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Elementary Teachers' Perceptions on Genially Learning Media Using Item Response Theory (IRT)

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Abstract

Many studies have developed learning media, but few studies focus on developing learning media in elementary schools using Genially and studying teachers' perceptions of Genially learning media. This study aims to determine teachers' perceptions of hybrid learning media with a more accurate and precise method, namely the item response theory (IRT) from the Rasch model. The survey was carried out by distributing a Likert scale questionnaire of 19 statements. Moreover, the subjects were 45 elementary school teachers in Riau Province, Indonesia. The results showed that they positively perceived the developed genially-based learning media. Genially learning media can support teachers in teaching. Based on these results, teachers need to develop skills in making various technology-based media, in order to support hybrid learning.

Keywords: blended learning, elementary teachers, game-based learning, genially, hybrid learning, rasch model

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1. Introduction

Technology is known to have an important role in the development of education and various sectors until the 21st century (Wijaya et al., 2020). It is considered to be able to simplify human work and save time, such as in the field of education (Mulyani, Alpusari, & Putra, 2021; Wijaya, 2021; Wijaya, Hidayat, & Zhou, 2020). Also, learning via the utilization of technology (online) has reportedly been in existence for 2 decades, in America. Moreover, online learning is known to have effectively developed, due to technological improvements and easy internet access (Heeks & Stanforth, 2015; Park et al., 2019; Raja & Nagasubramani, 2018). This fact led to an evolution in the technology-based educational sector, which then resulted in the production of various interactive and didactic digital media, available from electronic devices such as computers, smartphones, tablets, etc. (Manuel et al., 2019; Musskopf et al., 2019; Tan et al. 2020;

Wijaya, Jianlian, & Purnama, 2020; Wijaya, Ying, & Purnama, 2020).

Various countries around the world, including Indonesia, have experienced a period of crisis, due to the emergence of COVID-19 pandemic since March 2020 (Ekantini et al., 2020; Mailizar et al., 2020). This pandemic did not only cause numerous health crisis, it also weakened the economy and educational sector (Lapitan et al., 2021; Nuere & de Miguel, 2020). Moreover, educational institutions in various countries are required to modify appropriate learning methods, during the Covid-19 pandemic (Alasmari & Arabia, 2021). Based on the Circular of the Ministry of Education and Culture Number 4 of 2020, the educational processes (teaching and learning) at all levels of education should be carried out from home, either through blended or hybrid learning. Blended learning is known as an innovation in teaching, via the integration of online and traditional processes (Arrosagaray et al., 2019; Izquierdo Álvarez, 2020). Based on methods and media, the existence of technology and various innovations has helped to overcome these learning problems, from elementary to university levels (Wijaya, Ying, Chotimah, et al., 2020; Wiranota & Wijaya, 2021; Zhang et al., 2020).

Several innovations in learning have also started to be developed, especially those related to learning media (Al-Mashaqbeh, 2016; Flores et al., 2018; Wangid et al., 2021). Moreover, media is known as one of the most important factors that support learning. It is also an intermediary in delivering messages from teachers to students (Hermita et al., 2020). How should learning media solve the problems being presently encountered? What kind of media should be used to teach students in this present conditions?

One of the media used and designed by teachers is known to be interactive, based on the utilization of computers and smartphones. This media also involves the use of ICT and several technological devices, which allowed users to remotely interact and communicate (Wijaya & Hermita, 2021). Also, games are known to be sources of interesting media for learning. Even though games are often used only for entertainment, they are presently being developed in the sector of education, both at elementary and university levels. Moreover, several lecturers and teachers have developed games, in order to enhance student learning experiences. Also, various studies are found to have been conducted, which are related to game-based learning and gamification, as well as focus on general higher education (Duggins 2019, Karageorgiou et al. 2019, & Merx et al. 2020; Fotaris & Mastoras 2019) or different fields, such as computer education & science, engineering, nursing, pharmacy, physiotherapy, chemistry, mathematics, history, English, generic skills, and medicine (Borrego et al. 2017 & Ho 2018; Queiruga-dios et al. 2020; Adams et al. 2018; Cain 2018 & Eukel et al. 2017; Carrión et al. 2018; Dietrich 2018; Mónica et al. 2019; Rouse 2017; Lopez-Pernas et al. 2019; Craig et al. 2019; Cotner et al., 2018). Additionally, there is also research in the field of Science or Science Technology Engineering and Mathematics (STEM) (Veldkamp, Grint, et al., 2020).

The study on game-based learning in elementary and secondary education is still reportedly rare, as stated by Fotaris & Mastoras (2019). However, Botturi and Babazadeh (Botturi & Babazadeh, 2020) focused on teacher education, which is related to the perceptions of game-based learning effects in secondary schools (Martens & Crawford, 2019). Moreover, a single article recently published is found to be related to elementary school students (Huang et al., 2020), as

it also investigated 4th grade motivation and problem-solving skills. Also, the present study tried to bridge the gap in knowledge relating to educational escape room, and its effects in elementary school. It also focused on the effect of game-based learning in elementary school, and sought to understand the direct and indirect influences on full experience, students' collaboration and motivation, as well as their grade and gender. Additionally, the study compared the attitudes of lower and upper elementary school students, towards learning via a digital game and escape room. Based on the effects of the digital escape room and its application as a tool used in online learning environments, the study also offered insights to experts and educators.

Noteworthy, teachers are known to often appreciate the diversity of content-related activities, need for collaboration, and participation of students. Based on this gameplay, students are perceived to be more active, learn thoroughly than in a regular lesson, and enjoy the feeling of autonomy (Veldkamp et al., 2020).

The use of games in learning also trains the ability to solve problems, as well as think critically, creatively, and cooperate in groups (Zirawaga et al., 2017). Moreover, the learning mechanism used to train and educate students are known as serious games (Noemí & Máximo, 2014). However, instructional media designers should consider the characteristics of the digital tools to be used (Wangid et al., 2021).

