

# Literacy Level and Happiness Score Across Countries: A Secondary Data Correlation Study

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## Abstrak

Kurangnya tingkat literasi dapat mengakibatkan dampak yang kurang baik untuk kedepannya. Khususnya, tentang aspek pembangunan manusia atau SDM dan kesejahteraan mental atau well-being. Sebelumnya, assesment tingkat literasi yang dilakukan oleh PISA tahun 2018 memperlihatkan negara Indonesia berada di ranking 74 dari 79 negara. Ada beberapa penelitian yang berusaha mengkaji korelasi antara keterampilan membaca dan well-being. Namun, belum ada yang menggunakan data-data sekunder yang tersedia secara luas. Tujuan penelitian ini adalah untuk mengetahui seberapa kuat dan signifikan uji korelasi data sekunder antara variable tingkat literasi dan skor kebahagiaan tiap-tiap negara secara statistik. Penelitian ini menggunakan metode kuantitatif dengan analisis statistik spearman correlation. Sebagai informasi tambahan, penelitian ini melihat hasil uji statistik regresi sederhana atau R<sup>2</sup>. Hasil penelitian memperlihatkan adanya korelasi positif dan signifikan antara keterampilan membaca dan skor kebahagiaan. Dengan tingkat korelasi atau R value sebesar .479\*\* ( $p < .001$ ) dan R<sup>2</sup> adjustment value 0.209\*\*. Penelitian ini menyimpulkan bahwa tingkat literasi terbukti berkorelasi signifikan dengan skor kebahagiaan tiap-tiap negara dengan kekuatan sedang.

**Kata kunci:** Tingkat literasi, keterampilan membaca, kebahagiaan, well-being

## Abstract

Lack of reading skills can lead to un-favorable effects in the future. Especially regarding aspects of human development, human resources and mental well-being. Previously, In this regard, the literacy and reading ability assessment conducted by PISA in 2018 showed that Indonesia was ranked 74 out of 79 countries. there were several studies that attempted to examine the correlation between reading proficiency and well-being. However, no one has yet used widely available secondary data. In particular, the first is for reading assessment data from PISA and second, the Happiness World Report, both of which were conducted in 2018. The purpose of this study was to determine how strong and significant the correlation test between the variables of literacy ability and happiness ranking of each country statistically. This study uses a quantitative method with statistical analysis of the spearman correlation. Then, as additional information, the researchers also looked at the results of the simple regression or R<sup>2</sup> statistical test. The results showed a positive and significant correlation between reading proficiency and happiness. With a correlation level or R value of .479\*\* ( $p < .001$ ) and an R<sup>2</sup> adjustment value of 0.209\*\*. Thus, the researchers concluded that reading proficiency from PISA proved to be correlated with each country's happiness ranking with moderate strength.

**Keywords:** Literacy level; Reading proficiency; Happiness; Well-being

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## 1. Introduction

Reading skills are the main subject assessed by PISA (Program for International Student Assessment) which is an OECD (Organization for Economic Co-operation and Development) program in 2018. This reading skills test aims to see, explore, and measure patterns or trends in literacy levels over the past twenty years. PISA in 2018 itself defines literacy levels as the level of understanding, using, evaluating, reflecting on reading, engaging with texts, in order to achieve a goal, and developing knowledge and self-potential with the hope of participating in society (OECD, 2019).

Literacy assessment by PISA can be used by each country to improve their education policies. By improving better education policies, of course, it will make the level of welfare of a region even better. Equipping society with the knowledge and skills needed to reach their full potential, to contribute to an increasingly connected world, and to transform better skills into better lives needs to be a primary concern for policymakers around the world. Fairness, integrity and inclusiveness in a public policy that thus all depend on the skills of a citizen himself. (Schleicher, 2019) In an effort to achieve this goal, more and more countries are looking beyond their borders for evidence about the most successful and efficient education policies and practices (OECD, 2019).

