptive statistical analysis, namely the statistics used to analyze the data by describing the data obtained from the research. The data collection technique in this research used the *Nijmeegse Schoolbekwaamheids Test* (NST) to collect data on test scores and documents from students who had taken the school preparation test. The data analysis technique used was descriptive statistical analysis, namely statistics used to analyze data by describing data obtained from research.

RESULTS AND DISCUSSION

A. Result

After assessing the test results regarding learning readiness using the Nijmeegse Schoolbekwaamheids Test (NST) was carried out, the following results were obtained: an examination of 37 children in kindergarten class B. Based on the NST test score data, it was found that a total of 35 children are declared ready to participate in the learning process in elementary school. One child is declared not quite ready or considered, and one child is declared not ready to enter elementary school. This figure 2 from the NST test calculation results are presented in the diagram below:

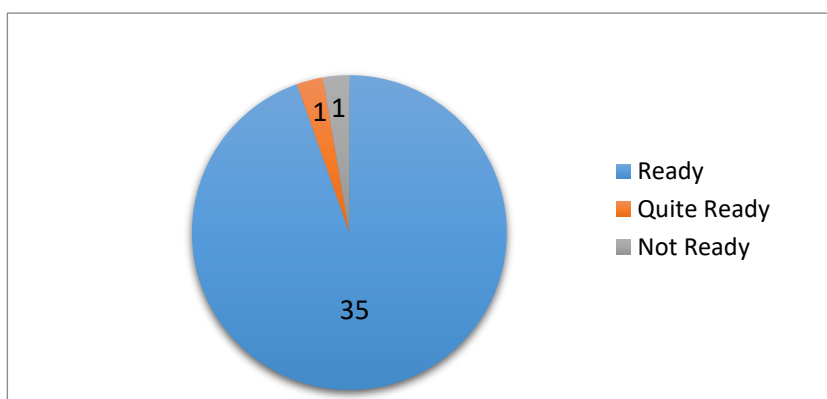


Figure 2. Results of the NST Test for DH, Padangsidimpuan IT Kindergarten.

To determine the implementation of the Nijmeegse Schoolbekwaamheids Test (NST) to measure school readiness for children in DH Kindergarten, the results of each subtest are described as follows:

Subtest 1 (Clown and Alarm Pages), Subtest 1 measures the observation of shape and ability to distinguish, consisting of 8 pictorial questions; in each question, there is one image in the left column, which must be matched with one image of the five available images in the right column. The child must match the appropriate pictures to get the correct score. Based on the data obtained, 31 children were able to do it correctly, four children were in the fairly ready category, and two children were in the not ready category.

Subtest 2 (Book Pages), Subtest 2 measures children's fine motor skills, which consists of 8 questions. Each question consists of 2 pictures. The first picture is complete, and the picture next to it is incomplete. The child is directed to complete the picture to match the actual picture. In this subtest, 21 children are said to be ready to develop fine motor aspects,

while five children are still in the fairly ready or considered category, and 11 children are still in the category of not being ready in the fine motor aspect.

Subtest 3 (Page Candles and Mushrooms), Subtest 3 which measures the notion of size (big-small), amount (a lot or little), comparison, and position or order of objects, consists of 8 questions. Children are asked to cross out the picture according to the instructions given: Cross out the child in the middle, cross out the fourth clock, cross out the smallest sausage, cross out the box containing the seeds that have the same number of fingers on one hand, and cross out the plate with the same number as the number of fingers on one hand, cross out the bowl containing the most oranges, cross out the first child's picture, and cross out the second (2nd) window on the third bus. There are 30 children who can understand and compare the size and number of objects in the test. Four children are in the fairly ready category or are considered to be not ready, and four are considered.

Subtest 4 (Fish Page), Subtest 4 measures the ability to sharp observations by finding hidden or hidden pictures of animals in the picture. All 37 students carried out accuracy and foresight in observing situations and pictures. This subtest is one of the subtests that children can pass properly and correctly.

Subtest 5 (Flower Pages), Subtest 5 measures critical observation in which children must be able to see and assess deficiencies in objects encountered in everyday life and recognize objects and their parts. The results of this subtest are 36 children who can make critical observations well and are included in the ready category. No child is in the quite ready or considered category, and only one child is still in the not ready category.