The interactive learning media in this study used an application known as genially, as well as a game-based learning design and gamification. Moreover, game-based learning and gamification are increasingly popular with other various innovative types (Brezovszky et al., 2019; Wouters & Van Der Meulen, 2020). Gamification is known as the use of game design techniques, in order to maximize the occurrence of students' interactions and collaborations in learning environments (Hermita et al., 2021).

Genially is also an online service, used for producing beautiful and interesting stories, which are in the form of posters, games, interactive contents, and infographics (Sanchez & Plumettaz-Sieber, 2019). Moreover, this application was established in 2015, at Córdoba, Spain. It is also able to create about 25 types of business, media, or teaching projects. Also, genially received the Global Edtech Startup Award (GESA) at the London BETT Show, for the categories of technology and education (Kaźmierczak, 2020). Additionally, teachers/students have the ability to insert web links, texts, videos, audios, and illustrative objects/images, when creating a work project on a Genially sheet.

Genially is also included among the top 100 positions in the learning media application. Also, this application is known to have series of advantages (González & Gomez, nd), which are as follows, (1) Various designs, animations, and texts that are easily adapted for use, (2) Contents that are easily work on by machines, (3) Buttons that are easily adjusted to worksheets before or after use, (4) Unlimited versions and adaptations, (5) Allowing collaboration between students and teachers, (6) Having a community of creators regularly uploading new contents, (7) Tendencies to be used by all types of computers, due to requiring an internet connection, (8) Automatic cloud storage, (9) Autosave features, and (10) Allowing multiple authors to simultaneously work on presentations and modify them in online operations.

The aims of developing learning media are to assist teachers in teaching and learning activities, increase teacher confidence when teaching, assist students in understanding the

learning materials, and create a more conducive learning atmosphere. Therefore, a study of teachers' perceptions of learning media is needed to evaluate whether the learning media made are acceptable and can support teachers in various aspects when teaching. Furthermore, the findings of this study could inform the researchers whether the development of learning media requires further development and revision.

Hayak & Orit Avidov-Ungar (2020), conducted a study on teacher perceptions of Digital Game-Based Learning. They integrated Digital Game-Based Learning in 28 schools, and examined the perceptions of teachers at different career stages, via the distribution of a 23-item questionnaire. Moreover, the results showed that teachers' perceptions widely varied (Hayak & Avidov-Ungar, 2020).

Meletiou-Mavrotheris & Prodromou (2016), also conducted research on preservice mathematics teachers' game-enhanced learning, with a sample of 13 prospective elementary teachers. The results showed that game-based learning has a positive impact on them. These are also in line with a research conducted on 50 teachers by Y.J. An & Cao (2017), which stated that digital games are able to increase students' attitude, self-efficacy, and perceptions of subjects. Additionally, other studies have shown that teachers observe game-based learning as a means of motivating and engaging students. Also, they view games as methods of training and empowering teachers (Molin, 2017). Marino et al (2013), also found that the learning media is able to improve student outcomes and attitudes, towards science lessons.

Teachers' perceptions of game-based learning are unique and varied, and several studies have shown that they are positive. Due to limited studies have analyzed elementary school teachers' perceptions of game-based learning (especially using Genially application), the findings of this study are expected to provide general information about the validity and reliability of the instrument and teachers' perceptions of genially learning media as a mean to support students' teaching and learning activities. Many previous studies have used The Classical Test Theory (CTT) to measure perceptions; however, it had measurement limitations. Therefore, this study aims to determine teachers' perceptions of genially learning media and analyze the effect of instructional media on students' learning motivation using Rasch analysis. Item Response Theory (IRT) from the Rasch model can specifically and comprehensibly analyze the data collected through questionnaires and show if each item in a questionnaire is valid and reliable. Specifically, the research questions are formulated as follows (1) How is the validity of the questionnaire of teachers' perceptions towards genially learning media; (2) How is the reliability of teachers' perceptions towards genially learning media; and (3) What are the teachers' perceptions towards genially learning media.

2. Method

A survey method was used in collecting data about the perceptions of teachers on Genially (Cohan et al., 2007). These developed data were collected via the use of a questionnaire, which was filled through Google Form. Moreover, the subjects of this study were 45 elementary school teachers, which were located in the province of Riau, Indonesia. Additionally, they were found to approximately and maximally have work experience and age periods of 2 and 19 years, respectively, as well as originated from cities and regencies in Pekanbaru.

The measurement of perceptions was carried out through a 19-item questionnaire, via the use of a Five-point Likert scale (1-5). This instrument was adapted based on the research conducted by Alim et al. (2020).

Table 1. The instrument for Measuring Teacher Perceptions About Genially Based Learning Media

No	Statements
1	As a teacher, I am able to use this learning media easily
2	The interface and description of the menu in this media is clear
3	The buttons in this media function as intended
4	The language used in this media is easy to understand
5	The description of the material of conductors and insulators in this media is easy to understand
6	Practice questions are in accordance with the material studied
7	The use of media is able to help students solve the questions given
8	The use of colors and images is able to motivate students to learn more fun
9	Animations/illustrations in this media make it easier for students to understand the material
10	The material presented is neat
11	Students are motivated to learn science after using this media
12	Students are able to learn with this learning media
13	The teacher can control the use of this learning media easily
14	Instructions for learning activities are clearly stated
15	Learning using this media is very interesting for students
16	Students become more concentrated in participating in science learning using this media
17	Students are able to learn more independently using this media
18	This media is able to make students master the learning material quickly
19	Learning to use interactive multimedia learning media is fun for students

The data was collected online in March 2021, via the Google Form. Moreover, the data analysis used the Rasch model (Sumintono & Widhiarso, 2013), due to its provision of more precise and accurate measurement results. Also, the WINSTEPS 4.5.2 program was used to analyze the data, including the quality of instruments, interaction between respondents and statements, as well as individual and item reliabilities. Therefore, elementary school teachers' perceptions of the developed gamification-based learning media was in-depthly known.

