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ANALYSIS OF STUDENT'S LEARNING INDEPENDENCE IN DISTANCE LEARNING DURING THE PANDEMIC USING RASCH MODEL

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ABSTRAK
Akibat pandemi COVID-19, pemerintah perlu memulai kebijakan baru yang mendukung transisi dari pembelajaran tatap muka ke pembelajaran online. Penelitian ini bertujuan untuk menguji dampak kemandirian siswa terhadap pembelajaran jarak jauh. Sampel yang diambil berjumlah 835 siswa SD, SMP, dan SMA di Kota dan Kabupaten Bekasi, yang dipilih dengan menggunakan teknik proporsional cluster random sampling. Pengumpulan data dilakukan dengan menggunakan angket kemandirian belajar siswa. Selanjutnya penelitian menggunakan desain kuantitatif non-eksperimental dan analisis data melalui model Rasch. Perangkat lunak WINSTEPS membantu menentukan validitas dan reliabilitas instrumen. Selain itu, kedisiplinan siswa dalam pembelajaran daring ditentukan dengan menggunakan statistik deskriptif mean dan deviasi standar serta nilai item logit dan skor individu. Skor tersebut secara khusus digunakan untuk menilai kesiapan mereka berdasarkan jenis kelamin, usia, etnis, dan bidang studi. Hasil penelitian menunjukkan kemandirian siswa tergolong sedang yaitu sebesar 69% berdasarkan peraturan pemerintah tentang pola pembelajaran daring. Kondisi ini mempengaruhi mentalitas siswa dan kemandirian belajar dalam lingkungan yang kondusif.

Kata kunci: *Kemandirian Belajar, Pembelajaran Jarak Jauh, Model Rasch*

ABSTRACK
Due to COVID-19 pandemic, the government needs to initiate new policies that support the transition from face-to-face to online learning. This study aimed to examine the impact of student independence on distance learning. The sample included 835 elementary, middle, and high school students in Bekasi City and Regency, selected using proportional cluster random sampling. The data were collected using a student learning independence questionnaire. Furthermore, the study used non-experimental quantitative design and analyzed data through the Rasch model. The WINSTEPS software helped determine the instrument validity and reliability. Moreover, students' discipline in online learning was determined using descriptive statistics of mean and standard deviation and logit item value and individual scores. The scores were specifically used to assess their readiness based on gender, age, ethnicity, and field of study. The results showed that student independence was moderate at 69% based on government regulations on online learning patterns. This condition influences the' mentality of students and learning independence in a conducive environment.

Keywords**:** *Learning Independence, Distance Learning, Rasch Model*

1. INTRODUCTION

The 2019 Coronavirus (COVID-19) pandemic has a significant global impact. Since its emergence at the beginning of 2020, the pandemic has tremendously affected all sectors, including education. Therefore, the national education system needs to ensure that students have equal access to quality learning during the unprecedented crisis. The drastic changes require a revolution from various parties to improve the education system in Indonesia. Moreover, the government must initiate new policies that support the transition from face-to-face to an online learning system during the pandemic. This is stated in the Circular Letter (SE) of the Minister of Education and Culture (Mendikbud) No. 36962/MPK.A/HK/2020 of March 17, 2020. The policy considers Online Learning and Working from Home concerning Preventing the Spread of COVID-19. Furthermore, it is stated in Circular Letter Number 15 of 2020 concerning Guidelines for Organizing Learning from Home in an Emergency Period for the Spread of COVID-19. The policy is also stated in Circular Letter of Minister of Education and Culture No. 4 of 2020 concerning the Implementation of Education in the Coronavirus Disease (COVID-19) Emergency Period.

There are various obstacles to implementing distance learning, which is not new in Indonesia, as stated in Law No. 20 of 2003 concerning the National Education System Articles (1) and (2) that mandate distance education. Distance learning aimed to provide educational services to community groups unable to attend a face-to-face meeting by creating equitable access and distribution of quality education. However, current conditions demand distance learning, adjustments, and preparations by various parties to achieve the learning objectives. The government's seriousness in addressing the current education problems is reflected in the latest policies. In line with this, Media Indonesia Newspaper of June 15, 2020, stated that the Minister of Education and Culture announced a Joint Decree (SKB) of the ministries of Education and Culture, Religion, Health, and Home Affairs concerning Guidelines for the Implementation of Learning in the New Academic Year during the COVID-19 Pandemic. The guidelines by the government show that distance learning is an ideal model in current conditions.

