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## Multiple Intelligences-based Creative Curriculum: The Best Practice

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**Abstract:** The purpose of this research is: 1) to develop the model and produce the assessment of creative curriculum-based learning program multiple intelligences (MI), 2) to know the characteristics and impacts of developed product models. Research using multi-years by method R & D (Research and Development) with two phases; First phase: 1) Preliminary survey stage, 2) definition stage, 3) design phase, 4) trial stage, and 5) development stage; The second phase: 1) the instrument design stage through the Forum Group Discussion, 2) the product trial phase of 100 children in Sleman Regency, 3) wide-scale implementation of 200 children in Yogyakarta Province, 4) the evaluation phase with construct analysis and achievement of research subjects' performance, 5) the stage of measuring the effectiveness of the product with user perception. The subject comprises 200 children of early childhood and 20 kindergarten teachers in 10 kindergartens in the Yogyakarta province in Indonesia, by the approach of Reflective Measurement Theory (RMT). The results showed that: 1) the MI-based creative curriculum assessment model was developed to meet valid, reliable and conformity criteria of an empirical data model, 2) The implementation of the assessment model had fulfilled the requirements worthy of using three criteria aspect; 1) The results of the assessment using creative instruments based on multiple intelligences on children get "very good" results, 2) the readiness of the teacher in learning is included in the "good" category; 3) teacher performance appraisal shows the "very good" category, and 4) the benefits of the products developed are in the "very good" category. It was concluded that the developed product had tested empirically and practically so that it was useful in learning in early childhood.

**Keywords:** *Model, assessment, curriculum, multiple intelligences, kindergarten.*

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### Introduction

Kindergarten is the most crucial step in determining the development aspect of the child. The Golden ages is a stage of developmental domination, with 80% of the child's ability to proliferate (Chicetti & Tooth, 1998). Coverage in early childhood education has a study that includes all the efforts and actions taken by educators and parents in the process of care and psychological development of children to optimize children's creativity. Therefore, by creating an excellent environment, experiences can be explored to the maximum. It can take children to learn skills acquired from situations through understanding, reproduction, and experiments, which repeated so that they can maximize the children's potential and intelligence.

Teachers can maximize the potential of early childhood intelligence simultaneously through learning that is useful and fun. The potential of early childhood intelligence consists of (1) Linguistic, (2) Logical mathematical, (3) Musical, (4) Spatial, (5) Bodily kinesthetic, (6) Interpersonal, and (7) Intrapersonal intelligence (Gardner, 1999). Thus, it is necessary to do an effective action optimizing three early childhood intelligence. An Application improving early childhood intelligence cannot be removed from the role of an educator, especially teachers. Kindergarten teachers are in excellent control over the potential to be developed for early childhood (Gardner, 2011).

The professionalism of a teacher in Indonesia is still not following the expected standards. It can prove in survey data on political and economic risk countries (PERC), a consultancy agency in Singapore, in 2001 that placed Indonesia in 12 out of 12 countries in terms of teacher quality. A professional teacher must have four core competencies: professional, pedagogical, personal, and social. In addition to the four main competencies, a kindergarten teacher must have four essential competencies and additional competencies, namely: 1) having creativity and a sense of art as an adjustment between learning and the needs of children, 2) understanding developmental theory and its implications (module for

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early childhood education, 2013). In implementing the learning process that is following the curriculum in kindergarten, it is essential to develop children's creativity in every activity undertaken. The application of the creative curriculum must do in two main aspects; about policy implementation and implementation in classroom learning practices. It is because teachers in stimulating creativity through children's creative curriculum need careful planning and implementation so that learning practices can carry out through kindergarten policies.

They will affect the development of children's creativity (Craft, 2004). A good curriculum is a curriculum that can produce the ideal personality types, which can live functionally in a changing world. So, it seems that the creative behavior is essential to be developed in the application of the curriculum because to be able to live in a world that is always changing needed creative skills (Glaveanu, 2014). In other words, a good curriculum not only emphasizes the subject matter but also develops creativity in the child. With a good curriculum will be a creative personal form, which can use his knowledge to solve problems in everyday life in many ways possible.

The education that took place at this moment stressed on the cognitive aspect alone, and it makes educators forget about creativity. Because creativity is not one of the determinants in the success of education, many teachers and parents focus on academic values as a benchmark for the achievement of a child. They became one of the triggers of the mass cheating during the final exam (Sukma, 2016). The problem occurs because the current curriculum implementation still feels too heavy for learners. They lead to the teacher being unable to teach well, because the teacher's mind is pursuing the target curriculum, well as Setiawan (2017) research where teaching experience correlated with the creativity of early childhood teachers in teaching. The Learning process is that the child must pursue the curriculum, not the curriculum that adjusts the characteristics and development of the child. What happens is that learners do not easily understand the lesson.

Another problem is that there are still many teachers who are low on the importance of child creativity. Thus the teacher only focuses on the development of educational values alone, regardless of the child's creativity. The creative behavior demonstrated by the child is not gaining meaningful attention, which is essential for the teacher is that the learner has a good value in various subjects that only need memorization. They cause learning to only walk around memorization. Learning with practice and application of matter is very rare, so the ability of graduates only at the level of knowledge. Many teachers are still trapped in the perception of the importance of educational value alone, leaving the value of creativity. With these incidents, not only does it make the learning process very tedious, but it also seems heavy, but not very beneficial for real everyday life. The field-test research demonstrates the importance of practitioner input, suggestions, and feedback for improving the usefulness of early childhood intervention practices (Dunst, 2017).

The implementation of a Multiple Intelligences-based creative curriculum in kindergarten is essential because the development of creative learning and the elements of the ability Most influential is the child's creativity. The impact, the creative child, can do any activities optimally, especially in the activities of playing both in the classroom and outside the classroom. Therefore, the application of a constructive, creative curriculum of multiple intelligences can improve the development and potential of early childhood intelligence. From the description, it can conclude that it is essential to develop a creative curriculum model of multiple intelligences based on kindergartens.

### *Creative*

According to Stenberg and Lubart in Wright (2010), Creativity is the process of generating ideas that are novel and bringing into existence an appropriate product and of high quality. With new and innovative ideas can provide benefits. The benefits of the resulting product can close-up from the quality of the product. Craft (2007) argues: "creativity is a state of mind in which all of our intelligences are working together." Guilford in Stenberg (1999) identifies five factors of creative features in solving the problem: first, recognizing the problem (sensitivity), second, smoothness (fluency) ability to produce many Ideas. Thirdly, the flexibility to apply a variety of approaches and road solutions to problems. Fourth, the statement to give birth to original ideas as a result of self-thought.