3. Result and Discussion

The results are presented in 2 parts, namely (1) The appearance of learning media with the concept of heat transfer, via the Genially application, and (2) The perceptions of elementary school teachers towards the learning media and data analysis techniques, via the Rasch model.

Display of Interactive Learning Media Products

The learning media was designed on the concept of heat transfer via the Genially application, which consisted of several parts, namely:

a. Greetings

The initial appearance of this learning media displayed the opening greetings and material to be discussed, as well as the profile of the user, as shown in Figure 1.

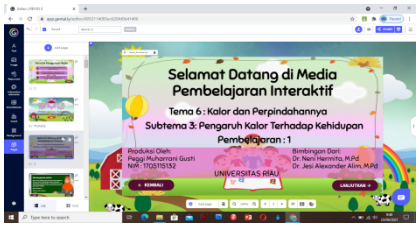


Figure 1. Opening Greetings

b. Instructions for Use of Media

The second display was an instruction to use the media, as shown in Figure 2. This section described the steps that should be followed by the user, in order to effectively operate the media.

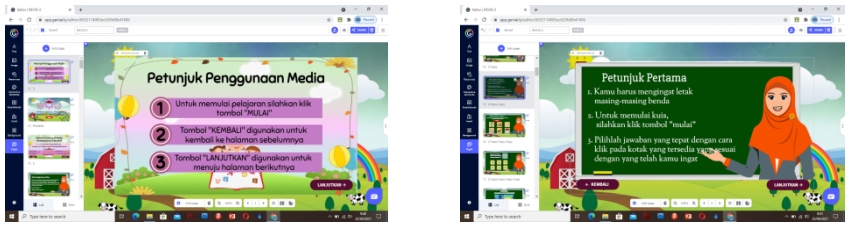


Figure 2. Instructions for Use Media

c. Heat transfer material

The learning material started with the display of conductor and insulator objects. This was presented with a game where students are told to remember the location of objects, as shown in Figure 3.

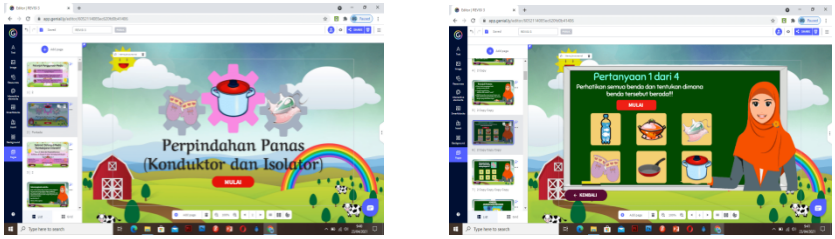


Figure 3. Material Information

d. Delivery of material information

Information was conveyed after students have correctly selected the location of pictures in the question. This information was in a descriptive form, as shown in Figure 4.

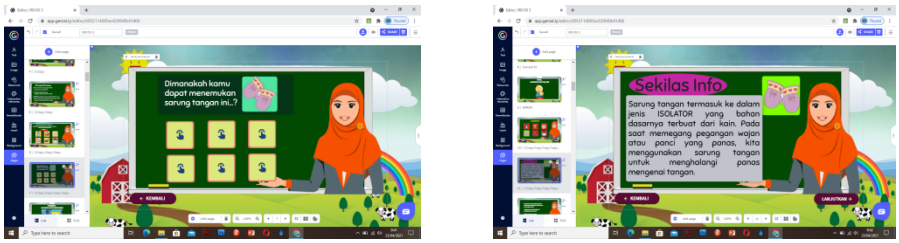
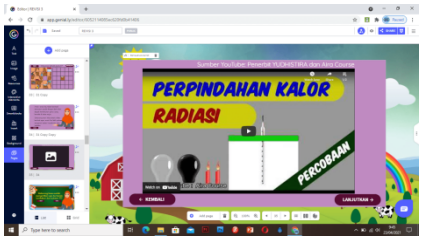


Figure 4. Material Information

e. Game

Based on the delivery of materials, this media also used several games, such as arranging puzzles, lab experiments, guessing pictures, and spinning wheels, as shown in Figure 5.



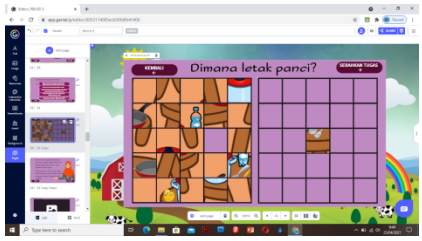


Figure 5. Games, video lessons and composing puzzles

f. Exercise

Finally, there was a practice question to measure students' knowledge about the material presented. As shown in Figure 6.

Figure 6. Exercise

g. Closing

This contained a conclusion about the learning presented through the spin wheel game, as shown in Figure 7.

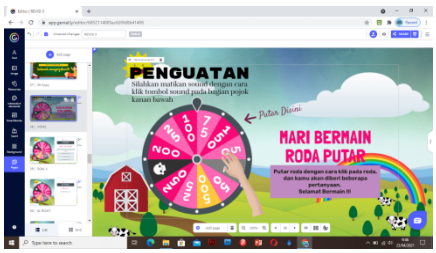


Figure 7. Closing

This game was ac-cessed freely, irrespective of the students' location. Therefore, this media supported learning during the COVID-19 pandemic. The media links used are as follows: https://view.genially/6052114085ec620fd0b4140 6/interactive-content-hasil-akhir

Data analysis using the Rasch Model

The instrument to explore teachers' perceptions about Genially focused on a 5-point Likely scale questionnaire, which was used by elementary school teachers in Riau, Indonesia. Based on the questionnaire, 11 items represented the teachers' perceptions of the game-based education developed products. Moreover, the ability of the media to motivate and train students' independence in learning, was represented by four items each, respectively. The construction and depiction of the teacher's perception questionnaire are shown in Table 2 below.

