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IMPLEMENTATION OF WEB-BASED CHARACTER ASSESSMENT ON STUDENTS' CHARACTER OUTCOMES: A REVIEW ON PERCEPTION AND GENDER

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Abstract

This study aims to see the effect of student perceptions on web-based character assessment on the results of student character assessment. The population in this study was a junior high school in Batanghari Regency with a sample of 322 students using the purposive sampling technique. Quantitative methods are used in this study with descriptive and inferential analysis methods to obtain assumption tests (normality, homogeneity, and linearity) and hypothesis testing (ANOVA and Linear Regression). The results of this study indicate that the perception of male and female students on web-based character assessment affects the results of character assessment. A linear regression test results show a significance value of 0.001 for both sexes. This is a supporting indicator in implementing web-based assessments apart from the real-time benefits and swift feedback. Therefore, web-based character assessment is suitable for use in learning, as indicated by good student perceptions of the application of the web-based character assessment.

Keywords – Character, Gender, Perception, Web-based assessment.

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1. Introduction

We have felt technological progress in all sectors of life due to the development of science and technology. Advances in technology make it easy to access information and establish communication (Budianingsih, Soehari & Irwansyah, 2019; Fitriyana, Wiyarsi, Ikhsan & Sugiyarto, 2020; Francis, Latib, Amiron, Subari & Kamin, 2020). Many devices, such as laptops and smartphones, have been developed to support access to information (Alvarez-Cedillo, Aguilar-Fernandez, Sandoval-Gomez & Alvarez-Sanchez, 2019; Farozin, 2019; Kusuma, 2021). Technology transforms to create a more professional system (Racz, Johnson, Bradshaw & Cheng, 2015; Farr, 2017; Yoon, Park, Yun & Park, 2018; Lusigi, 2019; Wiebe, Nguyen & Mattheis,, 2019). Technology has become a daily basic need (Fan, Liu, Wang & Wang, 2017; Larsson-Lund, Kottorp & Malinowsky, 2017; Billman, Harding & Engelbrecht, 2018; White, 2019; Setiawan, Aman & Wulandari, 2020; Teti & Maroni, 2021). Technology has now become a paradigm and

plays an essential role in the world of education (Shodiq & Syamsudin, 2019; Azman, Kamis, Kob, Abdullah, Jerusalem, Komariah et al., 2020; Prasojo & Yuliana, 2021; Subramaniam; 2021). This is because technology has been integrated into the education system (Rosana, Kadarisman, Maryanto & Sugiharsono,, 2017; Mahat, Hashim, Saleh, Nayan & Norkhaidi, 2019; Astuti, 2021). Now many technologies have been applied to the education system.

Education is an integrated system to improve the human resources of a country. Technology has widely developed education (Miskiah, Suryono & Sudrajat, 2019; Setiawan, Widjaja, Kusumajanto & Wahyono, 2020; Ong, Govindasamy, Singh, Ibrahim, Wahab, Borhan et al., 2021). Education is the process of forming the self of each individual (Zaenuri, Sudarmin, Utomo & Juul, 2017; Siswanto, Karimullah, Prasetyawati & Nurhayati, 2019; Irmansyah, Lumintuarso, Sugiyanto & Sukoco, 2020; Marzuki, Miftahuddin & Murdiono, 2020). In addition, it also acts as a means to improve students' abilities (Khasanah, Sajidan & Widoretno, 2017; Hartini, Firdausi, Misbah & Sulaeman, 2018; Wangid, Mustadi & Putri, 2018; Sukendar, Usman & Jabar, 2019; Maisyaroh, Juharyanto, Bafadal, Wiyono, Ariyanti, Adha et al., 2021; Sojanah, Suwatno, Kodri & Machmud, 2021). Education aims to create the best generation of the nation's youth (Sumardjoko & Musyiam, 2018; Afandi, Sajidan, Akhyar & Suryani, 2019; Asrial, Syahrial, Kurniawan, Aldila & Iqbal, 2022). Education in the learning process is formed because of interaction between teachers and students (Ginanjar, Suherman, Juliantine & Hidayat, 2019; Rosidin, Kadaritna & Hasnunidah, 2019; Salimi & Safarzadeh, 2019). Teachers and students are essential role holders in education (Simon, 2020; Yu & Sun, 2020; Fitriani, Maryani, Chen, Ginting, Sehab & Wulandari, 2021). Education is said to be ideal if there is a system for evaluation.

Evaluation or assessment is needed in education and plays an important role. Assessment is an objective activity that can measure an object (Ho, Chen & Hsu, 2017; Kantor & Lei, 2020). In education, assessment occupies an essential position as a reference for the success or failure of the learning process (Darmawan, Yatimah, Sasmita & Syah,, 2020; Rodriguez-Vasquez & Ariza-Hernandez, 2021). The success or failure of a learning process can be seen after the evaluation is carried out (Sahoglu, Yağci, Konedrali & Yağci, 2018; Yuhanna, Al Muhdhar, Gofur & Hassan, 2021). This evaluation is carried out to see the shortcomings and find the best solution to correct the existing deficiencies (Fadiana, Amin, Lukito, Wardhono & Aishah, 2019; Sadhu, Ad'hiya & Laksono, 2019; Zulfiani, Suwarna & Sumantri, 2020). This evaluation activity is generally carried out conventionally (Barua, Singh, Mridiula, Gupta, Satyapriya & Tomar, 2017; Hardianti,Taufiq & Pamelasari, 2017; Abdurrahman, Saregar & Umam, 2018; Ozan, 2019; Violato & King, 2021). However, with the development of technology, evaluation can be integrated with technology (Sakar, Orhan, Sinanoğlu, Tosun & Öz, 2017; Ayanwale, Isaac-Oloniyo & Abayomi, 2020; Esomonu, Esomonu & Eleje, 2020). So it is necessary to develop a technology-based assessment system to facilitate the assessment process.

