JURNAL PENDIDIKAN: RISET&KONSEPTUAL

www.journal.unublitar.ac.id/jp
E-ISSN: 2598-2877, P-ISSN: 2598-5175
Vol 7 No 3, Juli 2023

Motivation as a Stimulus for Developing Self-Confidence in Children with Special Needs

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Abstrct: In this study, focus on children with special needs and how to provide motivation to increase their self-confidence, so that they can feel more comfortable in expressing themselves and being creative. Our research was conducted at the Aora inclusive skills school in Surabaya. This training used a quantitative research approach with survey. Efforts to convince children with special needs through motivation that they are whole, unique human beings with strengths compared to other normal children. It can be concluded that increasing self-confidence is done by parents and teachers by providing encouragement and motivation, that they can do something without the help of others.

Tersedia Online di
http://journal.unublitar.ac.id/pendidikan/index.php/Riset_Konseptual

Sejarah Artikel
Diterima pada : 01-07-2023
Disetuji pada : 20-07-2023
Dipublikasikan pada : 31-07-2023

Kata Kunci:
Children with Special Needs, Machine Learning, Self-Confidence

DOI:
http://doi.org/10.28926/riset_konseptual.v7i3.680

INTRODUCTION

Confidence is the key to success in life, including for children with special needs. However, these children often face difficulties in developing sufficient self-confidence to face challenges and take risks in their daily lives (Setiawan, 2018). Therefore, motivation becomes very important in stimulating the development of self-confidence in children with special needs (Iwikotan et al., 2019). Motivation can be defined as an internal drive that encourages someone to act or perform an activity. In the context of children with (Irvan, 2020), motivation is very necessary as a stimulus to help them overcome their lack of self-confidence and fear that often hinders their ability to reach their true potential (Mulya & Lengkana, 2020).

In this case, motivation can come from various sources, such as family, friends, teachers, and therapists (Fatihah et al., 2022). In addition, challenging activities that are suitable for the child's abilities can also help increase their self-confidence. Furthermore, giving appropriate praise and rewards to children can also help increase their motivation and self-confidence (Desriva et al., 2020). By providing the right motivation, children with special needs can develop sufficient self-confidence to overcome the challenges they face (Rais, 2022). This will help them develop socially, emotionally, and academically, as well as giving them the ability to become independent and successful individuals.

Basically, every human has their own motivation with a certain goal. Motivation that is embedded in a person is a force to drive behavior to achieve personal satisfaction goals, where motivation can influence a person's self-confidence (Ali, Haidar Ali, R, M. Dahlan, Sobari, 2019). One of the most important parts of personal development is self-confidence, which is a factor that influences a person's reality in life (Asih & Astriyanti, 2019). Some people have low self-confidence, weak

www.journal.unublitar.ac.id/jp
E-ISSN: 2598-2877, P-ISSN: 2598-5175
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motivation in developing self-confidence can cause frustration to oneself due to negative thoughts about oneself (Wibawati & Watini, 2022).

Children with special needs often face difficulties in developing sufficient self-confidence to face challenges and take risks in their daily lives. However, little is known about the role of motivation as a stimulus in the process of developing self-confidence in children with special needs. Therefore, the research problem formulation is how motivation can play an effective role as a stimulus in developing self-confidence in children with special needs.

The purpose of this study is to thoroughly analyze the role of motivation as a stimulus in developing self-confidence in children with special needs. The objectives of this research are to explore the motivating factors that can stimulate the development of self-confidence in children with special needs, as well as to understand the impact and effectiveness of using motivation as a stimulus to help them reach their full potential.

This research has several benefits, including: improving our understanding of the importance of motivation as a stimulus in helping children with special needs develop self-confidence; providing practical guidance for parents, educators, therapists, and other stakeholders in stimulating positive motivation in children with special needs; supporting the development of effective inclusive educational approaches for children with special needs; laying the groundwork for further research in the field of personal development for children with special needs; and enhancing the quality of life for children with special needs by helping them develop sufficient self-confidence to face challenges and achieve their full potential.

Self-confidence must be nurtured from an early age by family, school, and the surrounding environment (Rahman, 2021). Lack of enthusiasm and self-confidence in children with special needs when facing their environment. Children with special needs still think that they are different from others (Setiawan & Puspaningrum, 2023). Many children with special needs still feel afraid of facing the outside world, where they tend to be morequiet, tend to withdraw, and hide their talents (Oktari et al., 2020). From this, it can be concluded that self-motivation for developing self-confidence in children with special needs is not yet embedded.

METHOD

This research was conducted by implementing a quantitative approach, in which the explanation of the research results is in the form of words (Chaerani et al., 2020). The researcher aimed to describe the role of motivational stimuli for the development of self-confidence in children with special needs (ABK) (Syafarana & Chairani, 2020). The research subjects were ABK children at Aora Surabaya. The data sources were obtained through Survey (Bisnis et al., 2020). The methods used in this study were Neural Network (NN) and Linear Regression. The data analysis process was carried out through training on the Neural Network (NN) and Linear Regression methods (Sarbaini et al., 2022)

Neural Network or also known as artificial neural network consists of basic components that are analogous to neurons (Nopiyanto & Rahmadi, 2021). The basis of neural network is artificial neurons perceived as constituents in interconnected processes, similar to the neural network in humans (Díaz-Ramírez, 2021). The purpose of forming a neural network is to solve a problem, such as classification or pattern recognition during the learning process (Santoso et al., 2021).