### *Multiple Intelligences Assessment*

According to Thomas (2010) that MI learning should use collaboration between curriculum and child needs analysis. Early child assessment is dominant on linguistic and mathematical logic. While good assessment is an assessment made summatively to assess the final product. The assessments used in *Multiple Intelligence* studies include a) project assessments, matches and presentations, b) Report cards and child progress reports, c) portfolios, d) school performances, e) parental education Children, f) communities around, and g) supporting conferences. While the step to implementing *Multiple Intelligences* is the following: 1) Optimizing report cards to communicate children's learning outcomes to parents; 2) Choose research materials that are best suited for the manufacturing of portfolio assessments; 3) Designing final assignments. The application of multiple intelligence in learning in kindergarten in Indonesia is still complicated in its implementation. It is due to a fundamental concept that optimizes abilities rather than children's intelligence. With this explanation, it can assess that there is a need to develop assessment instruments and learning tools based on multiple intelligences in kindergarten. It is done as a solution to develop children's creativity as a whole.

## Method

### *Research Goal*

The development method that R&D aimed at answering the research problem. The model chosen in development research is the Cennamo and Kalk model (2005). This model is adopting a spiral development model consisting of stage I consisting of: (1) preliminary studies, (2) define, (3) design, (4) show, (5) development; while phase II consists of: (1) socialization and dissemination, (2) applied, (3) measuring effectiveness, (4) evaluation.

### *Sample and Data Collection*

The subject of limited trials will conduct five kindergartens in Sleman City. An expanded trial was conducted to prove instrument reliability and instrument effectiveness. The subjects for the trials on the measurement will be more representative of the number of subjects chosen is higher. Therefore, the addition of subjects will increase the validity and reliability of the instrument. Samples for expanded trials were taken by a purposive random sampling technique by taking representation from each district in Yogyakarta. The expanded trial subject applied to 20 teachers in the province of Yogyakarta. The research subjects were headmasters, kindergarten teachers, and kindergarten students in Yogyakarta Province. Using IRT (Reflective Measurement Theory), at least the sample taken was 20 principals, 20 kindergarten teachers, and 200 kindergartens. The selected TK has low, medium, and superior characteristics and accreditation status. Identifying aspects and indicators of a creative curriculum assessment through theoretical studies conducted in February 2019.

### *Analyzing of Data*

A limited trial is performed to see the item quality of the problem using the Lisrel for Windows. Various methods do data analysis. First is the analysis content validity instrument, followed by a review of the instrument's construct, and ends with a summary of the effectiveness of the product developed. The first step is to use a method of qualitative analysis that aims to build the design of the instrument (content validity) is based on indicators built from the theory. The preparation and indicators of research instruments carried out by conducting a study of operational definitions. After that, an indicator study of all operational definitions carried out. Instrument indicators described in instrument items based on theoretical studies and research studies. After all, arranged in a draft instrument was subsequently carried out Focus Group Discussion (FGD) by inviting experts in psychology and measurement (five people), early childhood assessment experts (five people) and a panelist as many as Ten Kindergarten teachers. Quantitative descriptive analysis is then conducted to test the draft of the instrument obtained from the test response result of content analysis (construct validity) they are supported by quantitative data that aims to see the development carried out with exploratory factor analysis (EFA). After that, the socialization and application of the product in 20 Kindergartens in Sleman Regency. The final step analyzed effectiveness, benefit, evaluation of the impact of the product that has applied as a follow-up to the socialization, and product propagation. Analysis of the data used to test the product is confirmatory factor analysis (CFA). The CFA technique uses intercorrelation and covariance with a second-order analysis technique. Meanwhile, to see the product implementation used descriptive statistical analysis by looking for the mean, deviation, and percentage of achievement.

## Results

### *Model Development Results*

The products produced from this research and development (Research & Development) are the assessment models and guidelines that can be used to assess Creative Curriculum Learning multiple-based intelligence in kindergartens. While that includes: Pre-development and application. Determination of assessment indicators by adjusting instrument specifications and forms with the help of assessments by three experts in the field of measurement and evaluation and five kindergartens in Yogyakarta. Validating the instrument that had been made with Forum Group Discussion conducted by ten kindergarten head and 20 class teachers in Kindergarten at Yogyakarta Province.

Second, the stage of collaboration and instrument preparation, at this stage done several stages: (a) develop a creative curriculum instrument Multiple-based Intelligence, (b) Designing and collaborating then testing the validity and reliability of the instrument. The validation performed; there are two types of content validation and construct validation. Content validation is done with the calculation of Content Validity Index (CVI) consisting of six raters or votes. And then continued with the validity of the construction with the subject of a trial of 20 teachers and 200 children in 10 TK in Yogyakarta province. Questionnaires filled in the form of statements using a Likert scale, namely: excellent, good, adequate, less, and very lacking. Very good pension is suitable = 4, corresponds = 3, less appropriate = 2, and does not match = 1. Besides, the validator was also given space to provide opinions, proposals, and suggestions relating to the model and its instruments. Here is the calculation result of Content Validity Index.

Table 1. CVI coefficient of content validity

No.	Grain CVI	Coefficient
1	Highest	0.88
2	Lowest	0.66
3	Average	0.78

Based on table 1 above, it noted that the magnitude of the total validity is 0.78 so that it can be classed as useful ( $> 0.3$ ). The value of CVI is in the range-1 to 1. The CVI values can be categorized as follows. The device can be said to have good validity when CVR and CVI are more significant than 0.3. After calculating the CVI value for determining the validity of the content, then the next step is: (c) Validate and revise the Creative curriculum Instrument of Multiple intelligences and build a reliable and valid instrument.

Third, the confirmation stage and product socialization: (a) the implementation of the creative assessment to the kindergarten teacher, (b) Perform the measurement and the construction test using Confirmatory Analysis (Istiyono, 2020). In this case, the implementation of creative curriculum assessment based on MI is applied in 10 TK with research subjects as many as 200 kindergarten children. The Assessment of the model and the device by experts may be described as follows: The total number of appraiser is 3 expert, the details of the expert elements consist of: (a) 1 expert in the field of education evaluation, (b) 1 expert of measurement/construction instrumentation, (c) 1 expert of data analysis and instrument construction, held in April 2019. An expert assessment questionnaire to determine the validity of the contents using 4 scales (likert).