The government needs to consider many factors in facing the learning revolution during the pandemic. The policies formulated should consider the factors determining the success of distance learning, whose obstacles require mapping by the government. Therefore, it is necessary to consider the obstacles to improve policies and implement quality distance learning.

Student independence determines the success of a distance learning system that requires independent activities. According to Setiadji (2005), distance learning is where students are far from the educator and materials are delivered using media. Irzan & Encang (2006); Meriam & Caraffela (1999) stated that learning independence is where individuals diagnose needs, formulate goals, identify resources, determine approaches and strategies, and evaluate the outcomes with or without help. This is necessary for students to organize and discipline themselves in developing their learning abilities. Student learning independence is influenced by internal and external factors (Syam, 1999).

UNICEF conducted a survey in May and June on education during the pandemic, where students were given questions related to distance learning. The student responses in 34 provinces were published through the U-Report channel on November 12, 2020 (www.indonesiureport.in), as shown in Figure 1.

"What is your main obstacle while learning from home?"

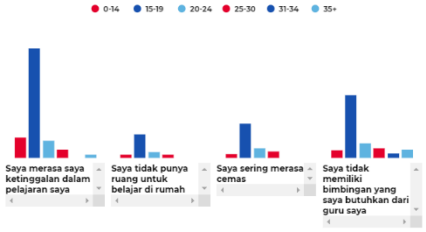

Figure 1. Student response graph

In Figure 1, lack of teacher guidance is a dominant obstacle to students in distance learning during the pandemic.

"What is the role of your teacher in helping learning during this pandemic?"

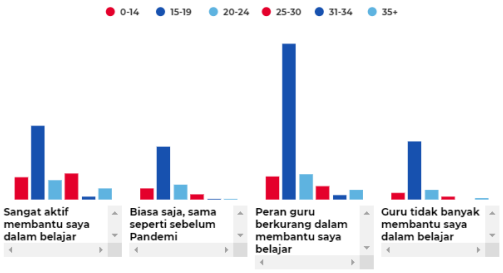

Figure 2. Student response graph

"Which of the six characteristics of the Pancasila Profile did you develop the most during the pandemic?"

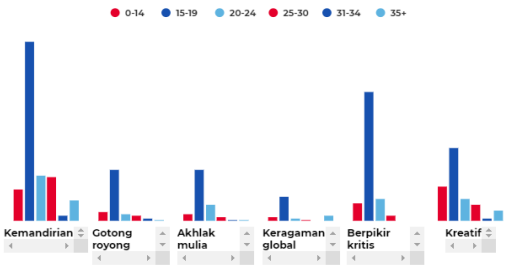

Figure 3. Student response graph

Figures 1 to 3 present responses to the questions posed by UNICEF in a survey on learning during the pandemic. The colors in the graphs represent the age range. Most students felt that online learning during the pandemic should consider their independence. Distance learning requires students to be responsible for their activities and achieve success independently. The survey showed that learning independence is important during a pandemic.

2. LITERATURE REVIEW

Student independence in distance learning should be mapped to assess their readiness. A proper survey is expected to show the conditions and factors affecting student independence in distance learning. The results would be used as material for improvement and input for stakeholders' assessments. Additionally, they would help formulate policies to improve the learning quality to optimize the students' outcomes during the pandemic.

Studies on learning independence include Kusuma (2020), which examined the influence of online distance learning on geometry students' independence. The study conducted a survey on 45 undergraduate students of the Mathematics Study Program, Faculty of Mathematics and Science, Padjajaran University, Bandung. The results showed that online distance learning positively affects geometry students' independence (Kusuma, 2020).

Another study measured student satisfaction with distance learning at the State Islamic Institute of Padangsidimpuan using a qualitative methodology with descriptive analysis. The sample comprised 384 respondents determined with simple random sampling. The results indicated that 98.8% of students had the equipment needed for distance learning. However, they felt that the current method is inappropriate because they could not monitor their development and obtain and learn the material easily. Therefore, they were dissatisfied with the current distance learning method and the lecturer's ability to deliver material (Napitupulu, 2020).

Nindiati (2020) used the literature review method to formulate the management of self-reliant distance learning and its implications for educational institutions' services. The results showed that distance learning should be managed systematically by preparing the material syllabus and selecting activities and strategies. This system should also formulate the material structure and select relevant activities, and the tasks given need to consider the load, time, and students' abilities. Therefore, educational institutions should seek effective and efficient communication services, supervision, and assistance for students and parents (Nindiati, 2020).