RESULT and CONCLUSION

Every child born in this world has unique personalities, intelligence, talents, and characteristics. Children with special needs have their own characteristics that distinguish them from children in general. According to Article 15 of Law No. 20 of 2003 concerning the National Education System, the type of education for children with special needs (ABK) is special education. The types of educational services in Special

www.journal.unublitar.ac.id/jp
E-ISSN: 2598-2877, P-ISSN: 2598-5175
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Education for children with different intelligence levels can generally be carried out inclusively.

Based on the data, there are 70 respondents and two clusters, namely the stimulus cluster and the self-confidence cluster. In the stimulus cluster, there are 128 respondents who agree, 36 respondents who moderately agree, and 52 respondents who disagree, while in the self-confidence cluster, there are 148 respondents who agree, 39 respondents who moderately agree, and 40 respondents who disagree. If the scores are totaled, the stimulus cluster has a score of 216 and the self-confidence cluster has a score of 227. The maximum score is 77% in the stimulus cluster, which means that the respondents agree, while the self-confidence cluster has a score of 81%, which means that the respondents strongly agree. It can be concluded that respondents prefer self-confidence over stimulus.

Table 1. Neural Network Regression

Neural Network Regression

Hidden Layers	Nodes	n(Train)	n(Validation)	n(Test)	Validation MSE	Test MSE
	7	34	9	3	2	1.198	1.430

Note. The model is optimized with respect to the *validation set mean squared error*.

Neural Network Regression is a prediction technique that uses artificial neural networks to learn patterns in data and make predictions based on those patterns. In this case, a Neural Network Regression with 7 hidden layers was used, with each hidden layer consisting of 34 nodes. To train the model, the data was divided into three parts: the training data, the validation data, and the test data. In this case, there were 9 training data, 3 validation data, and 2 test data.

The model was optimized using the validation set mean squared error, which measures how close the model's predictions are to the actual values in the validation data. The validation results showed that the model had a mean squared error (MSE) of 1.198. After testing the model on the test data, an MSE value of 1.430 was obtained, indicating that the model had a fairly good performance in predicting values in new data that had not been seen before. However, it should be noted that the performance of the model can vary depending on the dataset used and the parameters used in the model training.

Weight in a neural network refers to the strength of the connection between nodes in the network. Each node in a neural network is connected to nodes in the nearest layer, and each connection has an associated weight. Weights determine the influence of input from one node on the output of the next node in the network. In the given table, there are 10 input nodes and 4 hidden layers with 5 nodes each. Each input node is connected to every node in the first hidden layer, and each node in the first hidden layer is connected to every node in the subsequent hidden layers. The intercept values represent bias terms added to each node, which determine the threshold for node activation. The weights in the table are numerical values learned during the training of the neural network and used to make predictions or classifications based on input data.

Table 2. Evaluation Metrics

	Value
MSE	1.43
RMSE	1.196
MAE	1.196
MAPE	148.38%
R^2	

Note. R^2 cannot be computed due to lack of variance in the predictions.

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E-ISSN: 2598-2877, P-ISSN: 2598-5175
Vol 7 No 3, Juli 2023

Mean Squared Error (MSE) is an evaluation metric that measures the average of squared differences between predicted values and actual values of the tested data. The smaller the MSE value, the better the quality of the model. In the table, the MSE value is 1.43. Additionally, Root Mean Squared Error (RMSE) is an evaluation metric that measures the average of differences between predicted values and actual values of the tested data, then square-rooted. The smaller the RMSE value, the better the quality of the model. In the table, the RMSE value is 1.196. Furthermore, Mean Absolute Error (MAE) is an evaluation metric that measures the average of absolute differences between predicted values and actual values of the tested data. The smaller the MAE value, the better the quality of the model. In the table, the MAE value is 1.196.

Then, Mean Absolute Percentage Error (MAPE) is an evaluation metric that measures the average of absolute percentage differences between predicted values and actual values of the tested data. The smaller the MAPE value, the better the quality of the model. In the table, the MAPE value is 148.38%. Lastly, Coefficient of Determination (R^2) is an evaluation metric that measures how close the relationship between the dependent variable and independent variable is in a linear model with a regression line. The R^2 value ranges from 0 to 1, where the closer the R^2 value is to 1, the better the quality of the model. However, in the table, the R^2 value cannot be calculated due to a lack of variation in the predictions.