#### Unidimensional Test

The unidimensional test is done with factor analysis using SPSS program series 25. Before conducting the factor analysis conducted feasibility testing analysis using KMO-MSA test and Barlett's test on each instrument. According to Anderson (2012), the terms of analysis factor are Kaiser-Meyer Olkin (KMO)  $> 0.5$  and significant Bartlett's test unidimensional, meaning each test item only measures one ability. To test the unidimensional with factor analysis. The results of exploratory analysis show KMO and Bartlett's test coefficients less than 0.05. The KMO-MSA test is used to view sufficiency samples, is measuring Bartlett's test for normality of the data used. The results of the trial for the pre-dimensional test using the KMO- Bartlett's test can explain in table 2 below.

Table 2. Values KMO and Bartlett's Test Children Observation Instruments

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.865
	Approx. Chi-Square	3593.391
Bartlett's Test of Sphericity	Df	465
	Sig.	.000

A. Based on correlations

In table 2 explanation the results of the empirical analysis with KMO-MSA value is 0,86 or more than 0.5 and test significant *Barlett's* is 0.000. Thus, it can conclude that the analysis All results have been significant, meaning that the instrument deserves an analysis of factors. Obtain items that measure the same dimensions, the extraction process is generated, resulting in several factors. Each factor in the form has an Eigen value, and the factor that has an Eigen value above 1.00 is retained (Thompson, 2004).

According to Hambleton and Swaminathan (1985) A unidimensional assumption is considered fulfilled if the test contains a dominant component that measures the ability of a single one. The same statement was put forward by the Naga (1992) stating that if the measurements find a dominant dimension, then the dominant dimension becomes the single dimension or unidimensional of the item's response or characteristic. Next, if the first-factor Eigenvalue has a value of up to several times the value of the Eigen factor to two and subsequent then almost equal, then it is said that the unidimensional requirement met.

Table 3. Total Cumulative Variant (Total Variance Explained)

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative	Total	% of Variance	Cumulative
1	10,458	33,735	33,735	3,478	11,220	11,220
2	2,498	8,059	41,795	3,429	11,062	22,282
3	2,032	6,556	48,350	3,384	10,917	33,199
4	1,660	5,355	53,705	2,987	9,636	42,835
5	1,428	4,606	58,312	2,706	8,729	51,564
6	1,242	4,007	62,318	2,529	8,158	59,722
7	1,211	3,906	66,224	2,016	6,502	66,224

Once known total variances in table 3 of 66.224 % in the first component that can be interpreted this instrument measures one aspect with the dominant Eigenvalue of 33,73 means that the instrument is developed measuring only one dimension of ability. The results can identified *scree-plot* Exploratory factor analysis that explains in the following figure 1.

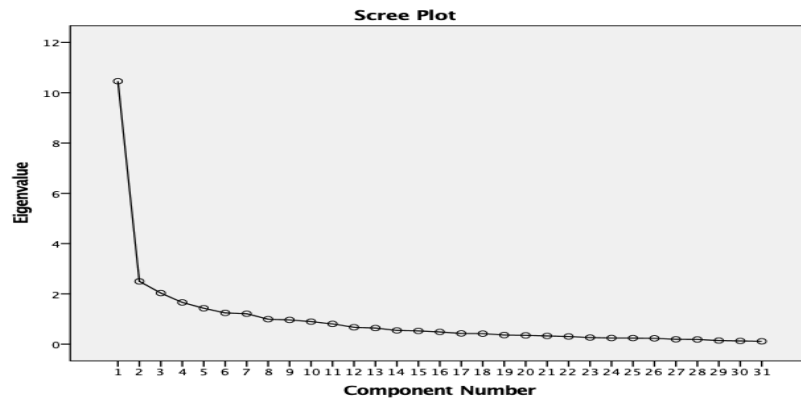


Figure 1. *Scree-plot Unidimensional Test of Teacher Rating Instrument*

Figure 1 indicates that the distance from component 1 to component 2 is far or multiple times the distance between other components. *Scree plot* the steep indicates the presence of dominant components, meaning that the instrument religious It only measures one factor or one dimension. In substests the instrument of observation instruments of children's activity measuring the ability of multiple intelligences that are owned by the child.

#### *Validity of content*

The purpose of the readability of instrument model assessment is the sentence used in the instrument/text can be legible and easily understood by experts, users, and peers. The average total score for readability assessment instrument model evaluation by five people amounted to 3.17. The value if it converted with quantitative data scoring criteria to qualitative data with a scale of 4 is in a suitable category. Coefficient Validity Index(CVI) on Expert assessment Results indicating CVI index value is 0.775 where CVI Average index for six raters is 0.67 so that the validity of the contents of the instrument is said to be very good (Shrotryia, 2019). Evaluation criteria for Kappa are that values above 0.74, between 0.6 and 0.74, and the ones between 0.4 and 0.59 considered to be excellent, good, and fair, respectively (Polit & Beck, 2006; Zamanzadeh et al., 2014).

#### *Conceptual Model of MI-based Creative Curriculum*

##### *Children's Activity Observation Instrument*

Children's activity observation instruments are used to collect information on how to apply MI-based creative curriculum in Yogyakarta kindergartens. Trial held on May and June 2019. The trial was conducted to see the validity of the construct on the instrument model of creative Curriculum assessment based on MI. The trial of this instrument aims to obtain information about the validity of the instrument that has made. The constructs tested using a quantitative approach with the confirmatory factor analysis (CFA) method using the help of the Lisrel 8.50 program for Windows. The Test result shows the construct has fixed in 9 main variables that are variables on Multiple Intelligences intelligence among others: (1) linguistics; (2) mathematics; (3) visual-spatial; (4) kinesthetic; (5) music; (6) interpersonal; (7) intrapersonal; (8) naturalistic; and (9) existence/religious. Here is the initial construct than constructed through the theory and validation of the contents of the instrument model of the creative Curriculum assessment of Multiple Intelligences Conceptual Model of MI-based creative curriculum.

Picture 2. *Conceptual Model of Character education evaluation model*

#### *The Reliability of Cronbach Alpha*

Next is analyzing the grains using SPSS to see the reliability of the instruments developed. The Parameter used to know reliability is to look at the value Alpha Cronbach on each table outputs obtained, as long as the Cronbach index is more significant than 0.7 ( $\alpha > 0.7$ ), the instrument is reliable (Nunally, 1981). The results of the Cronbach coefficient of limited-scale trials showed a value of 0.931 ( $> 0.7$ ), meaning that the instrument that built was already qualified for high reliability.