Another study discussed the relationship between the use of google classroom and learning independence on the outcomes of Police Science College (PTIK) students during the pandemic. This ex-post-facto study analyzed data using product-moment and multiple regression analysis with a sample of 38 students. The results showed that the use of google classroom and student independence significantly affected learning outcomes. The average score of student learning outcomes and the percentage response scores were 78.31 and 83.72%, meaning they were high and very good, respectively (Ashadii & Suhaeb, 2020).

A study also discussed online learning amid the COVID-19 pandemic and described the implementation of online learning in the Biology Education Study Program, Faculty of Teacher Training and Education, University of West Sulawesi. The qualitative study collected data through telephone interviews and analyzed them using Miles & Huberman interactive analysis technique. The results showed that students had the basic facilities needed to participate in online learning, which has flexibility in its implementation and promotes independence and motivation. Moreover, distance learning promotes the emergence of social distancing behavior and minimizes crowds. These steps reduce the potential for the spread of COVID-19 in the campus environment (Firman & Rahayu, 2020).

Another literature study discussed independence through online learning in universities in the 4.0 era. It elaborated the importance of online learning to realize independence due to the rapid development of information and technology. The results showed that online learning comprises two online models. The first model only involves lecturers and students as participants, while the second model involves students, mentors, and lecturers. Both models involve asynchronous

learning interactions through video calls, telephone, or live chat. Asynchronous learning interactions occur at different times through activities provided electronically using forums or messages. Students or participants learn independently without relying on others to set goals, diagnose needs, have self-confidence and responsibility, and conduct self-evaluations (Sobri et al., 2020).

The relationship between Distance Learning and Learning Independence has been widely examined. However, no study has examined the relationship between Distance learning and Learning Independence in the current pandemic conditions. Similar studies have also not been conducted at the provincial level. Therefore, this study aimed to examine the learning independence of elementary, middle, and high school students in Bekasi City and Regency.

Humans are born powerless but with a potential to develop naturally with help from others through guidance and direction from family members, the surrounding environment, schools, and the wider community. Knowledge, skills, attitudes, and personal values could be obtained through the learning process when individuals interact and learn at school and in the environment.

Stein and Book stated that independence is the ability to direct and control oneself in thinking and acting and not emotionally depending on others. Independence starts with self-efficacy or the ability to handle a problem (Stein and Book, 2000). It is characterized by being physically able to work alone and mentally able to think for oneself. Also, it means being creatively able to express ideas in a way easy to understand, and emotionally accountable for one's actions (Luther, 1995).

Student learning independence is achieved by creating a conducive atmosphere outside the classroom. In this case, students experience, carry out social activities, and blend in with their environment (Covey, 1997). This means independence is where the activities are directed at oneself without expecting much help from others or trying to solve their problems (Bathi, 1997).

Independent behavior is indicated by taking the initiative, solving problems, and desiring to succeed without help from others (Spencer and Koss, 1970). This means independent individuals show initiative, strive for achievement, exhibit great self-confidence, rarely seek protection from others, and desire success (Lindzey and Aronson, 1968).

Students need learning independence to responsibly regulate and discipline themselves in developing their abilities (Haryono, 1998) without depending on a supervisor and continuous teacher's direction. They must creatively take the initiative to work independently by referring to the available guidance (Knowles, 1975). Several postulates could be used as a guide in developing learning independence. Humans are born in different circumstances with the ability to learn and develop according to their potential and the environment. Also, they have the flexibility and ability to change and shape their personality (Miarso, 2007). Learning independence is where participants take the initiative and collaborate with other parties to increase social awareness and critical analysis of situations. They diagnose learning needs with appropriate and relevant referrals personally and socially, and identify human resources and learning materials. Furthermore, students select and implement appropriate learning strategies and reflect as well as evaluate their outcomes (Hommad and Collins, 195). According to More, quoted by Haryono, learning independence enables students to determine objectives, resources, and evaluations (Haryono, 1998).

Independence is the ability to take care of oneself without burdening others. It is an individual's ability to learn with activities and self-direction through various efforts, initiatives, and activities in dealing with situations. However, this does not mean not working together and learning with others. Independent students learn on their own and have a positive attitude towards their activities and responsibilities, and plan to achieve good outcomes.