Table 2. Construction of Questionnaire and Description of Statements

Construction elements	Item Distribution	Total Item
Teachers' perceptions of game-based education products using Genially	1,2,3,4,5,6,9,10,12,13,14	11
This media is able to motivate students in learning	8,11,15,19	4
This media is able to train students' autonomous learning	7,16,17,18	4

The developed instruments were further implemented and analyzed, in order to be interpreted into the study results. This questionnaire was analyzed in two stages. The first stage was to calculate the percentage of teacher perceptions, based on three questions. Moreover, Figure 8 below showed the percentage of each question, as presented in Table 2.

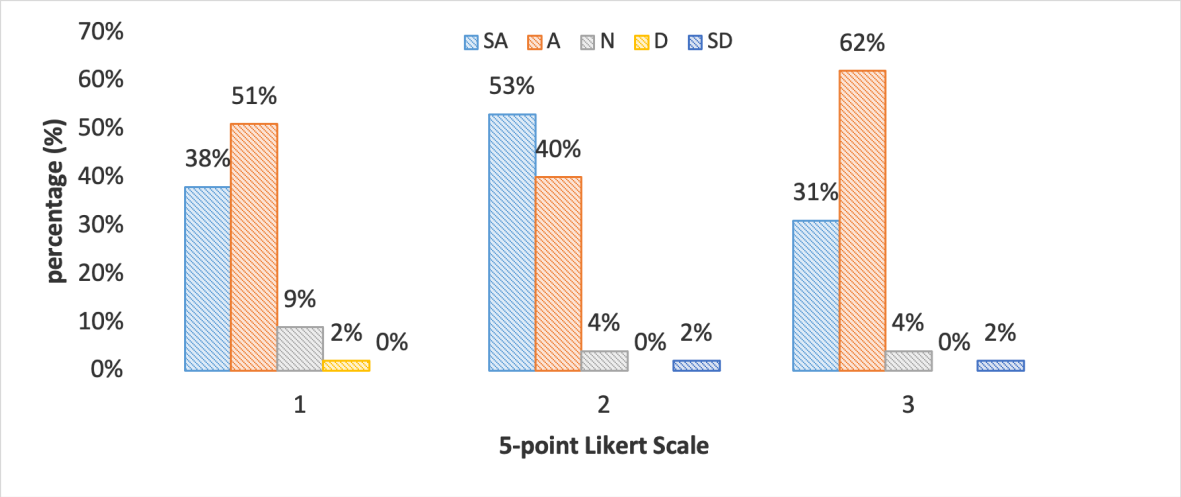


Figure 8. Percentage of Teacher Answer the Questionnaire

The results of teacher perceptions about game-based education products using Genially, showed the response rates of 38%, 51%, 9%, 2%, and 0% for Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD), respectively. Meanwhile, the results about the media's ability to motivate and train students' independence in learning, showed a response rate of 53% & 31%, 40% & 62%, 4% & 4%, 0% & 0%, as well as 2% & 2%, for Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD), respectively.

Based on the second stage, the questionnaire was analyzed using Winstep version 4.5.2. Furthermore, the in-depth exploration stage was carried out using Rasch analysis. This analysis used the score of teachers' perceptions about the Genially learning media. Also, the score was used to identify individual and item reliabilities, as well as Cronbach alpha of the instruments, as shown in Figure 9.

