

DEVELOPMENT OF ASSESSMENT INSTRUMENTS TO MEASURE EARLY CHILDHOOD CONCENTRATION

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Abstract

Purpose: The aim of this study was to develop an appropriate instrument to assess early childhood concentration in kindergarten. This research is an adjustment development research (R&D) from Borg and Gall. The research phase includes curriculum analysis, field studies, expert consultation, and the preparation of prototype models. The development stage includes expert and practitioner validation, readability testing, teacher training, limited trials, expanded trials and evaluation. The test subjects were limited to 9 kindergartens with 9 teachers and 90 children, the test subjects were expanded to 20 kindergartens with 20 teachers and 400 children. Analysis at the development stage was carried out using qualitative and quantitative approaches. The analysis at the final stage of development used repeated measures analysis to determine the development of early childhood concentration in kindergarten during/after the instrument trial. The results showed: 1) Development of instruments to measure the concentration of early childhood in kindergarten for theoretical tests using open interview methods and Delphi and FGD techniques, empirical tests using quasi-experimental designs Single-group interrupted time-series designs have been deemed appropriate and 2) Instruments to measure the concentration of early childhood in kindergarten is an observation sheet in the form of a check list that is considered appropriate. So that the instrument is very feasible to use to measure the concentration of early childhood.

Keywords: Instruments, Assessment, Concentration, Early Childhood

INTRODUCTION

The process of human development so that they become real human beings cannot be carried out partially and intermittently, but must continue throughout life (lifelong education) from birth to grave. Parents are obliged to carry out the educational process for their children, especially at an early age, from birth to about 6 years of age. Especially character education based on multiculturalism and local wisdom Harun et al. (2020).

The family environment is the environment that is first recognized and inhabited by children, so that the main potential guardians and developers are mothers and fathers. So important is the family for children, children will depend very much on their lives on the mother and father in the family. In fact, according to Abdul & Suwaid (1999), it is the family that gives style in stepping and treading the life of this world. As a place that is inhabited and recognized for the first time by children, all forms and anything that comes and is instilled in them is family life. Everything that is heard, seen, felt, and imitated by children is what happens in the family which will greatly influence their development in their next life.

The souls of young children who are still pure and clean will very easily accept the various seeds sown in them. In this context, Al Ghazali (in Abdul & Suwaid, 1999) states ... "a child is a trust for his parents, his heart is clean, pure and innocent, empty of all carvings and images, children will always receive what they carve and will tend to anything that affects it." In that clean, pure, and innocent condition, if good deeds are habituated, goodness will form in him. Likewise, if the child is engraved with actions that are not good and contrary to the life of society, he will also be engraved as a child who tends to be bad (Sihab, 2000).

The brain as a place for thinking has stored a lot of information obtained through hearing, sight, touch and other senses. As said by Garrett (2003) that thinking for a person is related to everything that is collected in the brain that can guide us to act. Habituation becomes something that is very valuable for children, because it will shape various past experiences and events for the child's life in the future. Children in playing will involve all aspects of their physical and psychological development, to understand everything in their environment (Suryati, 2006).

Hearing, seeing, and thinking are the basic capital for humans. These three main assets function to develop self-potential (Sihab, 2000), so that children are able to remember past events and encourage children to try their abilities (Suryati, 2006). Through hearing and sight, it becomes information material stored in the brain's memory to be used as material for thinking and act (Lindsay, 1977).

Early childhood is the golden age which has the potential to train and develop various potentials of multi-intelligence that children have. In relation to the basic potential of early childhood, the role of parents is so important as the first and foremost stimulator in providing learning experiences to their children through their hearing or sight. Thus the family has a very vital role in child development. Apart from the family, there are institutions that can help develop the potential of early childhood, but are very limited in number and quality. Such as kindergartens, play groups, day care parks, and play groups, family day care (Ebbeck, 1991)

The formation and development of strong human resources in the future cannot ignore early childhood education. Because underestimating early childhood education, according to Ebbeck (1998) is a big mistake, because almost all countries in the world at this time need problem solving, reliable thinkers, and people who can work well together. The urgency of facilitating early childhood education is play that educates, educates, is fun so that they become bright children (Freeman, 1996) in the future, by giving freedom of choice.

