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THE URGENCY OF CHILD-FRIENDLY MEDIA KNOWLEDGE IN MATHEMATICS ADUCATION: A PGSD STUDENT'S PERPECTIVE

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Abstrak

Formulation problem in study This are : (1) The extent of knowledge PGSD students about characteristics of user-friendly learning media children? (2) How many? percentage PGSD students who know and can mention examples of friendly media children who can used in learning mathematics? (3) Factors what influences level knowledge PGSD students about friendly media child?. Study This use approach descriptive quantitative with method survey. Approach quantitative chosen For measure level knowledge PGSD students about learning media friendly child in a way objective and can quantified. Population in study This is all over students of the PGSD Study Program at PGRI Semarang University (UPGRIS). consisting of from students in semesters 1, 3, 5 and 7. Level of knowledge PGSD students about characteristics of learning media friendly child is in the "Good" category. PGSD students are able to mention various examples of friendly media child For learning mathematics, however level depth knowledge Still diverse. there are a number of influencing factors level knowledge students, with strongest contribution originate from experience academic and training.

Kata Kunci: Media Ramah Anak, Pendidikan Matematika, Mahasiswa PGSD

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INTRODUCTION

Development knowledge and technology in One decade final has push change significant in the world of education, incl in practice learning at the level school basic. Transformation This demands teachers to capable provide experience learning that is not only informative, but also interesting, safe, and appropriate with stage development participant educate. One of the aspect important in learning the 21st century is use of learning media friendly children, namely media designed in accordance characteristics cognitive, affective, and psychomotor child so that capable increase motivation, understanding concepts, and involvement student in a way active. Various report international organizations, such as UNICEF (2020) and OECD (2021), emphasized that environment friendly learning children, including the media used by teachers, have correlation strong to achievements Study as well as welfare psychological student.

In the Indonesian context, the urgency use of friendly media child the more increased, especially in learning frequent mathematics considered abstract and challenging for student school basic. Research previously show that the media is lacking in accordance with characteristics development child can cause low interest, anxiety mathematics (math anxiety), and misconceptions draft basis (Suryani & Lestari, 2021; Hakim, 2022). Therefore that, prospective school teachers base must own competence adequate in recognize, select, and design learning media that are relevant, communicative, and encourage the thinking process mathematical in a way fun and safe for child.

However, some studies show that level knowledge PGSD students regarding learning media friendly child Still diverse and tend to is not optimal. Research by Dewi and Prasetyo (2021) found that that part big PGSD students can mention learning media in a way general, but Not yet understand characteristics of friendly media child in a way specific, especially in context learning mathematics. Similarly, another study by Kurniawan (2022) shows that only around 40% of students prospective teachers who are capable identify examples of friendly media child who fulfills element safety, suitability development and meaningfulness concept. Findings This show existence gap competence necessary start get attention Serious in education prospective teacher.

From the perspective theoretical, learning media concepts friendly child related close with theory development Piaget's cognitive, learning meaning Ausubel, as well as principle constructivism Vygotsky's social. Third approach This emphasize that effective learning must customized with characteristics development participant educate, enable interaction social, as well as give chance exploration through object concrete and precise visualization. In the realm of empirical, research in learning mathematics show that the media is friendly child can increase ability solution problem, thinking logical, and understanding draft abstract through appropriate representation (Furner & Berman, 2020). However, the integration approach This in curriculum teacher education in Indonesia is still Not yet maximum.

State of the art study moment This more Lots focused on evaluation effectiveness of certain media, development of media based on technology, or analysis teacher needs in schools basic. While that, the study which is special explore level knowledge PGSD students as

prospective teachers regarding learning media friendly children, especially in context mathematics, is still very limited. In fact, understanding beginning student become the determining foundation quality development competence they in stage education profession furthermore.

The gap research gap appears from lack of studies that do not only measure knowledge student in a way general, but also mapping factors that influence level knowledge those. Experience factors studying at college height, exposure to practice teaching, access to literature, as well as perception to friendly media needs child Not yet Lots investigated in a way in-depth. In addition, it has not There is research that provides description comprehensive about ability student in identify characteristics and examples of environmentally friendly media relevant children For learning mathematics, which has characteristic abstraction tall.