The several theories described show that learning independence is an individual's independence in their activities and direction to realize good outcomes, specifically in this pandemic, where students learn from home. Learning independence is indicated by independence from others, self-confidence, disciplined behavior, responsibility, initiative, and self-control.

Distance learning is a new strategy different from the classroom, caharacterized by students-teacher interaction via the Internet through video and audio conferencing, a collaboration between students, or participation in opportunities (Negash, Whitman, Woszczynski, Hoganson, & Mattord, 2008). This strategy is taken because students and teachers cannot hold face-to-face meetings to maintain social and physical distancing. Virtual learning was known as distance learning since the 1870s (Ibrahim, 2005), and initially applied to adults.

Online learning could be synchronous or asynchronous (Chaeruman, 2017). According to Chaeruman (2017), synchronous learning is similar to face-to-face classes, where students and teachers are in the same place simultaneously, such as participating through web conferencing applications. It creates virtual classrooms that allow teachers to answer students' questions instantly. Furthermore, synchronous learning allows students and teachers to participate and learn directly and engage in hands-on discussions. In contrast, asynchronous learning is an independent approach that utilizes email, online discussion boards, Wikipedia, and blogs. Some common asynchronous learning activities are interacting with the Learning Management System (LMS), communicating through email, posting discussion forums, and reading articles. However, it is important to maintain timely feedback and clear communication to engage students in learning. Asynchronous learning provides convenience, flexibility, more interaction, and the development of personal and professional responsibilities. Synchronous learning involves simultaneous students engagement similar to a virtual classroom, while asynchronous learning is student-centered or a self-directed approach using online resources.

Distance learning prepares students to learn away from teachers using the internet and online resources. It utilizes information and communication technology with the help of sophisticated media. This follows Law number 20 of 2003 article 1 paragraph 15, which states that distance learning separates students from educators and uses various resources through communication technology, information, and other media. In line with this, Keegan, explained by Warsito (2007), identified several characteristics of distance learning: 1), There is an almost permanent separation between teaching staff and students during the education program, 2 There is a separation between students and others during the education program, 3), An institution manages the educational program, 4), It utilizes good mechanical communication facilities as learning materials, 5), It provides two-way communication facilities, enabling students to take dialogue initiatives and seek and process the benefits.

Moore & Kearsley (2005) defined distance learning as planned learning occurring separately from the teacher using special designs and techniques. Communication occurs through various technologies using special organizational and administrative structures. Therefore, the learning elements that need a clearer description include

1. Emphasis on students learning, not educators teaching;
2. Learning is planned and organized, not accidental;
3. Learning occurs in space and time separate from the teaching activities;
4. The space-time separation makes the students learn independently at their pace;
5. The parties involved in learning interact through information technology.

Distance learning aims to overcome the space-time separation between students and teachers through computer media in a distant network, where materials are obtained from the Internet. The main feature of 21st century Distance Learning is integrated presentation, interaction, and evaluation using internet-based technology.

No study has examined student learning independence at the elementary, middle, and high school levels in Bekasi City and Regency during the pandemic. These areas have adequate supporting facilities and infrastructure in implementing distance learning because they are close to Jakarta. The student learning independence is expected to be much better than in other areas.

3. METHODOLOGY

This study used a non-experimental quantitative design analyzed data using the Rasch model. The WINSTEPS software (Sari et al., 2021) was used to determine the instrument's validity and reliability. Furthermore, descriptive statistics of mean and standard deviation, logit item value, and individual scores were used to check students' discipline for online learning. The scores were used specifically to assess their readiness based on gender, age, ethnicity, and field of study.

The study sample comprised 835 elementary, middle, and high school students in Bekasi City and Regency selected using proportional cluster random sampling. Data were collected using a student learning independence questionnaire.

The study variables were the learning independence of elementary, middle, and high school students during distance learning, as described in Table 1:

Table 1. Dimensions and Indicators of Learning Independence in Distance Learning

No	Dimensions	Indicators
1	Independent	1. Does not need the help of others in distance learning 2. Able to solve problems in distance learning
2	Confident	1. Able to express an opinion 2. Ask in class 3. Able to do tasks independently

No	Dimensions	Indicators
		4. Able to express ideas
3	Discipline	1. Be punctual in entering the online class 2. Obey the rules of online learning 3. able to manage learning time
4	Responsible	1. Carry out Tasks on Time 2. Learn according to the specified time
5	Having Initiatives	1. Search for materials online 2. Look for relevant sources 3. Analyze learning tasks 4. Have a Learning Strategy 5. Diagnose learning needs
6	Self-Control	1. Evaluating learning outcomes 2. Set study time 3. Analyzing the mistakes made