In order to train concentration in early childhood, dimensions such as sensitivity, intensity, effectiveness, frequency, and duration of time are needed (Garrett, 2003). To train concentration, (Lindsay & Norman, 1977) or focus attention, suggest three (3) ways to monitor it: 1) visible events go unnoticed; 2) separating aspects that are irrelevant to concentration; and 3) reduce disturbing aspects related to concentration. Thus, training the concentration of hearing, seeing, thinking and acting for young children can be done in the following steps: 1) growing interest; 2) paying attention to the maturity and readiness of the child; 3) can please children; 4) pay attention to the dimensions of sensitivity, intensity, effectiveness, frequency,

and duration of time; and 5) reducing aspects that interfere with the concentration of early childhood.

In relation to concentration exercises, based on the results of preliminary observations, it is shown that teachers generally have difficulty practicing concentration. Teachers find it difficult to attract children's attention. Several ways have been done by the teacher to reduce things that interfere with concentration in hearing, seeing, thinking and doing. For example, saying words clearly and firmly, guiding children to say words correctly, showing pictures and colors that interest children. However, the results of these efforts are still not optimal.

Playing situations that train children's concentration should not be required with various performance performances for the achievement of certain achievements. Especially if the achievement is measured based on the ranking of success and failure. Therefore, playing situations must evoke a sense of enjoyment. Thus, assessing a child's behavior while in a playing situation is not the level of achievement, but the extent to which the child lives and enjoys the game to fulfill his satisfaction, so that his language, cognitive and motor potential can grow and develop optimally. For this reason, this research focuses on developing assessment instruments to measure the concentration and development of early childhood abilities.

METHODOLOGY

Model Development Design

This research was carried out using a longitudinal quantitative positivistic approach (Muhajir, 2002), with trend studies designs (Babbie, 1973) and using a development research model (R&D) adopted from Borg and Gall (1983). The work procedure for this development research is presented in Table 1.

Table 1: Working procedure of research and development

Stages	Activities	Outputs
Preliminary stage	Preliminary research: a. Theoretical analysis b. Field requirement analysis c. Composing instrument d. Instrument validation and correction e. Data collection and analysis	Sturdy theoretical framework Valid instruments Prototype of assessment instrument
Research development	a. Validity test of prototype of assessment instrument b. Small scale empirical test of assessment instrumentt c. Large scale empirical test of assessment instrumentt d. Seminar results of the research	Draft of instrument assessment
Dissemination		Valid assessment instrument

The stages of preparing the early childhood concentration assessment instrument include: preparing the instrument, expert and user validation, training kindergarten teachers who will use the instrument. The assessment instruments include general manuals, technical

instructions, scoring rubric guidelines, and instructions for describing the results of the assessment. Next, a legibility test of the assessment instrument was carried out to assess aspects of sentence structure and language use. This readability test was conducted on 20 teachers and 5 lecturers.

Model Testing

The implementation of detailed trials for the application of the model, both in the development phase and the presentation phase is carried out with the following steps: 1) individual tests and expert reviews, 2) limited group tests, 3) model validation tests. These steps are procedures for evaluation activities to examine how far the effectiveness of the model that has been developed, both for determining the playing model, determining dimensions and objects of concentration. The testing of the assessment instruments was carried out in class by kindergarten teachers who had been trained and monitored by researchers who were assisted by 5 lecturers. The trial implementation of this model was carried out in two stages, namely limited trials and expanded trials. In carrying out this trial, the approach used was a quasi-experimental design: single-group interrupted time-series Design, (Krathwohl, 1998). The evaluation model used adapts the formative evaluation model from Tessemer (1993).

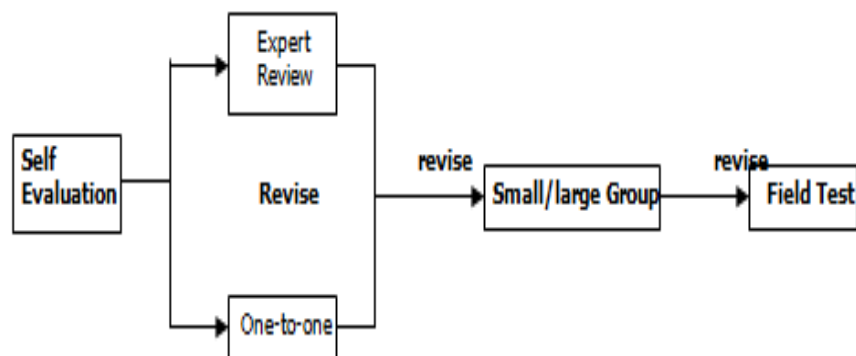


Figure 1: Formative evaluation model

1. Time and Place of Research

This research was conducted in Kindergarten in the Special Region of Jogjakarta by taking cluster samples: Jogjakarta City, Bantul Regency, and Sleman Regency. The time of the research was conducted for one year

