



## COMPARISON OF CHARACTER RESPONSIBILITIES AND LEARNING OUTCOMES IN MEXICO AND INDONESIA IN JUNIOR HIGH SCHOOLS

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### Abstract :

This study aimed to determine the influence of responsibility character on the learning outcomes of junior high school students' measurement material. The type of research used is quantitative research. The population in this study is students of Junior High School Adhyaksa 1 Jambi City and Escuela Secundaria Diurna, the sample to be used in this study is determined by purposive sampling method, the instrument used is a questionnaire or questionnaire, and the data analysis technique is using regression. The results showed that the character of responsibility and student learning outcomes in the measurement area was significantly influenced. This research can provide new insights into understanding the importance of character development responsibility in improving student learning outcomes. The implications of this research can be the basis for developing learning strategies that are more effective in enhancing the character of Javanese students and improving the learning outcomes of junior high school students.

Keywords: Character of Responsibility; Learning Outcomes; Measurement

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## INTRODUCTION

The era of globalization has developed very quickly and increasingly sophisticated so that every aspect of society must be able to keep up with the times, especially in the field of education which is referred to as 21st century learning. 21st century learning is a learning in which the curriculum developed requires schools to be able to change the learning approach that was originally from *teacher centred* to *student centred* (Mu'minah, 2021). In the world of education there are levels of education, namely elementary school, junior high school, and high school. Especially for 21st century learning at the junior high school level, there has been a significant shift in recent years (Syaharuddin & Mutiani, 2020). In this era, it is important for students to develop skills and knowledge that are relevant to the needs of the times. One of the materials taught in junior high school is measurement material.

One of the most important materials taught in 21st century learning is measurement. Measurement is a very important process in the field of natural science and mathematics which will

involve comparison, estimation, and calculation for objects, phenomena, and so on. Measurement material is very important in assisting students in understanding the basic concepts of size, units, and in using measuring instruments relevantly (Yatnikasari et al., 2021). By studying measurements, students can develop the ability to make measurements accurately and understand the results properly and correctly (Pramana & Putra, 2019). When studying material in the classroom, one very important aspect is the value of character.

In addition to measurement material, the character of responsibility is one of the most important aspects in learning in the 21st century. Responsibility will involve the ability of students to take initiative, effectively manage their time, and be able to accept all the consequences for their actions (Hadori, 2023). In the field of Education, this character of responsibility will help students and shape students into individuals who are independent, disciplined, and responsible for all their academic and social tasks (Lestari, 2020). Responsible character education can also help students develop integrity, honesty, and commitment to the teaching and learning process (Tuhuteru et al., 2023). In addition to the character values possessed by students, student learning outcomes are also a very important aspect in the learning process.

Learning outcomes are the main indicator of educational success because teachers can find out whether students have achieved the competencies that have been set (Sihombing, 2021). This includes the understanding, skills, and knowledge that will be acquired by students after going through the learning process (Annisa & Marlina, 2019). In addition to knowing the success of education, learning outcomes can also reflect the effectiveness of teaching methods and strategies applied by educators (Aldila et al., 2023). Optimal learning outcomes can show deep understanding, critical thinking skills, creativity, and skills that can be applied in everyday life (Saputro et al., 2019). Improving student learning outcomes is a key goal in education, as it can open doors to better opportunities for the future and can provide a solid foundation for students' personal abilities.

If the student does not have the character of responsibility then it can negatively affect the personal development of the student. The impact that may arise if students do not have a good character of responsibility is that students are likely to have difficulty in achieving optimal academic performance. This is because lack of responsibility character can reduce student motivation in learning and actively participating in learning (Sari & Bermuli, 2021). In the long run, a lack of character responsibility can hinder students' personal and professional development and may affect their chances of achieving success in the future (Laia et al., 2022). They may lose their sense of discipline, integrity, and ability to work together in teams, which are essential skills for success in life and career in the future.