4. RESEARCH AND DISCUSSION

A unidimensional test was performed before analyzing the data on student learning independence using the Rasch Model. Based on the output of the unidimensional test results table with standardized residuals using WINSTEP, the Raw variance was 53.0%, with an eigenvalue of 64.28. The instrument meets the unidimensional requirements when the resulting Raw Variance value exceeds 20% (Sumintono & Widhiarso, 2013). Since the test obtained a raw variance of 53% > 20%, the instrument correctly measured student learning independence. Another criterion used was the raw unexplained value that does not exceed 15% (Sumintono & Widhiarso, 2013). Based on the WINSTEP output, the raw unexplained value was less than 7%, meaning further analysis could be conducted using the Rasch Model after the unidimensional test requirements were met.

4.1 Instruments Validity and Reliability Test Results

A feasibility test was conducted on the validity and reliability of the study instruments. Table 3 shows the results of the validity and reliability test using the Rasch model with the help of WINSTEP.

Table 3. Summary of WINSTEP External Statistics

SUMMARY OF 835 MEASURED (EXTREME AND NON-EXTREME) Person

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	147.9	57.0	-.40	.15				
P.SD	40.4	.0	.87	.11				
S.SD	40.5	.0	.87	.11				
MAX.	285.0	57.0	5.80	1.83				
MIN.	57.0	57.0	-6.41	.12				
REAL RMSE	.19	TRUE SD	.85	SEPARATION 4.40	Person RELIABILITY		.95	
MODEL RMSE	.18	TRUE SD	.85	SEPARATION 4.62	Person RELIABILITY		.96	
S.E. OF Person MEAN = .03								

Person RAW SCORE-TO-MEASURE CORRELATION = .95
CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .96 SEM = 7.64

SUMMARY OF 57 MEASURED (NON-EXTREME) Item

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	2166.3	835.0	.00	.04	1.03	-.8	1.00	-1.2
P.SD	560.2	.0	.70	.01	.32	6.1	.30	5.3
S.SD	565.2	.0	.70	.01	.32	6.1	.30	5.3
MAX.	3202.0	835.0	1.23	.05	1.60	8.3	1.60	7.0
MIN.	1301.0	835.0	-1.22	.03	.50	-9.9	.55	-9.7
REAL RMSE	.04	TRUE SD	.70	SEPARATION 17.16	Item	RELIABILITY	1.00	
MODEL RMSE	.04	TRUE SD	.70	SEPARATION 18.85	Item	RELIABILITY	1.00	
S.E. OF Item MEAN = .09								

Item RAW SCORE-TO-MEASURE CORRELATION = -1.00
Global statistics: please see Table 44.
UMEAN=.0000 USCALE=1.0000

Table 3 describes the quality of respondents' answers, the instruments used, and their interactions. The Cronbach Alpha value of 0.96 indicates high interaction between respondents and the instrument items. The respondent's and the item value of the study instrument's reliabilities are 0.95 and 1.00, respectively. This means the respondents' consistency in answering and the quality of the instrument items are very good (> 0.94) (Sumintono & Widhiarso, 2013).

The quality of the instrument items was measured from the model's fitness level, which indicates the item's functionality in measuring learning independence. Each item's fitness level was measured using the point measure correlation criteria. The criteria used were the Point Measure Correlation (Pt. Mean Corr) values ranging from 0.4 to 0.85 (Sumintono and Widiharso, 2013; Boone et al., 2014; Bond and Fox, 2015). The output of WINSTEP showed that the Pt. The mean Corr value of the 57 items used ranged from 0.30 to 0.78, meaning it was within the fit criteria interval. Therefore, all items in the study instrument were valid to measure student learning independence and viable for the analysis.

The Rasch Model analysis shows the difficulty of the instrument items, as indicated by the logit value. The resulting logit value for the items based on the WINSTEP output ranged from -1.22 to 1.23, with a mean of 0.00 and a standard deviation of 0.70. The lowest value of -1.22 was produced by item number 1, meaning it was the easiest to answer by the respondent. In contrast, the highest score of 1.23 was produced by item number 3, meaning it was the most difficult item for respondents to answer. When sorted based on the difficulty level, the

items are 3, 26, 54, 48, 6, 12, 16, 29, 20, 15, 33, 57, 17, 51, 18, 30, 21, 8, 24, 27, 41, 45, 39, 38, 7, 36, 4, 47, 31, 56, 9, 32, 35, 11, 25, 23, 10, 5, 42, 37, 19, 40, 2, 34, 43, 55, 44, 53, 14, 50, 46, 28, 22, 13, 49. 52, 1.