Subtest 6 (Children's Page and Stroller), In this subtest, 34 children were able to concentrate well. The children were not affected by the environment and did not interfere with their concentration to complete the test well. There are two children in the quite ready category, one child in the unprepared category, and children who are still in the fairly ready and not ready category still need the training to focus on one particular type of activity.

Subtest 7 (Key Child Pages), In this subtest, 34 children can remember pictures well. However, two children are in the quite ready category, and one is in the not ready category. This aspect clouded the child's ability to recall the information obtained, including subject matter that requires children to memorize a lot.

Subtest 8 (Wine and Bike Pages), Subtest 8 measures understanding of objects and judgments of situations. A total of 33 children understood the situation and understood the

meaning of an event. A total of 2 children belonging to the fairly ready or considered category and two belonging to the unprepared category are still experiencing obstacles and difficulties in behaving while following environmental expectations and rules. They do not get stimulation in this aspect. They have the potential to experience obstacles in adaptation and socialization in the elementary school community.

Subtest 9 (Television Page), Subtest 9 measures a child's ability to understand a story. All 37 children were able to capture the story conveyed during the test. The child could accept the explanation he got and then rephrase the story through the picture answers that the child chose. This result shows that children in the ready category have been able to receive, process, store and recall the information provided simultaneously.

Subtest 10 (Butterfly Page), Subtest 10 is the last page of the NST test layout. Children are instructed to draw people from head to toe on this page. In this subtest, 27 children were able to draw well according to the completeness of their body parts. Children who fall into the ready category are said to have understood the function of members. Meanwhile, those included in the fairly ready category were obtained by two children and eight children belonging to the unprepared category.

B. Discussion

Most children are cognitively able to look for differences and similarities and recognize various shapes and images contained in pictures through observations made by children (Hasibuan dkk., 2020; Susilarini, 2021; Sa'adah & Mufid, 2022). This aspect of observing shapes and the ability to distinguish is the basis for the ability to recognize letters and numbers correctly in elementary schools (Halimah & Kawuryan, 2010; Hairina, 2017; Susilarini, 2021). The ability to recognize letters is the ability to do something by recognizing signs or characteristics of script marks in writing which are members of the alphabet that symbolize the sound of the language (Lailiyah & Nuraini, 2020; Hayati & Amelia, 2020; Fazriah dkk., 2021).

Recent research in psychology, neuroscience, education, and economics has shown that children's persistence in learning is an important determinant of academic success during the first years of schooling (Fitzpatrick & Pagani, 2012; Pianta dkk., 2020; Jackson dkk., 2021). When children begin to enter kindergarten, this is the right time to introduce children to the basics of reading and writing (*pre-reading skills*), namely by introducing letters and numbers (Astutik dkk., 2020; Fazriah dkk., 2021; Ardhyantama & Apriyanti, 2021). Before teaching children about letter symbolization, children must first understand the concept of

visual-spatial (spatial sensitivity) (Madyawati, 2016; Pratiwi, 2018). Children must understand the concepts of right-left, up-down, and front-back as a basic provision in understanding the symbolization of letters and numbers because there are quite a lot of letters that look similar or similar, (K. Khadijah & Amelia, 2020; Ardhyantama & Apriyanti, 2021).

These fine motor skills are the basis for the development of writing activities which will become academic demands in Elementary School in the future (M. A. Khadijah, 2020; Faqumala & Pranoto, 2020; Afifah, 2021). In addition, fine motor skills are also the basis for children to carry out *self-help* activities in various daily activities, such as eating and drinking, wearing clothes, pants, socks, tying shoelaces, brushing teeth, or buttoning clothes. Other activities related to fine motor skills (Hairina, 2017; K. Khadijah & Amelia, 2020; Ita dkk., 2020). Children's understanding of numbers and comparisons, skills, or abilities is the basis for children understanding mathematics lessons later in elementary school, which is related to number operations, namely addition and subtraction (Hikmawati, 2018; Sa'adah & Mufid, 2022). Early mathematical concepts such as comparing, classifying, and measuring are forms of basic skills that children must have to understand more complex mathematical concepts when children enter elementary school. Children can obtain this ability through natural activities, such as when children play with blocks, water, sand, and other natural materials and role-playing activities (Pramudyani & Maharani, 2018; Hasibuan dkk., 2020; Juniati & Hazizah, 2020).