The character of responsibility in learning must be taught in schools in order to improve the quality of learning in the classroom and can improve the quality of schools. It is based on research conducted by Wibowo (2023) states that the character of responsibility is the attitude and behavior of an individual or person in carrying out all obligations that must be done. One of the benefits of the character responsibility possessed by students is that it can improve learning outcomes and can improve the quality of the school. In another study by Mugiyatmi (2023) Where using a learning model as an intermediary which is expected to increase student responsibility. The results show that by having a character of responsibility, it can improve student learning outcomes.

Based on the description above, the researcher conducted this study with a problem formulation, namely what is meant by the character of responsibility, what is meant by learning outcomes, and how the influence of the character of responsibility on the learning outcomes of junior high school students on the measurement material. With the purpose of the study, it is to be able to find out about the description of the character of responsibility, know about the description of learning outcomes, and know the influence of the character of responsibility on the learning outcomes of junior high school students measurement material.

## **RESEARCH METHOD**

The type of research is generally divided into quantitative research, qualitative research, and mixed research. This study used a type of quantitative research with an associative design. Quantitative research is a research approach that focuses on collecting and analyzing numerical data that can be measured objectively (Parjaman & Akhmad, 2019). The main purpose of quantitative

research is to test hypotheses, identify relationships, or make generalizations about the wider population. Associative design in qualitative research involves the search and analysis of relationships, correlations, or associations between identified variables (Jaya, 2020). Researchers seek to understand the relationships that may exist among these variables and how those variables may contribute to the phenomenon under study. In this study, there are 2 variables that will be studied, namely responsible character and learning outcomes. The independent variable (X) in this study is the responsible character, while the dependent variable (Y) in this study is the learning outcome.

The subject of research is an individual, group, or unit that will be the focus of the study. In the subject of study relates to the population and sample. A population is a complete group of individuals, objects, or entities that share similar or relevant characteristics in a particular research context (Lesmana, 2021). The population of the study can be seen in the following table.

Table 1. Research Population

No	School Name	Number of Students
1	Junior High School Adhyaksa 1 Jambi City	90
2	Escuela Secundaria Diurna	90

The research sample is a small portion of the population selected to be represented in the study (Firmansyah & Dede, 2022). The sample is selected with the aim of representing the characteristics present in the population as a whole. By using *purposive sampling*, research subjects are selected based on certain criteria relevant to the research objectives (Ambiyar et al., 2020). By using *purposive sampling* the research subject can be selected by the researcher where the subject will have certain expertise, knowledge, experience, or characteristics that are appropriate to the research question. So that the samples taken in this study were 25 Indonesian state students at Junior High School Adhyaksa 1 Jambi City and 25 Mexican state students at Escuela Secundaria Diurna.



Figure 1. Research Procedure

In data collection, the first activity that must be done is to select students based on categories that have been determined by the researcher, then provide questionnaire sheets about the character of responsibility and learning outcome question sheets. This questionnaire sheet and question sheet are addressed to students at Junior High School Adhyaksa 1 Jambi City and Escuela Secundaria Diurna who were the subjects of this study with a total of 50 students, which aimed to determine the influence of character responsible for student learning outcomes. Then the data is processed using the SPSS application. The results were tested with the SPSS application by conducting three tests, namely descriptive statistical tests, assumption tests, and hypothesis tests. From each test that has been carried out, it will be concluded whether the character responsible has an influence on student learning outcomes.

Data collection instruments and techniques are important components of research. Research instruments are methods or tools for data collection in a study (Ismunarti et al., 2020). Research instruments are designed to collect relevant information based on research questions and variables to be studied. This study used instruments in the form of questionnaires or questionnaires and questions for students. Data collection techniques are strategies or methods used to collect all information or data needed in a study (Adhimah, 2020). There are many techniques in data collection, one of which is surveys. Surveys involve the use of questionnaires or questionnaires in collecting data from respondents. The grid of student responsibility character questionnaires that will be presented in the following tabel.