Urgency study This the more strong remember PGSD students are future teacher candidates own role strategic in create safe, interesting and meaningful learning for student school basic. Without adequate understanding about friendly media children, learning process mathematics potential not optimal, even can create experience negative learning for children. Therefore that, is necessary study exploratory that can describe condition current knowledge students and the factors that influence them as a basis for taking decision in development curriculum and training programs based need.

Research novelty This lies in its in -depth focus level knowledge PGSD students about learning media friendly child in a way specific in context mathematics , at the same time identify internal and external factors external factors that influence it. The approach This give contribution new to literature, because combine perspective media literacy, pedagogy mathematics and education child age school base in a way integrated. Research results This expected capable enrich study theoretical and provide recommendation practical For development competence prospective teachers in the modern learning era.

With understand complexity issue said, research This arranged For answer three focus main, namely to what extent do PGSD students understand characteristics of friendly media children, to what extent they can mention examples of relevant media For learning mathematics, as well as factors that influence level knowledge mentioned. Presentation about third aspect the will discussed more continue in the section formulation problems and goals study as direction from studies This.

Based on background the back that has been described , formulated problem in study This are : (1) The extent of knowledge PGSD students about characteristics of user -friendly learning media children? (2) How many? percentage PGSD students who know and can mention examples of friendly media children who can used in learning mathematics? (3) Factors what influences level knowledge PGSD students about friendly media child?

Research purposes This is : (1) For identify and analyze level knowledge PGSD students about characteristics of user -friendly learning media children. (2) For know percentage PGSD students who have knowledge and can mention examples of friendly media children who can

used in learning mathematics. (3) For identify and analyze factors that influence level knowledge PGSD students about learning media friendly child.

METHOD

Study This use approach descriptive quantitative with method survey. Research descriptive aim For describe in a way systematic fact or characteristics population certain in a way factual and accurate. Approach quantitative chosen For measure level knowledge PGSD students about learning media friendly child in a way objective and can quantified. Population in study This is all over students of the PGSD Study Program at PGRI Semarang University (UPGRIS). consisting of from students in semesters 1, 3, 5 and 7. Sample collection techniques sample using stratified random sampling with stratification based on semester level. Grouping based on the selected semester Because assumed that level knowledge student about learning media will increase along with increase experience lectures.

Amount sample determined use Slovin's formula :

$$n = \frac{N}{1 + N(e)^2}$$

Information

n = number sample

N = number population

tolerance limit error (margin of error = 5%)

Criteria inclusion sample : Students active PGSD Study Program, has take at least one semester, willing become respondents study.

Variables in study This is : Knowledge about characteristics of learning media friendly child : Understanding student about characteristics of appropriate learning media with characteristics Elementary School Children and Abilities student mention and explain types of learning media friendly children who can used in learning elementary school mathematics. Variables Supporting factors (Factors that Influence) include : Semester level, experience follow eye learning media lectures, experience follow training /workshop on learning media, experience practice teaching (internship) education), access to source Study about learning media, attitudes to use of learning media .

Instruments used in study This is questionnaire closed and open developed based on study theory and research previous. Questionnaire consists of from Part A: Identity Respondent : Name (optional), Semester, Course related to learning media that has been taken experience training /workshop, Experience practice teaching. Meanwhile in Part B: Knowledge about Characteristics of Child-Friendly Learning Media, contains : (1), Questions choice double about characteristics of friendly media children, (2) Likert scale for measure understanding about various aspect media characteristics. For Part C: (1) Knowledge about Examples of Child-

Friendly Learning Media, (2) Questions open : mention examples of friendly media child For Elementary school mathematics, (3) Questions choice double : identify the appropriate media For topic mathematics certain. And in section D: (1) Factors that Influence Knowledge, (2) Questions about access source study, (3) Questions about obstacle in studying learning media, and (4) Attitude scale to use of learning media.