Sharp observation ability by finding hidden or disguised pictures of animals in pictures. This subtest is one of the subtests that children can pass properly and correctly. Children can separate between *figure and ground* cognitively. Children can find which part is the focus and which parts should be ignored or missed so as not to disturb the object that is the focus of observation (Mariyati & Affandi, 2016; Fikki Prasetya, 2020; Susilarini, 2021). This ability will be the basis for children to read letters and numbers. Children are required to separate between letters, words, and sentences that focus on the reading and are not the focus of reading and must be abandoned. Critical thinking skills can be developed in early childhood by using materials and methods that follow the stages of children's thinking skills that are still concrete (Ita dkk., 2020; Nafiah & Zuhudian, 2021; Ardhyantama & Apriyanti, 2021). Learning methods that actively involve children are the most appropriate methods to build critical thinking skills in children. Through active learning, children build their knowledge, such as in experimental activities, children conduct themselves, observe, analyze,

and prove themselves and conclude the results of their experiments so that children's thinking skills can develop (Hikmawati, 2018; Imamah & Muqowim, 2020). Children's critical thinking skills will develop with frequent observation activities. This aspect of ability will be the basis for determining priorities for the various tasks that the child will face in the future.

Strong memory also influences how children can understand a concept well (Barnett dkk., 2020; Pianta dkk., 2020; Jackson dkk., 2021). Improving memory in children requires a long effort. It takes several combined methods to improve memory. Intelligence in children is a combination of touch, sensory, sight, speech (verbal), and hearing abilities (Hurlock, 1980; Pardede, 2020; Ita dkk., 2020). To get good performance at school, a child needs to develop his memory to store, organize, organize and translate information (Hikmawati, 2018; Rosyid dkk., 2019; Hasibuan dkk., 2020). This ability helps children to remember lessons and do the tasks given effectively.

A child's readiness to enter elementary school is certainly not the same for every child, considering that children are unique individuals (Marwati dkk., 2017; Sudarmo & Mariyati, 2018; Pratiwi, 2018). The readiness of children to enter elementary school is not only assessed from the age factor. The readiness of children to enter elementary school is assessed by their motor skills, observation abilities, concentration abilities, memory abilities, understanding abilities, and the ability to assess situations (Mariyati & Affandi, 2016; Hairina, 2017; Faqumala & Pranoto, 2020). Nijmeegse Schoolbekwaamheids Test (NST) is a tool used to measure and determine the maturity of various aspects of development, including motor, cognitive, and social-emotional aspects (Marwati dkk., 2017; Hairina, 2017; Susilarini, 2021). The Nijmeegse Schoolbekwaamheids Test (NST) is non-verbal, and is presented individually. This test is intended for students or children aged 4-6 years to see the maturity of children in motor, cognitive, and social-emotional aspects.

CONCLUSIONS

Descriptively, aspects of readiness to enter elementary school are closely related to cognitive aspects, including understanding the magnitude, number, and comparison, critical observation, observation and ability to distinguish, concentration, sharp observation, understanding of stories, and situation assessment, and drawing people. Meanwhile, the specs related to fine motor skills are categorized as not yet optimal. Based on the research results, the researchers suggest the parents and teachers provide a variety of appropriate and balanced

stimulation in various aspects of child development so that readiness can be optimal. Besides giving cognitive attention and stimulation, other aspects must also be considered considering that optimal child development can only be achieved if all aspects of development are properly stimulated, including social and emotional aspects. The process of training and stimulating children is a continuous process, so teachers must continue to optimize the process of children's school readiness, especially in the early years of their entry into elementary school. This effort can minimize the emergence of problems in higher classes later. Schools should be able to facilitate parents in parenting activities to better recognize the needs for early childhood growth and development.

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