2. Population and Sample

The population of kindergarten teachers as the target subject of the needs assessment in the preliminary research and the targets for small group trials and empirical tests were Kindergarten students in Jogjakarta City, Bantul Regency and Sleman Regency. The population of Kindergarten teachers in Jogjakarta City is 901 people, Bantul Regency is 1495 people and Seleman Regency is 2004 people. The kindergarten population consists of

Jogjakarta City with 211 Kindergartens (692 study groups), Bantul Regency 508 Kindergartens (1002 study groups), and Sleman Regency 496 Kindergartens (1171 study groups). The average per study group is 20 kindergarten students.

3. Data types and Sources

The primary data needed for the needs analysis step to design a prototype early childhood concentration assessment instrument comes from the following activities: First, identification of the types of play needed by early childhood especially kindergarten children. The second is the reflection or reflection of children's playing experiences using a designed model as outlined in the Daily Activity Unit (SKH) in learning with an angle or area approach. The source of the data for the first activity is the kindergarten teacher; while for activities the two data sources are teachers and kindergarten students who carry out learning using the developed assessment model

4. Data Collection Technique

The data collection techniques used were tests, questionnaires, and documentation. The instrument developed is a test to measure concentration based on the dimensions of the requirements of the measuring instrument, including the content and construction validity of the measuring instrument. The validity and reliability of the questionnaire for Kindergarten teachers was carried out through factor analysis of the questionnaire construct. For the implementation of the review, an analysis of agreement between reviewers was carried out using the Kappa coefficient. The results of scoring with rubrics and graded scales that have multi-dimensional sources of error are analyzed using the generalizability theory approach (Brennan, 2006).

5. Data Analysis Technique

The data analysis technique used used a statistical approach to empirical test data from the assessment model using a single-group interrupted time-series design approach (Mauchly's test of Sphericity, Multivariate, Test of within-subjects effect, Post Hoc) (Wiesrma, 1986).

RESULTS AND DISCUSSION

The assessment instruments developed are sound and animate sound playing models (MBBs), inanimate object sound playing models (MBBm), and artifact social product sound playing models (MBBSa). This sound and sound playing model is a model that can be used to train concentration in listening, seeing, thinking and acting in early childhood (TK), so that with this model teachers can carry out learning in kindergarten in a fun way for children. Learning in kindergarten using the MBBs, MBBm, and MBBSa models can train concentration in listening, seeing, thinking and doing. The results of the calculation of the assumption test are summarized in Table 5. It can be seen in Table 66 that the statistical value for Mauchly's test is 0.467 and the significance of the calculated p is 0.076. If the calculated significance value is compared with the significance of $\alpha = 0.05$, then $p > \alpha$. Thus the assumption of the hypothesis H_0 is

accepted. Thus it can be concluded that the sphericity assumption is met, so the repeated measures test can be continued.

Table 1: Summary of mauchly's test of sphericity calculation results for concentration

Mauchly's Test of Sphericity^b

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon ^a		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Pertemuan	.467	90.156	9	.076	.812	.728	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

b.

Design: Intercept+Sekolah

Within Subjects Design: Pertemuan

The requirements for repeated measures analysis are met so that further analysis can be carried out. The results of the calculation of the multivariate test repeated measures analysis are summarized in Table 2. The treatment (implementation of the playing model) for each meeting showed a significant effect. At least this is shown by the F value of 10.184 and the calculated significance value (p) of each encounter is smaller than the chosen significance value $\alpha = 0.05$. Thus, it can be concluded that the application of the play model in learning has a significant effect on increasing the concentration of early childhood.

Table 2: Summary of multivariate test calculation results in repeated measures analysis for concentration

Multivariate Tests^d

Effect		Value	F	Hypothesis df	Error df	Sig.
Pertemuan	Pillai's Trace	.195	10.184 ^b	4.000	168.000	.000
	Wilks' Lambda	.805	10.184 ^b	4.000	168.000	.000
	Hotelling's Trace	.242	10.184 ^b	4.000	168.000	.000
	Roy's Largest Root	.242	10.184 ^b	4.000	168.000	.000
Pertemuan * Sekolah	Pillai's Trace	.603	3.791	32.000	684.000	.000
	Wilks' Lambda	.497	4.051	32.000	621.149	.000
	Hotelling's Trace	.822	4.279	32.000	666.000	.000
	Roy's Largest Root	.518	11.073 ^c	8.000	171.000	.000

a. Computed using alpha = .05

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

d.