Self-confidence is crucial in developing talents and skills that individuals possess. With high self-confidence, individuals can open themselves to socializing with their surroundings. The cause of low self-confidence in children with special needs (CSN) is the lack of self-motivation and the differences they have. The lack of self-motivation in CSN can cause them to lose confidence in communicating and playing with their surroundings. CSN may feel insecure to initiate socializing with their surroundings. To solve the problem, several preventive measures need to be implemented to improve self-confidence in CSN.

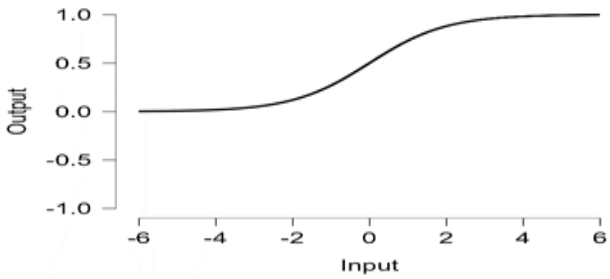

Figure 1. Logistic Sigmoid Activation Function

The Logistic sigmoid activation function is a type of non-linear function commonly used in artificial neural networks. It is a mathematical function that maps inputs as real numbers into values between 0 and 1. The output values of the logistic sigmoid function are always positive and its graph resembles the letter S. In neural networks, the logistic sigmoid activation function is commonly used in the output layer of binary classification tasks, where the goal is to predict whether the input belongs to a certain class or not. The output of the sigmoid function is interpreted as the probability of the input belonging to the positive class.

One of the advantages of the logistic sigmoid function is that its output is always bounded between 0 and 1, making it suitable for binary classification tasks. Moreover, the function is differentiable, which means it can be used in backpropagation algorithms to train neural networks. However, the logistic sigmoid function also has some limitations. One of the most significant limitations is its susceptibility to the vanishing gradient problem, where the gradient becomes very small during backpropagation, slowing down the learning process. Another limitation is that the output of the sigmoid function saturates when the input becomes too large or too small,

www.journal.unublitar.ac.id/jp
E-ISSN: 2598-2877, P-ISSN: 2598-5175
Vol 7 No 3, Juli 2023

resulting in a gradient that approaches zero, making it difficult to update the neural network weights during training

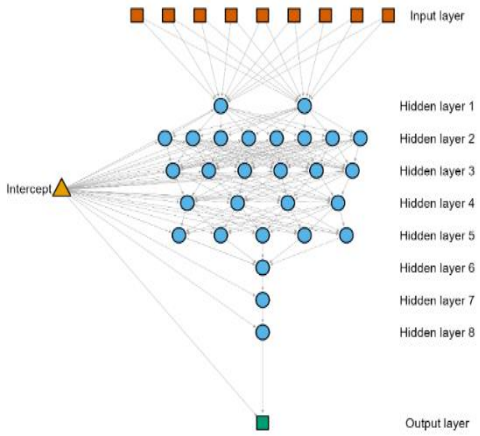

Figure 2. Network Structure Plot

The Network Structure Plot is a graph that shows the structure of a neural network. This plot displays the number of layers, the number of nodes in each layer, and the connections between nodes in different layers. In a Network Structure Plot, the input layer is usually located on the left side of the graph, followed by one or more hidden layers, and the output layer is located on the right side of the graph. Each circle on the graph represents a node in the neural network, while the lines connecting the circles represent the connections between nodes in different layers.

The Network Structure Plot is typically used to visualize the complex structure of a neural network, making it easier to understand how the network makes predictions or classifications on data. Additionally, this plot can also be used to compare the structures of different neural network models. From the above image, it results in an output indicating the need for self-confidence in children with special needs. It is essential to promote motivation in children with special needs as it is one of the most critical activities in enhancing their self-confidence. A higher level of self-confidence can make them better and develop their creativity, giving them the opportunity to interact with others without any limitations.

Based on the analysis of Machine Learning Neural Network Regression in the study of motivation as a stimulus for developing self-confidence in special needs children, it can be concluded that the motivation variable significantly affects the self-confidence of special needs children. This is evident from the results of the neural network regression model evaluation, which indicates that the model has good evaluation scores. By using machine learning technology, this study has successfully produced a neural network regression model that can predict the level of self-confidence in special needs children based on the motivation variable. These results can be used as a consideration for parents, teachers, and education experts in developing educational programs that can improve the self-confidence of special needs children.

However, the results of this study need to be interpreted with caution due to some limitations such as a limited sample size and the use of cross-sectional data which cannot directly demonstrate the cause-effect relationship between the motivation variable and the self-confidence of special needs children. Therefore, further research is needed with a larger sample size and more accurate data collection methods to validate the results of this study.

Special needs children with physical or mental limitations are certainly not easy to develop a concept of self-confidence. In reality, there are often rejections by people around them. Self-confidence can be nurtured by parents and teachers by continuously providing support and motivation to special needs children, encouraging

them to face their surrounding environment. Motivation in developing self-confidence is the most important activity in enhancing creativity and talent in special needs children. Having a strong self-confidence is crucial in shaping one's personality. Having great self-confidence can make someone feel confident and optimistic, and this can greatly affect their personal development and life, especially for special needs children.

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