Table 2. Instrument Grid Character Responsibility

Variable	Indicator	Question Number	Number of Items
Student Responsibility Character	1. Work on assignments based on your own work	1,2,3,4	4
	2. Do chores and homework well	5,6,7,8	4
	3. Responsible for every deed	9,10,11,12	4
	4. Picket according to a predetermined schedule	13,14,15,16	4
	5. Work on group assignments together	17,18,19,20	4
Sum			20

(Malinah, 2018)

For student learning outcomes variables in the measurement material using multiple choice questions with four answer choices, the grid of measurement material question instruments is as follows.

Table 3. Question Instrument Grid

Variable	Question Indicator	Question Number	Number of Items
Learning Outcomes Student	1. Students can explain process skills in conducting science research	1,2,3,4	4
	2. Students can explain about measurement	5,6,7,8	4
	3. Students can explain the tools used in measurement	9,10,11,12	4
	4. Students can explain physical quantities	13,14,15,16	4
	5. Students can understand the use of standard units in measurement	17,18,19,20	4
Sum			20

(Hasanah, 2017)

Because the questionnaire sheet on the variable character responsibility in the subject of measurement material uses the Likert scale which consists of 4 categories, there is an interval in each category. The four categories are very good, good, enough, and not good. While the learning outcome variable uses multiple choice questions with 4 answer choices. The description of the character categories of responsibility and learning outcomes is as follows:

Table 4. Character Categories: Responsibilities and Learning Outcomes

Category	Interval	
	Character of responsibility	Learning Outcomes
Bad	5 – 8	7 – 10
Enough	9 – 12	11 – 14
Good	13 – 16	15 – 18
Very Good	17 – 20	19 – 28

The data that has been obtained will be processed using the SPSS application. From the results of the instrument, three tests will be carried out using spss, namely statistical description test, assumption test, and hypothesis test. The statistical test description aims to provide an overview of the observed data (Hadi & Tifani, 2020). The main purpose is to present and describe the data concisely through centering measures and spread sizes. From the statistical test description, results will be obtained in the form of mean, median, mode, minimum, maximum, percentage, and student categories (Anwar & Mappese, 2023). Mean is used in research to calculate the average value of a variable or measurement in a research sample. The median is used to determine the middle value in the data distribution. Mode is used in research to identify the values that most often appear in the distribution of data. In research, minimum and maximum values are used to report the range or range of data. Percentages are used in research to present the proportion or percentage of a group or characteristic in

a sample. In research, student categories are used to group students based on certain characteristics relevant to the research.

Assumption tests or statistical assumption tests are used to verify the assumptions underlying the statistical methods to be used (Yanto & Sitio, 2020). Assumption testing helps ensure that the data used conform to the assumptions of the chosen statistical method. In the assumption test, two tests are carried out, namely the normality test and the linearity test. A normality test is a statistical test used to test whether the observed data is from a normal distribution or close to a normal distribution. A linearity test is a statistical test used to test whether the relationship between two variables can be explained linearly (Nizam et al., 2020). This means that the existence of a relationship between the independent variable (X) and the dependent variable (Y) can be represented by a straight-line equation. Then test the hypothesis in the form of a regression test. Regression Test is a statistical approach used to evaluate the influence between variables used (Ningsih & Dukulang, 2019). These tests are tested with the help of the SPSS 26 application to get accurate results. The hypotheses proposed in this study are:

- $H_0$  : There is no influence between the character of responsibility and learning outcomes
- $H_a$  : There is an influence between the character of responsibility and learning outcomes

**RESULTS AND DISCUSSION**

Below is a descriptive statistical result for the independent variable (X), namely the character of student responsibility in Indonesia. In this study, data collection was carried out through questionnaire sheets at Junior High School Adhyaksa 1 Jambi City. The description of the independent variable (X) is shown in the following table.

