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The Need Analysis for WriteMI Application as Digital Basic Writing Teaching Materials Based on Multiple Intelligences Approach

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***Abstract*—This study aimed to explore the urgency of the WriteMI application as digital basic writing teaching materials based on multiple intelligences approaches from the perspective of Indonesian students majoring in English Education. The population of this study consisted of all Indonesian students majoring in English Education, specifically those residing in the areas of Jakarta, Bogor, Depok, Tangerang, and Bekasi. Furthermore, the sample for this study was drawn from undergraduate students in the English Language Education program at Indraprasta University PGRI who were enrolled in basic writing courses. The instrument used was tested for both theoretical and empirical validation, as well as for reliability measures. Data were obtained from the respondents through a purposive sampling technique. They filled out a needs analysis questionnaire comprising five aspects: preparation, material content, display, language, and media presentation. The research revealed that almost all items in the needs analysis questionnaire for the WriteMI application category were strongly needed. There were five items categorized as needed and only one item categorized as not needed. Meanwhile, there were no items classified as strongly not needed. Students had a unique perspective on this phenomenon, believing that the presence of digital teaching materials for basic writing based on multiple intelligences approaches was strongly needed, with a total average score of 3.45. This indicates that the need for developing this teaching material model is significant and urgent.**

***Keywords*—WriteMI; basic writing; digital teaching materials; multiple intelligences**.

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I. INTRODUCTION

In Indonesia, English is taught both formally in schools and informally in courses. It is a compulsory subject from secondary school to university, with some urban schools introducing it in kindergarten and elementary levels. Writing is a crucial skill in the university curriculum, aiding students in their final assignments, such as thesis writing, and is typically taught sequentially, beginning with Basic Writing in the Department of English Education.

Writing is an activity that requires cognitive work; therefore, this activity can be influenced by various factors, so that the level of success is determined by what is expected [1]. To ensure that the Basic Writing subject is conducted effectively and efficiently, with outcomes that are applicable and aligned with students' needs, a thorough analysis must be performed. In this regard, it is essential to align the instructional material with the Indonesian National Qualifications Framework (KKNI), which serves as a standardized instrument for assessing and evaluating qualifications and competencies within Indonesia's workforce. Level 6 of this framework describes four aspects: work ability, mastery of knowledge, authority, and responsibility. This level is particularly applicable to undergraduate or bachelor programs as it pertains to the KKNI.

The aspect of work capacity requires college students to observe their field of study and apply principles of science, technology, and the arts in problem-solving, as well as to adapt to the situations at hand. Meanwhile, the component of mastery of knowledge necessitates that students master theoretical concepts in specific areas of study and understand broader theoretical principles within their fields. Additionally, this mastery allows students to formulate procedural approaches to problem-solving. The aspect of authority requires students to make informed decisions based on data and analysis. Furthermore, it encourages students to select various alternative solutions independently and

collaboratively. Finally, the aspect of responsibility ensures that students are accountable for their competencies and can be entrusted with achieving organizational outcomes [2].

The four aspects outlined in the KKNI Level 6 description must be adequately implemented in every lesson at the undergraduate level, including Basic Writing. Careful preparation is essential before learning begins, which includes developing the syllabus, lesson plans, and teaching materials. The syllabus and lesson plans serve as benchmarks for the course continuity throughout the semester, detailing the approaches and the primary and supplementary teaching materials that will be utilized during instruction. The significance of teaching materials is heightened when specific approaches are employed that are deemed effective in developing each student's abilities. Effective learning is characterized by comprehensive support factors that facilitate the achievement of learning objectives. One of the critical factors for successful learning is the availability of effective teaching materials.

The aspect of work capacity requires college students to apply the principles of science, technology, and the arts in their field of study to problem-solving, as well as to adapt to the situations at hand. Meanwhile, the component of mastery of knowledge necessitates that students master theoretical concepts in specific areas of study and understand broader theoretical principles within their fields. Additionally, this mastery allows students to formulate procedural approaches to problem-solving. The aspect of authority requires students to make informed decisions based on data and analysis. Furthermore, it encourages students to select various alternative solutions independently and collaboratively. Finally, the aspect of responsibility ensures that students are accountable for their competencies and can be entrusted with achieving organizational outcomes. [3].

Overall, the above approaches increase students' English writing ability; however, the result is not yet significant [4]. Moreover, these approaches have their weaknesses in optimizing students' basic potential and the dominance of their multiple intelligences. The theory of multiple intelligences is a model that differentiates human intelligence into specific modalities. The intelligences included in this theory are logical-mathematical, verbal-linguistic, visual-spatial, musical-rhythmic, interpersonal, intrapersonal, bodily-kinesthetic, and naturalistic. According to Gardner, none of these intelligences is considered superior to the others [5]. Different intelligences are viewed as personal tools, and a person may be more talented in some areas than in others [6]. Learning is more effective when it matches an individual's characteristics; each person has unique characteristics.