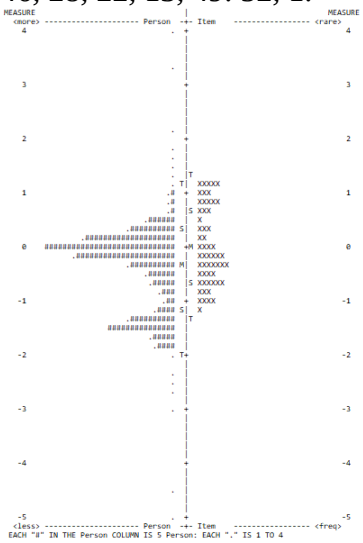

Figure 3. Wright Map

Figure 3 is a map of respondents' ability to answer the items juxtaposed with the difficulty level. The figure, known as the Wright Map, compares the respondent's ability and the difficulty level of the instrument items. Therefore, the average difficulty level of the instrument items was within the ideal criteria.

Description of Respondents' Characteristics

Figure 4. Respondent Characteristics Based on Gender and Education Level

Figure 4 shows that the total number of respondents per elementary, middle, and high school education levels are 135 (74 females and 61 males), 385 (212 females and 173 males), and 315 (203 females and 112 males), respectively.

Table 4. Statistic Description

Statistics	Education Level			Overall
	Elementary School	Junior High School	Senior High School	
Total (n)	135	385	315	835
Mean	0.011	-0.686	-0.232	-0.402
Variance	0.075	0.641	0.983	0.753
Std. Deviation	0.274	0.801	0.992	0.867
Maximum	0.440	1.420	5.800	-6.410
Minimum	-2.000	-3.080	-6.410	5.800

Table 4 shows the concentration of statistical data on student independence in the elementary, middle, and high school levels and overall. There was a difference between the mean value of students' independence from the

smallest to the Junior High, Senior High, and Elementary School levels, respectively. The following histogram visualizes student independence data based on education level:

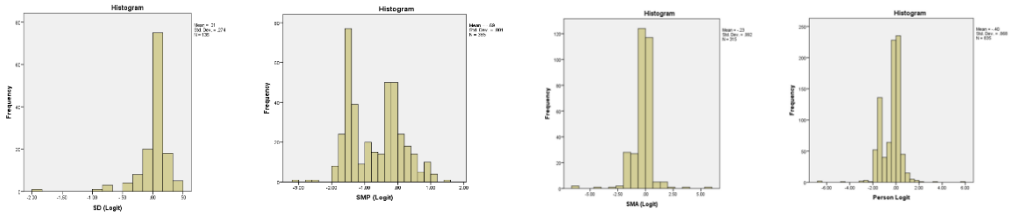

Figure 5. Histogram of Student Independence Data (Elementary School-Junior High School-Senior High School-Overall)

4.2 Categorization of Student Learning Independence Level

The next stage categorized the data on student learning independence level to obtain the trend's descriptions.

The first step was to determine the criteria used. The low, moderate, and high categories were determined by assuming the data were normally distributed. According to Azwar (2012), the guidelines for categorizing the measurement results into three categories using the following provisions:

Table 5. Categorization Criteria

Category	**Criteria**	
Low	X < M – 1SD	X < -1,27
Moderate	M – 1SD ≤ X < M + 1SD	-1,27 ≤ X < 0,466
High	X ≥ M + 1SD	X ≥ 0,466

Where X is the measured value, M is the mean, and SD is the Standard Deviation. The M value in Table 4 is -0.402, while SD is 0.867. Therefore, the criteria interval could be calculated by entering the M and SD values into the equation in Table 5.

Table 6. Summary of Student Learning Independence Level Category

Category	**Overall**	**Education Level**						
		%	**Elementary School**	**%**	**Junior High School**	**%**	**Senior High School**	**%**
Low	206	25%	1	1%	163	42%	42	13%
Moderate	577	69%	134	99%	195	51%	248	79%
High	52	6%	0	0%	27	7%	25	8%
Total	835	100%	135	100 %	385	100%	315	100%

a.
b.