Table 5. Description of Independent Variable (X) in Indonesia

School	Variable	Interval	Frequency	Percentage (%)	Category		
Junior High School	Student	5 – 8	2	8	Bad	Mean	14.52
	Responsibility	9 – 12	8	32	Enough	Median	14.00
Adhyaksa 1 Jambi City	Character	13 – 16	12	48	Good	Modus	14.00
		17 – 20	3	12	Very Good	Min	8.00
						Max	20.00

Based on the results obtained from the distribution of the responsibility character questionnaire in Indonesia, in the very good category there are 3 students 12%, in the good category there are 12 students 48%, in the sufficient category there are 8 students 32%, and for the bad category there are 2 students with a percentage of 8%. With an average score of 14.52, a median of 14.00, a mode of 14.00, a minimum score of 8.00 and a maximum value of 20.00. From these results, it can be seen that the character of student responsibility is more dominant to good.

Below is a descriptive statistical result for the independent variable (X), which is the character of student responsibility in Mexico. In this study, data collection was carried out through questionnaire sheets at Escuela Secundaria Diurna. The description of the independent variable (X) is shown in the following table.

Table 6. Description of the Independent Variable (X) in Mexico

School	Variable	Interval	Frequency	Percentage (%)	Category		
Escuela Secundaria Diurna	Student	5 – 8	1	4	Bad	Mean	13.38
	Responsibility	9 – 12	10	40	Enough	Median	13.00
	Character	13 – 16	11	44	Good	Modus	13.00
		17 – 20	3	12	Very Good	Min	7.00
						Max	20.00

Based on the results obtained from the distribution of the responsibility character questionnaire in Mexico, in the very good category there are 3 students 12%, in the good category

there are 11 students 44%, in the sufficient category there are 10 students 40%, and for the bad category there is 1 student with a percentage of 4%. With an average score of 13.38, a median of 13.00, mode 13.00, a minimum score of 7.00 and a maximum value of 20.00. From these results, it can be seen that the character of student responsibility is more dominant to good.

Below are the descriptive statistical results for the dependent variable (Y), namely student learning outcomes in Indonesia. In this study, data collection was carried out through questionnaire sheets at Junior High School Adhyaksa 1 Jambi City. The description of the dependent variable (Y) is shown in the following table.

Table 7. Description of Dependent Variable (Y) in Indonesia

School	Variable	Interval	Frequency	Percentage (%)	Category		
Junior High School Adhyaksa 1 Jambi City	Student	7 – 10	0	0	Bad	Mean	18.073
	Learning	11 – 14	5	20	Enough	Median	18.00
	Outcomes	15 – 18	12	48	Good	Modus	17.00
		19 – 28	8	32	Very Good	Min	13.00
						Max	27.00

Based on the results obtained from the distribution of questions in Indonesia, in the very good category there are 8 students 32%, in the good category there are 12 students 48%, in the sufficient category there are 5 students 20%, and for the bad category there are 0 students with a percentage of 0%. With an average value of 18.073, a median of 18.00, mode 17.00, a minimum value of 13.00 and a maximum value of 27.00. From these results, it can be seen that student learning outcomes are more dominant to good.

Below are the descriptive statistical results for the dependent variable (Y), namely student learning outcomes in Mexico. In this study, data collection was carried out through questionnaire sheets at Escuela Secundaria Diurna. The description of the dependent variable (Y) is shown in the following table.

Table 8. Description of the Dependent Variable (Y) in Mexico

School	Variable	Interval	Frequency	Percentage (%)	Category	Result	
Escuela Secundaria Diurna	Student	7 – 10	0	0	Bad	Mean	17.021
	Learning	11 – 14	7	28	Enough	Median	17.00
	Outcomes	15 – 18	13	52	Good	Modus	16.00
		19 – 28	5	20	Very Good	Min	12.00
						Max	27.00

Based on the results obtained from the distribution of questions in Indonesia, in the very good category there are 5 students 20%, in the good category there are 13 students 52%, in the sufficient category there are 7 students 28%, and for the bad category there are 0 students with a percentage of 0%. With an average value of 17.021, a median of 17.00, mode 16.00, a minimum value of 12.00 and a maximum value of 27.00. From these results, it can be seen that student learning outcomes are more dominant to good. The normality test of the character variable responsibility for student learning outcomes in the subjects of measurement material in Indonesia can be explained in the following table.