According to the observation results of basic writing students, 38.4% demonstrated dominant intrapersonal intelligence, followed by naturalistic intelligence at 23.6% and musical intelligence at 14.8%. Social intelligence accounted for 10.6%, while linguistic and logical intelligences each represented 4.2%. Spatial and kinesthetic intelligences were the least prevalent, each at 2.1%. Once students are aware of their strengths, they can focus on those abilities. Lecturers can guide students toward their interests, allowing ideas to emerge more rapidly and reducing the time needed for students to write effectively.

Modern approaches, particularly the theory of multiple intelligences, bring new perspectives to the classroom and learning environments. This theory has expanded the understanding of how individuals can optimize student potential. Moreover, multiple intelligences represent an approach to student-centered, brain-based learning, ensuring that learning experiences are more effective and enduring. This multiple intelligences-based learning approach emphasizes meaningful learning over mere memorization. To achieve this goal, learning should be arranged from various angles, allowing students to explore learning materials freely and connect with each of the intelligences involved, where the focus of academic development is usually on teaching and learning[7] where the focus of academic development is usually on teaching and learning [8].

The fact is that most students stated they had only recently become aware of their dominant multiple intelligences after the researchers conducted initial observations. Furthermore, they genuinely want to be supported in optimizing and developing their potential. It is unfortunate that students in the 18- to 21-year-old age range have only recently recognized their inherent strengths. Ideally, this potential should have been identified earlier. This situation highlights a weakness in the learning process in Indonesia, particularly in language skills, and is most notable in basic writing. Even though the competence demanded by the national standard education for the undergraduate level [9]. According to KKNI Level 6, where available, soft component skills must be honed and developed from the basic potential inherent in the students.

There is also a need for new bridges between information and students in education today. Because students are faced with an explosion of information, educators must find effective ways to structure learning content and experiences that are anchored in everyday life, aiming for originality in the learning process [10]. Teaching and learning activities for English writing basics by integrating all content of teaching English writing skills and the respective abilities of multiple intelligences, which can be carried out in various ways to equip students with the ability to learn English basic writing together with multiple intelligences, which are integrated through digital teaching materials.

In line with this, the presence of digital basic writing teaching materials supports the government’s initiatives through the Ministry of Education and Culture of Indonesia, particularly the Kampus Merdeka (Independent Campus) and Merdeka Belajar (Independent Learning) programs, by the Regulation of the Minister of Education and Culture Number 3 of 2020 regarding the National Standards of Higher Education. The program is expected to address university challenges in producing graduates aligned with current trends, advancements in science and technology, the demands of the global business and industrial sectors, and the dynamics of public life.

This initiative is further reinforced by the expected learning outcomes of the basic writing subject, where students express a need for systematic pedagogy, innovative approaches, and the development of learning programs that effectively implement English language learning utilizing scientific and technological advancements, including digital teaching materials. Language learning, particularly in basic writing, has been further supported by the conditions following the COVID-19

pandemic, which have accelerated the implementation of learning through digital teaching materials that can be utilized both offline and online [11], [12]. The arena of education today has undergone an incredible transformation due to the announcement from the World Health Organization (WHO) regarding the declaration of COVID-19 as a pandemic [13]. Various countries around the world have implemented policies that also impact the education sector due to the lockdown. This real-life social interaction between lecturers and students becomes restricted, which has substantial consequences for lecturers and students [14].

As of 2022, Indonesia has experienced three waves of the pandemic. The current post-COVID-19 conditions have prompted education policies to initiate regular face-to-face meetings. The results of this comprehensive needs assessment can provide valuable insights into adapting and optimizing technology-based coaching and learning, as well as supporting educators during this transition. Now, more than two years after the initial lockdown began, the education sector has returned mainly to hybrid teaching models [15]. This causes the need for teaching materials that can be accessed both offline and online to be a priority [16].

Therefore, an analysis of the need for the presence of basic writing teaching materials based on multiple intelligence approaches is necessary to establish benchmarks for significant needs, according to Graves' needs analysis model, which is believed to be suitable for the development of basic digital writing teaching materials grounded in multiple intelligences approaches [17]. Graves' needs analysis model is divided into six stages: the first is to determine what information you want to collect and why; the second is to establish when, from whom, and how to collect the information; the next stage is to gather the information; this is followed by interpreting the information obtained; next is the stage for action; and finally, the last stage is to evaluate the impact of the actions taken. The following is a chart of Graves' needs analysis model.