Table 4. *Creative Output Curriculum Model Reliability*

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.931	.932	31

#### Reliability Inter-Rater

The observation instrument (ratings) is a scoring procedure based on the subjective judgment of certain aspects and attributes, conducted by a direct or indirect systematic observation (Azwar, 1992). To reduce the subjectivity of the scoring on the ratings is done by more than one person rating (Setiawan, 2019). The rating performed by several different raters and independent of each other against the same subject group. Although there is still a possibility of error but rather minimizing the error variant than with a re-rating procedure by a rater only. The Ratings performed by many people will emphasize on their understanding of Interrater consistency. Azwar (2011), gave his formula to estimate the reliability of the rating results made by as many as K raters against as many as n person subject. Results show. The average reliability of the rating from the two the rater was 0,81 (0.65) The average reliability index concluded is consistent. It can conclude that the average reliability estimate for one rater is 0.69, and the consistency of a rater is good.

#### Final Product Creative Curriculum-based Multiple Intelligences

Next step performs CFA analysis to see the magnitude of the Loading Factor in each component, and the instrument developed. Estimated results show that Creative Curriculum assessment models are Multiple Intelligences for the instrument of the children's observation sheet has a good reliability index, because of the *Cronbach* coefficient > 0.7 of 0.931. So with the overall model of creative Curriculum assessment of Multiple Intelligences based on 31 items, has a loading factor value > 0.3 as much as 31 grains.

Table 5. Valid Item Results

No.	Category	Grain
1	Valid	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11,12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31
2	Invalid	-

Preliminary analysis results showed that out of 31 grains fully meet the requirements for the loading factor. Moreover, after done modifications obtained model fit with type Parsimony fit. The following are the results of the CFA analysis and recapitulation factor loading on an instrument based on creative curriculum models Multiple Intelligences. CFA Analysis Results Chi-Square value 1203,84 with degree of freedom 425 and RMSEA 0.067 (<0.08). To view model matches with empirical data or a fit model described in some model match criteria. Model Is said to be suitable has a significance (p) level, the CFI values 0.77 (>0.09) and RMSEA < 0.08. Dimensions (ý) and payload factor indicators (£) are in the model. Level of significance 5% with a critical price t = 1.98. In the path of diagram structural equation above can be explained the covariant relationship between variables with factors and indicators. After the test, the confirmatory factor (CFA) was acquired by Chi Square is (1203,84) with df =425, with GFI = 0.70, AGFI = 0,66 and RMSEA = 0.067 < 0,080. Then it can be concluded the model made is fit with empirical data. The result diagram path of the CFA analysis is based on the structural model. The analysis of the structural model suggests that all components or latent variables have high loading factors (< 0.3). Here is the diagram path of the model that has done the CFA analysis.

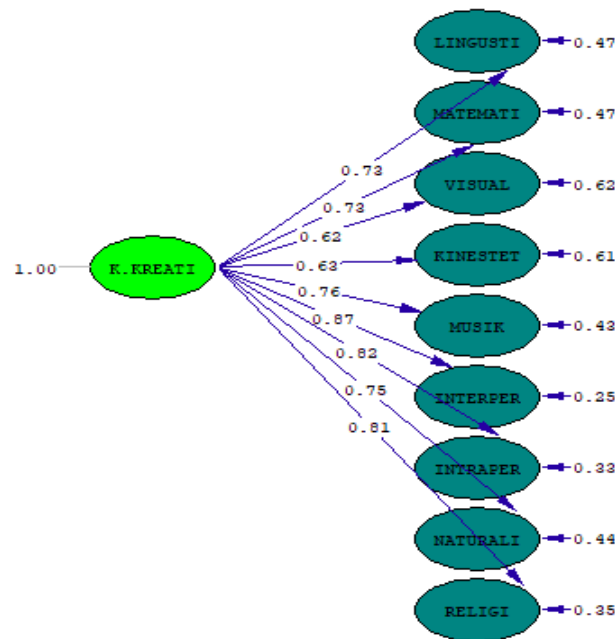


Figure 3. Structural Model

While the diagram between components on five components shows a high lambda value of  $> 0.3$ , the following is the recapitulation of structural Loading factor.

Table 6. The Result Of Structural Loading Factor Recapitulation

No.	Components	Loading factor	Decision
1	Linguistic	0.73	Good
2	Math	0.73	Good
3	Visual Spatial	0.62	Good
4	Kinesthetic	0.63	Good
5	Music	0.76	Excellent
6	Interpersonal	0.87	Excellent
7	Intrapersonal	0.82	Excellent
8	Naturalistic	0.75	Excellent
9	Religious	0.81	Excellent

Table 6. shows that Factor loading in the path of the diagram shows the covariant between the latent variable and the variable observed (termination) has a coefficient above 0.5 means that the entire structural model in the analysis through CFA is fit with empirical data.

## Discussion

### Description of Curriculum Implementation

The implementation of the MI-based creative curriculum contains several variables to be discussed, namely: 1) the observation of multiple intelligence in early childhood; 2) The results of teacher readiness in teaching; 3) The teacher's performance in teaching, and 4) The benefit of refined products. The discussion is done with two methods that explain in a thorough description through the triangulation approach and explain implicitly through the description statistic through the typical method and percentage.

Observation of compound intelligence done by observing two assessors who are class teachers in kindergarten. The instrument used is a valid and reliable instrument consisting of 31 items of termination. The Termination item divided into nine aspects of multiple intelligence with each consisting of at least three indicators observed. Here is the observation result of multiple intelligence early childhoods.

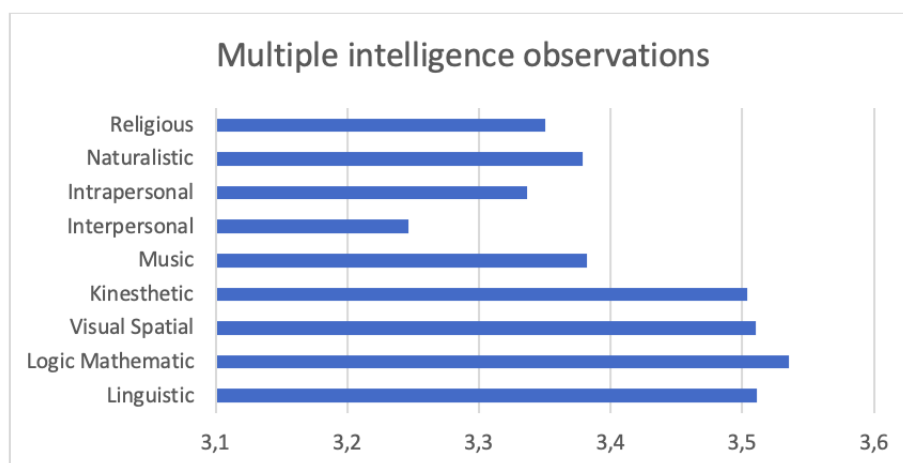


Figure 4. The Observation Result of Multiple Early Childhood Intelligence

Figure 4. shows that the highest aspect controlled by children is the intelligence of mathematical logic. In contrast, the lowest aspect is interpersonal intelligence, where the child's intelligence is the ability to socialize, communicate, and collaborate with other friends. This case is relevant to Bay and Lim (2006); research results and findings also explain the negative correlation between logical-mathematical intelligence and interpersonal intelligence. Likewise, Waree (2013) developed a test-based dual intelligence test that consisted of eight aspects of intelligence and succeeded in optimizing early childhood intelligence.