This study assumes that advanced education is generally related to well-being. Subjective happiness is generally determined by how people experience and evaluate their lives as a whole. This is because most people spend their lives learning and developing in school as children and in the workplace as adults. So it is very important to gain a strong understanding of the role of learning including literacy skills in school, work and the workplace and its relationship to shaping happiness for individuals and communities around the world. However, the concept of happiness is caused by many factors; such as income, employment, health and family life. Researchers or experts need to make research questions, how much difference each of these factors affects the happiness of people who experience it (Clark et al., 2017).

Previous research has tested how much difference there is in factors that can affect well-being in five (5) countries, one of which is Indonesia. The results explain that happiness or life satisfaction in Indonesia has several predictors with the order of income, education, physical and mental health that have the same score, having a partner, and finally having a job.

**Table 1**

Predictors of Life Satisfaction of Adults in Indonesia

| <i>Variable</i>  | <b>Indonesia</b> |
|------------------|------------------|
| Income (log)     | 0.18 (0,03*)     |
| Education        | 0.05 (0,01**)    |
| Having job       | 0.02 (0,01**)    |
| Partnerer        | 0.04 (0,01**)    |
| Physical illness | -0.07 (0,01**)   |
| Mental illness   | -0.07 (0,01**)   |
| <b>N</b>         | <b>31.437</b>    |

Source: IFLS data (Clark dkk., 2017)

One of the goals of a person studying is to achieve lasting happiness in the future as a sense of fulfillment. These positive feelings and emotions that arise tend to be eudaimonia type happiness. Effendy (2016) explains that eudaimonia in the concept of subjective happiness includes the meaning of life, self-realization, and full function as an individual. This study also assumes that to achieve lasting happiness, a person needs to strive to increase literacy levels. An education system is also needed that can lead to the welfare of a citizen.

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Several previous studies have said that reading habits are related to happiness. One of them

explains that the Positive effect includes active, enthusiastic, and happy to be involved in fun activities, which appears more often when someone reads a lot, especially positive energy words. Then, it will make someone tend to choose and use positive energy words in everyday life (Knuppenburg & Frederick, 2021). Reading together in groups of children aged 5-9 years or reading aloud in the Vygotsky learning method has also been found to reduce children's anxiety, especially excessive anxiety such as when going to the dentist (Moura et al., 2015; Sujana & Pudjiati, 2019). Reading books that are loaded like meditation that brings the brain to a pleasant trance state that is beneficial for relaxation and inner peace (Dovey, 2015).

The benefit of this study is to provide statistical evidence of the correlational relationship between literacy levels and happiness rankings of each country. Evidence from this quantitative research is expected to be further deepened in the future. Reading skills themselves are very useful for humans in their daily activities. Starting from following various simple guides to understanding the concept of what, when, where, who, and why the background of something. The advancement of technology in the current era has also shown how important reading skills are for exchanging information on social media. In fact, there are quite a lot of new texts and types of symbols, both short, long, and multifunctional. PISA assumes that the education system needs to pay attention to literacy levels or reading skills in the current digitalization era (OECD, 2019).

The development of digital technology now makes data analysis widely accessible and can be studied carefully, either by looking at various patterns/trends or reviewing the correlational relationship of each data. The emergence of correlational data analysis results, increased learning of the use of more diverse research methods; for example textual analysis techniques, and the increasingly diverse results of observations of individuals and their methods, make alternative sources of information now available. In the future, every data can be more diverse and meaningful at every opportunity. This study assumes that these secondary data sources can be used for initial data analysis, including for simple correlational statistical tests (Frijter, 2019; Qaniah, 2021).

## **2. Method**

This study uses secondary data. The research participants are data from 75 countries, all of which have PISA assessment results and the world happiness report or WHR in the same year, namely 2018. The literacy level score is a reading skill obtained based on the Program for International Student Assessment (PISA) in 2018. The total sample is approximately 600,000 students from 75 countries. The reading skills assessment carried out by PISA itself is carried out for 2/3 hours or 40 minutes. Reading skills are measured by how students perform a series of complex reading tasks. Among them are distinguishing between facts and opinions in uncommon readings, identifying main ideas in texts, and combining information from different sources (OECD, 2019).