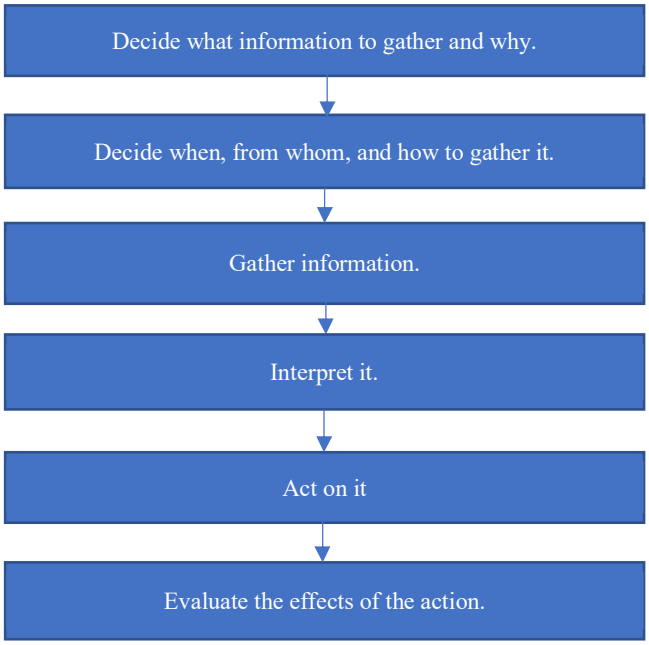

Fig. 1 Grave's Need Analysis Model

Needs analysis is needed to find out what language skills students need to perform in certain roles, to help determine whether existing learning adequately meets the needs of prospective students, to identify gaps between what students can do and what they need, to gather information about problems experienced explicitly by students, needs analysis can also be used to plan future programs and provide a basis for developing syllabus and teaching materials. The pedagogical improvement of getting to know activities seeks to hold up with the tempo of development of the physical surroundings [18]. Loss of instructor suggestion and pedagogical know-how will fail to meet what is wanted for foremost mastery [19].

The needs analysis was carried out based on five indicators, namely the preparation aspect, the material content aspect, the display aspect, the linguistic aspect, and the presentation media aspect. The following is a grid table of the needs analysis instrument carried out in the form of a questionnaire:

TABLE I
NEED ANALYSIS INDICATORS

Dimensions	Indicator	Item Number	Number of Items
To find out the gap between what is needed and the conditions in the field	1. Aspects of preparation	1-19	19
	2. Aspects of the content of the material	20-38	19
	3. Display aspect	39-51	13
	4. Linguistic aspect	52-61	10
	5. Aspects of presentation media	62-74	13
Total Number of Items			74

Based on the description above, this research proposes the following research problems:

- What is the need for the WriteMI application as teaching material for basic digital writing based on a multiple intelligences approach?
- How is basic writing learning appropriate for the English language education study program?

While the objectives of this study are to:

- Find the identity of students for digital teaching materials in basic writing learning using an ideal approach to the English language education study program
- Describe basic writing learning using the WriteMI application in the English study program.

II. Materials and Methods

In this research, the object of study is digital basic writing teaching materials based on a multiple intelligences approach, presented as an Android application called WriteMI. This application is designed using Jensen's brain-based learning model and is divided into seven sections: pre-exposure, preparation, initiation, elaboration, incubation, verification, and integration. The pre-exposure section entitles "Be Prepared." This phase provides students with a review of new learning before they delve into it, helping to build better conceptual maps in the brain. Here, the teaching materials present indicators of what students will learn.

The preparation section is called “Time to Warm Up.” This phase aims to create curiosity and enjoyment while also motivating students about the importance of studying the material to achieve their goals. In this segment, teaching materials feature inspiring quotes related to writing in an audiovisual format. The initiation and acquisition section, named “Let’s Get Started,” delivers learning content filled with initial facts, ideas, details, complexity, and meaning. This phase encourages curiosity and the search for understanding, supported by the lecturer's guidance. Teaching materials in this section cater to multiple intelligence learning styles and strategies.

The elaboration section is titled “Be Focused.” This phase allows students to engage in group discussions to understand, analyze, and argue their insights from the presented material. Teaching materials here include a discussion forum for students to ask questions, respond to peers, and engage with the lecturer. The section also features audiovisual content from native speakers providing instructions. The incubation part is named "Let's Do It." This phase emphasizes the importance of rest and reflection. It is recognized that the human brain learns most effectively over time, rather than in intensive bursts. This section offers practice exercises that serve as reminders of the material taught, enhancing understanding of concepts in problem-solving. Teaching materials present eight types of assessments tailored to the eight types of multiple intelligences, allowing students to complete tasks based on their strengths, as determined by the Multiple Intelligences Test.

The verification section is named “You Did It.” This phase assesses students' understanding of the lesson concepts. It involves checking the results of exercises completed by students and allows them to document their answers for evaluation. Here, teaching materials provide lecturers' reviews and feedback on the assessments based on each student's multiple intelligence strengths.

Finally, the integration section is called “Let’s Celebrate.” This phase is crucial for involving emotions, providing a stimulus for students to celebrate their achievements and understand the significance of enjoyable learning. In this section, teaching materials include two forms of celebration: uploading a group photo and singing a selected song. The goal is to conclude the learning experience with a sense of joy and lasting memories.

A. Respondents

The population of this study consists of all Indonesian students majoring in English Education, particularly in the Jakarta, Bogor, Depok, Tangerang, and Bekasi areas. These five cities are spread across three provinces in Indonesia: DKI Jakarta Province, West Java Province, and Banten Province. Meanwhile, the sample of this study consisted of undergraduate English language education students from Indraprasta University PGRI who took basic writing courses. This sample was selected using a purposive sampling technique. They are the respondents from whom the primary data were collected.