An integrated assessment system with technological developments in the form of e-assessment. E-assessment makes the assessment process more efficient and uses a simple, end-to-end process (Aichi, Bassiri, Benmokhtara & Belaaouad, 2020). This feature can be accessed easily using a smartphone to facilitate evaluation integrated with the web (Lai, Jong & Hasia, 2020; Rabiman, 2021; Wahyuningsih, Qohar & Satyananda, 2021; Wibowotomo, Rizal, Akbar & Kurniawan, 2021). The web was chosen as the integrator because the website has the advantage that it can be developed and updated according to needs (Sahidu, Gunawan, Indriaturrahmi & Astutik, 2017; Leksono, Marianingsih., Ilman & Maryani, 2021). In addition, web-based assessment can positively impact the latest evaluation system in education (Wenno, 2014; Dunovic, Radujkovic & Vukomanovic, 2016; Widiana & Jampel, 2016). So the use of web-based assessment will provide benefits for education.

Online assessment has been widely applied in education, one of which is a web-based assessment which is gradually being developed because it is essential in teaching (Wang, 2018). Web-based assessment enables the broader adoption of technology in schools because it encourages educators to be creative in the assessment process (Kim & Gurvitch, 2018). Web-based review is very effective for use in learning because this type of assessment makes the assessment process easy and efficient (Alfiriani, Setyosari., Ulfa & Praherdhiono, 2022; Wahyuningsih, Wahyuni & Lesmono, 2016). The web platform used in the

assessment process can assist teachers in examining, assessing, and reviewing (Abass, Olajide & Samuel, 2017; Permatasari, Ellianawati & Hardyanto, 2019). Web-based assessment is one of the best ways to positively evaluate learning to impact education (Dahalan & Hussain, 2010). Electronic assessments (e-assessments) such as web-based assessments have been used in various ASEAN countries.

Brunei conducts an online-based assessment that can be accessed via a smartphone or laptop, encouraging feedback (Lee, Hassel, Salleh & Munohsamy, 2021). Cambodia has delivered an assessment transforming into a digital assessment (Sin, Sothy, Phirom & Tineke, 2020). Furthermore, Malaysia has also implemented an online assessment method due to restrictions from the government to deal with the pandemic (Iskandar, Ganesan & Maulana, 2021). Thailand has also developed many online standardized tests for students because they are instrumental in learning management and increase the effectiveness of processing and displaying learning outcomes concretely and dynamically (Khlaisang & Koraneekij, 2019). Then, Timor Leste also implemented a computer-based test so that students were more accustomed to using computers and the internet in everyday life (Balan, & Djuniadi, 2016). Not only that, but Vietnam has also implemented online tests in support of performance tests in several different educational contexts that can be applied not only to mathematics, but it can also be done in other subjects, especially those that are suitable for social sciences or subjects with open knowledge (Bui, Nguyen, Tran & Nguyen, 2021). Online assessment that has been widely applied in various ASEAN countries has not been developed to evaluate students' character.

Using web-based assessment to measure student character is an innovation in student character assessment considering that character development is essential for building the Indonesian nation (Tanti, Darmaji, Astalini, Kurniawan & Iqbal, 2021). Web-based student character assessment can include evaluations on a large scale (Barlow, Jordan & Hendrix, 2003). Darmaji, Astalini, Kurniawan and Aldila (2021) stated that student character assessment is critical to determine the success of learning through web-based character assessment. Using web-based assessment to measure student character is very useful in education because it can save costs and speed up data analysis time so that students can reflect on themselves (Aldila, Darmaji & Kurniawan, 2022; Iqbal, Ginting, Aldila, Putri, Maryani & Ratnawati, 2022). The character of students must also be evaluated by monitoring character education.

Students' character must be built to build the nation (Novianti, 2017; Suastra, Jatmiko, Ristiati & Yasmini, 2017). Good moral values are contained (Lapsley & Woodbury, 2016; Harun, Jaedun, Sudaryanti & Manaf, 2020; Kristjansson, 2020; Suhirman, Prayogi & Asy'ari, 2021). Character education is essential because it creates students who have character, ethics, and attitudes to become pillars of building the nation (Isdaryanti, Rachman, Sukestiyarno, Florentinus & Widodo, 2018; Martini, Rosdiana, Subekti & Setiawan, 2018). This study's characteristics measured using web-based assessment are independent, religious, disciplined, hard work, and creative. Independent character becomes a character that can affect students' lives because by having a different character, students can carry out activities in their lives (Nurazizah, 2021; Putra & Suyatno, 2021; Sidiq, Najuah & Suhendro, 2021). Religious character is an attitude and behavior to obey the teachings of the religion he adheres to (Victorynie, Husnaini & Amili, 2020). Discipline is an essential behavior possessed by students because it is related to the behavior/character of the students themselves and self-control against the rules (Annisa, 2018; Darmaji, Astalini, Kurniawan, Perdana & Putra, 2019). The character of hard work is a form of a person's persistence in achieving his goal (Munfarikhatin, Pagiling, Mayasari & Natsir, 2021; Saragih, Widodo & Wardani, 2019). Creative character is related to a person's ability to imagine and develop something (Amalia, Sutarto & Pranoto, 2021; Kim, Bae, Choi, Kim & Lim, 2019). These five characters are essential to measure and evaluate to develop students' character through learning.

Using web-based assessment to measure students' character will raise students' perceptions as website users. Using web-based assessment increases students' positive perceptions as users (Küppers & Schroeder, 2019). The positive perception shown by students on the use of web-based assessment is the ability of students to use technology to support learning anywhere and anytime (Appiah & Van Tonder, 2019). Students' positive perception of web-based assessment shows that web-based assessment supports student evaluation of character as a forum for developing the learning process (Darmaji et al., 2021).

Students like web-based assessment because it positively contributes to it (Howe, 2020). Using web-based assessment, students involved in the assessment process believe that the assessment activity will add value to their learning (Alsadoon, 2017).