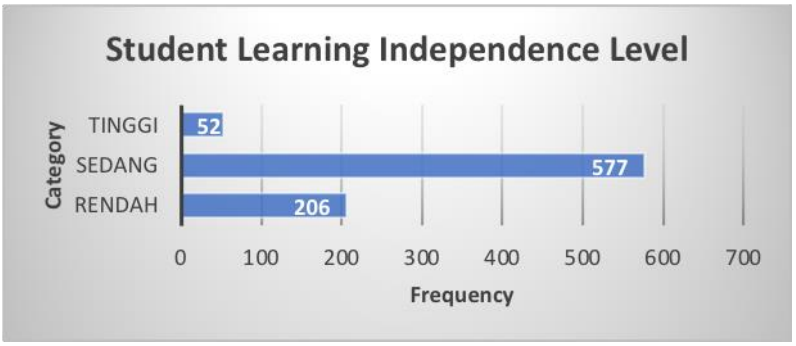

Figure 6. Histogram of Student Learning Independence Category Level

Table 6 and Figure 6 show that student learning independence during the pandemic was 69%, 25%, and 6% in the moderate, low, and high categories, respectively. The student learning independence level is also less than 10% at the elementary, middle, and high school levels.

4.3 Discussion

Learning independence is an internal drive to be responsible and disciplined in developing competencies related to learning methods and styles, and is influenced by the surrounding environment (Miftaqul, 2016). In this study, student learning independence level was moderate during the pandemic because the home and school environment are different.

Djaali (2017) stated that the learning climate is influenced by internal and external factors. Internal factors are self-concept, motivation, and attitudes, while external factors are the surrounding environment, community, school, family. According to Sugianto (2020), learning independence is influenced by discipline, self-confidence, encouragement, responsibility, customs, the surrounding community, and natural conditions. Therefore, the obstacles in student learning independence are discipline and surrounding conditions. Good discipline makes students obey responsibilities, while environmental factors greatly influence their psychological condition in carrying out their tasks.

The learning processes conducted from home during this pandemic receive varied responses from people. For instance, studying from home reduces the risk of virus infection but greatly influences student learning patterns. Learning activities are carried out online from home, including material delivery by the teacher and working on assignments. Everything is accomplished online through various platforms, causing drastic changes in student learning styles. Furthermore, the learning climate at school is different from that at home, influencing students' independence. According to Mujiman (2011), learning independence emphasizes conclusions that result in competitions and grows through planning the insights held. Students determine, achieve competence, and evaluate the outcomes through self-confidence independently based on time, place, rhythm, tempo, method, resources. This belief grows in a conducive environment that could be disturbed due to the various disturbances when students learn from home.

In this study, 69%, 25%, and 6% of the conditions were in the medium, low, and high categories, respectively. The percentages show that students feel that their learning independence is inappropriate due to various obstacles while learning at home. They cannot concentrate on learning on several occasions due to unconducive environmental conditions, making them less independent. This is in line with Yudiawan (2020), which examined student learning independence at the higher education levels. Various non-technical obstacles reduced the enthusiasm

for learning and influenced independence. Therefore, this requires teachers and students to adapt to all conditions during the pandemic to continue the learning process.

5. CONCLUSION

Student's learning independence is one of the important factors that determine the success of distance learning implementation. The aim of this study was to analyse student learning independence during distance learning in the pandemic era. Student learning independence has measured and analysed using the Rasch model approach. This approach is used to increase the measurement accuracy and analysis of learning independence, so the data obtained will fit to the actual conditions. In addition, this study can be used as a reference related to the implementation of the Rasch model in measuring students' learning independence. Furthermore, the results showed that the level of student learning independence was generally in the moderate category during the pandemic. This result indicates that most of the students feel that their learning independence is still not well formed. There is a difference in the learning environment between at home and at school. Less conducive learning environment causes students hard to concentrate, so that learning independence is not optimal. Therefore, teachers and parents need to work together to create a conducive learning environment by developing: comprehensive and interesting teaching materials, learning models that encourage student activity, learning media that utilize the surrounding environment, and assessment instruments that are more varied. These points can also be considered for further research, so that students' independence, concentration, and enthusiasm in learning can increase so that learning objectives can be achieved optimally. In addition, further research can also use other approaches such as item response theory in increasing the accuracy of measurement.

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