B. Data Collection

This research is quantitative, in which the researchers distribute questionnaires to a number of students to identify and analyze the needs for digital basic writing teaching materials based on multiple intelligences approaches. The primary data are derived from the results of the needs analysis questionnaires, which have undergone validation and reliability tests. This research also included literature reviews from various sources, such as articles from highly reputable journals, books, and other relevant publications.

C. Data Analysis

Since this is a quantitative research study, the data will be analyzed using SPSS, which stands for Statistical Package for the Social Sciences. SPSS is a computer program used for statistical analysis. After the findings, the results of this study will be discussed comprehensively. In quantitative research, data will be analyzed using technical data processing, which involves data validation, editing, and coding. Technical data validation will prevent invalid and unreliable data from being entered into the dataset. In data editing, basic checks will be performed to identify and eliminate data points that may compromise the accuracy of the results. Data coding will involve grouping and assigning scores to responses from the questionnaires distributed.

D. Ethical Consideration

The ethical considerations of using multiple intelligences in educational technology should be thoroughly examined. This includes ensuring that the application maximizes opportunities to enhance learning outcomes while proactively avoiding potential harm. Moreover, the societal and ethical issues surrounding digitization emphasize the importance of shaping digital tools in an ethically responsible manner [20]. Stakeholders involved in the development of the WriteMI application must have a clear understanding of these issues to ensure that the digital teaching materials align with ethical standards. Integrating ethics into the academic curriculum, as discussed by, is crucial for fostering awareness and positive attitudes towards ethical considerations in educational settings. This approach can help students engage with ethical dilemmas early on and develop analytical decision-making skills within the context of digital learning tools [21], [22]. Furthermore, the development of teaching case studies to explore ethical issues associated with computer programming, as proposed by, can provide students with practical insights into ethical decision-making in the digital realm [23]. By incorporating such case studies into the WriteMI application, students can engage with ethical considerations relevant to their field of study.

E. Validity and Reliability

After testing the validity of the items using SPSS version 26 on the questionnaire, which analyzed the needs of the digital basic writing teaching material development model based on the multiple intelligences approach, the following results were obtained. There are 56 valid question items and 18 invalid question items.

TABLE II
VALIDITY TEST RESULT

Items	Based on Sig Score			
	Sig Score	0.05	Info	
X1	0.01	0.05	VALID	
X2	0.03	0.05	VALID	
X3	0.08	0.05	INVALID	1
X4	0.01	0.05	VALID	
X5	0.02	0.05	VALID	
X6	0.04	0.05	VALID	
X7	0.01	0.05	VALID	
X8	0.02	0.05	VALID	
X9	0.36	0.05	INVALID	1
X10	0.01	0.05	VALID	
X11	0.003	0.05	VALID	
X12	0.3	0.05	INVALID	1
X13	0.01	0.05	VALID	
X14	0.14	0.05	INVALID	1
X15	0.003	0.05	VALID	
X16	0.146	0.05	INVALID	1
X17	0.612	0.05	INVALID	1
X18	0.173	0.05	INVALID	1
X19	0.11	0.05	INVALID	1
X20	0.171	0.05	INVALID	1
X21	0.098	0.05	INVALID	1
X22	0	0.05	VALID	
X23	0.046	0.05	VALID	
X24	0.082	0.05	INVALID	1
X25	0.005	0.05	VALID	
X26	0.075	0.05	INVALID	1
X27	0.025	0.05	VALID	
X28	0.001	0.05	VALID	
X29	0.104	0.05	INVALID	1
X30	0.02	0.05	VALID	
X31	0.169	0.05	INVALID	1
X32	0	0.05	VALID	
X33	0.004	0.05	VALID	
X34	0.761	0.05	INVALID	1
X35	0	0.05	VALID	
X36	0.008	0.05	VALID	
X37	0.001	0.05	VALID	
X38	0.003	0.05	VALID	
X39	0.001	0.05	VALID	
X40	0	0.05	VALID	
X41	0	0.05	VALID	
X42	0	0.05	VALID	
X43	0	0.05	VALID	
X44	0	0.05	VALID	
X45	0.001	0.05	VALID	
X46	0	0.05	VALID	
X47	0.001	0.05	VALID	
X48	0	0.05	VALID	
X49	0.001	0.05	VALID	
X50	0	0.05	VALID	
X51	0.03	0.05	VALID	
X52	0.02	0.05	VALID	
X53	0.004	0.05	VALID	
X54	0.03	0.05	VALID	
X55	0.02	0.05	VALID	
X56	0.037	0.05	VALID	
X57	0.061	0.05	INVALID	1
X58	0.006	0.05	VALID	
X59	0.036	0.05	VALID	
X60	0.152	0.05	INVALID	1
X61	0.004	0.05	VALID	
X62	0	0.05	VALID	
X63	0.074	0.05	INVALID	1
X64	0.017	0.05	VALID	
X65	0.008	0.05	VALID	
X66	0.005	0.05	VALID	
X67	0	0.05	VALID	
X68	0.001	0.05	VALID	
X69	0	0.05	VALID	
X70	0.04	0.05	VALID	
X71	0.008	0.05	VALID	
X72	0.001	0.05	VALID	
X73	0.001	0.05	VALID	
X74	0	0.05	VALID	
X_SUM				18

After eliminating the invalid items, we calculated their reliability. Using SPSS, we obtained Cronbach's Alpha value of 0.955. Due to the value of Cronbach's Alpha being greater than 0.6, all question items in this study were reliable.