The perceptions possessed by students vary according to the extent of the characters they have. Students with good perceptions will support the learning process by actively participating in learning (Amalia, Ibnu, Widarti & Wuni, 2018; Egilmez, Eğilmez & Engür, 2018; Sudirman, Nurmandi & Bashori, 2020; Tobing & Pranowo, 2020). Students' perceptions play an important role as a supporting aspect in every learning activity (Purwoko, Andayani, Muntar & Diartha, 2017; Suyitno, Andayani, Anggari, Kurniawan & Arista, 2021). Perception is an individual's process of receiving messages using the senses, which are then interpreted (Koseoglu, 2018; Goncalves, Noce, Barbosa, Figueiredo, Hackfort & Teoldo, 2020; Muhtar & Dallyono, 2020; Rusidiyah, Purwati & Prabowo, 2020). Students with exemplary learning achievements will have a high level of curiosity to seek, expand and deepen information (Meilinda, Rustaman & Tjasyono, 2017; Tapilouw, Firman, Redjeki & Chandra, 2017; Braun, Merk, Ponitzsch, Rehdanz & Schmidt, 2018; Ayvaz-Tuncel & Tuncel, 2019). This will make students more professional in facing and solving problems in learning (Koseoglu, 2017; Prihadi, Hui, Chua & Chang, 2017; Prihadi, Tan, Tan, Yong, Yong, Tinagaran et al., 2018; Kim, Lee, Yang, Lee, Jang & Kim, 2019). The level of perception possessed by students is different based on their gender.

Gender men and women have different levels of perception. Gender is a factor that also needs to be considered in education (Darmaji, Astalini, Kurniawan & Aldila, 2022; Fitriani, Asy'ari, Zubaidah & Mahanal, 2019; Suyatna, Maulina, Rakhmawati & Khasanah, 2018). For example, Gender women are generally superior and skilled in various activities (Beddoes, 2018; Saleh & Mazlan, 2019; Rizal, Rusdiana, Setiawan & Siahaan, 2020). This shows that the gender of men and women significantly differs (Noh & Khairani, 2020; Astuti, 2021). Gender is a social construction formed and structured (Xiao & Hong, 2017; Holliday, Hennebry & Gammage, 2019). Then women can do many activities and interactions even though they have many activities (Diningrat, Nindya & Salwa, 2020). By using an evaluation system that has been integrated with technological advances, researchers can conduct research on evaluating the character and perceptions of students on the use of web-based character assessment, which is analyzed for male and female students. The literature above has explained that women have more skills than men. This makes researchers want to see the character and perceptions of students on the use of web-based character assessment. The questions that arise in this research are:

1. How do student perceptions affect web-based character assessment on student character outcomes?
2. What is the effect of student perceptions on web-based character assessment on the results of student character analysis based on gender?

2. Research Methodology

This study uses a quantitative method to conduct non-experimental research that can be measured numerically by focusing on object analysis (Pastore, 2017; Putri, Fitriani, Rini, Aldila & Ratnawati, 2021; Aldila, Wirayuda, Wulandari, Ningsi, 2020; Maison, Hidayat, Kurniawan, Yolviansyah, Sandra & Iqbal, 2022). This quantitative study was used to see the effect of students' perceptions of web-based character assessments on the results of student character assessments. The variable of student perception on the use of web-based character assessment is a variable that will observe student perceptions (student views and responses) when students use web-based assessment. At the same time, the student character variable is the result of the acquisition of the student's character, which is studied based on the indicators of the student's character during learning.

This study uses a questionnaire on student perceptions of web-based character assessment and student character questionnaires. The student perception instrument on web-based character assessment was adapted from Rizki's (2017) research with four indicators. The grid of students' perception instruments on web-based character assessment can be seen in Table 1.

Sub Variable	Items
Theory	1, 2, 3, 4, 6, 7, 8, 9
Language	5, 10, 11, 12, 18
Display	13, 14, 19, 25, 26, 27, 28, 29, 30
Benefits	20, 21, 22, 23, 24

Table 1. Perception Instrument

Then, the student character instrument used to measure student character was adapted from Harnanto (2016), which consisted of five characters. The grid of the student character instruments can be seen in Table 2.

Students' perception scores on web-based character assessments were classified using four Likert scales. Score 4 was categorized as very good, score 3 was organized as good, score 2 was categorized as bad, and score 1 was classified as very bad. The classification of these scores is shown in Table 3.

The student character assessment questionnaire, also a statement, will be converted into a Likert scale with five scales. The higher the score, the better the results for positive statements, while the lower the score for negative statements, the better the results. From the character questionnaire, students scored 5 in the very good category, 4 in the good category, 3 in the good enough category, 2 in the bad category, and 1 in the very bad category. To determine which category the student's character value belongs to, it is necessary to use the classification of student assessment scores which can be seen in Table 4.

Indicator	Items
Independent	1, 2, 3, 4
Religious	5, 6, 7, 8
Discipline	9, 10, 11
Hard Work	12, 13, 14
Creative	15, 16, 17

Table 2. Indicator of Character

Perception Rating Classification			Perception Rating Classification based on Perception Sub Variable	
Interval	**Score**	**Category**	**Interval**	**Category**
30.0 – 52.5	1	Very Bad	1.00 – 1.75	Very Bad
52.6 – 75.0	2	Bad	1.76 – 2.50	Bad
75.2 – 97.5	3	Good	2.51 – 3.25	Good
97.6 – 120.0	4	Very Good	3.26 – 4.00	Very Good

Table 3. Perception Rating Classification

Character Rating Classification			Character Rating Classification based on Character Indicator	
Interval	**Score**	**Category**	**Interval**	**Category**
16.00 – 28.80	1	Very Bad	1.00 – 1.80	Very Bad
28.90 – 41.60	2	Bad	1.81 – 2.60	Bad
41.70 – 54.40	3	Good Enough	2.61 – 3.40	Good Enough
54.50 – 67.20	4	Good	3.41 – 4.20	Good
67.30 – 80.00	5	Very Good	4.21 – 5.00	Very Good