#### Observation of Teacher Readiness in Learning

Observations made to 20 teachers in learning both inside and outside the classroom. There are seven components and eleven items of the instrument used. Here are the results of observations on the aspect of teacher readiness in the application of creative curriculum based on multiple intelligence.

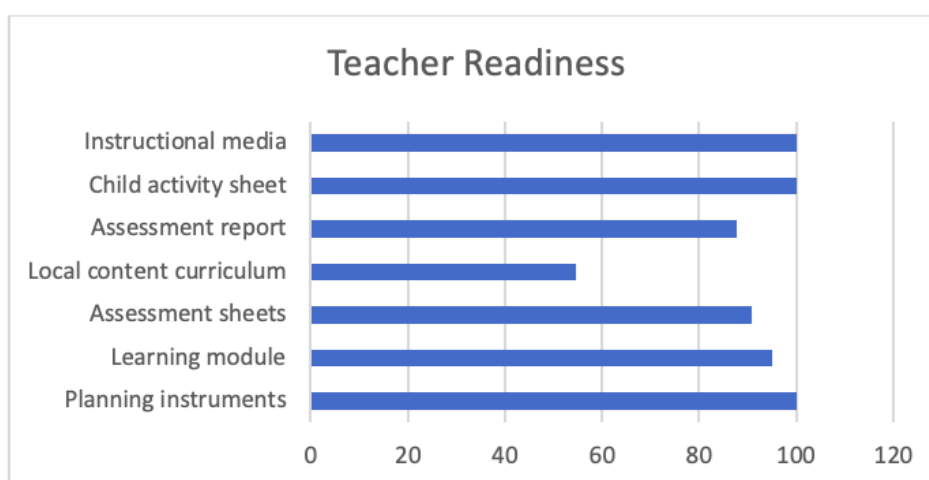


Figure 5. Teacher readiness in implementing creative curriculum models

The fact shows that the seven observed aspects have a "good" performance categorization. Aspects of instructional media, child activity sheet, and planning instruments have high scores or "excellent" category entry. While the implementation aspect of the local curriculum has the lowest score; which means that the implementation of local curriculum still has not been implemented optimally, including local wisdom, local culture, and local science. It can strengthen from research Mashburn and Hendry (2004) about the readiness of schools in kindergarten, including learning tools to support curriculum implementation. The results show that preschool teacher rankings have a lower relationship with the skills and abilities observed by children than the kindergarten teacher rankings. It is the opposite of the results of the study (Duncan et al., 2015). Her research on the Creative Curriculum produces a far more positive classroom process than a locally developed curriculum, and this curriculum fails to improve the academic achievement or behavior of preschoolers compared to the local curriculum.

#### Teacher-taught Performance



The teacher's performance aspects of teaching taken through the teacher's observation inside and outside the classroom. The observation is done by the head of the kindergarten. Observations were carried out from the beginning of learning until the closure divided into three main aspects. Here are the results of teacher performance observations in teaching.

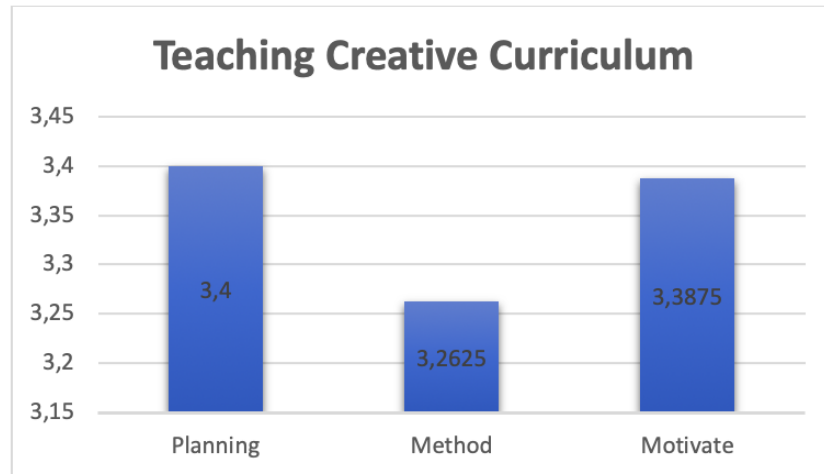


Figure 6. Teaching creative curriculum

Data shows the implementation aspects of the methods including; a) administering, b) implementing, c) demonstrating, and d) using the proper teaching materials; included in the "low" category with a score of 3.26 so that teachers should still adjust the use of this Multiple Intelligence-based creative curriculum assessment instrument. Similar to the results of the Alhassan et al. (2012) study of the Teachers' implementation, the LMS-based Physics Activity program has the potential to increase LMS and reduce the secondary time of minority preschool children. So it was concluded that the performance and activity of the teacher in stimulating children's creativity became a significant factor in the success of the implementation of this creative curriculum.

#### *The Benefits of the Product Developed*

Right products provide more value and huge benefit, especially for users. Data synchronization is performed to see the relationship between usage, teacher performance, and child intelligence observation results validated with product benefit data. In measuring the benefits of products used five leading indicators. Below are the measurement results of five product utilization indicators.