For the country's happiness score, it is taken based on the results of each country's World Happiness Report or WHR in 2018. WHR in its guidelines for measuring well-being recommends a conceptual definition that they consider universal; namely a good mental state including all the results of various evaluations, positive and negative, that people experience about their lives and affective reactions to their personal experiences. This general definition leads to three elements: (a) Life evaluation - a reflective assessment of one's life or certain aspects of it, (b) Affect - a person's feelings or emotional states, usually measured with reference to a certain point in time, (c) Eudaimonia - meaningfulness and purpose of personal life and positive psychological functioning.

(Helliwell et al (2017, 2018) suggest eight factors used by the World Happiness Report:

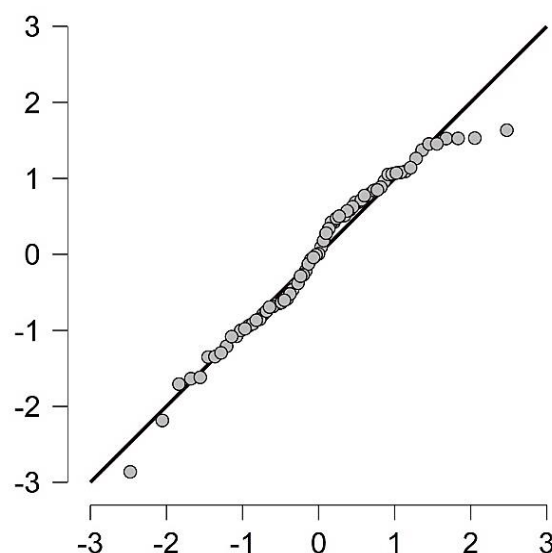
- a) GDP per capita in purchasing power parity or PPP adjusted to the international dollar constant, taken from the World Development Indicators (WDI) released by the World

Bank in September 2017.

- b) Life expectancy at birth (time series) is based on data from WHO and WDI. WHO publishes healthy life expectancy for 2012, and WDI publishes a time series of life expectancy. WHR then constructs a time series of life expectancy at birth by: Generating a ratio of healthy life expectancy to the time series of life expectancy for countries that have both data.
- c) Social support is the average of the binary responses (0 or 1) to the GWP question “If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?”
- d) Freedom to make life choices is the average of the binary responses to the GWP question “Are you satisfied or dissatisfied with your freedom to choose what you do with your life”
- e) Generosity is the residual regression of the average response to the GWP scale “Have you donated money to a charity in the past month” against a country’s GDP per capita.
- f) Perception of corruption is the average of the GWP scale questions “Is corruption widespread throughout the government or not?” and “Is corruption widespread throughout business or not?” Where data for government corruption are not available, perception of business corruption will be used as a measure of overall corruption perception.
- g) Positive affect is defined as the average of the questions on the scale related to feeling happy, laughing or enjoying from the 2008 to 2013 GWP.
- h) Negative affect is defined as the average of the questions on the previous feelings of worry, sadness and anger in the GWP survey.

This study uses Spearman Correlation analysis (two tailed) to see how high the correlation level is between research variables and also how good the degree of significance is. If the correlation is significant and good, the researcher tries to see the coefficient of determination ( $R^2$ ) in the simple linear regression model, as additional information. The analysis of the Spearman correlation results itself allows this study to further interpret the research variables in general through the results of descriptive analysis related to the relationship between reading skills and happiness in statistical method analysis.

**Image 1**  
Q-Q Plot Standadized Residuals Across Variable



### 3. Results

Statistical analysis of correlation test in this study can be seen in the table below, in table 3. Because the correlation test is significant ( $p < 0.01$ ), the researcher tried to see the adjusted R<sup>2</sup> or simple regression model of the research variable. Statistical test in this study uses SPSS and JASP softwares.

