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Research Article

Modeling authentic assessment: Using analysis based on the Structural Equation Model (SEM)

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Abstract: This article introduces an authentic assessment model that is built on the influence of student attitudes towards authentic research, while student attitudes can be influenced by factors such as parental influence, teacher ability, and peer influence. Then the attitude of these students is also a factor that affects student learning outcomes using authentic assessment models. This study aims to determine the suitability of the structural equation model with themodel authentic assessment with the variables of student attitudes, peer attitudes, teacher abilities, and understanding and expectations of parents related to authentic assessment and to determine the influence of parents, the ability of teachers, and peers on attitudes. students towards authentic assessment. Want to know the effect of student attitudes on authentic assessment on learning outcomes. And want to know the relationship between parents, the ability of teachers, and peers related to authentic assessment. This research is a quantitative study with a correlational method. The sample of this research was seventh grade students from 14 State Junior High Schools in Cirebon City, West Java Province, Indonesia. The number of research samples was 361 students. The data analysis technique uses SEM (Structure Equation Modeling). The research instrument was a questionnaire of students' attitudes and perceptions in authentic assessment and mathematics learning outcomes. The questionnaire instrument of students' attitudes towards authentic assessment was 54 items and the mathematics learning outcomes test consisted of 18 multiple choice items and 6 items. The research instrument before being tested was tested for content validity and construct validity. Analysis of the test instrument using the Rasch model, the results are that the two research instruments are stated to have a fit model and good reliability levels. The results stated that there was a match between the range model and the research result model, there were 2 hypotheses rejected, namely hypothesis 2 and hypothesis 5, namely there was no influence of peer attitudes and student achievement related to authentic assessment and there was no influence of peer attitudes on student achievement results. related to authentic assessment. Regarding the rejection, because the data was taken when learning was carried out online during the pandemic, therefore the peer variable had no effect on student attitudes or on student learning achievement related to authentic assessment.

Keywords: Student Attitudes, Authentic, Assessment, SEM

1. Introduction

Assessment is an important part of the learning process (Benavot & Tanner, 2007; Birenbaum et al., 2015; Brown, 2008; Cope & Kalantzis, 2016; Knight & Cooper, 2019; Scalise & Wilson, 2011; Wiliam, 2011). Improving the quality of the assessment is also used as a benchmark in an effort to improve the quality of education. (Broadfoot & Black, 2004; Kellaghan & Greaney, 2001; Penney et al., 2021; Raymond et al., 2013) Authentic assessment is an assessment process which involves various performances that describe how students learn, learning achievement, motivation, and attitudes related to learning activities. In contrast to traditional assessments, authentic assessments require subjective application of learned skills to new environments. Authentic assessment demonstrates the same competence, namely combining knowledge, skills and attitudes. Assessments that require students to perform real-time tasks and expert or professional performance standards that demonstrate meaningful application of knowledge and skills. (Brown, 2008; Darling Hammond & Snyder, 2000; Fiore & Fiore, 2020; Koh, 2017; Mueller, 2005; Palm & Palm, 2008; Raymond et al., 2013) Authentic assessment of the learning process in schools in Indonesia, begins used in conjunction with the implementation of the 2013 Curriculum (Education et al., 2013). The 2013 curriculum was implemented at the beginning of the 2013/2014 academic year and replaced the previous curriculum, namely the Education Unit Level Curriculum. (Kesehatan, 2010)

Researchers made observations as a preliminary study regarding the implementation of the 2013 curriculum in schools. The results of these observations state that every school, especially those with state status, has implemented the 2013 Curriculum in the 2019/2020 Academic year. As recommended by the government in the 2018/2019 academic year, all schools are required to implement the 2013 Curriculum. (Budi, 2018) The results of observations show that gradually schools have implemented authentic assessments during learning. Researchers also made observations regarding the use of authentic assessments which became the assessment standards (Pendidikan et al., 2013). According to the teachers, authentic assessment is different from previous assessments. They have been provided with trainings to be able to apply the 2013 Curriculum and authentic assessments in schools (Indonesia & Cara, 2021; Mahdiansyah, 2017; Robertus Belarminus, 2014). Students and parents have been given socialization regarding the application of authentic assessment in schools through the teacher.

From the results of these observations, researchers are also interested in how students' attitudes towards authentic assessments given during learning at school. Then how parents, peers, and teachers influence student attitudes towards authentic assessment. And its effect on student learning outcomes at school. Researchers are also interested in the application of authentic assessment to mathematics in junior high schools.

This interest is based on the fact that authentic assessment has the characteristics of completing tasks related to the competencies needed in the real world as previously described. Mathematics as a deductive science can be interpreted as a science that requires proof of truth. (Arslan et al., 2009; AS Dehaene et al., 2016; S. Dehaene et al., 2010; Kroger et al., 2008; Lee, 2000; Simon et al., 2004; Zhang et al., 2015) . Deductive reasoning is a thought process that moves from the general to the particular. (Bryant & Charmaz, 2007; Cramer-petersen et al., 2018; Magnani, 2006). The stage of mental development of seventh (seven) junior high school students is included in the concrete operation stage, which starts at the age of 12 years, meaning that the child is in the concrete operation stage. (Beilin & Fireman, 1999) The definition of attitude is the organization of beliefs, feelings, and relatively long-lasting behavioral tendencies towards socially significant objects, groups, events or symbols. Attitude is the result of learning, imitating others, and experiences direct us to people and situations.

Psychological tendencies expressed by evaluating certain entities with several levels of liking or disliking ". (Dobson, 1985; Eagle & Chaiken, 1995; McDougall, 2015) Previousresearch has proven that there is an influence on students' attitudes towards learning outcomes (Byers et al., 2018; Hong et al., 2021; Primi et al., 2020). Attitude of students as Individuals can be influenced by important people around them such as parents, friends peers, and teachers. (Ashton, 2018; Gonçalves & Lemos, 2014; Lisa M. Boon, Henk Ritzen, Hieronymus JMGijselaers, 2021; Malhotra et al., 2021) Peers can influence students' attitudes as individual members of groups and their existence is considered important. The attitudes of these students can be influenced by their peers because as individuals they place importance on peer approval. According to them peers represent strong agents of socialization. (Broadfoot & Black, 2004; Campbell, 2015; Hallinan, 1981; Schibeci, 1989) The attitudes of students 'parents have an influence on students' attitudes in developing and functioning in their environment. The importance of parents' attitudes towards students is implied by their hopes and beliefs in schools, teachers, subjects, and education in general. (Drummond, 2014; Henning, Karen, 2013; Masood A., Badri. Guang, Yang. Yousef, Al Sheryani. Asma et al., 2019) Students 'attitudes can be predicted by the influence of teachers' abilities during learning. The influence of teacher abilities on student attitudes is support for students. There is an identification that smart teachers produce successful students. (Bardach & Klassen, 2020; Blazar & Kraft, 2017; Cattley, 2004; Gelişli, 2007; Hurrelmann, 1990) Peers have a strong influence on cognitive growth and development. Peer learning encourages students to consider and speak honestly during the learning process together. This makes it easier to obtain feedback on learning (Matt & Manning, 2016; Moust et al., 1989; Wawrzynski et al., 2011; Wilkinson et al., 2000).

The involvement of parents at school in the educational development of their children is a key factor for the success of their academic achievement. Schools involve parents for educational purposes in schools because it has been proven that the main role to improve learning outcomes is family (Furlong et al., 2009; Kaukab, 2016; Lara & Saracostti, 2019) Teachers are led to have the abilities or competencies required by law RI No. 14 of 2005 on Teachers and Lecturers in article 10. This ability is mandatory for every teacher to become a professional educator. The teacher's ability will affect student learning outcomes. (Drummond, 2014; Guerriero, 2013; Kaukab, 2016; Paolini, 2015; Tai et al., 2012; *Law-Number-14-Year-2005*, nd) Peers, parents, and teachers are mutually exclusive individuals. relate to each other during the learning process. The relationship that occurs is not only in the learning process but also affects student behavior. (Berchiatti et al., 2020; Chai et al., 2020; Silver et al., 2010) There are several studies that have similarities like the research in this article. This similarity is the use of Structural Equation Model Based Analysis (SEM) to build a particular model. Such as research conducted by Minkee Kim and Jinwoong Song in 2010 regarding A Confirmatory Structural Equation Model of Achievement Estimated by Dichotomous Attitudes, Interest, and Conceptual Understanding (Kim, 2021).

