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Research Article

Empowerment Gifted Young Scientists (GYS) in Millennial Generation: Impact of Quality Improvement in Education of Gender Perspective

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Abstract

The Gifted Young Scientists (GYS) in Indonesia in this decade are getting stronger. However, the minimum level of education makes equity in Indonesia not running optimally. The purpose of this study was to obtain a complete picture of the steps taken by Tegal Regency, and Kendal Regency, Indonesia in removing discrimination against GYS andevaluatingaccordingtoconstitutionalrights.The sampling technique in this study was carried out by simple random sampling. The instruments used in this study were a test of pre-test, post-test and communication test skills. This data collection was conducted to determine the level of ability of differences in the field of STEM education in male and female gender equality. From the test results, the data is tested in the SPSS program such as the T test, homogeneity test, and normality test. Based on the results data collection and the Forum Discussion Group (FGD), government administrators in education and the development of empowerment of GYS in the Tegal regency, and Kendal regency, Indonesia is implemented in the implementation of minimum service standards. The comparison between the number of female workers compared to male workers in the city of Tegal occupies the highest place in Central Java (out of 11,586 workers in the area of Tegal Regency, and Kendal Regency, Indonesia 19,713 are female workers).The millennial generation must study etiquette to balance knowledge and attitudes in social life.

Keywords

Gifted Young Scientists (GYS), STEM, forum discussion group

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Introduction

The discourse on empowerment of Gifted Young Scientists (GYS) in Indonesia in this decade has increasingly strengthened with regard to strengthening democratization and recovery of the economic crisis. Factors of helplessness are caused by, among others, the absence of economic guarantees (Rufaidah, AtIrsyadi, Saregar, & Umam, 2018), low education, low access to politics, weak access to information and technology, lack of financial support and unavailability of education (Hartinah et al., 2019). The powerlessness experienced by a group of people is a result of the internalization process that results from their interaction with the community (Cetin & Tortop, 2018). The powerless community groups consider themselves weak and powerless in the digital-based era of the Industrial Revolution 4.0 (Diani et al., 2019).

Empowerment is a concept that was born as part of the development of the minds of western people and culture, especially in Europe. To understand the concept of empowerment appropriately and clearly requires an effort to understand the contextual background that gave birth to it (Muhamad Syazali et al., 2019). The concept has been widespread and used since 1980, with different understandings and perceptions(Look, Participation, & Happiness, 2019). Acceptance, and the use of the concept critically make the social community make a revision that is fundamental and clear (Gulgor & Tortop, 2018). Gender is a social construction regarding the different roles, positions (Umam & Sommanawat, 2019), opportunities between men and women in family life and community life. Likewise in the field of education that is increasingly developing, namely Science, Technology, Engineering, and Mathematics (STEM) (Figure 1) (Sagala, Umam, Thahir, Saregar, & Wardani, 2019).

The commitment of the Indonesian Government to realize gender equality and justice is based on Article 27 of the 1945 Constitution and strengthened through the ratification of the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) in Law Number 7 of 1984 and the foundation of the Beijing Action and Declaration of the Fourth World Conference on Women in Beijing in 1995.

Article 27 of the 1945 Constitution guarantees equal rights for all citizens before the law, both men and women, but there are still many discriminatory legal material (Novoa, Johann, Morillo, & Inciarte, 2019). For example, Law Number 1 of 1974 concerning Marriage also reinforces the division of roles by type stereotyping of women in the Development Approach (WID), which aims to fulfill women's basic needs and use women's traditional abilities and skills to achieve development goals (America, Role, Chac, Giancarlo, & Orozco, 2019).