Table 4. Character Rating Classification

The population in this study were high school students in Batanghari Regency who came from two schools. The sample of this study was 322 students, of which 164 students were obtained from Public High School Number One in Batanghari. As many as 158 students were obtained from Public High School Number Ten in Batanghari, with details of as many as 133 male and 189 female students). In this study, a purposive sampling technique was chosen to determine the sample to maximize the results and information collected (Mosabala, 2018; Tangülü & Kaya, 2019). Purposive sampling is a technique that considers specific criteria that follow the research objectives (Melesse & Mekonnen, 2020; Kamid, Rohati, Marzal, Simamora, Ramadhanti & Iqbal, 2021). The sample selection requires operating a laptop/computer/mobile phone connected to the internet. In addition, proficiency in working a laptop/computer/mobile phone is required so that students can conduct character assessments using web-based assessments. These criteria must be achieved to obtain a sample following the research objectives (Aldila, Matondang & Wicaksono, 2020; Sanova, Bakar, Afrida, Kurniawan & Aldila, 2022).

After obtaining data from a questionnaire on student perceptions of web-based character assessment and the results of student character assessments, it is necessary to do data analysis where the researcher will use descriptive and inferential statistical analysis. First, descriptive analysis needs to be done to determine the data center's location so that it is known what category the students belong to. Descriptive statistics include mean, median, mode, frequency, maximum, and minimum (Putri, Aldila & Matondang, 2022; Suhara, Kiska & Aldila, 2022). After being described to find out what category the students belong to, a hypothesis test is needed to see the relationship between variables. Before testing the hypothesis, it is necessary to test the assumptions first. The conditions that must be met so that the data can be tested for hypotheses are that the data must be tested for normality, homogeneity, and linearity first, with a significant value that must be greater than 0.05 (Ozdemir, Cakir & Hussain, 2018; Wulandari, Wirayuda, Aldila & Wulandari, 2020; Tentama & Nur, 2021; Ong et al., 2021).

The fulfillment of the assumption test requirements can then be tested for hypotheses in ANOVA and linear regression tests. First, the ANOVA test was carried out to see if there was a significant difference between variables with the condition that the significance value had to be smaller than 0.05 so that the data had a significant difference (Parmaksiz, 2019; Gomez-Arizaga, Navarro, Martin, Roa-Tampe, Conejeros-Solar, Kronborg et al., 2021; Thi & Hanh, 2021). Then, the ANOVA test was conducted to see the differences between the three classes for both perceptions of web-based character assessment and character variables. After the ANOVA test was carried out, the next researcher conducted a linear regression test to see whether students' perceptions of web-based character assessment affected the results of student character assessments. The requirement for linear regression testing is that when the significance value is less than 0.05, the attitude variable affects the student's character (Pan, 2017; Ertikanto, Rosidin, Distrik, Yuberti & Rahayu, 2018; Özdemir, 2020).

3. Results

The results of the student character assessment obtained were then analyzed to see whether there were differences in each class. The description of students' perceptions of web-based character assessment based on gender differences in seventh grade can be seen in Table 5.

Gender	Category	F	(%)	Mean	Median	Mode	Min	Max
Female	Very Bad	0	0%	100.67	102	102	85	112
	Bad	0	0%					
	Good	19	29.7%					
	Very Good	45	70.3%					
Male	Very Bad	0	0%	98.33	98	98	88	108
	Bad	0	0%					
	Good	18	37.5%					
	Very Good	30	62.5%					

Table 5. Seventh Grade Student's Perception of the Use of Web-based Character Assessment

Table 5 shows the results of the description of students' perceptions of using web-based character assessment from seventh grade with a total of 112 students. First, the perception of female students in the very good category was 70.3% with 45 out of 64 students, while in the good category, it was 29.7% with 19 out of 64 students. Then, the perception of male students in the very good category was 62.5% with a total of 30 out of 48 students, while in the good category, it was 37.5% with a total of 18 out of 48 students. Then, a description of the seventh-grade students' perceptions of using web-based character assessment based on the student's perception indicators is presented in Table 6.

Table 6 shows the results of the seventh-grade students' perceptions of using web-based character assessment, which was analyzed based on students' perception indicators. For female students, the theory indicator obtained a mean of 3.43 with 40% good and 60% very good categories. The language indicator got a mean of 3.46 with 35% good category and 65% very good category. The display indicator obtained a mean of 3.36 with 40% good and 60% very good categories. Finally, the benefits indicator has a mean of 3.34, with 50% in the good category and 50% in the very good category.

For male students, the theory indicator obtained a mean of 3.35, with 50% in the good category and 50% in the very good category. The language indicator got a mean of 3.33 with 50% good and 50% very good categories. The display indicator obtained a mean of 3.40 with 40% good category and 60% very good category. Finally, the benefits indicator received a mean of 3.30, with 10% in the bad category, 40% in the good category, and 50% in the very good category. Furthermore, the description of students' perceptions of web-based character assessment based on gender differences in eighth grade can be seen in Table 7.

Gender	Indicator	Mean	Category			
			Very Bad (%)	Bad (%)	Good (%)	Very Good (%)
Female	Theory	3.43	0%	0%	40%	60%
	Language	3.46	0%	0%	35%	65%
	Display	3.36	0%	0%	40%	60%
	Benefits	3.34	0%	0%	50%	50%
Male	Theory	3.35	0%	0%	50%	50%
	Language	3.33	0%	0%	50%	50%
	Display	3.40	0%	0%	40%	60%
	Benefits	3.30	0%	10%	40%	50%

Table 6. Seventh Grade Student's Perception of the Use of Web-based Character Assessment based on Student Perception Indicators

Gender	Category	F	(%)	Mean	Median	Mode	Min	Max
Female	Very Bad	0	0%	101.87	102	98	88	112
	Bad	0	0%					
	Good	15	22.4%					
	Very Good	52	77.6%					
Male	Very Bad	0	0%	97.22	98	98	86	107
	Bad	0	0%					
	Good	14	34.2%					
	Very Good	27	65.8%					

Table 7. Eighth Grade Student's Perception of the Use of Web-based Character Assessment

Table 7 shows the results of the description of students' perceptions of using web-based character assessment from eighth grade with a total of 108 students. First, the perception of female students in the very good category was 77.6% with a total of 52 out of 67 students, while in the good category, it was 22.4% with a total of 15 out of 67 students. Then, the perception of male students in the very good category was 65.8% with a total of 27 out of 41 students, while in the good category, it was 34.2% with a

total of 14 out of 41 students. Then, a description of the eighth-grade students' perceptions of using web-based character assessment based on the student's perception indicators is presented in Table 8.