TABLE III
RELIABILITY TEST RESULT

Reliability Statistics	
Cronbach's Alpha	N of Items
.955	56

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X1	197.23	269.151	.593	.954
X2	197.30	269.734	.517	.955
X4	197.17	270.695	.541	.955
X5	197.40	270.455	.446	.955
X6	197.53	270.602	.384	.955
X7	197.30	269.734	.449	.955
X8	197.23	270.806	.479	.955
X10	197.33	270.575	.452	.955
X11	197.47	268.671	.550	.954
X13	197.77	270.116	.380	.955
X15	197.60	269.903	.494	.955
X22	197.27	266.823	.726	.954
X23	197.33	271.678	.334	.955
X25	197.30	268.355	.606	.954
X27	197.37	271.551	.336	.955
X28	197.57	266.875	.593	.954
X30	197.30	270.700	.395	.955
X32	197.23	268.461	.640	.954
X33	197.20	269.752	.578	.954
X35	197.23	267.702	.693	.954
X36	197.40	268.041	.523	.955
X37	197.20	269.062	.627	.954
X38	197.30	268.217	.615	.954
X39	197.57	265.151	.527	.955
X40	197.40	268.317	.508	.955
X41	197.70	266.286	.502	.955
X42	197.40	264.800	.634	.954
X43	197.47	264.326	.600	.954
X44	197.23	269.289	.583	.954
X45	197.33	269.609	.513	.955
X46	197.37	267.689	.623	.954
X47	197.47	266.464	.547	.954
X48	197.20	269.614	.588	.954
X49	197.57	264.254	.566	.954
X50	197.20	269.821	.573	.954
X51	197.63	270.861	.344	.955
X52	197.50	271.293	.392	.955
X53	197.17	270.557	.551	.955
X54	197.90	266.300	.371	.956
X55	197.27	269.995	.445	.955
X56	197.30	270.562	.403	.955
X58	197.17	271.178	.504	.955
X59	197.27	271.513	.415	.955
X61	197.30	266.907	.546	.954
X62	197.40	264.455	.721	.954
X64	197.90	267.128	.380	.956
X65	197.40	269.903	.480	.955
X66	197.50	268.259	.577	.954
X67	197.27	267.444	.685	.954
X68	197.50	264.259	.604	.954
X69	197.37	264.930	.797	.954
X70	197.43	266.668	.381	.956
X71	197.07	271.237	.506	.955
X72	197.40	266.593	.603	.954
X73	197.23	267.013	.636	.954
X74	197.27	264.340	.775	.954

III. Results and Discussion

Before collecting data, instrument tests were conducted to assess validity and reliability. This instrument test was carried out on a questionnaire to determine the validity and reliability of the instrument in the form of a questionnaire. The validity test was conducted through theoretical validation by experts, as well as qualitative and quantitative empirical validation tests. After experts conducted the theoretical validation test, the result indicated that the instrument was feasible with minor revisions. Then, after the questionnaire was revised, the next stage involved an empirical validation test, which required 30 students to complete the questionnaire. After that, the data were analyzed using SPSS, and it was determined which statement items were valid and which were invalid. After the invalid statement items are removed, a reliability test is carried out to determine whether the instrument is reliable or not. This reliability test was carried out using Cronbach's Alpha.

The results of an empirical validation test with 30 respondents from a needs analysis questionnaire for basic digital teaching materials based on the multiple intelligences approach, using SPSS version 26, are 56 valid question items and 18 invalid question items. After the invalid items are removed, we calculate the reliability. From the calculation results using SPSS, Cronbach's value is obtained. Alpha is 0.955, because Cronbach's value Alpha is greater than 0.6, so all items in this study are reliable.

After completing the instrument test, the actual data collection was carried out, where the results of this data collection were calculated quantitatively to determine the level of the need for basic digital writing teaching materials based on multiple intelligences, where respondents were selected using a purposive sampling technique, with a total of 50 respondents, including students.

This needs analysis questionnaire has been thoughtfully crafted using a modified Likert scale, deliberately excluding neutral options to enhance clarity in responses. This approach offers four distinct choices for participants to gauge their level of student needs accurately: "strongly needed," "needed," "not needed," and "strongly not needed." The table below visually represents this refined, modified Likert scale, facilitating a more nuanced understanding of the varying degrees of need among students.