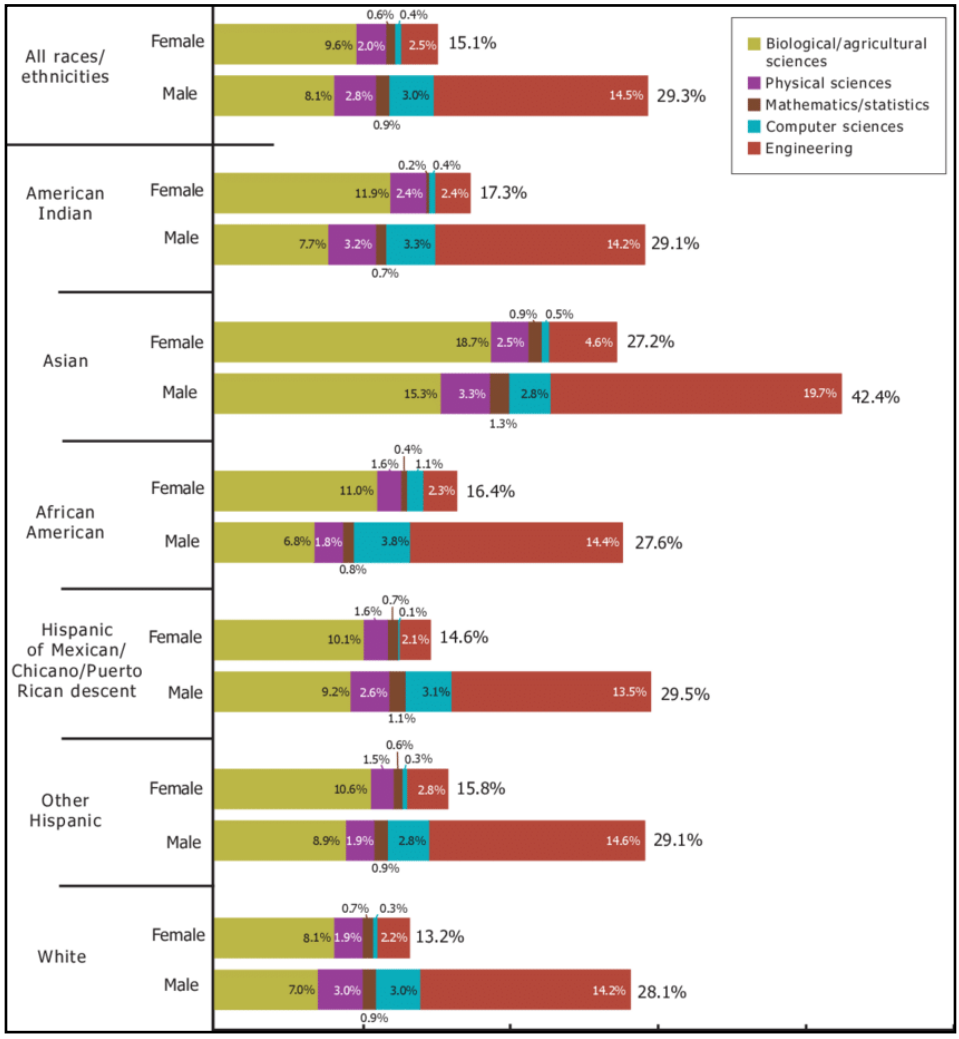

Figure 1

The First Year College Students to Major in STEM Fields between Ethnicity and Gender (*Source: Higher Education Research Institute, 2007 on*(Sagala et al., 2019).

The vision of developing the empowerment of Gifted Young Scientists (GYS) in Indonesia is the realization of gender equality and justice in family life, community, nation and state (Networks, Channels, Participation, Moreno, & Trejo, 2019).

The mission of the development of women's empowerment is:

1. Improving the quality of life of Gifted Young Scientists (GYS)
2. Promoting socialization of gender equality and justice
3. Elimination of all forms of violence against women
4. Enforcement of human rights for women

5. Increasing child welfare and protection
6. Increasing the independence of institutions and organizations Gifted Young Scientists (GYS)

While the development policy of Gifted Young Scientists (GYS) empowerment is:

a. Increasing gender equality and justice
b. Improving the quality of life of Gifted Young Scientists (GYS)
c. Strengthening institutions and institutions

From the vision, mission and development program of women's empowerment, the policy emphasis is on improving the quality of life of the socio-economic Gifted Young Scientists (GYS) in the equality of rights between men and women based on existing legal provisions (Ramadhani, Umam, Abdurrahman, & Syazali, 2019).