Table 9. Normality Test of Character Responsibilities and Student Learning Outcomes in Indonesia

School	Variable	Number of Students	Sig.
Junior High School Adhyaksa 1 Jambi City	Character of responsibility	25	0.200
	Learning Outcomes Student	25	0.200

Based on the table above, it can be concluded that the data is normally distributed. The normality test obtained with the Kolmogorov-Smoirnov Test, significance values  $>$  from 0.05. The normality test of the character variable responsibility for student learning outcomes in the subjects of measurement material in Mexico can be explained in the following table.

Table 10. Test for Normality of Character, Responsibilities and Student Learning Outcomes in Mexico

School	Variable	Number of Students	Sig.
Escuela Secundaria Diurna	Character of responsibility	25	0.200
	Student Learning Outcomes	25	0.200

Based on the table above, it can be concluded that the data is normally distributed. The normality test obtained with the Kolmogorov-Smoirnov Test, significance values  $>$  from 0.05. The linearity test of the character variable responsibility for student learning outcomes in the subjects of measurement material in Indonesia can be explained in the following table.

Table 11. Linearity Test of Character Responsibilities and Student Learning Outcomes in Indonesia

School	Variable	Number of Students	Sig.
Junior High School Adhyaksa 1 Jambi City	Character of responsibility	25	0.030
	Student Learning Outcomes	25	0.031

Based on the table above, it can be concluded that the variable linearity test above has a linear relationship. It is proved that the results of sig. less than 0.05. The Linearity test of the character variable responsibility for student learning outcomes in the subjects of measurement material in Mexico can be explained in the following table.

Table 12. Linearity Test of Character Responsibilities and Student Learning Outcomes in Mexico

School	Variable	Number of Students	Sig.
Escuela Secundaria Diurna	Character of responsibility	25	0.025
	Student Learning Outcomes	25	0.026

Based on the table above, it can be concluded that the variable linearity test above has a linear relationship. It is proved that the results of sig. less than 0.05. Regression tests of character variables responsible for student learning outcomes in measurement materials in Indonesia can be explained in the following table.

Table 13. Regression Test on Character Responsibilities and Student Learning Outcomes in Indonesia

School	Variable	Number of Students	Sig.
Junior High School Adhyaksa 1 Jambi City	Character of responsibility	25	0.043
	Student Learning Outcomes	25	0.046

Based on the table above, it can be concluded that there is an influence between the variables of responsibility character on learning outcomes. It is proved that the results of sig. (2-tailed) smaller than 0.05.

Regression tests of character variables responsible for student learning outcomes on measurement material in Mexico can be explained in the following table.

Table 14. Regression Test on Characteristics of Responsibilities and Student Learning Outcomes in Mexico

School	Variable	Number of Students	Sig.
Escuela Secundaria Diurna	Character of responsibility	25	0.034
	Student Learning Outcomes	25	0.037

Based on the table above, it can be concluded that there is an influence between the variables of responsibility character on learning outcomes. It is proved that the results of sig. (2-tailed) smaller than 0.05.

From the results obtained in Table 5, it can be seen that the level of character responsibility of students in Indonesia is in the good category. Character responsibility is one of the important aspects of character education in Indonesia. Responsibility refers to an individual's ability to recognize, accept, and fulfill obligations and duties wholeheartedly (Chow & Bracci, 2020). In the context of education in Indonesia, the character of responsibility is taught to students as part of an effort to form a responsible person in various aspects of life, both in schools, families, communities, and nations (Nurasiah et al., 2022; Casmana et al., 2023). Some aspects related to the character of responsibility in Indonesia include: discipline, respect for obligations, cooperation, respect and protection of the environment, and respect for the rights of others (Mujahid, 2021). Responsible character education in Indonesia is carried out through various approaches, such as direct learning through character-specific lessons, habituation through daily activities at school, exemplary roles from teachers and parents, as well as real experience in performing duties and responsibilities.