Design: Intercept+Sekolah

Within Subjects Design: Pertemuan

Looking at Table 2, it appears that the treatment (implementation of the playing model) for each meeting shows a significant effect. This is shown by the significance value of the calculation results (p) in the meeting line, namely $p = 0.0001$ which is smaller than the significance value $\alpha = 0.05$ which was selected. Thus, the same conclusion as the multivariate

test is obtained, namely the application of the play model in learning has a significant effect on increasing the concentration of early childhood. The multivariate test results were strengthened from the results of tests of within-subjects effects as presented in Table 3.

**Table 3: Summary of the results of the calculation of tests of within-subjects effects
In repeated measures analysis for concentration**

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Pertemuan	Sphericity Assumed	1.307	4	.327	29.578	.000
	Greenhouse-Geisser	1.307	1.248	1.047	29.578	.000
	Huynh-Feldt	1.307	1.312	.996	29.578	.000
	Lower-bound	1.307	1.000	1.307	29.578	.000
Pertemuan * Sekolah	Sphericity Assumed	.788	32	.025	2.230	.000
	Greenhouse-Geisser	.788	9.984	.079	2.230	.017
	Huynh-Feldt	.788	10.493	.075	2.230	.015
	Lower-bound	.788	8.000	.099	2.230	.027
Error(Pertemuan)	Sphericity Assumed	7.554	684	.011		
	Greenhouse-Geisser	7.554	213.410	.035		
	Huynh-Feldt	7.554	224.279	.034		
	Lower-bound	7.554	171.000	.044		

a. Computed using alpha = .05

Furthermore, a test is carried out to determine the appropriate type of influence related to the application of the playing model. For this purpose, tests of within-subjects contrast are used, the results of which are summarized in Table 4. It can be seen from Table 4 that, in the meeting line, the appropriate effect is linear. This is shown by the significance value of the calculated p of 0.00001 which is smaller than the significance of $\alpha = 0.05$ for linear. Thus, it can be said that an increase in the number of meetings on the application of the play model causes an increase in the concentration of early childhood.

**Table 4: Summary of calculation results of tests of within-subjects contrast
on repeated measures analysis for concentration**

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	Pertemuan	Type III Sum of Squares	df	Mean Square	F	Sig.
Pertemuan	Linear	1.213	1	1.213	34.363	.000
	Quadratic	.010	1	.010	4.132	.044
	Cubic	.044	1	.044	20.389	.000
	Order 4	.039	1	.039	9.357	.003
Pertemuan * Sekolah	Linear	.525	8	.066	1.860	.069
	Quadratic	.196	8	.024	9.716	.000
	Cubic	.032	8	.004	1.853	.071
	Order 4	.035	8	.004	1.039	.408
Error(Pertemuan)	Linear	6.036	171	.035		
	Quadratic	.431	171	.003		
	Cubic	.368	171	.002		
	Order 4	.719	171	.004		

a. Computed using alpha = .05

The next step is to see which meeting pairs give different averages. For this purpose, note the results of the post hoc test (in this case using the Bonferroni method), a summary of the calculation results is presented in Table 5.

Table 5: Summary of post hoc test calculation results at analysis of repeated measures convergence cases for concentration