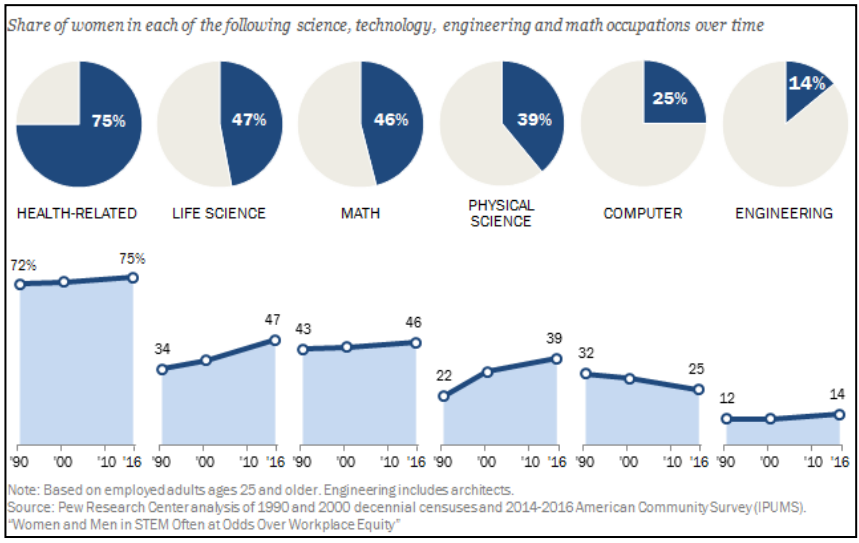

Figure 2.

Comparison of Women and Men Based on Health and STEM Education Level (Source: Pew Research Center Analysis of U.S. Census Bureau Data since 1990).

Equality as a development issue will increase the ability of countries to develop, reduce poverty(Yilmaz & Tortop, 2018), and run the government effectively (Figure 2). Thus, increasing gender equality is an important part of a development strategy that seeks empowerment (Lestari et al., 2019).

The purpose of this study was to obtain a complete picture of the steps taken by Tegal City, Tegal Regency, and Kendal District in removing discrimination against Gifted Young Scientists (GYS) and evaluating according to constitutional rights (Balsa, 2019). In addition, it obtained a comprehensive picture of the efforts

to empower and improve the education of Gifted Young Scientists (GYS) based on gender comparisons in the STEM field.

Method

Research Model

The type of research in this study is the Quasy Experiment research. The students at the Senior High Private School in Tegal Regency and Kendal Regency, Indonesia. The sampling technique in this study was carried out by simple random sampling. The instruments used in this study were a test of pre-test, post test and communication test skills. This data collection was conducted to determine the level of ability of differences in the field of STEM education in male and female gender equality. From the test results, the data is tested in the SPSS program such as the T test, homogeneity test, and normality test (Landau & Everitt CHAPMAN, 2004).

Participants

In addition, in this study also collected data on Gifted Young Scientists (GYS) especially prospective teachers (final students), young teachers (Schools and Universities) who have contributed to the writing of scientific papers or international articles (International Journal) to find out the trends in contributions in The last 2 years as an impact of the increase in the Digital Age (industrial revolution 4.0) (Kasayanond, Umam, & Jermsittiparsert, 2019).

Data Collection Tools

In addition, secondary data, mainly in the form of legal product products, are analyzed by certain criteria about gender sensitivity. The process of analyzing qualitative data, the author takes the following criteria:

- Take notes that produce field notes, with that code given so that the data source can still be traced.
- Collect, sort, classify and make summaries.
- Thinking by making the data categories have meaning, looking for and finding patterns and relationships and making general findings.