Then Factors Affecting Students' Attitude toward Mathematics: A Structural Equation Modeling Approach by Shamila Dewi Davadas and Yoon Fah Lay in 2017. (Davadas & Lay, 2018). The influences of teacher knowledge and authentic formative assessment on student learning in technology education by Fox Turnbull, W in 2006. (Fox-Turnbull, 2006) However, from the studies that have been carried out, there are differences in the factors that build the model, the model to be built, and the number of factors that are used as the concept of building the model. The difference also lies in the themes raised in the modeling. Therefore, research onModeling *Authentic Assessment*: Using Structural Equation Model-Based Analysis (SEM) has never been conducted by other researchers. The results of this study are expected to help students learn when using an authentic assessment model. From authentic assessment modeling will produce which variables are considered important and ignore variables that are considered less important.

2. Leiterature Study

Authentic Assessment

Model The authentic assessment model is an assessment model that is used with the implementation of the 2013 Curriculum (Pendidikan et al., 2013). The purpose of developing the 2013 Curriculum to replace the previous curriculum is to produce productive, creative, innovative, and affective Indonesians; through strengthening integrated attitudes, skills and knowledge. (Mulyasa, 2013). Authentic assessments are developed because conventional assessments that have been used ignore the real world context and do not describe students' abilities holistically. (Santrock, 2007) Characteristics of authentic assessment, namely the assessment is realistic, requires assessment and innovation, asks students to "do" the subject, is carried out in situations similar to the context in which the related skills are performed, requires students to demonstrate various skills related to complex problems, and allows for feedback, practice, and second chances to solve the problem at hand. (Darling-Hammond & Snyder, 2000; Mueller, 2005; Svinicki, 2004) Disadvantages of *authentic assessmentauthentic assessment*:takes a lot of time and requires better effort from both students and teachers. In terms of measurement, there are reliability problems in the assessment. Problems arise regarding assignments that are not mutually identical between students, because in authentic assessment only compares the student's efforts with his previous efforts. This makes it difficult to make comparisons between students and between subject areas. There are also several problems that arise, namely regarding security issues, management problems, ethical problems, and problems with students, namely assessing the overall skills and attitudes of different students. (Benavot & Tanner, 2007; Choate & Evans, 1992; Macandrew & Edwards, 2002; Walvoord et al., 1998)

Next we discuss the advantages of authentic assessment models can be seen in measurement techniques, authentic assessments track the real world so closely, they tend to has a *face validity* that is very good for students and for evaluators from outside. Authentic assessment models can motivate students by allowing students to choose the type of assessment according to their own interests and skills. Advantage from a psychological engineering point of view, authentic assessment models result in a lot of transfer from the classroom to the real world after graduation. Authentic assessment models also have concrete targets to target students to assess their own progress during learning. (Svinicki, 2004) Comparing *authentic assessment* and general tests, general tests must be unknown in advance to ensure validity while for authentic assessments to be known as far as possible in advance. It is based on skills and predictable situations. Authentic assessments are synonymous with repetitive, repetitive, important tasks, whereas general tests are only "one shot". The general test only has correct answers, for authentic assessment it is more indicated in the quality of the response and its justification. General tests only deduce students' understanding based on the correlation between what is being tested and what is desired, whereas authentic assessment leads directly to the desired results. General tests are summative, authentic assessments provide students with diagnostic information and feedback so they can see where and how to make corrections. (Darling-Hammond & Snyder, 2000; Mueller, 2005; Wiggins, 1989)

Attitude

Attitude is defined in the Longman Dictionary of Contemporary English as the opinions and feelings that you usually have about something, especially when this is shown in your behavior. In the APA, attitude psychology dictionary is defined as *n.* a relatively enduring and general evaluation of an object, person, group, issue, or concept on a dimension ranging from negative to positive. Attitudes provide summary evaluations of target objects and are often assumed to be derived from specific beliefs, emotions, and past behaviors associated with those objects. (Mayor, 2009; VandenBos & Association, 2015) Attitude is a mental status and an individual's physical response to an object, situation, concept, or person that can be*favorable*or*unfavorable*, positive or negative. Attitude is a constellation of cognitive, affective, and conative components that interact with each other in understanding, feeling, and behaving towards an object. (Azwar, 1988; Fishbein & Ajzen, 1975; Scale, 2013) Individual attitudes can be influenced by other people who are considered important, such as parents, people of higher status, peers, close friends, teachers, co-workers, and wives or husbands. . (Ashton, 2018; Azwar, 1988; Gonçalves & Lemos, 2014; Lisa M. Boon, Henk Ritzen, Hieronymus JMGijselaers, 2021; Malhotra et al., 2021)

Perception

Definition of perception in the Longman Dictionary of Contemporary English as a) theway you think about something and your idea of what it is like; b) the way that you notice things with your senses of sight, hearing etc; c) the natural ability to understand or notice things quickly. Then the APA psychology dictionary defines perception as the process or result of becoming aware of objects, relationships, and events by means of the senses, which includes such activities as recognizing, observing, and discriminating. These activities enable organisms to organize and interpret the stimuli received into meaningful knowledge and to act in a coordinated manner. (Major, 2009; VandenBos & Association, 2015)Perception is the process of obtaining sensory information later organize it according to culture, expectations, even with the people we are with, and interpret it to create a picture that is

meaningful by involving a high level of cognition. (Ling et al., 2014; Solso et al., 2013)

The types of perception consist of constructive perception and direct perception. Constructive perception theory is based on the assumption that during perceptions, we form and test hypotheses related to perception based on what our senses are and what we know. Direct perception theory is when the information in stimuli is an important element and that learning and cognition are not important in perception because the environment already contains enough information that can be used for interpretation. (Solso et al., 2013) Factors that can influence perceptions according to functional factors and structural factors. Functional factors come from needs, past experiences and other things including personal factors. Structural factors come from the nature of the physical stimuli and the effects on the nerves of the individual nervous system. (Hong et al., 2021; Maxwell, 2021; Spurgeon et al., 2015)

Students

Are defined in the Longman Contemporary English Dictionary as someone who is studying at a university, school etc. (Major, 2009). Students or students in RI Law NO. 20 of 2003 concerning the National Education System Article 1 is a member of the community who strives to develop their potential through the learning process available at certain paths, levels, and types of education. (Depdiknas, 2003) Students' attitudes according to developing the concept of student attitudes in learning through two components as follows (1) *teacher Approval* (TA), which relates to students' views of teachers, their behavior in class, and the way teachers teach. How do students view teachers who teach in class, how students perceive teacher behavior in class, and how students perceive how teachers teach. There are two positive and negative views. If someone has a positive attitude in the learning process, students will be ready to help, pay attention, do something beneficial for the teacher. So if students have a negative attitude towards the learning process students will be indifferent to the learning. (2) *Education Acceptance* (EA), namely student acceptance and rejection of the goals to be achieved and the material to be presented, practices, assignments and requirements set at school. (Cecchetti et al., 2021; Givron & Desseilles, 2021; Holtzman & Brown, 1968)

Teacher

Teacher is defined by the Longman Dictionary of Contemporary English as someone whose job is to teach, especially in a school. (Major, 2009). Teachers must have For certain competencies, teachers are required to have four competencies, namely pedagogical competence, personality competence, social competence, and professional competence, these four competencies are obtained through professional education. Pedagogical competence according to the Ministry of National Education (2004) includes the ability to design learning programs, the ability to carry out interactions or manage the learning process, and the ability to carry out assessments. (*Law-14-Tahun-2005*, nd)

Peers

Peers are friends of the same age and are in the same social group, such as school friends or colleagues from work. Peer is defined by the Longman Contemporary English Dictionary as if a group of people are on the same page, they are working well together and have the same aims. (Major, 2009). Peers are people with approximately the same age, age, level of development, and maturity. (Cattley, 2004; Morrish, 2019; Santrock, 2007)

Parents

Parents are defined by the Longman Contemporary English Dictionary as a) the father or mother of a person or animal; b) something that produces other things of the same type; c) a company which owns a smaller company or organization. (Mayor, 2009) Parents are family members consisting of father and mother or who play the role of responsible people in the family. Parents are adults physically and mentally, have physical and non-physical maturity, emotional maturity, mental maturity and economic, social and mental independence. Parents also carry out roles according to their respective functions in caring for children who are not yet mature in their families, namely children. (Ministry of Law and Human Rights of the Republic of Indonesia, 2014)

The SEM-Based Analysis Approach

Structural Equation Modeling (SEM) is a multivariate analysis technique for the next generation. 2 to combine factor analysis and path analysis, so that the combination allows researchers to be able to test and estimate simultaneously the relationship between multiple latent independent variables and multiple latent dependent variables with many indicators and can test models with mediator and moderator effects in non -linear and measurement error. (Garson, 2012; Marcoulides, 1998).