Multiple Comparisons

Dependent Variable: Kosentrasi
Bonferroni

(I) Pertemuan	(J) Pertemuan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pertemuan 1	Pertemuan 2	-.00782	.01840	1.000	-.0596	.0440
	Pertemuan 3	-.06278*	.01840	.007	-.1146	-.0110
	Pertemuan 4	-.07884*	.01840	.000	-.1306	-.0271
	Pertemuan 5	-.09273*	.01840	.000	-.1445	-.0409
Pertemuan 2	Pertemuan 1	.00782	.01840	1.000	-.0440	.0596
	Pertemuan 3	-.05495*	.01840	.029	-.1067	-.0032
	Pertemuan 4	-.07102*	.01840	.001	-.1228	-.0192
	Pertemuan 5	-.08491*	.01840	.000	-.1367	-.0331
Pertemuan 3	Pertemuan 1	.06278*	.01840	.007	.0110	.1146
	Pertemuan 2	.05495*	.01840	.029	.0032	.1067
	Pertemuan 4	-.01606	.01840	1.000	-.0679	.0357
	Pertemuan 5	-.02995	.01840	1.000	-.0817	.0218
Pertemuan 4	Pertemuan 1	.07884*	.01840	.000	.0271	.1306
	Pertemuan 2	.07102*	.01840	.001	.0192	.1228
	Pertemuan 3	.01606	.01840	1.000	-.0357	.0679
	Pertemuan 5	-.01389	.01840	1.000	-.0657	.0379
Pertemuan 5	Pertemuan 1	.09273*	.01840	.000	.0409	.1445
	Pertemuan 2	.08491*	.01840	.000	.0331	.1367
	Pertemuan 3	.02995	.01840	1.000	-.0218	.0817
	Pertemuan 4	.01389	.01840	1.000	-.0379	.0657

*. The mean difference is significant at the .05 level.

Shown in Table 5, the significance value of the calculated p for all pairs considered is the same, namely equal to 0.00001. If the significance value of the calculation results is compared with the significance of $\alpha = 0.05$, then $\alpha > p$. It can be concluded that each pair of meetings that is considered gives a significant difference in student abilities. This means that there is a significant change as a result of the functioning of the developed concentration measurement instrument.

After seeing the differences in students' abilities for each meeting, the next step is to see whether the differences in Kindergarten provide differences in the concentration and ability development of early childhood. The significance value of the calculated p for the pair of TK

Pedagogia FIP UNY and TK LKMD B. LIPURO BANTUL, TK ABA KR WARULOR SLEMAN, TK KUSUMA I SLEMAN, and TK ABA KR KAJEN YOGYA respectively 0.001, 0.0001, 0.007, 0.012. These values when compared with the significance chosen $\alpha = 0.05$, then if the value $\alpha > p$. Thus it can be concluded that the TK pair gave different results. This information also illustrates that the FIP Pedagogical Kindergarten has an average score of concentration and development of children's abilities that is higher than the other four Kindergartens. The other four pairs are not as different or of equal ability.

Then, a significant difference also occurred between TK TUNAS MELATI YOGYA and TK LKMD B LIPURO BANTUL and TK ABA KR WARULOR SLEMAN. In this regard, TUNAS MELATI YOGYA Kindergarten has an average score of concentration and development of early childhood abilities that is higher than the other two Kindergartens. The difference that occurs is shown by the significance value calculated for the two pairs of CS which is much smaller than the significance of $\alpha = 0.05$. In other conditions, other TK pairs have the same average score, so there is no difference between them. Playing models applied to learning, effective for improving the quality of concentration of early childhood early kindergarten. At least this is also supported by the average increase from each meeting, as shown in Table 6.

Table 6: Average comparison of childhood concentration for each meeting

Meetings	Mean	N	Std. Deviation	Minimum	Maximum
Meeting 1	2.8773	180	.26564	1.73	3.00
Meeting 2	2.8851	180	.23238	2.00	3.00
Meeting 3	2.9400	180	.11254	2.38	3.00
Meeting 4	2.9561	180	.09295	2.43	3.00
Meeting 5	2.9700	180	.08083	2.43	3.00
Total	2.9257	900	.17822	1.73	3.00

CONCLUSION

Referring to the results of the research and discussion that have been presented, the conclusions based on the findings of this study are: (1) developing an instrument to measure the concentration of early childhood in kindergarten for theoretical tests using the open interview method with the Delphi technique and three rounds of FGD, test Empirically carried out using quasi-experiments with a Single-group interrupted time-series design of five rounds in limited trials and expanded trials (2) the instrument that can be used to measure the concentration of early childhood in kindergarten by the teacher is a concentration observation sheet in the form of a check list. Based on the conclusions that have been stated above, the following are some suggestions that need to be considered in order to improve the quality of early childhood learning in kindergarten, namely: (1) it is suggested to kindergarten teachers to use the developed instrument as an alternative learning that can grow and develop children's basic abilities as a whole. fun and (2) there are still opportunities for researchers to be able to conduct research and develop more broadly, so that there are many alternatives and variations of

assessment instruments for playing sound and sound models that can be applied in early childhood learning in kindergarten.

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