Gender	Indicator	Mean	Category			
			Very Bad (%)	Bad (%)	Good (%)	Very Good (%)
Female	Theory	3.46	0%	0%	30%	70%
	Language	3.40	0%	0%	40%	60%
	Display	3.33	0%	10%	40%	50%
	Benefits	3.36	0%	0%	50%	50%
Male	Theory	3.36	0%	0%	50%	50%
	Language	3.40	0%	0%	40%	60%
	Display	3.33	0%	10%	40%	50%
	Benefits	3.43	0%	0%	40%	60%

Table 8. Eighth Grade Student's Perception of the Use of Web-based Character Assessment based on Student Perception Indicators

Gender	Category	F	(%)	Mean	Median	Mode	Min	Max
Female	Very Bad	0	0%	99.28	99	95	88	112
	Bad	0	0%					
	Good	26	44.8%					
	Very Good	32	55.2%					
Male	Very Bad	0	0%	100.14	101.50	102	89	108
	Bad	0	0%					
	Good	12	27.3%					
	Very Good	32	72.7%					

Table 9. Ninth Grade Student's Perception of the Use of Web-based Character Assessment

Table 8 shows the results of eighth-grade students' perceptions of the use of web-based character assessment, which were analyzed based on indicators of student perceptions. For female students, the theory indicator obtained a mean of 3.46 with 30% good and 70% very good categories. The language indicator received a mean of 3.40 with 40% good category and 60% very good category. The display indicator obtained a mean of 3.33 with 10% in the bad category, 40% in the good category, and 60% in the very good category. Finally, the benefits indicator obtained a mean of 3.36 with 50% good and 50% very good categories.

For male students, the theory indicator obtained a mean of 3.36 with 50% good category and 50% very good category. The language indicator got a mean of 3.40 with 50% good and 50% very good categories. The display indicator obtained a mean of 3.33 with 10% in the bad category, 40% in the good category, and 60% in the very good category. Finally, the benefits indicator obtained a mean of 3.43, with 40% in the good category and 50% in the very good category. Furthermore, the description of students' perceptions of web-based character assessment based on gender differences in ninth grade can be seen in Table 9.

Table 9 shows the results of the description of students' perceptions of using web-based character assessment from ninth grade with a total of 102 students. First, the perception of female students in the very good category was 55.2% with a total of 32 out of 58 students, while in the good category, it was 44.8% with a total of 26 out of 58 students. Then, the perception of male students in the very good category was 72.7% with a total of 32 out of 44 students, while in the good category, it was 27.3% with a total of 12 out of 44 students. Then, a description of the ninth-grade students' perceptions of using web--based character assessment based on the student's perception indicators is presented in Table 8.

Gender	Indicator	Mean	Category			
			Very Bad (%)	Bad (%)	Good (%)	Very Good (%)
Female	Theory	3.35	0%	0%	50%	50%
	Language	3.33	0%	0%	50%	50%
	Display	3.40	0%	0%	40%	60%
	Benefits	3.34	0%	0%	50%	50%
Male	Theory	3.46	0%	0%	35%	65%
	Language	3.36	0%	0%	40%	60%
	Display	3.43	0%	0%	40%	60%
	Benefits	3.40	0%	0%	40%	60%

Table 10. Ninth Grade Student's Perception of the Use of Web-based Character Assessment based on Student Perception Indicators

Gender	Category	F	(%)	Mean	Median	Mode	Min	Max
Female	Very Bad	0	0%	56.18	57	58	42	68
	Bad	0	0%					
	Good Enough	1	1.6%					
	Good	45	70.3%					
	Very Good	18	28.1%					
Male	Very Bad	0	0%	59.48	60	58	50	68
	Bad	0	0%					
	Good Enough	0	0%					
	Good	21	43.8%					
	Very Good	27	56.2%					

Table 11. Character Description of Seventh Grade Students

Table 8 shows the results of the perceptions of ninth graders on the use of web-based character assessment, which were analyzed based on indicators of student perceptions. For female students, the theory indicator obtained a mean of 3.35 with 50% good and 50% very good categories. The language indicator got a mean of 3.33 with 50% good and 50% very good categories. The display indicator obtained a mean of 3.40 with 40% good category and 60% very good category. Finally, the benefits indicator has a mean of 3.34, with 50% in the good category and 50% in the very good category.

For male students, the theory indicator obtained a mean of 3.46, with 35% in the good category and 65% in the very good category. The language indicator received a mean of 3.36 with 40% good and 60% very good categories. The display indicator obtained a mean of 3.43, with 40% in the good category and 60% in the very good category. Finally, the benefits indicator has a mean of 3.40 with 40% good category and 60% very good category. Furthermore, the description of the character of seventh-grade students can be seen in Table 11.

Table 11 shows the results of the character descriptions of seventh-grade students with a total of 112 students. The character of female students in the good category is 70.3% with a total of 45 out of 64 students, in the very good category by 28.1% with a total of 18 out of 64 students, and in the fairly good category by 1.6% with a total of 1 of 64 students. Then, the character of male students in the very good category was 56.2% with a total of 27 out of 48 students, while in the good category, it was 43.8% with a total of 21 out of 48 students. Furthermore, the description of the character of seventh-grade students based on character indicators can be seen in Table 12.