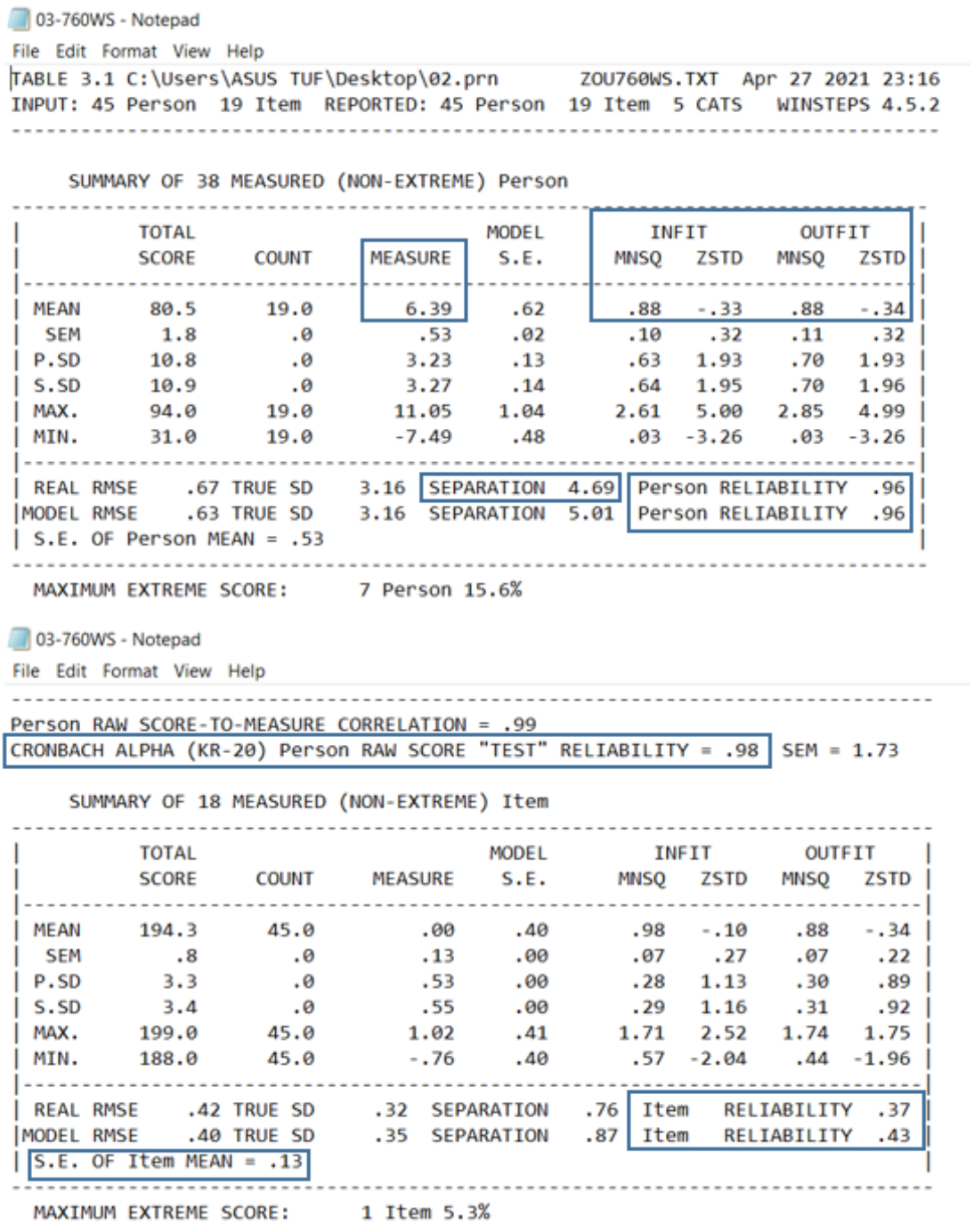


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TABLE 3.1 C:\Users\ASUS TUF\Desktop\02.prn       ZOU760WS.TXT  Apr 27 2021 23:16
INPUT: 45 Person  19 Item  REPORTED: 45 Person  19 Item  5 CATS   WINSTEPS 4.5.2
-------------------------------------------------------------------------------

     SUMMARY OF 38 MEASURED (NON-EXTREME) Person
-------------------------------------------------------------------------------
|          TOTAL                          MODEL       INFIT        OUTFIT     |
|          SCORE     COUNT     MEASURE    S.E.      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN      80.5      19.0        6.39     .62       .88   -.33    .88   -.34 |
|  SEM       1.8        .0         .53     .02       .10    .32    .11    .32 |
| P.SD      10.8        .0        3.23     .13       .63   1.93    .70   1.93 |
| S.SD      10.9        .0        3.27     .14       .64   1.95    .70   1.96 |
| MAX.      94.0      19.0       11.05    1.04      2.61   5.00   2.85   4.99 |
| MIN.      31.0      19.0       -7.49     .48       .03  -3.26    .03  -3.26 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .67 TRUE SD    3.16  SEPARATION  4.69  Person RELIABILITY  .96 |
|MODEL RMSE    .63 TRUE SD    3.16  SEPARATION  5.01  Person RELIABILITY  .96 |
| S.E. OF Person MEAN = .53                                                   |
-------------------------------------------------------------------------------
  MAXIMUM EXTREME SCORE:      7 Person 15.6%
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-------------------------------------------------------------------------------
Person RAW SCORE-TO-MEASURE CORRELATION = .99
CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .98  SEM = 1.73

     SUMMARY OF 18 MEASURED (NON-EXTREME) Item
-------------------------------------------------------------------------------
|          TOTAL                          MODEL       INFIT        OUTFIT     |
|          SCORE     COUNT     MEASURE    S.E.      MNSQ   ZSTD   MNSQ   ZSTD |
|-----------------------------------------------------------------------------|
| MEAN     194.3      45.0         .00     .40       .98   -.10    .88   -.34 |
|  SEM        .8        .0         .13     .00       .07    .27    .07    .22 |
| P.SD       3.3        .0         .53     .00       .28   1.13    .30    .89 |
| S.SD       3.4        .0         .55     .00       .29   1.16    .31    .92 |
| MAX.     199.0      45.0        1.02     .41      1.71   2.52   1.74   1.75 |
| MIN.     188.0      45.0        -.76     .40       .57  -2.04    .44  -1.96 |
|-----------------------------------------------------------------------------|
| REAL RMSE    .42 TRUE SD     .32  SEPARATION   .76  Item   RELIABILITY  .37 |
|MODEL RMSE    .40 TRUE SD     .35  SEPARATION   .87  Item   RELIABILITY  .43 |
| S.E. OF Item MEAN = .13                                                     |
-------------------------------------------------------------------------------
  MAXIMUM EXTREME SCORE:      1 Item 5.3%
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Figure 9. Summary Statistics on Rasch Analysis

Figure 9 showed that the individual and item reliability values were 0.96 & 0.96 and 0.34 & 0.43 when included in the special and weak categories, respectively. Therefore, the Cronbach alpha value of 0.98 was observed in the special category. Furthermore, the analysis related to the teachers' perceptions score of the developed media products, is shown in Figure 10 below.