Data Analysis

All data collected will be analyzed qualitatively inductively. The focus of the analysis is aimed at the strategies of the government and regional governments in empowering women workers (Jaimes, 2019) through the development of gender perspective law (Sagala et al., 2019). The steps of analysis are as follows:

- Data in the field are grouped according to the element of study that has been determined.
- Description and concepts based on data.

- Confirm the interpretation of the relevance of the elements of the study with the informant (Maulidi, Apriliani, & Syazali, 2019).
- Conduct conceptualization to formulate the results of the study (Rahmawati, Lestari, & Umam, 2019).

Analysis of the data in this study focused on the designation of meaning, namely the legal function with a gender perspective, one description of empowering women with clarification of the placement of data in each context and often depicting in words rather than numbers. Data is arranged in a certain pattern, specific category, focus or specific theme by summarizing and selecting data so that it can be included in the appropriate category (Abdurrahman, Saregar, & Umam, 2018).

Result and Discussion

Based on research conducted randomly at school schools in the area of Tegal Regency, and Kendal Regency, Indonesia. The results of the normality test (Table 1), homogeneity test (Table 2), and the T test (Table 3) show that this test has recapitulation of calculations that can be accepted in Quasy Experiment research in STEM education with a gender perspective. Sample in this study amounted to 60 students (30 experimental classes and 30 for control classes) with male and female gender division (50:50).

Table 1.

Results of Calculation of Normality Test for Communication Test Skills in STEM

Class	Total of samples	$L_{count}(L_{(\alpha,n)})$	L_{table}	Information
Experiment	30	0,182	0,212	Normal
Control	30	0,160	0,209	Normal

To find out whether the two scores have the same or different characters, an F-test is needed. Variance test results with a significant level of α = 5% can be seen in the following Table 2:

Table 2.

Results of the Similarity Test for STEM

Class	Total of samples	Variances	F_{count}	F_{table}	Information
Experiment	30	0,035	1,036	1,955	Homogeneous
Control	30	0,035			

To test the differences in mathematical communication skills of students used t-test. The calculation results can be seen in the following Table 3:

Table 3.

Results of Calculation of T-Tests for STEM

Class	Total of samples	Average(x)	$t_{table}(t_{(\alpha,db)})$	t_{count}	Information
Experiment	30	56,590	1,627	11,439	H_1 be accepted
Control	30	41,411			

Based on the results of Quasy Experimental research data collection on STEM education with a gender perspective. It is known that the ability to interview is low or the ability to teach. This is seen based on the results of the interview test, which shows that the abilities of both genders (both male and female) are still the same. However, gender-specific can be seen in Figure 3 which shows a comparison of students' achievement abilities in the last 2 years in the Tegal District, and Kendal District, Indonesia based on comparisons in this study.

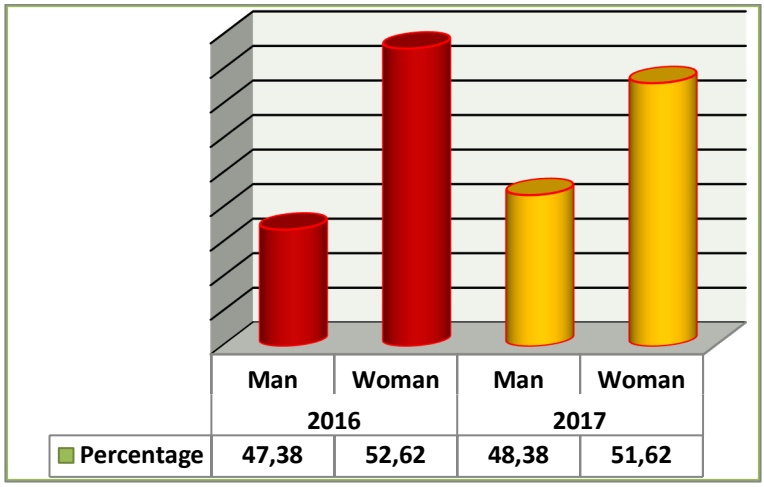

Figure 3.