Gender	Indicator	Mean	Category				
			Very Bad (%)	Bad (%)	Good Enough (%)	Good (%)	Very Good (%)
Female	Independent	3.48	0%	0%	10%	40%	50%
	Religious	3.52	0%	0%	0%	50%	50%
	Discipline	3.56	0%	0%	0%	50%	50%
	Hard Work	4.10	0%	0%	0%	35%	65%
	Creative	3.60	0%	0%	0%	40%	60%
Male	Independent	4.34	0%	0%	0%	30%	70%
	Religious	3.80	0%	0%	0%	40%	60%
	Discipline	3.60	0%	0%	0%	40%	60%
	Hard Work	3.56	0%	0%	0%	50%	50%
	Creative	3.48	0%	0%	10%	40%	50%

Table 12. Character Description of Seventh Grade Students based on Student Character Indicators

Gender	Category	F	(%)	Mean	Median	Mode	Min	Max
Female	Very Bad	0	0%	58.24	58	58	48	68
	Bad	0	0%					
	Good Enough	0	0%					
	Good	39	58.2%					
	Very Good	28	41.8%					
Male	Very Bad	0	0%	58.96	60	60	45	68
	Bad	0	0%					
	Good Enough	1	2.4%					
	Good	14	34.2%					
	Very Good	26	63.4%					

Table 13. Character Description of Eighth Grade Students

Table 12 shows the results of the seventh-grade students' character, which was analyzed based on the student's character indicators. For female students, the independent indicator obtained a mean of 3.48, with 10% in the relatively good category, 40% in the good category, and 50% in the very good category. The religious indicator obtained a mean of 3.52, with 50% in the good category and 50% in the very good category. The discipline indicator received a mean of 3.56, with 50% in the good category and 50% in the very good category. The complex work indicator obtained a mean of 4.10, with 35% in the good category and 65% in the very good category. Finally, the creative indicator has a mean of 3.60, with 40% in the good category and 60% in the very good category.

For male students, the independent indicator obtained a mean of 3.43 with 30% good and 70% very good categories. The religious indicator received a mean of 3.80, with 40% in the good category and 60% in the very good category. The discipline indicator obtained a mean of 3.60 with 40% good category and 60% very good category. The hard work indicator received a mean of 3.56 with 50% good and 50% very good. Finally, the creative indicator obtained a mean of 3.48, with 10% in the relatively good category, 40% in the good category, and 50% in the very good category. Furthermore, the description of the character of eighth-grade students is shown in Table 13.

Table 13 shows the results of the character descriptions of eighth-grade students with a total of 108 students. First, the character of female students in the good category was 58.2% with a total of 39 out of 67 students, and in the very good category, it was 41.8% with a total of 28 out of 67 students. Then, the character of male students in the very good category was 63.4% with a total of 26 of 41 students, in the good category of 34.2% with a total of 14 of 41 students, and the fairly good category of 2.4% with a total of 1 of 41 students. Furthermore, the description of the character of eighth-grade students based on character indicators can be seen in Table 14.

Gender	Indicator	Mean	Category				
			Very Bad (%)	Bad (%)	Good Enough (%)	Good (%)	Very Good (%)
Female	Independent	3.92	0%	0%	0%	40%	60%
	Religious	3.66	0%	0%	0%	40%	60%
	Discipline	3.84	0%	0%	0%	40%	60%
	Hard Work	4.00	0%	0%	0%	40%	60%
	Creative	3.80	0%	0%	0%	40%	60%
Male	Independent	4.00	0%	0%	0%	40%	60%
	Religious	3.90	0%	0%	0%	40%	60%
	Discipline	3.84	0%	0%	0%	40%	60%
	Hard Work	4.43	0%	0%	0%	40%	60%
	Creative	3.80	0%	0%	0%	40%	40%

Table 14. Character Description of Eighth Grade Students based on Student Character Indicators

Gender	Category	F	(%)	Mean	Median	Mode	Min	Max
Female	Very Bad	0	0%	57.09	58	58	45	68
	Bad	0	0%					
	Good Enough	1	1.7%					
	Good	38	65.5%					
	Very Good	19	32.8%					
Male	Very Bad	0	0%	56.80	57	56	45	68
	Bad	0	0%					
	Good Enough	3	6.8%					
	Good	25	56.6%					
	Very Good	16	36.6%					

Table 15. Character Description of Ninth Grade Students

Table 14 shows the results of the character of the eighth graders who were analyzed based on the indicators of student character. For female students, the independent indicator obtained a mean of 3.92 with 40% good category and 60% very good category. The religious indicator obtained a mean of 3.66, with 40% in the good category and 60% in the very good category. The discipline indicator received a mean of 3.84, with 40% in the good category and 60% in the very good category. The hard work indicator got a mean of 4.00 with 40% good category and 60% very good category. Finally, the creative indicator got a mean of 3.80 with 40% good category and 60% very good category.

For male students, the independent indicator obtained a mean of 4.00 with 40% good category and 60% very good category. The religious indicator obtained a mean of 3.90, with 40% in the good category and 60% in the very good category. The discipline indicator obtained a mean of 3.84, with 40% in the good category and 60% in the very good category. The hard work indicator obtained a mean of 4.43, with 40% in the good category and 60% in the very good category. Finally, the creative indicator got a mean of 3.80 with 40% good category and 60% very good category. Furthermore, the description of the character of ninth-grade students can be seen in Table 15.

Table 15 shows the results of the character descriptions of ninth-grade students with a total of 102 students. First, the character of female students in the good category is 65.5% with a total of 38 out of 58 students, in the very good category by 32.8% with a total of 19 out of 58 students, and in the fairly good category by 1.7% with a total of 1 out of 58 students. Then, the character of male students in the good category was 56.6% with a total of 25 out of 44 students, in the very good category with 36.6% with a total of 16 out of 44 students, and in the fairly good category by 6.8% with a total 3 of 44 students. Furthermore, the description of the character of ninth-grade students based on character indicators can be seen in Table 16.