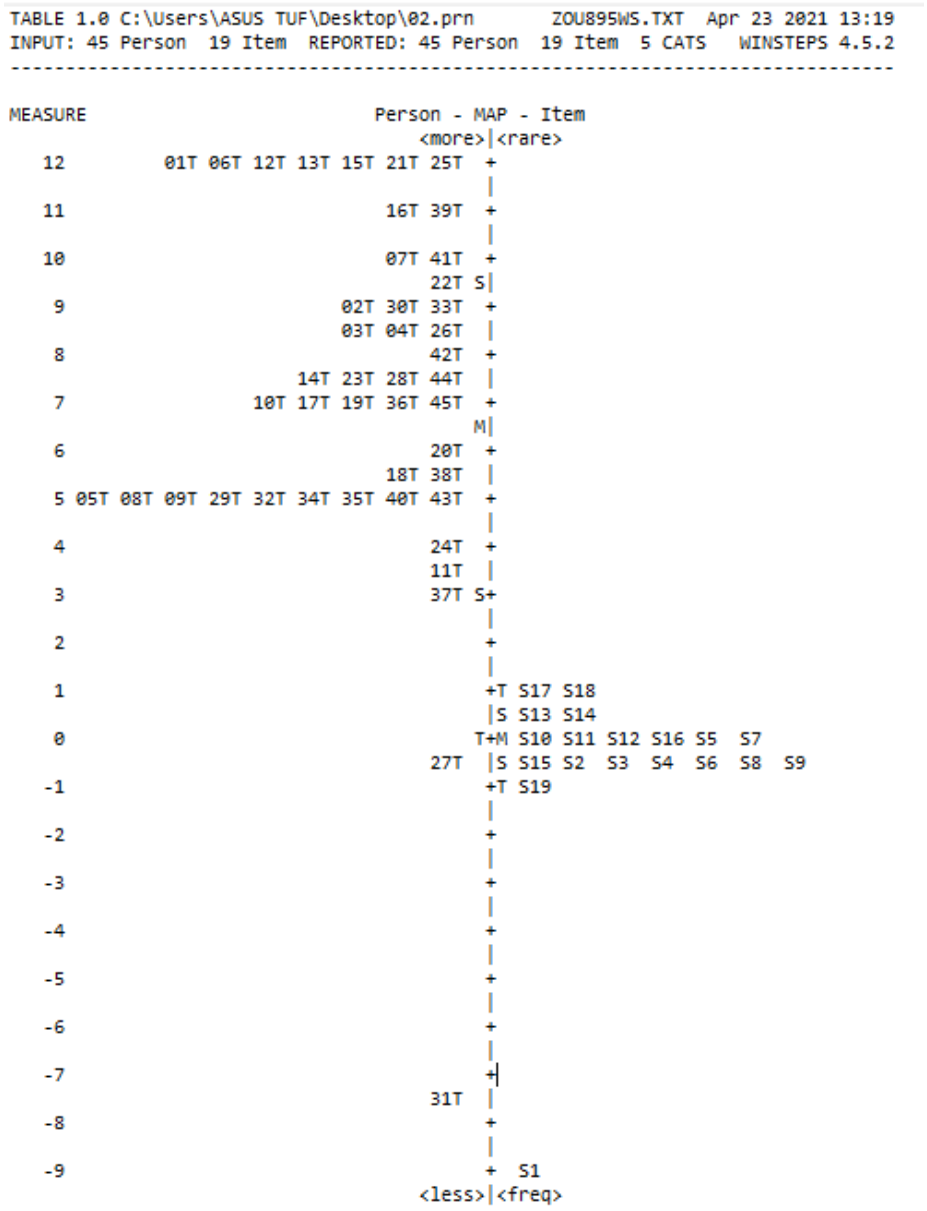

Figure 10. A Score of Distribution of Teacher Perception About Learning Media Based on Genially

Based on Figure 10, individual 31 was observed to have the most difficulty in agreeing. However, individuals 01, 06, 12, 13, 15, 21, and 25 agreed very easily. According to the distribution on the right side, item 1 was the easiest to be agreed upon by all respondents. However, items 17 and 18 were the most difficult to be agreed upon.

Another analysis that was related to an individual measure with a misfit, is shown in Figure 11 below.