The design ofmodel of *authentic assessment* the SEM-basedin a study conducted SEM refers to models with Two Independent Variables Intermediation and Collaborate as follows:

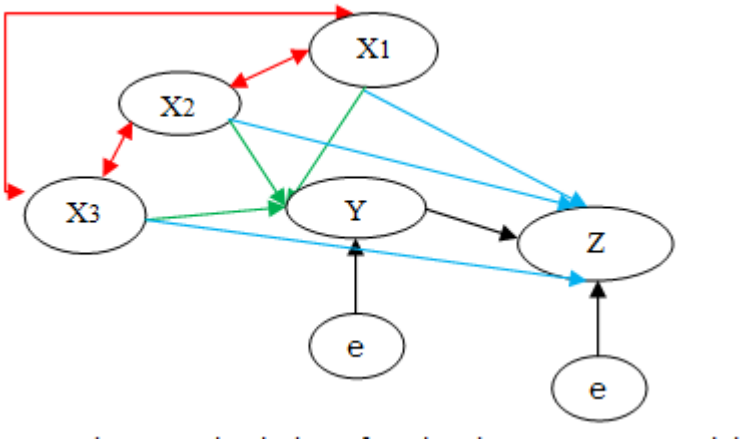

Figure 1. The design of Authentic Assessment Model

From the picture above is known to test student achievement (Z), peer attitudes regarding the implementation of authentic assessments (X1), students 'perceptions of teacher abilities related to authentic assessments (X2), students' perceptions of parental understanding and expectations regarding authentic assessments (X3), student attitudes towards implementing authentic assessments (Y). The variables in the study consisted of 3 exogenous variables, namely X1, X2, and X3 and 2 endogenous variables, namely Y and Z. The framework that underlies the design of themodel *Authentic Assessment* is based on theory and relevant previous research results.

3. Research Methods

Research Design

This research is a quantitative study using a correlational method. This study uses analysis of Structural Equation Modeling (SEM) analysis to determine whether the tested model is fit and the correlational method to see the influence and relationship between variables that are used as the factors that build the assessment model.

Research Sample The

sample in the research to be carried out is the seventh grade students (VII) of the State Junior High School in the city of Cirebon. The population of this study were students of State Junior High Schools in the city of Cirebon. There are 18 Public Junior High Schools in Cirebon City, West Java Province, Indonesia. The samplinguses techniquea probable sealing technique, namely stratification sealing. Stratification sampling was carried out every seventh grade at SMP Negeri Cirebon. The sample size was determined using the Slovin formula. (Tejada & Punzalan, 2012)

Research

Instruments The researchused instrumenta scale instrument of students 'attitudes and students' perceptions of teachers' abilities, understanding and expectations of parents and related peer attitudes authentic assessment using a closed questionnaire, the instrument consists of 54 items statement.

Table 1. Variables, dimensions and indicators of the instrument research:

No.	Variable	Dimensions	Indicator
1	Students' Attitudes towards the Implementation of Authentic Assessments (Y)	Follow the Authentic Learning and Assessment Process	1) Make preparations before learning. 2) Follow learning well. 3) Follow the assessment process and do the assignments well.
		Expecting Authentic Assessment Feedback	1) Believing that the feedback is useful for learning improvement. 2) Expect to receive feedback from each assessment process. 3) Make improvements to learning based on feedback.

No.	Variable	Dimensions	Indicator
2	Students' Perceptions of Teacher Ability related to Authentic Assessment (X2)	Outreach authentic assessments	1) Conducting outreach about authentic assessments used in learning. 2) Conduct socialization about the types of tasks in authentic assessment. 3) Conducting outreach about various forms of tests in authentic assessment.
		Has Flexibility in Authentic Judgments	1) Has flexibility regarding authentic assessments used during the learning process. 2) Has flexibility regarding the types of tasks in authentic assessment. 3) Has flexibility regarding various forms of tests in authentic assessment.
		Mastering Material on Authentic Assessment	1) Mastering material about authentic assessment used in learning. 2) Mastering the material about the types of assignments in authentic assessment. 3) Mastering material about various forms of tests in authentic assessment.
3	Students 'Perceptions of Parents' Understanding and Expectations regarding Authentic Assessment (X2)	a. Parents' Understanding of Authentic Assessment.	1) Receive socialization about authentic assessments used in learning. 2) Understand the types of tasks in authentic assessment. 3) Understand the various forms of tests in authentic assessment
		b. Parents' Expectations about Authentic Assessment	1) Believing that the feedback is useful for learning improvement. 2) Feel happy when you receive feedback on the results of the assessment. 3) Suggesting their children to
4	Students' Perceptions of Peer Attitudes regarding Authentic Assessment. (X1)	a. An understanding of the benefits of authentic assessment	1) Understand the benefits of learning by using authentic assessment in general. 2) Understand the benefits of different types of assignments by using authentic assessment. 3) Understand the benefits of a learning outcome test form using authentic assessment.
		b. Get feedback on authentic assessments.	1) Get feedback on authentic assessment learning. 2) Get feedback from assignments related to authentic assessments. 3) Get feedback from learning outcome tests on authentic assessments.

KISI-KISI SOAL MATEMATIKA

No	Kompetensi Inti	Kompetensi Dasar	Indikator
1	3. Memahami pengetahuan (faktual, konseptual, dan prosedural) berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni, budaya terkait fenomena dan kejadian tampak mata 4. Mencoba, mengolah, dan menyaji dalam ranah konkret (menggunakan, mengurai, merangkai, memodifikasi, dan membuat) dan ranah abstrak (menulis, membaca, menghitung, menggambar, dan mengarang) sesuai dengan yang dipealjari di sekolah dan sumber lain yang sama dalam sudut pandang/teori.	3.1 Menjelaskan dan menentukan urutan pada bilangan bulat (positif dan negatif) dan pecahan (biasa, campuran, desimal, persen).	1. Siswa mampu menjelaskan urutan pada bilangan bulat (positif dan negatif).
			2. Siswa mampu menetukan urutan pada bilangan bulat (positif dan negatif).
			3. Siswa mampu menentukan urutan pada pecahan (biasa, campuran, desimal, persen).
		3.2 Menjelaskan dan melakukan operasi hitung bilangan bulat dan pecahan dengan memanfaatkan berbagai sifat operasi.	4. Siswa mampu menentukan hasil operasi hitung yang menggunakan bilangan bulat (positif dan negarif) dengan memanfaatkan berbagai sifat operasi.
			5. Siswa mampu menentukan hasil operasi hitung yang menggunakan pecahan (biasa, desimal, campuran, dan persen) dengan memanfaatkan berbagai sifat operasi.
		3.3 Menjelaskan dan menentukan representasi bilangan dalam bentuk bilangan berpangkat bulat positif.	6. Siswa mampu menentukan representasi bilangan dalam bentuk bilangan berpangkat bulat positif.
		4.1 Menyelesaikan masalah yang berkaitan dengan urutan beberapa bilangan bulat dan pecahan (biasa, campuran, desimal, persen).	7. Siswa mampu menyelesaikan masalah yang berkaitan dengan urutan beberapa bilangan bulat (positif dan negatif).
			8. Siswa mampu menyelesaikan masalah yang berkaitan dengan urutan beberapa pecahan (biasa, campuran, desimal, dan persen).
		4.2 Menyelesaikan masalah yang berkaitan dengan operasi hitung bilangan bulat dan pecahan.	9. Siswa mampu menyelesaikan masalah yang berkaitan dengan operasi hitung bilangan bulat positif dan negatif.
			10. Siswa mampu menyelesaikan masalah yang berkaitan dengan operasi hitung pecahan.
		4.3 Menyelesaikan masalah yang berkaitan dengan bilangan dalam bentuk bilangan berpangkat bulat positif dan negatif.	11. Siswa mampu menentukan hasil operasi hitung bilangan bulat dan bilangan pecahan dengan memanfaatkan berbagai sifat operasi hitung.
			12. Siswa mampu menyatakan yang berkaitan dengan bilangan dalam bentuk bilangan berpangkat bulat positif dan negatif.
Jumlah Butir Soal			