Gender	Indicator	Mean	Category				
			Very Bad (%)	Bad (%)	Good Enough (%)	Good (%)	Very Good (%)
Female	Independent	3.52	0%	0%	0%	50%	50%
	Religious	3.66	0%	0%	0%	40%	60%
	Discipline	3.60	0%	0%	0%	40%	60%
	Hard Work	3.56	0%	0%	0%	50%	50%
	Creative	3.80	0%	0%	0%	40%	60%
Male	Independent	3.48	0%	0%	10%	40%	50%
	Religious	3.56	0%	0%	0%	50%	50%
	Discipline	3.70	0%	0%	0%	40%	60%
	Hard Work	3.80	0%	0%	0%	40%	60%
	Creative	4.10	0%	0%	0%	35%	65%

Table 16. Character Description of Ninth Grade Students based on Student Character Indicators

Gender	Variable	Sig.
Female	Perception	.044
	Character	.003
Male	Perception	.031
	Character	.009

Table 17. One Way ANOVA Test Results

Table 16 shows the results of the character of the ninth graders who were analyzed based on the indicators of student character. For female students, the independent indicator obtained a mean of 3.52 with 50% good category and 50% very good category. The religious indicator obtained a mean of 3.66, with 40% in the good category and 60% in the very good category. The discipline indicator obtained a mean of 3.60 with 40% good category and 60% very good category. The hard work indicator obtained a mean of 3.56 with 50% good category and 50% very good category. Finally, the creative indicator got a mean of 3.80 with 40% good category and 60% very good category.

For male students, the independent indicator obtained a mean of 3.48, with 10% in the relatively good category, 40% in the good category, and 50% in the very good category. The religious indicator obtained a mean of 3.56, with 50% in the good category and 50% in the very good category. The discipline indicator obtained a mean of 3.70, with 40% in the good category and 60% in the very good category. The hard work indicator obtained a mean of 3.80 with 40% good category and 60% very good category. Finally, the creative indicator has a mean of 4.10, with 35% in the good category and 65% in the very good category.

Before the data were analyzed using the one-way ANOVA and regression tests, normality, homogeneity, and linearity tests were carried out. The normality, homogeneity, and linearity tests show that the data are normally distributed, homogeneous, and have a linear relationship because of the Sig value. > 0.05. Furthermore, the one-way ANOVA analysis and the results can be seen in Table 17.

Based on Table 11, it was found that all values of Sig. < 0.05. So, there are differences in the results of female students' perceptions of the use of web-based character assessment and female students' character. Furthermore, there are differences in the results of male students' perceptions of the use of web-based character assessment and the character of male students. Furthermore, the regression test results can be seen in Tables 18 and 19.

Based on Table 18, it is found that the probability value in the Sig. in female students and male students is 0.000. This means that there is an effect of student perception on the use of web-based character assessment on the character of both female and male students.

Gender	Model	Sum of Squares	df	Mean Square	F	Sig.
Female	Regression	5104.402	1	5104.402	799.702	.000[b]
	Residual	1193.598	187	6.383		
	Total	6298.000	188			
Male	Total	2722.571	1	2722.571	418.766	.000[b]
	Residual	2722.571	131	6.501		
	Total	3574.256	132			

Table 18. Regression Test Variant Results

Gender	R	R Squares	Adjusted R Square	Std. Error of the Estimate
Female	.900[a]	.810	.809	2.526
Male	.873[a]	.762	.760	2.550

Table 19. Determinant Regression Test Results

Table 19 shows that the value of female students in the R Squares column is 0.810. This means that the perception of female students on the use of web-based character assessment has an effect of 81% on the results of female students' character. Then, the R Squares column value for male students is 0.762. This means that the perception of male students on the use of web-based character assessment has an effect of 76.2% on the male students' character results.

4. Discussion

This study aimed to determine the effect of students' perceptions on the use of web-based character assessment on the results of student character analysis based on gender. Web-based assessment can be developed and used to measure students' character in schools. Using web-based assessment to measure students' character will raise students' perceptions of using the web-based assessment. Electronic assessments such as web-based assessments are expected to provide new experiences for students in filling out student character questionnaires. The student character assessment conducted through the website has features that users can easily access. Electronic assessment (e-assessment) has several advantages, making it more refreshing to use. Therefore, electronic assessments such as web-based assessments are needed in assessing student character.

Several studies have shown the use of web-based assessment to evaluate school learning. Web-based assessment has been used by developing countries in Asia and is becoming an essential tool in education with long-term impact. The long-term effect of web-based assessment allows the country to save costs for students, where students do not need to travel so that students do not incur expenses that will impact economic growth (Arkorful & Abaidoo, 2014; Babu & Reddy, 2015). The application of web-based assessment in developing countries will enable students to carry out learning and assessment anywhere so that they will be able to make students more comfortable accessing learning and assessment (Selvanathan, Hussin & Azazi, 2020; Zalat, Hamed & Bolbol, 2021). In developing countries in ASEAN, the application of web-based assessment will make countries increasingly create the quality of the internet and technology so that they will be able to make a long-term impact in the form of significant technological improvements that will make future assessments and learning technology-based (Lee et al., 2021; Zarei & Mohammadi, 2021). The substantial use of web-based assessment is being able to overcome multicultural barriers so that it will be able to make assessment systems in developing countries able to collaborate with developed countries and will have an impact on more effective assessments (Zoroja, Skok & Bach, 2015)

Students' perceptions of using web-based character assessment in science learning based on gender differences can show how the website is used in the assessment process. Students who positively respond to web-based assessment indicate that web-based assessment supports student character assessment as a forum for developing the learning process (Darmaji et al., 2021). Website-based student character assessment can increase student interest in learning. The use of the website can train students' independence and activeness online to support the learning process and produce a positive student

learning attitude. In addition, research on student perceptions of student character assessment will also make the assessment process more complex because it is viewed from gender differences. This follows research by Akkaya (2016), which shows that combining technological and pedagogical knowledge will develop students' perceptions. Student perceptions can also be related to student perceptions in certain subjects (Meng, Idris & Eu, 2014). Therefore, integrating all educational technologies will also enhance students' educational experience.