TABLE IV
MODIFIED LIKERT SCALE TABLE

Answer Choices	Value Weight
Strongly needed	4
Needed	3
Not needed	2
Strongly not needed	1

The results of this questionnaire distribution are then analyzed to determine the average. After the average score is calculated, the scale category classification is formulated. The minimum score is 1, and the maximum score is 4. Scale width: $\frac{4-1}{4} = 0.75$. Then the scale category is determined as follows:

TABLE V
INTERPRETATION OF THE AVERAGE SCORES TABLE

Intervals	Criteria
1.00 – 1.75	Really not needed
1.76 – 2.50	Not needed
2.51 – 3.25	Needed
3.26 – 4.00	Very needed

The valid and reliable grid items against the needs analysis questionnaire from a student perspective, based on five indicators, are as follows:

TABLE VI
NEED ANALYSIS INDICATORS AFTER REVISED

Dimensions	Indicator	Item Number	Number of Items
To find out the gap between what is needed and the conditions in the field	1.Preparation aspect	1-11	11
	2.Content of material aspect	12-23	12
	3.Display aspect	24-36	13
	4.Linguistic aspect	37-44	8
	5.Presentation media aspect	45-56	12
Total Number of Items			56

The findings were used to conduct a needs analysis for basic digital writing materials, employing the multiple intelligences approach. The results are as follows:

TABLE VII
NEED ANALYSIS FINDINGS

No.	Statement	Category
1.	Teaching materials are structured to explain basic concepts in basic writing about sentence types	SN
2.	Teaching materials are used for student practice according to the tendency of multiple intelligences domination	SN
3.	Teaching materials are prepared using analogy and classification methods to develop naturalist intelligence	SN
4.	Teaching materials are structured to develop students' critical thinking	SN
5.	Teaching materials are intended for learning resources according to the standards of Graduate Learning Outcomes	SN
6.	Teaching materials are prepared using personal assignment learning strategies to develop intrapersonal intelligence	SN
7.	Teaching materials are structured to suit the academic needs of students	SN
8.	Teaching materials are arranged according to the Curriculum Learning Outcomes	SN
9.	Teaching materials are prepared using a team learning strategy to develop interpersonal intelligence	SN
10.	Teaching materials are prepared using problem-solving learning strategies to develop logical mathematical intelligence	SN
11.	Teaching materials are prepared using demonstration learning strategies to develop kinesthetic intelligence	SN
12.	The content of teaching materials is delivered using the lecture method via audio to develop linguistic intelligence	SN
13.	Exercises on teaching materials are designed according to the types of multiple intelligences in students	SN
14.	The content of teaching materials is delivered using a presentation method to develop visual spatial intelligence	SN
15.	The contents of teaching materials are under RPS, but can be developed according to academic needs	SN
16.	Teaching materials are designed to be interspersed with intervals so that students don't get bored quickly	SN
17.	Teaching materials are under the level of student academic development	SN

No.	Statement	Category
18.	There are musicals conditioning in teaching materials so that students' musical intelligence develops	SN
19.	Teaching materials can build new knowledge in students	SN
20.	The material in the teaching materials is applicable	SN
21.	Teaching materials contain writing correct mechanics or writing techniques	SN
22.	Teaching materials contain paragraph writing	SN
23.	Teaching materials contain how to edit writing	SN
24.	The display of teaching material sis colorful	SN
25.	The presentation of teaching materials is in accordance with the deductive and inductive mindsets	SN
26.	The display of teaching materials is accompanied by audio	SN
27.	Teaching materials are accompanied by supporting pictures, graphs, or charts	SN
28.	Teaching materials contain simple games as mood boosters for students.	SN
29.	Teaching materials are displayed as creatively as possible	SN
30.	Teaching materials are designed as attractively as possible	SN
31.	Teaching materials are designed to be simple but eye-catching	SN
32.	Teaching materials contain aesthetic elements that can increase student learning enthusiasm	SN
33.	Teaching materials are designed interactively and communicatively	SN
34.	Teaching materials have an elegant layout	N
35.	The presentation of teaching materials is continuous and interrelated	SN
36.	The presentation of teaching materials is dialogic, as if students communicate directly with digital media	SN
37.	The language used is straightforward	SN
38.	The language used explains each concept well and in detail	SN
39.	The language used can trigger student emotions	NN
40.	The language used makes students appear confident and active in learning	SN
41.	The language used is neutral	SN
42.	The sentences used are simple and easy to understand	SN
43.	The language used in English is good and correct	SN
44.	The language in the teaching materials uses a vocabulary commensurate with the undergraduate level	SN
45.	Teaching materials are presented in digital form according to the demands of the current situation	SN
46.	Teaching materials can be accessed using a QR code	N
47.	Teaching materials can be postponed in the Play Store	N
48.	Between design and material synchronous	SN
49.	Teaching materials are designed using programs that can be used offline and online	SN
50.	Teaching materials use a modern and elegant appearance	SN
51.	Teaching materials use programs that can help students learn independently	SN
52.	Teaching materials in the form of free applications make it more efficient	SN
53.	Digital teaching materials are free from advertising	SN
54.	In teaching materials, there are usage controls for users	SN
55.	In teaching materials, there is a feature of the availability of assistance	SN
56.	In teaching materials, there is a closing feature at the end	N
	Total Average	SN

Remarks: SN (Strongly Needed), N (Needed), NN (Not Need), and SNN (Strongly Not Needed)

Here is the link for downloading the digital basic writing teaching material based on the multiple intelligences approach named WriteMI application discussed in this study: https://play.google.com/store/apps/details?id=com.spectacreative.writemi. According to the findings in the table above, almost all items contained in the needs analysis questionnaire for basic teaching materials, digital writing based on multiple approaches, and intelligences categories are strongly needed. There are four questionnaire items with the needed category and only one questionnaire item with the not needed category. Meanwhile, there are no questionnaire items that are classified as strongly not needed. In more detail, four questionnaire items focused on the need category are concerned with display aspect indicators, one need item category, and three need category questionnaire items are concerned with presentation media aspect indicators. For one item in the needs analysis questionnaire categorized as 'not needed', it focuses on indicators related to language aspects.