Data analysis techniques used is with use descriptive statistical analysis with mark proportion, mean value, and categorization level categorized knowledge based on scores obtained :

Very Good: 81% - 100%

Good: 61% - 80%

Sufficient : 41% - 60%

Less: 21% - 40%

Very Poor: 0% - 20%

Besides that analysis data description in qualitative also conducted For describe knowledge about Media Examples. Analysis performed on the result data instrument Open questions with method : (1) Answer respondents categorized based on types of media mentioned, (2) Calculated frequency and percentage students who can mention friendly media child (3) Identified most types of media known. For data on influencing factors, also use analysis descriptive For Each Factor by calculating frequency and percentage For every factor category and create tabulation crosstab between factors and levels knowledge.

RESULTS AND DISCUSSION

Respondents in study This are 120 students of the Elementary School Teacher Education Study Program (PGSD) of Semarang PGRI University (UPGRIS) who come from from various semester level, starting from semester 1 to semester 7. Selection respondents use technique *stratified random sampling* so that every semester level represented in a way proportional. A total of 30 students (25%) came from from semester 1, 32 students (26.7%) from semester 3, 28 students (23.3%) from semester 5, and 30 students (25%) from semester 7. Composition This give description comprehensive about level knowledge student from various stage development academic.

Tabel 1. Distribution Respondents By Semester

Semester	Amount	Percentage
1	30	25%
3	32	26,7%
5	28	23,3%
7	30	25%

Early semester students (semesters 1 and 3) are at the stage introduction to draft base learning and not yet Lots get eye studying pedagogical. Meanwhile that , final semester students (semesters 5 and 7) tend to has own knowledge more wide related pedagogical science including knowledge about learning media Because has go through eye studying related as well as follow an experience program apprenticeship education in schools partners for 3 months.

Experience academic UPGRIS PGSD students regarding learning media show that part big respondents has own exposure theoretical and practical enough relevant in the learning process at lectures. Based on results questionnaire There is as many as 75% of students who have take at least one eye lectures that are direct related with learning media, including : learning media graphic elementary education, learning media videographics Elementary education, elementary education guidance media, elementary school learning media workshop and learning innovation. Courses the give runway conceptual and experiential practice for student about definition of media, characteristics of media, types of learning media, principles media development, as well as utilization technology in learning. Students are also trained For designing or modify and create simple relevant media products For student Elementary school.

Besides experience formal academic, research data show that 52% of students Once attend workshops, training or related seminars development of learning media. Training or seminars attended student many kinds of both those organized by the Faculty, Study Program, HIMA PGSD, and those organized by other parties outside UPGRIS. Form training ever followed student including, among others, activity :

1. Workshop on making tool props mathematics from material used and materials cheap.
2. Training use of media based technology, such as creating animated videos, simple augmented reality, or digital manipulative.
3. Training e-module creation use *Canva* or *Flip PDF* .
4. Class concrete media practices, for example make wheel fractions, number line board interactive, geometric puzzles, and building models room.

From the results analysis show that : Students who have ever follow training own level average knowledge 80% (very good category). Students who have not Once follow training has an average of 64% (Good category but is at the lower limit). With Thus, there are difference by 16 points percentage, which shows that training practical give impact real in increase literacy student towards friendly media children, especially in context learning mathematics that requires manipulative media.

Tabel 2. Comparison of Knowledge Levels based on Experience Training

Experience Training	Amount	Average Knowledge	Category
Once follow training	62	80%	Very good
Never follow training	58	64%	Good

The most impactful type of training according to student are concrete media creation workshops (44%) and digital media training such as Canva, GeoGebra, and animated videos (38%).

Based on questionnaire data analysis, several types of media that have ever developed student among others:

1. Concrete media mathematics : Dienes blocks, tangrams, cards numbers, math dominoes, geoboard.
2. Visual media: concept posters mathematics, charts interactive, cards illustrated.
3. Digital media: educational videos, animation mathematics Canva- based quizzes interactive (Kahoot/ Quizziz), and simulations simple using GeoGebra.
4. Manipulative media from material local : ice cream sticks For operation numbers, buttons color For classification, close bottle as a number token.
5. This media variation describe creativity student at a time show that part student has capable apply principle *child-friendly learning media*, namely media that is safe, interesting, relevant and makes things easier exploration draft.