Research on student perceptions has been carried out by many researchers, including where it has been found that students' perceptions of learning achievement are based on the principles of curriculum alignment (Rundle-Thiele & Kuhn, 2009). The relationship between student's perceptions of the authenticity of the assessment, learning approach, and learning outcomes (Gulikers, Bastiaens, Kirschner, & Kester, 2006). Comparing students' perceptions of students' skill levels as a result of learning (Duke, 2002). Student perceptions of electronic learning (e-learning) during COVID-19 in India (Khan, Vivek, Nabi, Khojah & Tahir, 2021). In addition, research on student perceptions of mobile learning or e-assessment was also found. First, research suggests students' perceptions and experiences using mobile learning via SMS (Ziden, Rosli, Gunasegaran & Azizan, 2017). Then, a study examines students' perceptions of mobile learning in Thailand (Issaramanoros, Khlaisang & Pugsee, 2018). Additionally, the research examines mobile learning use in secondary schools (Eppard, Hojeij, Ozdemir-Ayber, Rodjan-Helder & Baroudi, 2019).

The studies that have been carried out show that the research on student perceptions is mainly focused on the effect of student perceptions on learning, especially learning outcomes. In addition, it also focuses on students' perceptions of the use of mobile learning itself. Because the study of student perceptions associated with student character has not been found in studies. Therefore, the novelty of this study is to examine the effect of student perceptions on the use of web-based character assessment on student character outcomes. Furthermore, the study of the impact of student perceptions on the use of web-based character assessment on student character outcomes was also analyzed based on gender. Analysis of students' perceptions of students' character in the use of web-based assessment based on gender makes this research effective (Darmaji et al., 2021). This research has implications for science learning, especially in the assessment process. Assessment is essential in learning, so it must be done carefully. A good assessment process will result in quality science learning (Astalini, Kurniawan, Perdana & Pathoni, 2019). Therefore, this research has an impact on increasing students' ability to operate laptops in the learning process to facilitate the learning process.

Character assessment using web-based assessment shows that a student's character can be built through the use of ICT in the learning process. The rapid use of ICT in education will impact students' character in learning that utilizes ICT itself. Students' character education will be related to technological developments (Amali, 2018). Learning using information technology demands creativity and self-reliance so that it is possible to develop all the potential of students (Lestari, 2014). Using information technology, each student will be stimulated to learn to progress continuously according to their potential and skills (Anwar & Salim, 2018). This is in line with the concept of heutagogy, namely the theory that the internet can provide resources for self-directed experiences (Agonács & Matos, 2019; Blaschke & Hase, 2019; Yandrizal, 2021). In the learning process with technology, it must be used as a means to apply the fundamental values of character education and be used as well as possible so that the nation's generation can develop their creativity.

The novelty of this research is to examine the effect of students' perceptions on the use of web-based character assessment on the results of students' character analysis based on gender. Previous studies discussed the differences or the influence of students' perceptions on learning outcomes variables that tend to assess students' knowledge. Therefore, this study explores the impact of students' perceptions on the domain of attitude, namely character. Web-based character assessment also makes it easier for teachers because there is no need to manually correct students' answers, so the assessment process is much more effective and efficient. This study aims to determine students' perceptions of using web-based character assessment in science learning based on differences. Teachers are expected to be able to deal with

technological developments by using technology-based assessments to be more effective and efficient, so this research is expected to be used as a basis for developing a technology-based assessment process to support the implementation of a better learning process.

This study implies that using web-based character assessment will produce good student perceptions of using the web as an innovation in learning. This study found that the perceptions of female and male students influenced the results of character assessment. This shows that good student perceptions or responses indicate that web-based character assessment can influence student character assessment. Students' perceptions of web-based character assessment become a reference in the development of broader assessment media, especially in assessing students' affective domains. The use of web-based character assessment helps teachers and schools in conducting the process of evaluating the affective domain of students more easily and quickly. With the achievement of character assessment results and good student perceptions of the use of web-based character assessment, it is an indicator that the development of technology-based assessment media is essential in the world of education.

Using web-based assessment to measure student character will contribute positively to technology education. Web-based assessment to measure student character has undoubtedly been integrated with technology so that an evaluation can be done anywhere and anytime (Astalini, Darmaji, Kurniawan, Anwar & Kurniawan, 2019). Furthermore, technology education, such as web-based assessments, will make inspections more efficient in terms of time, funds, and the achievement of assessment objectives (Astalini, Kurniawan, Sulistiyo, Perdana & Susbiyanto, 2019). Therefore, using technology in the assessment process, such as this web-based assessment, will help develop the technology and the assessment process.

Utilization of student character assessment using web-based assessment used for high school students will have a positive impact on the development of science education (Aldila et al, 2022). Learning science in schools, of course, still has to help students in developing the potential of students to become students with character. In line with Darmaji et al (2021) stated that creating and evaluating good student character in science education will improve the quality of learning itself. The web-based character assessment developed and used in this research is applied to science learning in schools. Thus, web-based character assessment has a good impact on the implementation of science education. Therefore, website-based character assessment can be used to measure student character, which will positively impact education.

5. Conclusions

This study's findings indicate that using web-based character assessment will raise student perceptions as users. Students' perceptions of using web-based character assessments will affect the results of student character assessments, especially on independent, religious, disciplined, hard work, and creative characters. The perception of female students on the use of web-based character assessment has an effect of 81% on the results of the character assessment. Meanwhile, the perception of male students on the use of web-based character assessment has an impact of 76.2% on the results of character assessment. This study suggests that web-based character assessment should be developed to measure students' character in schools. However, the limitation of this research is that the web-based assessment only measures five student characteristics: independent, religious, disciplined, hard work, and creative. Developing a web-based assessment to measure all characters (18 characters) will create a better character assessment system.

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