**Tabel 2.**  
Correlation and Regression Model in Research

| NO | Variable                              | R<br><i>Spearman</i>                 | R <sup>2</sup> | F        | T     | .Sig  |
|----|---------------------------------------|--------------------------------------|----------------|----------|-------|-------|
| 1. | Literacy Level and<br>Happyness Score | <b>0,479**</b><br>(.sig $p > 0,01$ ) | <b>0,209</b>   | 19.286** | 4.392 | 0,000 |

Ket: Dependent Variable: happyness score. two tail. n:75. \*\*:  $p < .001$

Spearman correlation value between variables is  $R = 0.479^{**}$  which means that there is a significant association or relationship between the PISA literacy level and the happiness level of each country. Thus, H1 is accepted. The higher the level of literacy or reading skills in a country, the higher the happiness level of the country. And vice versa. The correlation value between variables is at a value of 0.4 to 0.6 which means it has a moderate relationship strength.

This study takes the coefficient of determination or R<sup>2</sup> as additional information for the results and discussion. In the model above, the independent variable (X) is the level of literacy or reading skills. While the dependent variable (Y) is happiness. It can be seen that the significance of F and t-count is below 0.001 with an R<sup>2</sup> adjustment of 0.209. It can be said that 20.9% of the happiness variance can be explained by reading skills. The remaining 80.1% is explained by other factors outside the model. In other words, reading skills have a contribution of 20.9% and are able to significantly predict happiness in the existing data.

The researcher has previously assumed that there is a significant correlation between the two variables; student literacy level and happiness score. The higher the literacy level, the higher the happiness score in research. There were no obstacles encountered other than conducting statistical tests. Thus, the examiner conducted a regression test and obtained significant positive results. The literacy rate can affect happiness significantly. Thus, further interventions can be carried out; for example, reading training, improving literacy facilities, social intervention in reading, for increase happiness score.

### 4. Discussion

The results of the study are in line with one of the general goals of education in Indonesia to achieve more lasting happiness (long-term). This type of long-lasting happiness leads to eudaimonic well-being compared to hedonic well-being which is situational. Although, both types of well-being are important, necessary and complement each other. To achieve long-term happiness, a person or group needs to make an effort, for example by trying to develop and improve reading skills.

As with the research results, eudaimonia or eudaimonic well-being is more consistent than hedonic well-being because of ongoing empathy, self-development, continuous learning of new skills, and trying to achieve new goals in the future (Joshano et al., 2021). Reading skills are undeniably very useful skills for a person and are long-lasting. With good literacy, a person is

assumed to better understand what is happening in the surrounding environment, to themselves, and to reflect, which will add new insights. This new insight can also be used to improve well-being in daily activities. This can happen because insight from reading skills can discover people with new potential.

One of the factors used by the World Happiness Report (WEF) to predict happiness is life expectancy. Longitudinal research at Yale University found that reading habits have an influence on higher life expectancy or longevity. The study consisted of 3635 participants under the age of 50 who followed the program for a period of 12 years. The results of the study said that participants who had a reading habit significantly lived 23 months longer than "non-reader" participants (Bavishi et al., 2016). They also have better survival knowledge. The habit of reading itself based on research can improve interpretation and evaluation skills, and someone can start the habit because they enjoy thinking or cognitive activities (Bavishi et al., 2016; Muawanah, 2014).

Someone who has eudaimonic well-being happiness is assumed to be more understanding, prefers to do ignorance, is healthier, more creative, effective, more empathetic and altruistic than the hedonic type of happiness, although both types of happiness are equally needed by someone. Western philosophers such as Aristotle, Thomas Jefferson, and Nietzsche considered virtue or good values to be the moral foundation for lasting happiness. Among the character strengths based on virtue in Positive Psychology by Peterson & Seligman (Mayerson et al., 2022), of course there are those related to literacy levels and reading skills including: (a) curiosity, (b) love of learning, (c) perspective, (d) judgment and (e) creativity which are all included in the value or virtue of Wisdom and Learning.

This study itself seeks to help teachers and schools identify areas for improvement and practices that are considered best (Schleicher, 2019). However, the PISA assessment also shows that most OECD countries have shown little improvement in their performance since PISA was first conducted in 2000 (OECD, 2019). The stagnation in the performance of several countries illustrates the difficulty of maintaining systemic improvements in education. Of course, many important factors for educational success have not been revealed (OECD, 2020). Meanwhile, there is a growing expectation for students to become independent learners, lifelong learners and broad-minded learners. Therefore, PISA itself does not only aim to critically assess content knowledge competencies and routine cognitive skills. Reading levels are no longer about extracting information from books in a careful and valid way. But also building knowledge, thinking critically, and making reasoned judgments from a variety of texts and sources (OECD, 2019).