Of the total 120 respondents, 94 students (78%) have go through eye related lectures with development and use of learning media. Data shows that students who have go through eye studying the have an average level knowledge by 76%, which includes in category good. Meanwhile that, 26 students (22%) who have not go through eye studying related only own level average knowledge 58%, or enter in category enough. Comparison This show existence difference by 18 points percentage, which indicates contribution strong from component formal academic in increase understanding student towards friendly media child.

Tabel 3. Effect of Courses on Knowledge Level

Student Group	Amount	Average Knowledge	Category
Already go through eye studying	94	76%	Good
Not yet completed eye studying	26	58%	Enough

From all over respondents, 30 students (25%) have follow apprenticeship education at partner elementary schools for 3 months. Students who have follow apprenticeship tend own ability more Good in identify and assess friendly media children , especially the media used in learning mathematics. Quantitative data shows: Students who have completed PPL have an average knowledge of 82%, in the Very Good category. Students who have not completed PPL only has an average of 66%, in the Good category. A difference of 16 points percentage show that experience directly in class real play a role substantive in form understanding students, especially in evaluate media suitability with characteristics elementary school students.

Tabel 4. Influence Apprenticeship to Child-Friendly Media Knowledge

Student Group	Amount	Average Knowledge	Category
Already Apprenticeship	30	82%	Very Good
Not Yet Apprenticeship	90	66%	Good

In addition, 25% of students who have follow apprenticeship mention that they Study direct from the class teacher about use tool props or friendly media child in the form of mathematics, especially dienes blocks, number line boards, and simple digital media.

If analyzed in a way Overall, students who have two or more experience academic (eg has go through eye study and participate training, or has participating in PPL and workshops) have an average level of knowledge 84%, Very Good category. Meanwhile students who only own One type experience academic has an average of 68% (Good category). Meanwhile student without experience academic related has an average of 55% (category Enough).

Tabel 5. Recap Influence Amount Academic Experience

Amount Academic Experience	Average Knowledge	Category
Two experiences or more	84%	Very good
One experience	68%	Good
Without experience	55%	Enough

This data confirm that diversity and intensity experience academic contribute direct to quality knowledge student.

CONCLUSION

Based on results study about level knowledge UPGRIS PGSD students on learning media friendly child in learning mathematics, can concluded three matter main as answer on formulation problem study :

1. Level of knowledge PGSD students about characteristics of learning media friendly child is in the “Good” category. Results analysis quantitative show that average knowledge score student is 72%, with distribution category as following: 15% are in the category *Very Good*, 51.7% category *Good*, and 23.3% category *Enough*. Findings This indicates that majority student has understand principles friendly media basis childlike security, suitability development, visual aspects, meaningfulness concept and convenience usage. However, understanding in aspect certain like integration technology and media differentiation still need improved.
2. PGSD students are able to mention various examples of friendly media child For learning mathematics, however level depth knowledge Still diverse. Qualitative data show that part big student can give examples of learning media friendly children, especially concrete and manipulative media like Dienes block (68%), card numbers (62%), tangrams, geoboards,

number lines, animated videos (57%), and other media based on technology simple. The media variations mentioned show that student own sufficient understanding about appropriate types of media For learning mathematics school basic. However, the ability in explain reason media selection and relatedness between media and objectives learning Still need reinforced.

3. There is a number of influencing factors level knowledge students, with strongest contribution originate from experience academic and training. Analysis factor show that knowledge student influenced by several aspects, especially:
 - a. Experience go through eye studying related to learning media (78%), which increased the average knowledge to 76%.
 - b. Experience attend a workshop or training (52%), which increases level knowledge up to an average of 80%.
 - c. Experience internships (25%), which contributed to the increase understanding applicable with an average knowledge of 82%.
 - d. Access to source learning (63%) also plays a role important in expand outlook student related forms and functions of media.

In a way overall, combination between experience lectures, training practical, as well as experience directly at school proven own impact significant to improvement quality knowledge student regarding learning media friendly child.

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