Keterangan

C_1 : Mengingat

C_2 : Memahami

C_3 : Menerapkan

Table 2. Mapping Difficulty

Level difficulty Level question	**Cognitive level**			**Number**
	Easy	**Medium**	**Difficult**	
Multiple Choice Questions	5	9	4	18
Percentage	27.78%	50.00%	22.22%	100%
Description	1	4	1	6
Percentage	16.67%	66.67%	16.67%	100%

4. Result and Discussion

Based on the results of the research data, it is concluded that from 11 hypotheses there are 2 hypotheses that are rejected. The first hypothesis is whether the structural equation model fits with themodel *authentic assessment* with the variables of student attitudes, peer attitudes, teacher abilities, and understanding and expectations of students' parents regarding authentic assessment. Following are the results of the significance test for Structural Equation Modeling (SEM):

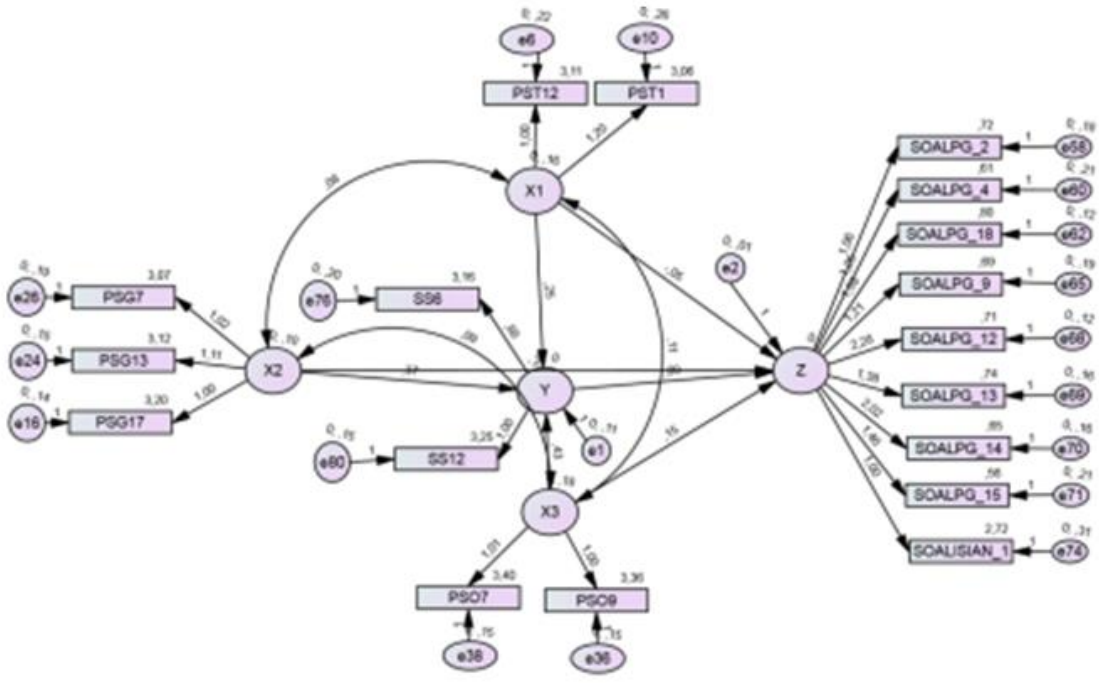

Figure 1. Model or prediction model with the model from the research data.

Table 3. Model from the research data

Model	NPAR	CMIN	DF	P	CMIN / DF
Default model	64	151,854	125	, 051	1,215

Saturated model	189	, 000	0		
Independence model	36	1253,818	153	, 000	8,195

Testing hypothesis 1, based on The calculation results from the CMIN table above, obtained avalue *P* of 0.051 or greater than 0.05 and a CIMN / DF of 1.215 or less than 2,000, which means that the structural equation model is declared Fit. Based on the results of data analysis, a model designed based on this theory is declared the model fit. This shows that the level of fit (*fit*) of the designed model or prediction model with the model from the research data.

The results of the fit model test are in accordance with relevant theories and research, namely the influence of student attitudes on learning outcomes (Byers et al., 2018; Hong et al., 2021; Primi et al., 2020). As well as the attitude of students as individuals can be influenced by parents, peers, and teachers. (Ashton, 2018; Gonçalves & Lemos, 2014; Lisa M. Boon, Henk Ritzen, Hieronymus JMGijselaers, 2021; Malhotra et al., 2021).

Table 4. Regression Weights

Hypothesis	**Bound**		**Variables Free Variables**	**CR**	**P**	**Results**
H4	student attitudes towards the implementation of authentic assessment	< ---	Students' perceptions of teacher abilities related to authentic assessment	2,013,044		**Accepted**
H2	student attitudes towards the implementation of the assessment authentic	<---	peer attitude related to implementation authentic assessment	1,783, 075		**Rejected**
H3	student attitudes regarding theconduct of assessment autentk	<---	persepsi students the understanding and expectations of parents related authentic assessment	2,774,	006	**Accepted**
H7	student learning	<---	students' perception of teacher-related capabilities authentic assessment	- 2,448, 014		**Accepted**
H6	student learning	<---	persepsi students the understanding and expectations of parents related authentic assessment	2,217,	027	**Accepted**
H5	student learning outcomes	<---	attitudes of peers related to implementation authentic assessment	-, 960 , 337		**Rejected**
H8	Student learning outcomes	<---	student attitudes towards the implementation of authentic assessments	1,965	, 049	**Accepted**

Table 5. Covariances

Hypothesis	Bound Variables		Variables	CR	P	Results
H11	students' perception of authentic assessment capabilities related Master	<->	attitudes of peers on the implementation of authentic assessment	5,700	***	Received
H9	persepsi students the understanding and expectations of parents relatedassessment authentic	<- >	students 'perceptions of the attitudes of peers on theimplementation of authentic assessment	6.479	***	Accepted
H10	persepsistudents the understanding and expectations of parents relatedassessment authentic	<->	students' perception ofcapabilitiesGuru assessmentrelated authentic	6.768	***	Accepted

Hypothesis testing analysis results 2, that there is no influence of student perceptions on peer attitudes towards student attitudes related to authentic assessment. Based on the data analysis, the research results obtained avalue *p* of 0.075, which means that it is greater than the significant value of 0.050, so the hypothesis is rejected, it can be concluded that there is no effect of student perceptions on peer attitudes towards student attitudes regarding authentic assessment. Built based on the hypothesis that this result is contrary, since it is supposed atitude students as indvidu can be influenced by people around the important one only peer. (Ashton, MC, 2018; Boonk, LM, et al 2021; Gonçalves, T., &Lemos, M., 2014; Malhotra, M., et al., 2021). This conflict could be caused because the research data was obtained when schools carried out online learning due to Government policies regarding learning from home during the Pandemic. So there is no direct interaction between students. This condition resulted in no direct communication between students and other students. So that there is not much influence on peer attitudes towards student attitudes regarding authentic assessment during the learning process.