For the reasons above, PISA has also started measuring growth mindset vs fixed mindset since 2018. There are several studies that see this concept as associated with life satisfaction. The concept of growth mindset itself has been discussed in the field of Psychology for the past few decades. Experts assume that this concept may be able to explain why certain students thrive when faced with difficulties while others do not. For example, in a society where uncertainty is increasing, and during the global COVID crisis, large-scale school closures have heterogeneously impacted more than 1.6 billion learners (UNESCO, 2021).

While such experiences may be enriching for students who are able to set their own learning goals, outline learning strategies, and master their progress. Generally they have a growth mindset. A growth mindset is the belief that a person's skills and qualities can be developed through good strategies, efforts, and support from others as opposed to a fixed or fixed growth mindset that assumes that it is determined from birth. According to the theory, someone with a growth mindset is more likely to accept challenges and learn from failure to achieve greater levels of achievement than someone with a fixed mindset who tends to avoid challenges (OECD, 2019)

Research shows that mindset has an influence on overall well-being life satisfaction because



mindset can be a buffer for some people when facing unusual situations that require more effort. One of the results of research by Burnette et al., (2020) found that growth mindset is negatively correlated with psychological distress. Or Yeager, (2017) who found that young people respond to social difficulties depending on their mindset, where fixed mindset is associated with extreme affective, psychological and behavioral aspects such as depression and aggression. Wahidah & Royanto (2019) also found that students with a growth mindset have a better relationship with school well-being with the grit variable as a mediator.

Zeng et al., (2019) found that growth mindset, well-being, and fear of trying can predict the extent to which people are involved in their work (work engagement). In addition, they also found a structural equation model (SEM) which showed that well-being and perseverance can partially mediate the path between growth mindset and work engagement. This can be a clue for teachers about the importance of developing a growth mindset in schools. For workplace research, Godlewska-Werner et al., (2021) found that consumerism at work was not correlated with well-being and growth mindset. The phenomenon of Consumerism at work is considered a negative phenomenon in the context of employee self-concept clarity because some things are related to being less productive, and are usually associated with unbalanced materialistic goals.

## 5. Conclusion and Suggestion

Statistical analysis of the correlation test conducted showed that there was a significant relationship between reading skills or literacy levels of the 2018 PISA assessment and the world happiness ranking by WHR or the 2018 World Happiness Report. This means that the higher a country's reading skills, the higher their happiness score tends to be. Simple regression analysis also shows that reading skills have an influence on the happiness score of each country. However, when explored further, it turns out that there is a difference between countries with a mean happiness score above average and below average. The results of the analysis also show that the correlation between variables is more significant and meaningful for countries with a mean happiness score above average compared to countries below the mean score. This raises new questions about education and happiness between countries.

PISA began measuring growth mindset vs. fixed mindset in 2018. Several studies have looked at the concept as being associated with life satisfaction. Experts speculate that it may explain why some students thrive when faced with adversity while others do not. The concept of growth mindset itself has been discussed in the field of Psychology for decades. Growth mindset is the belief that a person's skills and qualities can be developed through good strategies, effort, and support from others as opposed to a fixed mindset or fixed growth mindset that assumes these are determined from birth. According to the theory, someone with a growth mindset is more likely to accept challenges and learn from failure to reach greater levels of achievement than someone with a fixed mindset who tends to avoid challenges. Research also shows that mindset has an influence on overall life satisfaction and well-being because mindset can be a buffer for some people when faced with unusual situations that require more effort.

This study has several limitations. First, the definition of happiness offered by the World Happiness Report or WHR may differ if each culture in a country has its own concept of happiness that is generally different. Second, the main purpose of this study is to test the correlation of secondary data and discuss several studies on education. Therefore, further in-depth research is still needed, both qualitatively to see the relationship between literacy levels and happiness, or an action research approach, training, experiments, and other research methods that make it easier for researchers to achieve the targeted goals.

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