Comparison of Student Achievement Abilities Based on a Combination of Data in the Tegal Regency, and Kendal District, Indonesia

Furthermore, from this low ability, a solution can be given, namely by providing gender perspective learning equality in Gifted Young Scientists (GYS). From the treatment, the influence of the learning model will be sought on the students' teaching communication skills.

Discussion and Conclusion

Based on the secondary data collection of the Forum Discussion Group (FGD), government administrators in education and the development of empowerment of Gifted Young Scientists (GYS) in the Tegal regency, and Kendal regency, Indonesia is implemented in the implementation of minimum service standards.

The standard refers to the implementation framework for empowering (Nugroho, Putra, Putra, & Syazali, 2017) Gifted Young Scientists (GYS) in the regions by raising existing problems:

- Quality of life of Gifted Young Scientists (GYS) in the economic standard.
- The problem of empowering regional institutions.
- The issue of gender equality and justice in the field of employment with the low participation rate of the female labor force compared to men 45.6% with 73.5% (data in 2018).

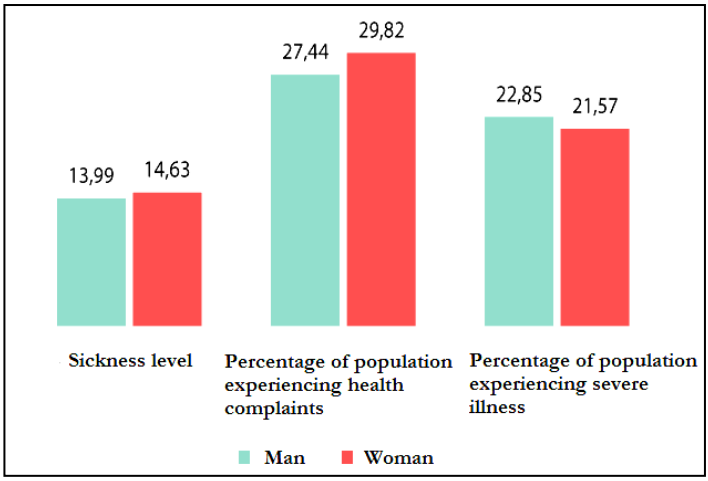

Figure4.

Various Health Indicators by Gender in Indonesia, 2017 (Source: 2017 People's Welfare Statistics (BPS, 2017c)

The comparison between the number of female workers compared to male workers in the city of Tegal occupies the highest place in Central Java (out of 11,586 workers in the area of Tegal Regency, and Kendal Regency, Indonesia 19,713 are female workers).

The results of the comparison of labor in the Tegal regency and Kendal regency, have a positive relationship to the data of the Indonesian central ministry statistics (Maskur, Syazali, & Utami, 2019), which provides information that men and women have equal opportunities for education (Saregar, Latifah, & Sari, 2016). However, in STEM gender statistics in Indonesia (Yuniasti & Wulandari, 2018), women's age is longer than that of men (Figure 4), so women's gender development index can surpass men (Figure 5).

Gender refers to attributes, social opportunities(Syahrir et al., 2018), and relationships related to men and women. These attributes, opportunities and relationships are built and studied socially through the process of socialization. The term gender is often synonymous with gender. Though both are different things (Putra, Nur Kholifah, Subali, & Rusilowati, 2018). The sex itself refers to physical

conditions that are outwardly possessed by someone. When a person is born male or female, there are differences in norms and behavior between the two. This difference in treatment then forms roles, behaviors, and attributes that are socially constructed in society which are often referred to as gender (Prastowo et al., 2019). Differences in treatment, norms and views that are formed in society between men and women have an impact on various things in life (Rahman, Abdurrahman, Kadaryanto, & Rusminto, 2015). Gender discrimination raises differences in outcomes between men and women which are called gender inequality.