The results of the analysis of hypothesis testing 3 show that there is an effect of student perceptions on parental understanding and expectations of student attitudes regarding authentic assessment. Based on the data analysis, the research results obtained avalue *p* of 0.006, which means that it is smaller than the significant value of 0.050, so that the hypothesis is accepted, it can be concluded that there is an effect of student perceptions on parental understanding and expectations of student attitudes regarding authentic assessment. Parents as individuals who interact more frequently with students during online learning take place when the research data is collected. Parents became more aware of the learning that was taking place as well as the assignments and learning outcomes tests that were given to students. The results of hypothesis testing are in accordance with the theory and the results of previous studies that are relevant to the influence of parents on student attitudes regarding authentic assessment.

(Drummond, 2014; Henning, Karen, 2013; Masood A., Badri. Guang, Yang. Yousef, Al Sheryani. Asma et al., 2019) The results of the analysis of hypothesis testing 4 show that there is an effect of student perceptions on teacher ability related to authentic assessment of student attitudes towards the implementation of authentic assessments. Based on the data analysis, the research results obtainedvalue of *p* 0.044, which means that it is smaller than the significant value of 0.050, so that the hypothesis is accepted, it can be concluded that there is an effect of student perceptions on teacher abilities related to authentic assessment of students' attitudes towards the implementation of authentic assessment Teachers have an important role during the learning process, teachers must also have abilities related to their profession as educators. Based on relevant theory and research, it shows that the ability of teachers has an influence on students' attitudes regarding authentic assessment. During learning activities carried out online, the teacher continues to do his job as much as possible to approach the ideal learning process and use authentic assessment with adjustments of course. Although some types of authentic assessments

cannot be carried out, such as assessments between students and discussions between groups. However, from the results of this study, it was stated that the teacher was still doing their job well so that the ability of the teacher to deliver the material to the assessment process had an influence on student attitudes regarding the implementation of authentic assessment. (Drummond, 2014; Guerriero, 2013; Kaukab, 2016; Paolini, 2015; Tai et al., 2012). Students still receive good information about how the authentic assessment process runs even though online learning.

The results of testing hypothesis 5 show that there is no effect of student perceptions on peer attitudes related to the implementation of authentic assessments on student learning outcomes. Based on the data analysis, the research results obtained avalue *p* of 0.337, which means that it is greater than the significant value of 0.050, so the hypothesis is rejected, it can be concluded that there is no effect of student perceptions on peer attitudes regarding the implementation of authentic assessments on student learning outcomes. Based on the hypothesis that this result is constructed, it is contradictory, because there should be an influence of student attitudes on learning outcomes. (Hong, JC, et al., 2021; Byers, T., et al., 2018; Primi, C., Bacherini, A., Beccari, C., & Donati, M. A., 2020). This rejection could be caused because the research data was obtained when schools carried out online learning due to Government policies regarding learning from home during the Pandemic. So there is no direct interaction between students. This condition resulted in no direct communication between students and other students. So that there is not much influence on peer attitudes towards student learning outcomes related to assessment.

The results of hypothesis testing 6 show that there is an effect of student perceptions on parental understanding and expectations regarding authentic assessment of student learning outcomes. Based on the data analysis, the research results obtained avalue *p* of 0.027, which means that it is smaller than the significant value of 0.050, so that the hypothesis is accepted, it can be concluded that there are students 'perceptions of parents' understanding and expectations regarding authentic assessment of student learning outcomes. Parents become individuals who have an influence on student achievement in school, whether this is expressed in theory or the results of relevant previous research. (Furlong et al., 2009; Kaukab, 2016; Lara & Saracostti, 2019). Parents of students have the responsibility to care for their children into adulthood. Likewise, in achieving learning achievement at school, parents have an obligation to assist students. From the results of the study states that there is an influence of parents regarding authentic assessment of student learning outcomes. When this research was conducted, online learning was taking place because the pandemic was still raging. The role of parents is very important while assisting students in studying at home, because learning is entirely done at home through online. Parents have a lot to understand the learning process, the assessment process, assignments, and the process of testing student learning outcomes. So it is not surprising that the understanding and expectations of parents regarding authentic assessment greatly affect student learning outcomes.

The results of the analysis of hypothesis testing 7 show that there is an effect of student perceptions on teacher abilities related to authentic assessment of student learning outcomes. Based on the data analysis, the research results obtainedvalue of *p* 0.014, which means that it is smaller than the significant value of 0.050, so that the hypothesis is accepted, it can be concluded that there is an effect of student perceptions on teacher abilities related to authentic assessment of student learning outcomes. Student learning outcomes can be influenced by the surrounding environment and the individuals around them. The teacher's ability to deliver material to the delivery of the assessment process can affect student learning outcomes. The purpose of using authentic assessment is one of them having a lot of transfer from the classroom to the real world, motivating students to be allowed to choose the type of assessment according to their own interests and skills, and making students more creative. The results of the analysis are in accordance with the results of previous research that the ability of teachers is a factor that affects academic results or student learning outcomes. (Drummond, 2014; Guerriero, 2013; Kaukab, 2016; Paolini, 2015; Tai et al., 2012; *Law Number-14-Year-2005*, nd)

The results of the analysis of hypothesis testing 8 show that there is an effect of student attitudes on implementation. authentic assessment of student learning outcomes. Based on the data analysis, the research results obtainedvalue of *p* 0.014 which means that it is smaller than the significant value of 0.050 so that the hypothesis is accepted, it can be concluded that the effect of student attitudes on the implementation of authentic assessment on learning outcomes The factors that most influence on student learning outcomes are internal factors, namely factors from the students themselves. According to relevant theory and preliminary research, student attitudes have an influence on student learning outcomes. (Byers et al., 2018; Hong et al., 2021; Primi et al., 2020).

The results of the analysis of hypothesis testing 9 that there is a relationship between students' perceptions of peer attitudes regarding the implementation of authentic assessments and students' perceptions of parents' understanding and expectations regarding authentic assessment. Based on the data analysis, the research results obtained avalue of *p* 0.000, which means that it is smaller than the significant value of 0.050, so that the

hypothesis is accepted, it can be concluded that there is a relationship between students' perceptions of peer attitudes regarding the implementation of authentic assessments and students' perceptions of parents' understanding and expectations regarding authentic assessments. Peers and parents are individuals who often interact with students.

The results of the analysis of hypothesis testing 10 show that there is a relationship between students' perceptions of parents' understanding and expectations regarding authentic assessment and students' perceptions of teacher abilities related to authentic assessment. Based on the data analysis, the research results obtained avalue of *p* 0.000, which means that it is smaller than the significant value of 0.050, so that the hypothesis is accepted, it can be concluded that there is a relationship between students' perceptions of parents' understanding and expectations regarding authentic assessment and students' perceptions of teacher abilities related to authentic assessment. Teachers and parents of students are individuals who have an important role in the learning process besides the students' own attitudes. Between the teacher's ability and the understanding and expectations of parents have a correlation, namely through the similarity of messages and expectations conveyed by teachers and parents to students which have an impact on student behavior. Both have the same roles, goals and responsibilities, namely to support student achievement.

The results of the analysis of hypothesis testing 11 show that there is a relationship between students' perceptions of teachers' abilities related to authentic assessment and students' perceptions of peer attitudes regarding the implementation of authentic assessments. Based on the data analysis, the research results obtained avalue of *p* 0.000, which means that it is smaller than the significant value of 0.050, so that the hypothesis is accepted, it can be concluded that there is a relationship between student perceptions of teacher abilities related to authentic assessment and student perceptions of peer attitudes regarding the implementation of authentic assessments. Likewise, parents, teachers and peers are individuals who often interact directly with students at school. It is from them that students get a lot of experience, learning, character, and attitude. Teachers and peers have an influence in shaping student attitudes and achievement at school. The existence of peer, teacher, and parent relationships is significant, these results are in accordance with relevant previous research regarding these relationships. (Berchiatti et al., 2020; Chai et al., 2020; Silver et al., 2010)

5. Conclusion

The results show that the hypothesized structural equation model is fit with the data obtained based on the research results. Based on the results of the study, the factors that influence student attitudes towards authentic assessment are the ability of teachers and the understanding and expectations of parents regarding authentic assessment. Then student attitudes towards authentic assessment have an effect on student learning outcomes. The following is a picture of an authentic assessment model based on student attitudes which are influenced by peer attitudes, teacher abilities, and parental understanding and expectations regarding authentic assessment. Initially, the structural equation model design of the authentic assessment model had a firm connection line, because the results of the study were 2 (two) hypotheses that were rejected. This hypothesis is the effect of student perceptions on peer attitudes towards student attitudes regarding the implementation of authentic assessments and the influence of student perceptions on peer attitudes regarding the implementation of authentic assessments. Therefore, the connecting line of the variable peer attitudes towards students' attitudes regarding the implementation of authentic assessments and on learning outcomes becomes dashed.