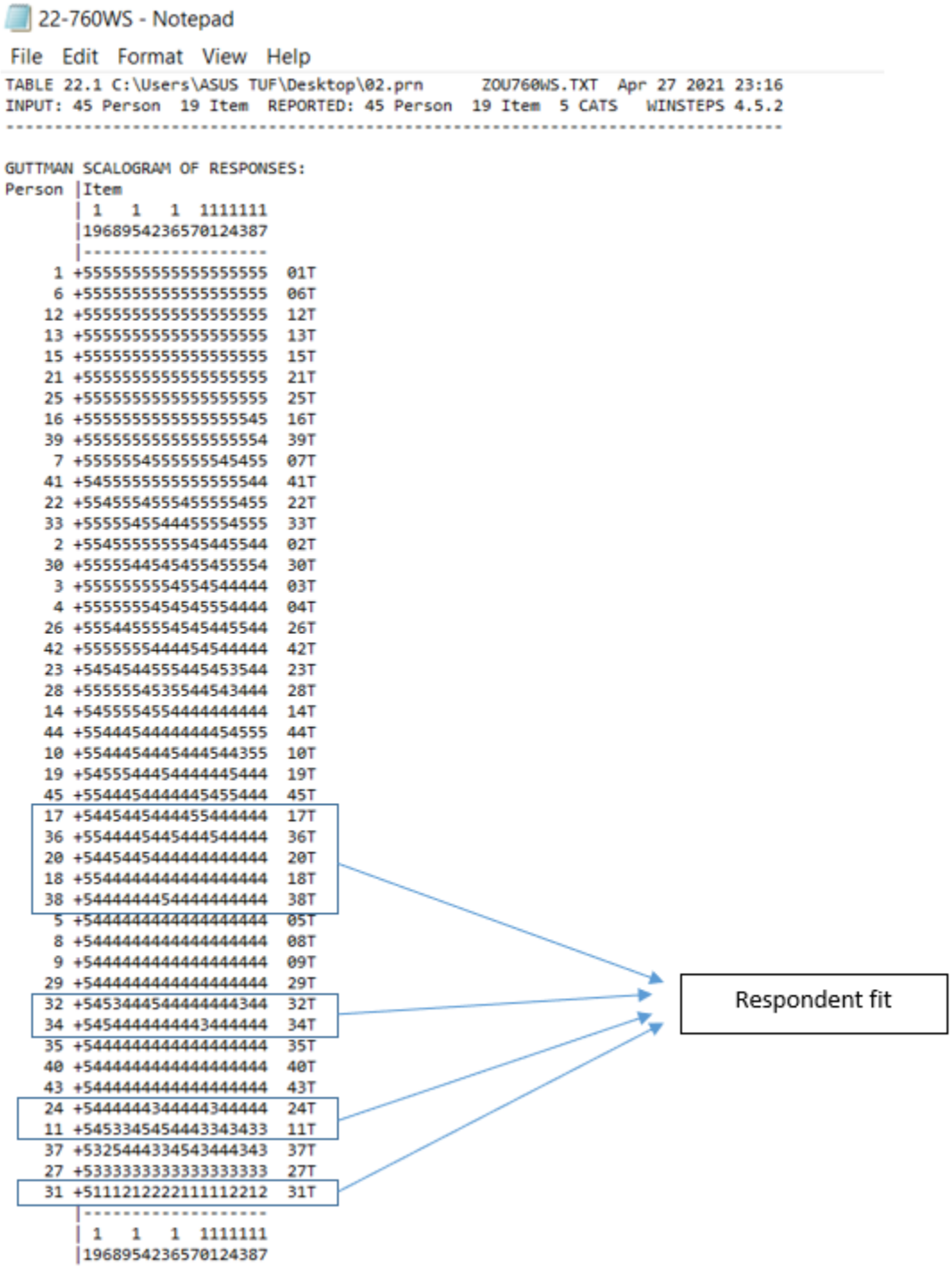

Figure 11. Person Measure with Misfit

Based on Figure 11, the individual measure with misfit was indicated by respondents outside the blue column. This explained that several people were inconsistent in providing opinions about the items. Moreover, the analysis related to the suitability of the question (question fit), is shown in Figure 12.

The following is a graph to observe the item's misfit. Based on the mean-square infit value being greater than 1.5 (1.74), the statements S6 and S7 was observed to show a misfit. Additionally, these results were also shown on the ICC graph, where there was a misfit response, due to being outside the trust space curve (blue line).

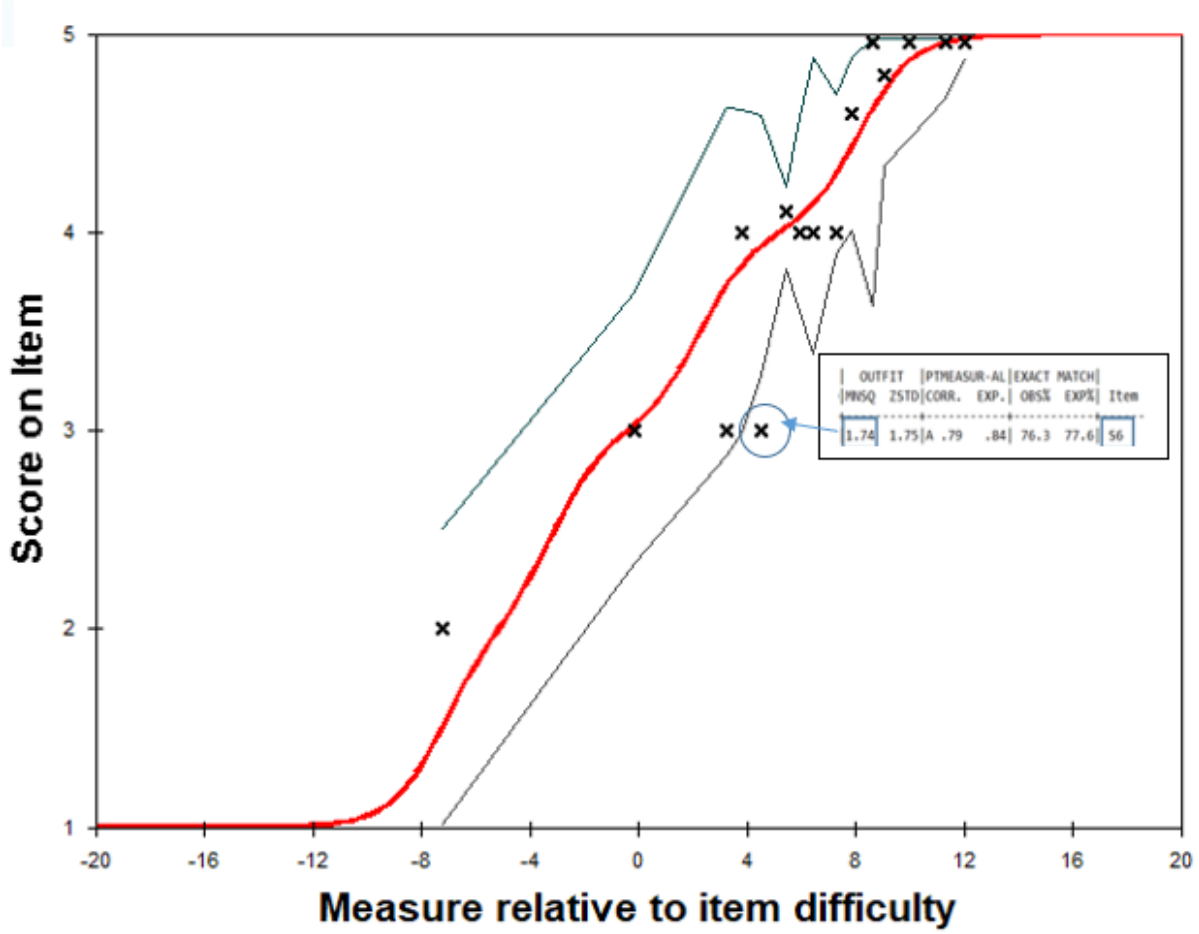

Figure 12. Suitability of the Question

The COVID-19 pandemic was known to have caused major changes to various sectors, especially education. Based on the demands of situations and conditions, digital literacy teachers and lecturers, students, as well as parents, were trained. Moreover, the application of blended and hybrid learning enabled educators and experts to discover various innovations in education. The innovation developed was in form of digital education, such as game-based learning and gamification.