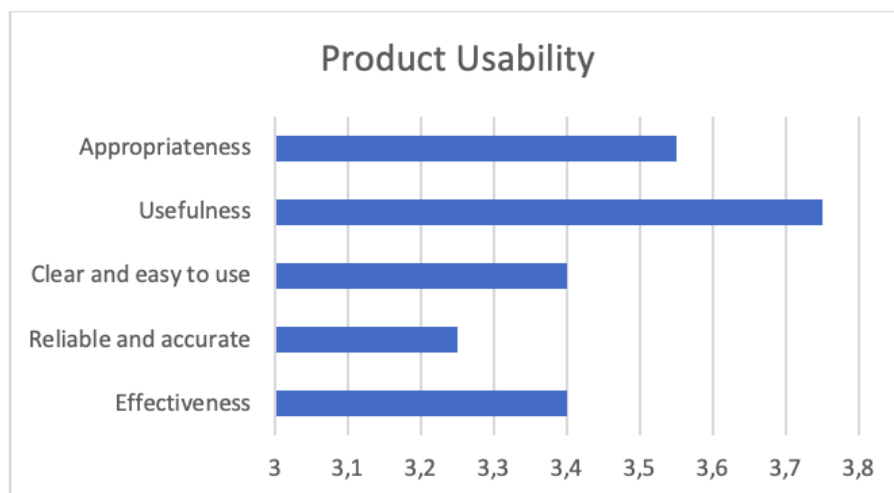


Figure 7. Product usability

Figure 7 shows that the usability of the product is highly rated by users, while the reliability and accuracy are assessed low. This is considered to be less in sync with the test results data through the empirical test of the Confirmatory Factor Analysis, so it can be concluded that the perception of accuracy demonstrated by users due to novelty or new factors using an assessment model that is truly New Zealand. The relevant results of research of Chant et al. (2009) about benefit product curriculum construction with the creative problem solving model. It encourages participants to be

involved and experience an increase in optimism, trust, respect, attention, concern, and intentionality, which are the five value assumptions based on the education invitation. Whereas research from Schack (1993) demonstrated the usefulness of a creative problem-solving curriculum model that provides teacher assessments for the average student who has not changed, even though there is a significant increase in problem-solving abilities.

#### *Final product Review Results*

Models that have developed have fulfilled the rules of the fit model against empirical data. Initial analysis criteria showed that out of 31 Grains had fulfilled the requirements of loading factors above 0.3 so It said that all of the MI-based creative curriculum assessment instruments are already fit. While to know the matching model is carried out model match test by the CFA analyze obtained model fit with Parsimony right type. The Description of the model match fulfillment criteria is; 1) the value of THE PNFI (parsimony normed Fit index) of 0.62 (range 0.6 to 0.9); 2) value of the PGFI (parsimony goodness of Fit Index) of 0.6 (range 0.6 to 0.9); 3) Models of AIC (992.96) > Saturated AIC (1432); 4) Model CAIC (1738.14) < saturated CAIC (3123.97). Same as Don and Piaw research (2014) and Maryanto (2005), that has tested for an indicator of multiple intelligence for teachers and managers of the Education Institute. Model Match fulfillment indicates that the model matches the empirical data, which means the product developed is very representative with field data. The results of a similar study by Pada (2016) which measures creative abilities; the results show that the creative thinking skills assessment instrument that supports the aspect of biology teacher candidates has a good separation index and all the items fit PCM-1PL.

#### **Conclusion**

Assessment of MI-based curriculum that developed meets the criteria of valid, reliable, and meets the suitability of empirical data models. The first criteria are the MI-based creative curriculum assessment model developed to meet valid, reliable, and conformity criteria of an empirical data model. Second, the implementation of the assessment model had fulfilled the requirements worthy of using three criteria aspect. Aspect 1, the results of the assessment using creative instruments based on multiple intelligences on children get "very good" results: aspect 2, the readiness of the teacher in learning included in the "good" category. Aspect 3, teacher performance appraisal shows the "very good" category, and aspect 4, the benefits of the products developed are in the "very good" category. It was concluded that the developed product had tested empirically and practically so that it was useful in learning in early childhood. The limitation of this study is that the research subjects used are still in one particular area and the subject of the teacher is homogeneous so that the data obtained does not represent the actual state of multiple intelligence learning. It recommended that the application of MI-based creative curriculum learning be socialized and assessment guides made so that the product developed can be used for all early childhood institutions.

Recommendations from this research for educators include being able to provide practical examples in the implementation of product use. At the same time, education practitioners can add theoretical references to the application of MI to the development of early childhood creativity.

#### **References**

- Alhassan, S., Nwaokemele, O., Ghazarian, M., Roberts, J., Mendoza, A., & Shitole, S. (2012). Effects of locomotor skill program on minority preschoolers' physical activity levels. *Pediatric Exercise Science, 24*(3), 435-449.
- Anderson, L.W. (2012). Assessing affective characteristic in the schools. Allyn and Bacon.
- Pada, A., Kartowagiran, B., & Subali, B. (2016). Separation index and fit items of creative thinking skills assessment. *REiD (Research and Evaluation in Education), 2*(1), 1-12. <https://doi.org/10.21831/reid.v2i1.8260>
- Bay G. K., & Lim K. M. (2006). Correlations of multiple intelligences and emotional intelligence: A Closer Analysis of Theoretical Assumptions.
- Cennamo, K., & Kalk, D. (2005). Real world instructional design learning. Wadsworth/Thompson.
- Cicchetti, D., & Toth, S. L. (1998). The development of depression in children and adolescents. *American psychologist, 53*(2), 221.
- Chant, R. H., Moes, R., & Ross, M. (2009). Curriculum construction and teacher empowerment: supporting invitational education with a creative problem-solving model. *Journal of Invitational Theory and Practice, 15*, 55-67.
- Craft, A. (2008). *Creativity and early years education: A lifewide foundation*. Continuum.
- Duncan, G. J., Jenkins, J. M., Auger, A., Burchinal, M., Domina, T., & Bitler, M. (2015). Boosting school readiness with preschool curricula. *Irvine Networks on Interventions in Development*.
- Dunst, C., Hamby, D., Wilson, L., Espe-Sherwindt, M., & Nelson, D. (2017). Practitioner-informed improvements to early childhood intervention performance checklists and practice guides. *REiD (Research and Evaluation in Education), 3*(1), 12-27. <https://doi.org/10.21831/reid.v3i1.14158>