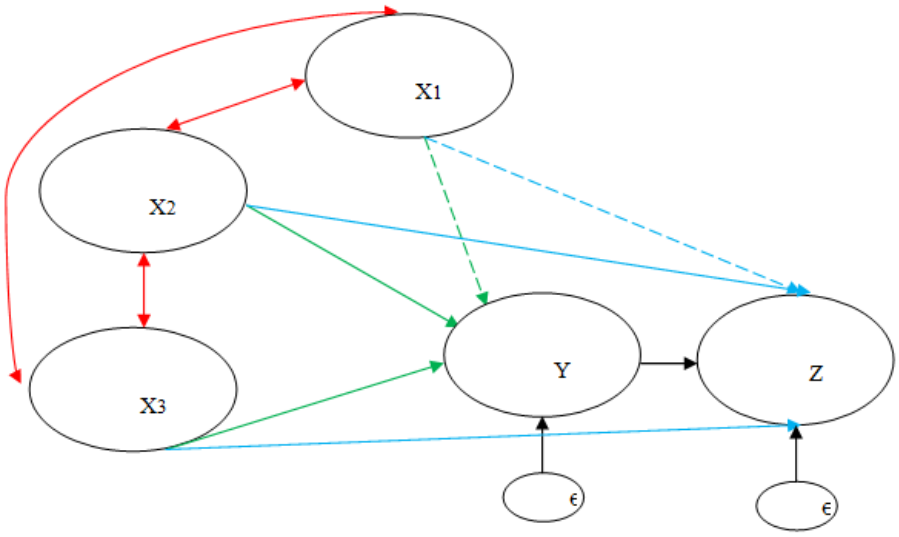

Figure 2. Then student attitudes towards authentic assessment have an effect on student learning outcomes.

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References

1. Arslan, C., Göcmencelebi, S. I., & Tapan, M. S. (2009). Learning and reasoning styles of pre service teachers': inductive or deductive reasoning on science and mathematics related to their learning style. Procedia - Social and Behavioral Sciences, 1(1), 2460–2465. https://doi.org/10.1016/j.sbspro.2009.01.432
2. Ashton, M. C. (2018). Personality and Life Outcomes. Individual Differences and Personality, 199–227. https://doi.org/10.1016/b978-0-12-809845-5.00009-3
3. Azwar, S. (1988). Sikap manusia: teori dan pengukurunnya. Liberty. https://books.google.co.id/books?id=J_smnQEACAA
4. Bardach, L., & Klassen, R. M. (2020). Smart teachers, successful students? A systematic review of the literature on teachers' cognitive abilities and teacher effectiveness. Educational Research Review, 30(June 2019), 100312. https://doi.org/10.1016/j.edurev.2020.100312
5. Beilin, H., & Fireman, G. (1999). The Foundation of Piaget's Theories: Mental and Physical Action. Advances in Child Development and Behavior, 27(C), 221–246. https://doi.org/10.1016/S0065-2407(08)60140-8
6. Benavot, A., & Tanner, E. (2007). The Growth of National Learning Assessments in the World , 1995-2006. East Asia, 1–18.
7. Berchiatti, M., Badenes-Ribera, L., Ferrer, A., Longobardi, C., & Gastaldi, F. G. M. (2020). School adjustment in children who stutter: The quality of the student-teacher relationship, peer relationships, and children's academic and behavioral competence. Children and Youth Services Review, 116(July), 105226. https://doi.org/10.1016/j.childyouth.2020.105226
8. Birenbaum, M., DeLuca, C., Earl, L., Heritage, M., Klenowski, V., Looney, A., Smith, K., Timperley, H., Volante, L., & Wyatt-Smith, C. (2015). International trends in the implementation of assessment for learning: Implications for policy and practice. Policy Futures in Education, 13(1), 117–140. https://doi.org/10.1177/1478210314566733
9. Blazar, D., & Kraft, M. A. (2017). Teacher and Teaching Effects on Students' Attitudes and Behaviors. Educational Evaluation and Policy Analysis, 39(1), 146–170. https://doi.org/10.3102/0162373716670260
10. Broadfoot, P., & Black, P. (2004). Redefining assessment? The first ten years of assessment in education. Assessment in Education: Principles, Policy and Practice, 11(1), 7–26. https://doi.org/10.1080/0969594042000208976
11. Brown, S. (2008). Assessment for learning. Assessment for Learning, 1–209. https://doi.org/10.7810/9781927131763_9
12. Bryant, A., & Charmaz, K. (2007). The SAGE Handbook of Grounded Theory. SAGE Publications. https://books.google.co.id/books?id=HlHHVV8qt4gC
13. Budi, K. (2018). Tahun ajaran baru, sekolah wajib terapkan kurikulum 2013. In Kompas.com. https://edukasi.kompas.com/read/2018/06/30/23475471/tahun-ajaran-baru-sekolah-wajib-terapkan-kurikulum-2013
14. Byers, T., Imms, W., & Hartnell-Young, E. (2018). Comparative analysis of the impact of traditional versus innovative learning environment on student attitudes and learning outcomes. Studies in Educational Evaluation, 58(July), 167–177. https://doi.org/10.1016/j.stueduc.2018.07.003
15. Campbell, B. A. (2015). Approach to Peer Influence in Adolescent Socialization *. 24(2), 324–344.
16. Cattley, G. (2004). The impact of teacher-parent-peer support on students' well-being and adjustment to the middle years of schooling. International Journal of Adolescence and Youth, 11(4), 269–282. https://doi.org/10.1080/02673843.2004.9747935
17. Cecchetti, M., Last, J., Lynch, J., & Linehan, C. (2021). Evaluating the longitudinal impact of a disability education intervention on medical students' attitudes towards persons with a disability. Disability and Health Journal, xxxx, 101092. https://doi.org/10.1016/j.dhjo.2021.101092
18. Chai, L., Xue, J., & Han, Z. (2020). School bullying victimization and self-rated health and life satisfaction: The mediating effect of relationships with parents, teachers, and peers. Children and Youth Services Review, 117(July), 105281. https://doi.org/10.1016/j.childyouth.2020.105281