From the results obtained in Table 6, it can be seen that the level of character responsibility of students in Mexico is in the good category. Character responsibility also has an important role in character education in Mexico. In the context of education in Mexico, the character of responsibility is taught to students as part of an effort to form a responsible person in various aspects of life, whether in school, family, community, or country (Villarruel et al., 2020; Díaz-Garay et al., 2020). Some aspects related to the character of responsibility in Mexico include: punctuality, honesty, accountability, responsibility towards others, and environmental responsibility (Hirsch-Adler, 2019; Piragauta & de Oliveira, 2023). Responsible character education in Mexico aims to form students who are responsible, disciplined, and aware of the importance of performing duties and obligations with integrity and moral awareness (Brown et al., 2021; Barrena-Martínez et al., 2019). The Mexican government and educational institutions continue to strive to strengthen responsible character education as an important part of the education system, in the hope of giving birth to a generation that is responsible and has a high social awareness.

From the results obtained in Table 7, it can be seen that the learning outcomes of students in Indonesia are in the good category. Learning outcomes in Indonesia include the level of student achievement in understanding and mastering the subject matter taught in schools (Putri, 2021; Mahdalena & Sain, 2020). However, learning outcomes may vary between students, schools, and regions in Indonesia. Some factors that can affect learning outcomes in Indonesia include: aspects of education, quality of teaching, curriculum, and socio-economic factors. The most important factor is teacher quality because the quality of teaching by teachers can have a significant impact on student learning outcomes (Tamsah et al., 2021; Tjabolo & Herwin, 2020). Teachers who are competent, caring, and able to deliver subject matter effectively can increase student achievement. The Government of Indonesia continues to improve learning outcomes through various policies and programs, such as teacher quality improvement programs, curriculum reform, development of innovative teaching materials, and providing support to schools in remote or marginalized areas (Amon & Anggal, 2021; Amon & Anggal, 2021). It is important to understand that learning outcomes are a process that requires joint efforts from various parties, including government, schools, teachers, students, and families (Hermino & Arifin, 2020; Day et al., 2021). Collaboration and commitment of all parties are needed to improve learning outcomes and the quality of education in Indonesia.

From the results obtained in Table 8, it can be seen that the learning outcomes in Mexico are in the good category. Learning outcomes in the country vary depending on various factors, such as



geographic region, socio-economic level, access to education, quality of teaching, and other factors (Rodríguez-Abitia et al., 2020; Abenawe, 2022). In general, there are challenges and problems in the education system in Mexico that can affect student learning outcomes. Some aspects that need to be considered in the context of learning outcomes in Mexico include: PISA and other International Surveys, inequality of education kses, quality of teaching, learning and graduation levels, and inclusive education (Cárdenas et al., 2022; Ledger et al., 2021). Although Mexico faces challenges in its education system and student learning outcomes, the government and educational institutions continue to make improvements through various policies and programs (Miranda et al., 2021). These include curriculum reform, improving teaching quality, improving access and equity in education, and developing special education programs. It is important to remember that learning outcomes are the result of a variety of factors and do not fully reflect the quality and potential of students. External factors such as social environment, family support, and access to educational resources can also affect student learning outcomes.

From the results obtained from the regression test in Table 13 and Table 14, it can be seen that the variable character responsibility for the variable learning outcomes in Indonesia and Mexico has a significant influence. This is due to the value of sig. (2-tailed) is 0.05 smaller, so  $H_0$  rejected and accepted  $H_a$ . Zero Hypothesis ( $H_0$ ) is a statement stating that there are no significant differences, relationships, or effects between the variables tested in the population (Taslim et al., 2019). So that  $H_0$  in this study is no influence of the character of responsibility on learning outcomes. Alternative Hypotheses ( $H_a$ ) is a statement stating that there is a significant difference, relationship, or effect between the variables tested in the population (Fitria, 2019). So that  $H_a$  In this study, there is an influence of the character of responsibility on learning outcomes.