A well-designed game-based learning had the potential to provide meaningful experiences to students. This was in line with Y. An & Cao (2016), which stated that students used information from various sources to solve problems, compared to memorizing facts. Based on the gameplay, players were found to learn through failure. This indicated the occurrence of active learning, due to students directly experiencing the educational process, without focusing on knowledge. Furthermore, game-based learning allowed players to learn, while developing their knowledge for use in reality.

This study aims to explore teacher perceptions of genially, by developing instruments in accordance with the elementary school curriculum. Besides that, it also explored the means by which the ability of the developed media motivated and trained students' independence in learning, via the Rasch analysis. This analysis was made for the suitability of the interval level measurement, which was conducted on the two main dimensions (person and item) used to explore the teachers' perceptions of Genially. Moreover, several studies explained that the Rasch analysis supported the theoretical design of the instrument (Chan et al., 2014; Kasi et al., 2020; Winarti et al, 2020).

Based on the analysis in the first stage (Figure 8), the results of the initial research question showed a response rate of 38%, 51%, 9%,

2%, and 0% for Strong Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strong Disagree (SD), respectively. This indicated that genially educational products were used for learning in elementary schools. Moreover, these products were had certain advantages, such as easy usage, easily acknowledged learning materials and languages, functional menu display, clear educational instructions, and neat presentation. Additionally, the illustrations in this media facilitated students to understand materials and practice questions in the form of games, quizzes, and tests.

Based on the second research question, the results showed a response rate of 53%, 40%, 4%, 0%, and 2%, for Strong Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strong Disagree (SD). This indicated the assumptions that genially motivated elementary school students in learning, both in terms of the media appearance and material presented. Moreover, this media was equipped with animations, videos, and sounds, making genially more interesting for students to learn.

Gamification in education is known as an approach to motivate and involve students in learning, via the integration of game design principles (Dichev & Dicheva, 2017). It was also important to maintain student motivation, in order to support hybrid and blended learning. This showed that the potential of gamification had a significant effect on student motivation. Also, it positively affected motivation levels, and guaranteed continuous engagement (Pramana et al., 2018). Other studies have also stated that gamification positively affected mental health and well-being, while reducing stress, anxiety, and depression (Tolks et al., 2019; Kuosmanen et al., 2018; Peracchia et al., 2019). However, Dichev and Dicheva (2017), stated that there were no practical guidelines on how to integrate learning in an effective and efficient manner.

According to Y. An & Cao (2016), teachers had the perception that game-based learning made educational processes fun and interesting, as well as helped students develop higher-order thinking skills. This was in line with Jamaludin et al. (2021), which also stated that gamification motivated adolescents in overcoming depression via user-compatible designs, in order to prevent boredom and ensure continuous engagement.

Based on the third research question, the results showed a response rate of 31%, 62%, 4%, 0%, and 2%, for Strong Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strong Disagree (SD), respectively. This indicated the opinion that genially trained learning independence for elementary school students. Also, it helped students to complete provided practice questions. Moreover, they concentrated more on following media instructions, and quickly mastered the materials. Therefore, students learned independently, due to the teacher only providing study links.

According to the teacher's perception, this study also found that the media supported autonomous learning. This was indicated by the response of the subjects, where 92% were in the SA & A categories. Furthermore, autonomous learning is known to be independently carried out by students, in order to construct knowledge, with the teacher only acting as a facilitator. This was in line with the opinions of Masouleh & Jooneghani (2012) and Samusenkov et al (2021), which stated that it was a social process in student independence, independent learning, and self-direction, towards the construction of knowledge.

Based on Rasch's in-depth analysis, the values of individual and item reliabilities were 0.96 & 0.96 and 0.34 & 0.43, respectively. However, the Cronbach alpha value was observed at 0.98 (Figure 9). These results were categorized as special and weak, for both the individual and item reliabilities, respectively. Based on the value of the Cronbach's alpha being close to 1, an additional reliable measure was indicated (Boone, 2016).

Afterwards, the Rasch analysis also indicated that most teachers in Riau province provided a positive perception of genially educational products, and its uses for learning in elementary schools (Figure 10). This explanation was obtained from the output of Variable (Wright) maps in the WINSTEP 4.5.2 software. Moreover, item S1 was Strongly Agreed upon by all respondents.

Meanwhile, the respondents with code T27 only supplied a positive response to item S1, with others providing neutral answers. Additionally, the Wright map supported experts in measuring the strengths and weaknesses of instruments, comparing theories with experimental data, and also providing guidance (Boone, 2016; Kasi et al., 2020).

4. Conclusion

The aim of this study was to determine the teachers' perceptions of genially, with an item response theory (IRT) from the rasch model. Also, it showed a detailed description of teacher perceptions in three main areas, which were related to game-based learning. These included the perceptions of genially media, motivation, and independent learning. Moreover, this study used a sample of primary school teachers, which stated that they preferred genially-based learning media in three aspects (genially media, motivation, and autonomous learning).

The results showed that genially was useful for primary school teachers, and provided knowledge to other experts, about its effects on the learning process. Based on being a basic element in the use of genially, this learning effect was expected to change the students' educational environment, in order for them to be more independent and motivated to learn. Conclusively, teachers were recommended to design game-based learning, gamification, or other digital interactives, due to the positive perceptions provided by elementary school teachers towards the use of the genially application. The results of this study answer the question of how the elementary school teachers' perception of the use of instructional media involving technology. The elementary school teachers said that instructional media involving technology make the teaching and learning process effective , especially in Covid-19 pandemic period.

The researchers suggest a future study about the use of the instructional media to improve students' higher order thinking skills.

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