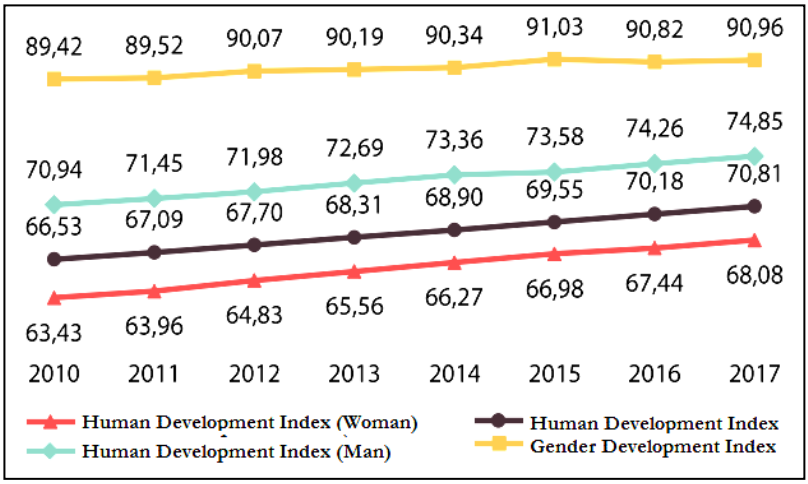

Figure 5.
Development of the Human Development Index (Women), Human Development Index (Men), Human Development Index (Women), and Gender Development Index, 2010-2017 (Source: Central statistical agency, Indonesia)

In various regions of the world, such as in Indonesia, this imbalance is reinforced by the growth of patriarchal culture that prioritizes men over women. Patriarchal culture places men as the party responsible for the public role, while women only dwell on domestic roles (Sriyakul et al., 2019). Gender inequality occurs in various ways. Discrimination that occurs results in differences in development achievements between men and women. These differences can be found in the fields of health, economy and labor (Umam & Sommanawat, 2019). In general, women's achievements are still far behind compared to men. However, the results of this study provide good information, that inequality does not occur in the range of elementary schools to study in areas that are good in terms of educational facilities (Kusumawati & Nayazik, 2018). However, it occurs in certain regions due to economic constraints and uneven education(M. Syazali et al., 2019) and in the recruitment of workers who prioritize male workforce over women.

In addition to work participation, the polemic of women's role in income generation also occurs in the work carried out. When women have decided to enter

the workforce, they are faced with a variety of policies that are not gender responsive. Discrimination in the process of hiring employees until the difference in wages of labor between men and women is still visible (Habibi et al., 2019).

Education is something that is used to measure the success of human development. Achievements regarding this education are listed in the goals of sustainable development (Ratnasari, Tadjudin, Syazali, Mujib, & Andriani, 2018). The higher education pursued by someone, the higher the quality of development achieved. In measuring the quality of human development (Abdurrahman, Nurulsari, Maulina, & Ariyani, 2019), the education dimension is represented by two indicators, one of which is long-term school expectations (Andini & Yunianta, 2018). The school's long-term expectations measure a person's long chance to study. This indicator is calculated from residents aged 7 years and above. The results of the study (Table 1, 2, and 3) show that the Tegal and Kendal regencies have good potential (Hartinah et al., 2020).

Based on the results of the study it can be concluded that basically the STEM educational capacity of a gender perspective is not influential during the educational process. But it began to be seen when looking for labor. In fact, based on the results of the analysis in this study, which is associated with Indonesian statistical data on gender perspective education, generally the women's development index is higher than that of men, but in physical strength, male labor demand is higher than that of women (Rahmawati et al., 2019). This index affects Gifted Young Scientists (GYS) in Indonesia. Gender-based human development means improving the quality of life that is balanced between men and women. Improved quality of life as in the fields of health, education, and the economy will lead to empowerment. Empowerment is not only expected from men, but also women. The culture that has been developing as if it is inhibiting women's empowerment, such as in decision making to income generation in the labor market. Ideally, increasing gender development will create a balance of empowerment between men and women.

For further studies, research can be developed by comparing and linking data from several countries with different millennial generation characters. Because character can influence the human development index of a country's education system.

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