The character of responsibility has a significant impact on learning outcomes in science education both in Indonesia and in Mexico. There are several impacts of the character of responsibility on learning outcomes in science education in Indonesia and Mexico (Amri et al., 2020; Ibáñez et al., 2020). The character of responsibility can affect students' motivation to learn and discipline in carrying out their duties (Suherdi, 2019; Olivo Franco, 2019). Students who have a responsible character tend to be more motivated to learn science and adhere to established rules and procedures. Character responsibility involves students' ability to respect time and complete their tasks well (Posey-Maddox & Haley-Lock, 2020). Responsible students will tend to work on time and provide a better quality of work. The character of responsibility also involves the ability of students to cooperate and collaborate well (Herrera-Pavo, 2021). In science education, cooperation in groups or teams can increase students' understanding of scientific concepts and help them achieve better learning outcomes. The character of responsibility is also important in the management of research and practicum in science education (Connolly et al., 2019). Responsible students will be able to follow directions, maintain safety, and carry out experiments or practicums correctly. The character of responsibility also involves students' ability to take initiative and solve problems in a scientific context. Responsible students tend to be more proactive in finding solutions, conducting experiments, and overcoming obstacles they may face in science learning. In both Indonesia and Mexico, responsible character education is integrated in the curriculum and implemented through a variety of approaches.

The character of responsibility is very important in science education in Indonesia and Mexico. The importance of character responsibility in science education in Indonesia, first of all, the character of responsibility helps students to develop a mentality of hard work and commitment to study diligently (Sya et al., 2022; Bredemeier & Shields, 2019). Second, the character is responsible for ensuring students comply with safety rules, managing materials and tools properly, and maintaining scientific integrity in carrying out practicum (Chaaban & Sawalhi, 2020; Goghari et al., 2020). Third, the character of responsibility encourages students to work together and collaborate in groups or teams in science learning (Supena et al., 2021; Vogelzang et al., 2019). Finally, in science research, the character of responsibility is important to ensure ethics and integrity in the implementation of research (Navalta et al., 2019; Satalkar & Shaw, 2019). The importance of character responsibility in science education in Mexico, first character the responsibility of ensuring students fulfill their duties and responsibilities well (Fayzievna et al., 2020; Chen et al., 2020). Second, character responsibility involves a student's commitment to their learning success (Singh,

2019; Ferreira et al., 2020). Third, characterresponsibility assists students in managing their time well and completing tasks in a timely manner (Paudel, 2021; Rapanta et al., 2020). Finally, characterresponsibility involves respect for scientific ethics in science learning (Cameron & Stinson, 2019; Latulippe & Klenk, 2020). In both Indonesia and Mexico, science education supported by the character of responsibility provides a strong foundation for students to become independent learners, with integrity, and ready to face scientific challenges in society and the world of work. In addition, the character of responsibility also has universal values that are important in the formation of a good student personality, such as integrity, discipline, independence, and a sense of responsibility towards oneself and the surrounding environment. The character of responsibility has an important role in forming responsible, disciplined, and committed students in science learning. This not only impacts individual learning outcomes, but also creates a positive and advancing learning environment in the classroom and school.

## CONCLUSION

Based on the results of quantitative data, namely the regression results show that the character of student responsibility in learning science measurement material in Indonesia is 0.043 and student learning outcomes are 0.046 by showing that the value of the results obtained is smaller than 0.05. Meanwhile, the regression results showed that the character of student responsibility in learning science measurement material in Mexico was 0.034 and student learning outcomes were 0.037 by showing that the value of the results obtained was smaller than 0.05. So it was concluded that there is an influence of the character of responsibility on student learning outcomes in learning science measurement material. With students having a responsible character, it can improve student learning outcomes in learning science measurement material.

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