19. Choate, J. S., & Evans, S. S. (1992). Authentic Assessment of Special Learners: Problem or Promise? Preventing School Failure: Alternative Education for Children and Youth, 37(1), 6–9. https://doi.org/10.1080/1045988x.1992.9944588
20. Cope, B., & Kalantzis, M. (2016). Big Data Comes to School. AERA Open, 2(2), 233285841664190. https://doi.org/10.1177/2332858416641907
21. Cramer-petersen, C. L., Christensen, B. T., & Ahmed-kristensen, S. (2018). Empirically analysing design reasoning patterns: Abductive-deductive reasoning patterans dominate design idea generation. Design Studies, 1–32. https://doi.org/10.1016/j.destud.2018.10.001
22. Darling-Hammond, L., & Snyder, J. (2000). Authentic assessment of teaching in context. Teaching and Teacher Education, 16(5), 523–545. https://doi.org/10.1016/S0742-051X(00)00015-9
23. Davadas, S. D., & Lay, Y. F. (2018). Factors affecting students' attitude toward mathematics: A structural equation modeling approach. Eurasia Journal of Mathematics, Science and Technology Education, 14(1), 517–529. https://doi.org/10.12973/ejmste/80356
24. Dehaene, A. S., Spelke, E., Pinel, P., Stanescu, R., Tsivkin, S., Dehaene, S., Spelke, E., Pinel, P., Stanescu, R., & Tsivkin, S. (2016). Sources of Mathematical Thinking : Behavioral and Brain-Imaging Evidence Published by : American Association for the Advancement of Science Stable URL : http://www.jstor.org/stable/2899209 REFERENCES Linked references are available on JSTOR for this artic. 284(5416), 970–974.
25. Dehaene, S., Piazza, M., Pinel, P., & Cohen, L. (2010). THREE PARIETAL CIRCUITS FOR NUMBER PROCESSING T HREE PARIETAL CIRCUITS FOR NUMBER. October 2014, 37–41. https://doi.org/10.1080/02643290244000239
26. Departemen Hukum dan Hak Asasi Manusia RI. (2014). Undang-Undang Republik Indonesia No 35 Tahun 2014 (Issue 1, pp. 1–5).
27. Depdiknas. (2003). Undang-Undang Republik Indonesia No 20 tahun 2003 tentang Sistem Pendidikan Nasional. In Jakarta: Direktorat Pendidikan Menengah Umum (p. 6). http://stpi-binainsanmulia.ac.id/wp-content/uploads/2013/04/Lamp_2_UU20-2003-Sisdiknas.doc
28. Dobson, C. (1985). Attitudes and Perceptions. In Later Life Transitions (Issue January 2005). https://doi.org/10.1007/978-94-009-4978-2_11
29. Drummond, J. (2014). Parent Support Programs and Early Childhood Development: Comments on Goodson, and Trivette and Dunst. Parenting Skills, 76(1), 5–6.
30. Eagle, A. ., & Chaiken, S. (1995). Book Review. In Psychology & Marketing (Vol. 12, Issue August).
31. Fiore, L. B., & Fiore, L. B. (2020). Authentic Assessment. Assessment of Young Children, 5(5), 119–144. https://doi.org/10.4324/9780367808709-6
32. Fishbein, & Ajzen. (1975). A Bayesian analysis of attribution processes. Psychological Bulletin, 82(2), 261–277.
33. Fox-Turnbull, W. (2006). The influences of teacher knowledge and authentic formative assessment on student learning in technology education. International Journal of Technology and Design Education, 16(1), 53–77. https://doi.org/10.1007/s10798-005-2109-1
34. Furlong, M. J., Gilman, R., & Huebner, E. S. (2009). Handbook of Positive Psychology in Schools. Taylor & Francis. https://books.google.co.id/books?id=1pKOAgAAQBAJ
35. Garson, G. D. (2012). Testing statistical assumptions: Blue Book Series. Asheboro: Statistical Associate Publishing, 12, 15, 16–20, 24, 31, 41–43, 44, 46–48, 50. https://www.researchgate.net/profile/Jurandy_Penitente-Filho/post/What_is_the_best_statistical_method_to_correlate_immunohistochemestry_and_rt-pcr/attachment/59d61d9879197b807797853c/AS:271755204071424@1441802897825/download/assumptions.pdf
36. Gelişli, Y. (2007). Effects of Teachers' Attitudes and Behavior on Students' Attitudes, Behavior, and Academic Success in Turkey. International Journal of Educational Reform, 16(1), 96–106. https://doi.org/10.1177/105678790701600108
37. Givron, H., & Desseilles, M. (2021). Longitudinal study: Impact of communication skills training and a traineeship on medical students' attitudes toward communication skills. Patient Education and Counseling, 104(4), 785–791. https://doi.org/10.1016/j.pec.2020.09.010
38. Gonçalves, T., & Lemos, M. (2014). Personal and Social Factors Influencing Students' Attitudes Towards Peers with Special Needs. Procedia - Social and Behavioral Sciences, 112(Iceepsy 2013), 949–955. https://doi.org/10.1016/j.sbspro.2014.01.1253
39. Guerriero, S. (2013). Teachers' Pedagogical Knowledge and the Teaching Profession: Background Report and Project Objectives.
40. Hallinan, M. T. (1981). The peer influence process. Studies in Educational Evaluation, 7(3), 285–306. https://doi.org/10.1016/0191-491X(81)90007-9

41. Henning, Karen, J. (2013). Attitude and Achievement: a Study of Parent and Student Attitudes Towards Education and Their Effects on Achievement. July, 55.
42. Holtzman, W. H., & Brown, W. F. (1968). Evaluating the study habits and attitudes of high school students. Journal of Educational Psychology, 59(6 PART 1), 404–409. https://doi.org/10.1037/h0026438
43. Hong, J. C., Hsiao, H. S., Chen, P. H., Lu, C. C., Tai, K. H., & Tsai, C. R. (2021). Critical attitude and ability associated with students' self-confidence and attitude toward "predict-observe-explain" online science inquiry learning. Computers and Education, 166, 3–5. https://doi.org/10.1016/j.compedu.2021.104172
44. Hurrelmann, K. (1990). Parents, Peers, Teachers and Other Significant Partners in Adolescence. International Journal of Adolescence and Youth, 2(3), 211–236. https://doi.org/10.1080/02673843.1990.9747679
45. Indonesia, P., & Cara, T. (2021). Pemerintah Kebut Pelatihan Guru agar Bisa Terapkan Kurikulum.
46. Kaukab, S. (2016). the Impact of Parent/Family Involvement on Student'S Learning Outcomes. International Journal of Research -GRANTHAALAYAH, 4(10), 72–81. https://doi.org/10.29121/granthaalayah.v4.i10.2016.2494
47. Kellaghan, T., & Greaney, V. (2001). Using assessment to improve the quality of education. In Training.
48. Kesehatan, B. P. dan P. (2010). RPJMN 2010-2014.pdf (2010th–2014th ed.). Kementerian Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional(BAPPENAS). https://www.bappenas.go.id/files/rpjmn/RPJMN 2010-2014.pdf
49. Kim, M. (2021). Persamaan Struktural Konfirmatori Model Estimasi Prestasi oleh Sikap Dikotomis , Minat , dan Pemahaman Konseptual. 6(4), 271–285.
50. Knight, M., & Cooper, R. (2019). Taking on a New Grading System: The Interconnected Effects of Standards-Based Grading on Teaching, Learning, Assessment, and Student Behavior. NASSP Bulletin, 103(1), 65–92. https://doi.org/10.1177/0192636519826709
51. Koh, kim H. (2017). Authentic Assessment. Assessment of Young Children. https://doi.org/978019264093.013.22
52. Kroger, J. K., Nystrom, L. E., Cohen, J. D., & Johnson-Laird, P. N. (2008). Distinct neural substrates for deductive and mathematical processing. Brain Research, 1243, 86–103. https://doi.org/10.1016/j.brainres.2008.07.128
53. Lara, L., & Saracostti, M. (2019). Effect of parental involvement on children's academic achievement in Chile. Frontiers in Psychology, 10(JUN), 1–5. https://doi.org/10.3389/fpsyg.2019.01464
54. Lee, K. (2000). Cortical areas differentially involved in multiplication and subtraction: A functional magnetic resonance imaging study and correlation with a case of selective acalculia. Annals of Neurology, 48(4), 657–661. https://doi.org/10.1002/1531-8249(200010)48:4<657::aid-ana13>3.3.co;2-b
55. Ling, J., Catling, J., & Upton, D. (2014). Psychology Express: Cognitive Psychology (Undergraduate Revision Guide). Pearson Education Limited. https://books.google.co.id/books?id=H8g8AwAAQBAJ
56. Lisa M.Boon, Henk Ritzen, Hieronymus J.M.Gijselaers, S.-G. (2021). Stimulating parental involvement in vocational education and training (VET): A case study based on learning histories of teachers , principals , students , and their parents. 3–5.
57. Macandrew, S. B. G., & Edwards, K. (2002). Essays are Not the Only Way: A Case Report on the Benefits of Authentic Assessment. Psychology Learning & Teaching, 2(2), 134–139. https://doi.org/10.2304/plat.2002.2.2.134
58. Magnani, L. (2006). European Journal of High Ability CREATIVE PROCESSES IN SCIENTIFIC DISCOVERY. February 2015, 37–41. https://doi.org/10.1080/0937445940060260
59. Mahdiansyah. (2017). Kementerian pendidikan dan kebudayaan badan penelitian dan pengembangan pusat penelitian kebijakan pendidikan dan kebudayaan tahun 2017. Kementerian Pendidikan dan Kebudayaan Indonesia. https://core.ac.uk/download/pdf/250647897.pdf
60. Malhotra, M., Yu, S. Y., Lakshmipathy, N., Rajkumar, A., & Goyal, C. (2021). A fuzzy analysis of teacher's attitude affect student's performance and personality development. Materials Today: Proceedings, 1–2. https://doi.org/10.1016/j.matpr.2020.11.497
61. Marcoulides, G. A. (1998). Modern Methods for Business Research. Taylor & Francis. https://books.google.co.id/books?id=EDZ5AgAAQBAJ
62. Masood A., Badri. Guang, Yang. Yousef, Al Sheryani. Asma, A. R., Badri, M. A., Sheryani, Y. Al, Yang, G., Rashedi, A. Al, Sumaiti, R. Al, & Mazroui, K. Al. (2019). The Effects of Teachers', Parents', and Students' Attitudes and Behavior on 4th and 8th Graders' Science/math Achievements: A model of School Leaders' Perspectives. International Journal on Engineering, Science and Technology, 1(1), 22–37.
https://www.researchgate.net/publication/332013254_The_Effects_of_Teachers'_Parents'_and_Students'_Attitudes_and_Behavior_on_4th_and_8th_Graders'_Sciencemath_Achievements_A_model_of_School_Leaders'_Perspectives