- Ebel R.L. (1986). *Essential of educational measurement* (3rd ed.). Prentice Hall. Inc.
- Gardner, H. (2011). *Frames of mind the theory of multiple intelligences*. Basic Books.
- Gardner, H. (1999). Who owns intelligence? *The Atlantic Monthly*, 283(2), 67-76.
- Glaveanu, V. P. (2014). *Distributed creativity thinking outside the box of the creative individual*. Springer.
- Hambleton, R.K., & Swaminathan, H., & Rogers, H. J. (1991). *Fundamental of reflective measurement theory*. Sage Publication Inc.
- Istiyono, E., Dwandaru, W. S. B., Setiawan, R., & Megawati, I. (2020). Developing of computerized adaptive testing to measure physics higher order thinking skills of senior high school students and its feasibility of use. *European Journal of Educational Research*, 9(1), 91-101. <https://doi.org/10.12973/eu-jer.9.1.91>.
- Ministry of Education and Culture of Indonesia (2013). *Education and teacher professional training) module for early childhood education*. State University of Jakarta.
- Polit, D., & Beck, C. (2006). The content validity index: Are you sure you know what's being reported? Critique and recommen-dations. *Research in Nursing & Health*, 29(5), 489-497.
- Maryanto, A. (2005). Pengembangan instrumen analisis kompetensi tutor pendidikan anak usia dini (*Development of competency analysis instrument for early childhood education tutors*). *Jurnal Penelitian dan Evaluasi Pendidikan*, 7(2), 241-252.
- Mashburn, A. J., & Henry, G. T. (2004). Assessing school readiness: Validity and bias in preschool and kindergarten teachers' ratings. *Educational Measurement: Issues and Practice*, 23(4), 16-30.
- Naga, D. S. (1992). *Pengantar teori sekor dalam pengukuran penddikan* [Introduction to the score theory on measuring education]. State University of Jakarta.
- Nunally, J. C. (1981). *Psycholometric theory*. Tata McGraw-Hill Publishing Company Ltd.
- Piaw, C. Y. & Don, Z. M. (2014). Predictors of multiple intelligence abilities for Malaysian school leaders. *Procedia-Social and Behavioral Sciences*, 116(2014), 5164-5168.
- Saifuddin, A. (2011). *Reliability and validity*. Student Library.
- Schack, G. D. (1993). Effects of a creative problem-solving curriculum on students of varying ability levels. *Gifted Child Quarterly*, 37(1), 32-38.
- Setiawan, R. (2019). A comparison of score equating conducted using Haebara and stocking lord method for polytomous. *European Journal of Educational Research*, 8(4), 1071-1079. <https://doi.org/10.12973/eu-jer.8.4.1071>.
- Setiawan, R. (2017). The influence of income, experience, and academic qualification on the early childhood education teachers' creativity in Semarang, Indonesia. *International Journal of Instruction*, 10(4), 39-50. <https://doi.org/10.12973/iji.2017.1043a>.
- Shrotryia, V. K., & Dhanda, U. (2019). Content validity of assessment instrument for employee engagement. *SAGE Open*, 9(1), 2158244018821751.
- Sternberg, R. J. (1999). *Handbook of creativity*. Cambridge University Press.
- Sukma, I. P. (2016, April 7). *Aksi contek massal ujian nasional di SMA* [The mass-cheating national exam action in high schools]. Detik.com, <https://news.detik.com/berita/3182495/begini-penampakan-percakapan-nyontek-massal-un-sma-di-grup-line>
- Thomas R. H., Sally B., & Christine W. (2010). *Celebrating every learner: activities and strategies for creating multiple intelligences classroom*. Jossey BASS Publisher.
- Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. American Psychological Association. <https://doi.org/10.1037/10694-000>
- Waree, C. (2013). A Development of the Multiple Intelligences Measurement of Elementary Students. In *Proceedings of World Academy of Science, Engineering and Technology* (No. 79, p. 774). World Academy of Science, Engineering and Technology (WASET).
- Wright, S. (2010). *Understanding creativity in early childhood*. SAGE Publication. Ltd.
- Zamanzadeh, V., Rassouli, M., Abbaszadeh, A., Majd, H., Nikanfar, A., & Ghahramanian, A. (2014). Details of content validity and objectifying it in instrument development. *Nursing Practice Today*, 1(3), 163-171.

**Appendix 1.** Final Instruments Assessment Of Creative Curriculum For Multiple Intelligences-Based Learning Programs**A. Instrument grids developed**

No	Research Focus	Indicators	Data to be collected	Data Collection Techniques				
				Obs	Int	Doc		
1	Creative Curriculum Learning Assessment of multiple Intelligences.	1. <i>Student centered Learning Strategy Learning</i>	1. The method	√	√			
			2. Media	√	√			
			3. Evaluation of the activities of Learning			√		
		2. Learning Device Completeness	1. Curriculum		√	√		
			2. Methods and strategies		√			
			3. Kindergarten Teaching Materials Development					
			4. Class assessment and outside of class		√		√	
		3. Natural schools	1. Teachers		√			
			2. Learning strategy		√			
			3. Natural School Benefits			√		
		2.	Multiple Intelligences assessment on Paud	1. Naturalistic	1. Garbage Recycling activities	√		
					2. Aquaponic activities	√		√
2. Physical kinaesthetic	1. Routine <i>Outdoor</i> activities				√		√	
	2. Futsal Activities				√		√	
	3. Archery Activities				√		√	
3. Interpersonal	1. <i>Cooperative Learning</i> methods for each learning				√		√	
	2. AUD Entrepreneurship Methods				√		√	
	3. Assessment of child's social attitudes and behaviors				√	√	√	

**B. Instrument 1. Activity Observation Assessment Sheet****Instrument A1****Children's Activity Assessment sheet**

Hint: This instrument is used to assess children's learning activities inside or outside the classroom to see the effectiveness of Multiple Intelligences on the development of early childhood abilities.

*Charge Instructions:*

IsilaH Observation Sheet in accordance with the fact that happened to the learning in the class by giving a check list in the field that is on the right.

No.	Indicators	Sub indicators	Example	Valuation Scale			
				1	2	3	4
1.	Linguistic	Understanding Grammar	Revealing something with verbal language				
		Practice language	Greet a friend				
		Understand the meaning of words	Answering/Responding to a friend who spoke				
2.	Mathematical logic	Daily language use	Long Conversations				
		Understanding Shapes	Mention geometric shapes				
		Understand the number symbol	Mention the number symbol				
3.	Visual Spatial	Understanding Causal patterns	Can distinguish between real and fantasy				
		Understanding Constructive Games	Crafting an object of the largest size to the smallest				
		Understanding geometric shapes	Pairing geometric shapes				
4.	Kinesthetic	Able to draw/color an object	Drawing/coloring on certain media				
		Coordination of body	Make your body move right to the left or rotate				
		Body Skills	To rotate hands or feet				
5.	Music	Child mobility Flexibility	Doing bending movements				
		Child's motion speed	Run slow towards fast				
		Response to stimuli	Responds when exposed to sharp objects				
6.	Interpersonal	Capable of singing	Open				
		Able to hum	Humming				
		Distinguishing Sounds and sounds	Mentioning a sound of objects or animals				
7.	Intrapersonal	Being able to blend in with friends	Communicating with his friend				
		Being able to negotiate	Bargain with friends				
		Able to fight fights	Separating a fighting buddy				
8.	Naturalist	Being able to act as someone else	Perform role playing games				
		Self-motivation	Say the word motivation; MIS: I can certainly!				
		Discipline in everyday life	Departing to KINDERGARTEN is not too late				
9.	Existence	Self-esteem (self-cleaning)	Wash your mouth, hands and feet or brush your teeth after eating				
		Appreciating nature (plants and animals)	Pronounce the words of admiration (Masyallah, beautiful, funny, etc.)				
		Natural classification	Mentioning animal types; E.g: crop eaters, meats. Any.				
9.	Existence	Able to adapt to the environment outside the classroom	Doing activities outside of class with enthusiasm and excitement				
		Steadquence of God	Pray				
		Can master/Calm yourself	Not quick temper/confirmation First				
		Adaptation to community & Environment	Understanding the right and wrong				