Based on these findings, it is known how necessary the presence of digital teaching materials based on multiple intelligences approaches [24]. This is because multiple intelligences can help individuals, groups of people, and organizations to be able to use human resources more efficiently in complex environments [25]. In addition, if it is related to basic writing, the ability to write in English is considered a significant asset for students taking an English as a foreign language study program [26]. For instance, in Indonesia, which poses a challenge for students to learn English, especially writing, as it is not the national language.

The emphasis on the presence of basic writing teaching materials with this approach lies in the learning process rather than learning outcomes, because the evaluation process is carried out by gathering information about individual abilities and skills to provide valuable and relevant input for more meaningful learning [27]. Additionally, writing contributes to the development of other skills and serves as a means of expressing one's feelings, thoughts, and ideas. Writing must be perceived and evaluated not only as a mechanical process but also as a skill that includes understanding, thinking, developing, and the skills to produce something in written form [28], [29].

The use of the multiple intelligence approach in teaching materials is particularly urgent at this time because it aligns with the global trend of placing students at the center of the

education system [30]. Because students are the most critical element of any education system, dealing with them should not be random. Students' needs, learning styles, strengths, and weaknesses must be thoroughly addressed and acknowledged to create meaningful and practical learning experiences. In addition, this approach holds significant importance in education because it is believed that students, as learners, possess individual characteristics, independent talents, and diverse preferences in how they learn and respond to learning situations, which also leads to differences in their approach to strategies and learning methods [31].

This description can be seen in the findings of the needs analysis that has been carried out, where certain learning methods and strategies are employed based on the dominant intelligence of the students. Analogy and classification methods are used to develop naturalist intelligence, personal assignment learning strategies are used to develop intrapersonal intelligence, team work learning strategies are used to develop interpersonal intelligence, problem solving learning strategies are used to develop logical mathematical intelligence, demonstration learning methods are used to develop kinesthetic intelligence, the lecture method is used to develop linguistic intelligence, while the presentation method is used to develop visual spatial intelligence. These various learning methods and strategies are all in the category of much needed, and this can be seen from the findings of the needs analysis, where the process of gathering information about teaching needs and making decisions about learning has been carried out carefully [32], [33]. Meanwhile, regarding the digital platform used in teaching materials, this is adjusted in line with government policies regarding *Merdeka Belajar, Kampus Merdeka* and also post-pandemic conditions and the new normal era so that the demand for teaching materials that can be accessed online is very significant, but of course it must be prepared and designed well and properly [34] [35]. Then, a needs analysis needs to be carried out before developing a development model of teaching materials so that the results meet the needs of students who will use the product, where the teaching materials developed and designed have gone through the results of preliminary studies [36].

IV. Conclusion

Based on the research conducted to explore the needs analysis of basic digital writing teaching materials utilizing multiple intelligences approaches, it can be concluded that students possess a rather unique viewpoint regarding this phenomenon. They believe that the presence of basic digital writing teaching materials grounded in multiple intelligences approaches is highly necessary, with an average acquisition score of 3.45. This signifies that the demand for developing this teaching material model is quite significant, a conclusion drawn from findings in the field from the needs analysis research that has been conducted. In continuation of this research, the next phase will involve creating a product model design for digital teaching materials, ensuring that the final product can be effectively utilized by students in basic writing learning.

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References

[1] D. Erlina et al., "English education and large classes: Unpacking the challenges and coping strategies," *Theory Pract. Lang. Stud.*, vol. 12, no. 3, pp. 489–497, Mar. 2022, doi: 10.17507/tpls.1203.08.

[2] S. Widiyarto et al., "Learning Dayak literature through information systems," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 13, no. 6, pp. 2302–2307, 2023, doi: 10.18517/ijaseit.13.6.18094.

[3] S. Marmoah et al., "Teacher challenges in designing the learning after curriculum change: An analysis of learning management system," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 13, no. 6, pp. 2205–2212, 2023, doi: 10.18517/ijaseit.13.6.19655.

[4] L. J. Zhang and X. Cheng, "Examining the effect of comprehensive written corrective feedback on L2 EAP students' linguistic performance: A mixed-methods study," *J. English Acad. Purp.*, vol. 54, 2021, doi: 10.1016/j.jeap.2021.101043.

[5] H. Gardner, *Frames of Mind: The Theory of Multiple Intelligences*. New York, NY, USA: Basic Books, 1983.