63. Matt, A., & Manning, N. (2016). A Guide to Peer-to-Peer Learning: How to make peer-to-peer support and learning effective in the public sector? https://www.effectiveinstitutions.org/en/
64. Maxwell. (2021). Communication Psychology. UNICORN Publishing Group. https://books.google.co.id/books?id=njlnzgEACAAJ
65. Mayor, M. (2009). Longman Dictionary of Contemporary English. Pearson Longman. https://books.google.co.id/books?id=2Ors3yHvwsgC
66. McDougall, W. (2015). An Introduction to Social Psychology. Taylor & Francis. https://books.google.co.id/books?id=nojwCQAAQBAJ
67. Morrish, I. (2019). The Sociology of Education: An Introduction. Taylor & Francis. https://books.google.co.id/books?id=tb2tDwAAQBAJ
68. Moust, J. H. C., De Volder, M. L., & Nuy, H. J. P. (1989). Peer teaching and higher level cognitive learning outcomes in problem-based learning. Higher Education, 18(6), 737–742. https://doi.org/10.1007/BF00155664
69. Mueller, J. (2005). The Authentic Assessment Toolbox : Enhancing Student Learning through Online Faculty Development. 1(1).
70. Mulyasa, E. (2013). Pengembangan dan implementasi kurikulum 2013. PT Remaja Rosdakarya. https://books.google.co.id/books?id=UB0EnwEACAAJ
71. Palm, T., & Palm, T. (2008). Performance Assessment and Authentic Assessment : A Conceptual Analysis of the Literature Performance Assessment and Authentic Assessment :13, 0–11.
72. Paolini, A. (2015). Enhancing Teaching Effectiveness and Student Learning Outcomes. 15(1), 20–33.
73. Pendidikan, M., Kebudayaan, D. A. N., & Indonesia, R. (2013). Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia No, 54 Tahun 2013. Kementerian Pendidikan dan Kebudayaan Indonesia.
74. Penney, D., Brooker, R., Hay, P., & Gillespie, L. (2021). Curriculum , pedagogy and assessment : three message systems of schooling and dimensions of quality physical education. 1–5.
75. Primi, C., Bacherini, A., Beccari, C., & Donati, M. A. (2020). Assessing math attitude through the Attitude Toward Mathematics Inventory – Short form in introductory statistics course students. Studies in Educational Evaluation, 64(January), 100838. https://doi.org/10.1016/j.stueduc.2020.100838
76. Raymond, J. E., Homer, C. S. E., Smith, R., & Gray, J. E. (2013). Learning through authentic assessment: An evaluation of a new development in the undergraduate midwifery curriculum. Nurse Education in Practice, 13(5), 471–476. https://doi.org/10.1016/j.nepr.2012.10.006
77. Robertus Belarminus. (2014). Desember , Pemerintah Putuskan Kurikulum 2013 Dilanjutkan , Direvisi , atau Dihentikan.
78. Santrock, J. W. (2007). Psikologi pendidikan (Edisi ke-2). In Jakarta: Kencana Prenada Media Group.
79. Scale, A. (2013). Measuring attitude toward theistic faith: assessing the Astley-Francis Scale among Christian, Muslim and secular youth in England. 89. https://doi.org/10.7227/RIE.89.1.6
80. Scalise, K., & Wilson, M. (2011). The nature of assessment systems to support effective use of evidence through technology. E-Learning and Digital Media, 8(2), 121–132. https://doi.org/10.2304/elea.2011.8.2.121
81. Schibeci, R. (1989). Home, school, and peer group influences on student attitudes and achievement in science. Science Education, 1, 13–24.
82. Silver, R. B., Measelle, J. R., Armstrong, J. M., & Essex, M. J. (2010). The impact of parents , child care providers , teachers , and peers on early externalizing trajectories. Journal of School Psychology, 48(6), 555–583. https://doi.org/10.1016/j.jsp.2010.08.003
83. Simon, O., Kherif, F., Flandin, G., Poline, J. B., Rivière, D., Mangin, J. F., Le Bihan, D., & Dehaene, S. (2004). Automatized clustering and functional geometry of human parietofrontal networks for language, space, and number. NeuroImage, 23(3), 1192–1202. https://doi.org/10.1016/j.neuroimage.2004.09.023
84. Solso, R. L., Maclin, O. H., & MacLin, M. K. (2013). Cognitive Psychology: Pearson New International Edition PDF eBook. Pearson Education. https://books.google.co.id/books?id=RtCpBwAAQBAJ
85. Spurgeon, P., Davies, R., & Chapman, A. (2015). Elements of Applied Psychology. Taylor & Francis. https://books.google.co.id/books?id=kE9ACwAAQBAJ
86. Svinicki, M. D. (2004). Authentic assessment: Testing in reality. New Directions for Teaching and Learning, 2004(100), 23–29. https://doi.org/10.1002/tl.167
87. Tai, D. W. S., Hu, Y., Wang, R., & Chen, J. (2012). What is the impact of teacher self-efficacy on the student learning outcome ? February, 6–10.
88. Tejada, J. J., & Punzalan, J. R. B. (2012). On the Misuse of Slovin ' s Formula. The Philippine Statistician, 61(1), 129–136.
89. Undang-Undang-Nomor-14-Tahun-2005. (n.d.). Kementerian Pendidikan dan Kebudayaan Indonesia.
90. VandenBos, G. R., & Association, A. P. (2015). APA Dictionary of Psychology. American Psychological Association. https://books.google.co.id/books?id=Mbz3rQEACAAJ

91. Walvoord, B. E., Anderson, V. J., & Angelo, T. A. (1998). Effective Grading: A Tool for Learning and Assessment. Wiley. https://books.google.co.id/books?id=yXTuAAAAMAAJ
92. Wawrzynski, M. R., LoConte, C. L., & Straker, E. J. (2011). Learning outcomes for peer educators: The national survey on peer education. New Directions for Student Services, 2011(133), 17–27. https://doi.org/10.1002/ss.381
93. Wiggins, G. (1989). Teaching to the (Authentic) Test. Educational Leadership, April, 41–47.
94. Wiliam, D. (2011). What is assessment for learning? Studies in Educational Evaluation, 37(1), 3–14. https://doi.org/10.1016/j.stueduc.2011.03.001
95. Wilkinson, I. A. G., Hattie, J. A., Parr, J. M., Townsend, M. A. R., Thrupp, M., Lauder, H., & Robinson, T. (2000). Influence of peer effects on learning outcomes: A review of the literature (Final report to the Ministry of Education).
96. Zhang, L., Gan, J. Q., & Wang, H. (2015). Mathematically Gifted Adolescents Mobilize Enhanced during Deductive Reasoning. NEUROSCIENCE, 289, 334–348. https://doi.org/10.1016/j.neuroscience.2014.12.072