Description: 1: Very good/very complete/very suitable, 2: Good/complete/appropriate, 3: Moderate, 4: Less good/less complete/less appropriate

**C. Instrument 2. Assessment Of Children's ability in children's Classroom (5-6 years)**

<i>No.</i>	<i>Aspects</i>	<i>Indicators</i>	<i>Scale</i>			
			<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
1	Psychomotor	Move				
		Noisy				
		Love Games				
		Do your own work				
		Attaching buttons and shoelaces				
		Love holding pencils and crayons				
		Kicking Ball				
		Walk straight				
		Jump				
		Riding a bicycle				
2	Intellectual property	Comment Something				
		Recognizing sentences/numbers				
		Pretending to read/write				
		Can distinguish truth from imagination				
3	Emotional	Interested in family				
		Sharing family stories at school				
		Reject small Rules				
		Can distinguish true wrong				
		Start acting independently				
		Be proud of something				
		Persuading Rayu to parents				
		Think of the smartest teacher				
Verbal aggression when angry						

Description: 1: Very good/very complete/very suitable, 2: Good/complete/appropriate, 3: Moderate, 4: Less good/less complete/less appropriate

**D. Instrument 3. Completeness of the Learning activities module**

<i>No.</i>	<i>Indicators</i>	<i>Have</i>	<i>None</i>
1.	Weekly activity plan		
2.	Daily activity plan		
3.	Teaching Materials Module		
4.	Children's performance assessment sheet		
5.	Multiple Intelligences Observation Sheet		
6.	Development of local content curriculum		
7.	Daily reports		
8.	Weekly reports		
9.	Semester reports		
10.	Children's activity sheet		
11.	Learning Media (educational game tool)		

**E. Instrument 4. Teaching Materials Module Assessment**

<i>No.</i>	<i>Components</i>	<i>Indicators</i>	<i>Scale</i>			
1	Ease of Use	Complete and good usage instructions	1	2	3	4
		Languages spoken in accordance with the default language				
2	Materials and Content	Themes easily understood by children				
		Objectives of the activities are well described and complete				
		Competency Map explained properly				
		Material specifications and activities are clearly displayed				
3	Assessment and evaluation	Assessment sheet is made according to competency				
		Activity evaluation is clearly outlined				

Description: 1: Very good/very complete/very suitable, 2: Good/complete/appropriate, 3: Moderate, 4: Less good/less complete/less appropriate



**Appendix 2.** Results of expert assessment, *user*, and peer friend to the readability of instrument Model assessment

<i>No.</i>	<i>Indicators</i>	<i>Aspects</i>	<i>P1</i>	<i>P2</i>	<i>P3</i>	<i>P4</i>	<i>P5</i>	<i>P6</i>	<i>V</i>
1	Linguistic	Understanding Grammar	3	4	2	4	4	4	0.83333333
2	Linguistic	Practicing sound	2	4	2	4	4	4	0.77777778
3	Linguistic	Understand the meaning of words	3	4	2	3	4	4	0.77777778
4	Linguistic	Language use	3	4	3	2	4	4	0.77777778
5	Mathematical logic	Understand the concept of quantity	2	4	2	2	4	4	0.66666667
6	Mathematical logic	Understanding the Emblem	3	4	2	2	4	3	0.66666667
7	Mathematical logic	Understand causal patterns	2	3	2	4	4	4	0.72222222
8	Visual Spatial	The constructive understanding	3	4	2	4	4	4	0.83333333
9	Visual Spatial	Shape geometry skills	3	4	2	4	4	4	0.83333333
10	Visual Spatial	Drawing/Coloring	3	4	2	3	4	4	0.77777778
11	Kinesthetic	Coordination of body	3	4	2	3	4	4	0.77777778
12	Kinesthetic	Body Skills	3	3	2	3	4	4	0.72222222
13	Kinesthetic	Motion flexibility	2	4	2	3	4	4	0.72222222
14	Kinesthetic	Speed of motion	3	4	2	4	4	4	0.83333333
15	Kinesthetic	Stimulus response	3	3	2	2	4	4	0.66666667
16	Music	Open	3	4	3	4	4	4	0.88888889
17	Music	Humming	2	3	3	4	4	4	0.77777778
18	Music	Distinguishing Sounds and sounds	3	4	2	4	4	4	0.83333333
19	Interpersonal	Blending with friends	3	4	2	4	4	4	0.83333333
20	Interpersonal	Negotiate	2	4	3	4	4	4	0.83333333
21	Interpersonal	The fight	2	3	3	4	4	4	0.77777778
22	Interpersonal	Act as someone else	2	4	2	4	4	4	0.77777778
23	Intrapersonal	Self-motivation	2	3	2	4	4	4	0.72222222
24	Intrapersonal	Discipline in everyday life	3	4	3	4	4	4	0.88888889
25	Intrapersonal	Rewarding yourself	3	4	2	4	4	4	0.83333333
26	Naturalist	Appreciating nature	2	4	2	4	4	4	0.77777778
27	Naturalist	Understanding classification	2	4	2	4	4	4	0.77777778
28	Naturalist	Adapt	2	4	2	4	4	4	0.77777778
29	Religion	Devotion to God	3	4	2	4	4	2	0.72222222
30	Religion	Self-control	2	4	3	4	4	3	0.77777778
31	Religion	Adaptation to the environment	2	4	3	3	4	4	0.77777778
<b>Total CVI (3.32)</b>			<b>2.54</b>	<b>3.8</b>	<b>2.2</b>	<b>3.5</b>	<b>3.9</b>	<b>3.8</b>	<b>0.779</b>