[6] N. Nazari, M. S. Shabbir, and R. Setiawan, "Application of artificial intelligence powered digital writing assistant in higher education: Randomized controlled trial," *Heliyon*, vol. 7, no. 5, 2021, doi: 10.1016/j.heliyon.2021.e07014.

[7] M. Ferrero, M. A. Vadillo, and S. P. León, "A valid evaluation of the theory of multiple intelligences is not yet possible: Problems of methodological quality for intervention studies," *Intelligence*, vol. 88, 2021, doi: 10.1016/j.intell.2021.101566.

[8] S. Abdulkerim et al., "Enhancing higher education teaching and learning in northern Syria: Academic development needs of teaching staff at free Aleppo and Sham universities," *Int. J. Educ. Res. Open*, vol. 3, 2022, doi: 10.1016/j.ijedro.2022.100143.

[9] K. Yusra, Y. B. Lestari, and M. O. Hamid, "Teacher agency and the implementation of CEFR-like policies for English for tourism and hospitality: Insights from local vocational high schools in Indonesia," *Curr. Issues Lang. Plan.*, vol. 23, no. 3, pp. 233–253, 2022, doi: 10.1080/14664208.2021.1965739.

[10] I. Runge et al., "Teacher-reported instructional quality in the context of technology-enhanced teaching: The role of teachers' digital competence-related beliefs in empowering learners," *Comput. Educ.*, vol. 198, 2023, doi:10.1016/j.compedu.2023.104761.

[11] T. Shenkoya and E. Kim, "Sustainability in higher education: Digital transformation of the fourth industrial revolution and its impact on open knowledge," *Sustainability*, vol. 15, no. 3, 2023, doi:10.3390/su15032473.

[12] Y. Jang, I. Yoon, and H. Woo, "Development of AI liberal arts curriculum for the general public," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 13, no. 5, pp. 1978–1983, 2023, doi: 10.18517/ijaseit.13.5.19057.

[13] M. Khoiron, A. Kasdi, and A. Rizki, "Development of digital social studies teaching materials in the era of pandemic emergency learning," *Indones. J. Soc. Stud.*, vol. 4, no. 1, pp. 36–44, 2021, doi:10.26740/ijss.v4n1.p36-44.

[14] E. Kupers, J. M. Mouw, and M. Fokkens-Bruinsma, "Teaching in times of COVID-19: A mixed-method study into teachers' teaching practices, psychological needs, stress, and well-being," *Teach. Teach. Educ.*, vol. 115, 2022, doi:10.1016/j.tate.2022.103724.

[15] B. Klusmann et al., "Providing emergency remote teaching: What are teachers' needs and what could have helped them to deal with the impact of the COVID-19 pandemic?," *Teach. Teach. Educ.*, vol. 118, 2022, doi: 10.1016/j.tate.2022.103815.

[16] T. F. Tan et al., "Generative artificial intelligence through ChatGPT and other large language models in ophthalmology clinical applications and challenges," *Ophthalmol. Sci.*, vol. 3, no. 4, 2023, doi:10.1016/j.xops.2023.100394.

[17] E. J. Sosa et al., "Educational software based on augmented reality: A systematic literature review," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 11, no. 4, pp. 1324–1329, 2021, doi: 10.18517/ijaseit.11.4.13671.

[18] C. T. T. Linh, H. T. Houng, and N. D. Tien, "Enhancing digital capacity for students at higher education institutions under the Ministry of Home Affairs in the context of digital

transformation," *Rev. Gest. Soc. e Ambient.*, vol. 17, no. 5, pp. 1–16, 2023, doi: 10.24857/rgsa.v17n5-018.

[19] M. Mononen, S. Havu-Nuutinen, and M. Haring, "Student teachers' experiences in teaching practice using team teaching in flexible learning space," *Teach. Teach. Educ.*, vol. 125, 2023, doi: 10.1016/j.tate.2023.104069.

[20] R. Maryanti et al., "Teaching viscosity to students with special needs in vocational high schools from daily products: From literature review on concept, misconception, to teaching and learning process," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 12, no. 6, pp. 2404–2414, 2022, doi:10.18517/ijaseit.12.6.17058.

[21] X. Jiang, Y. Du, and Y. Zheng, "Evaluation of physical education teaching effect using Random Forest model under artificial intelligence," *Heliyon*, vol. 10, no. 1, 2024, doi:10.1016/j.heliyon.2023.e23576.

[22] O. A. G. Opesemowo and V. Adekomaya, "Harnessing artificial intelligence for advancing sustainable development goals in South Africa's higher education system: A qualitative study," *Int. J. Learn. Teach. Educ. Res.*, vol. 23, no. 3, pp. 67–86, 2024, doi:10.26803/ijlter.23.3.4.

[23] D. Gordon, M. Collins, and D. O'Sullivan, "The development of teaching case studies to explore ethical issues associated with computer programming: Four case studies on programming ethics," in *Proc. ACM Int. Conf.*, 2021, pp. [page numbers if available], doi:10.1145/3481282.3481293.

[24] A. Al Darayseh, "Acceptance of artificial intelligence in teaching science: Science teachers' perspective," *Comput. Educ. Artif. Intell.*, vol. 4, 2023, doi: 10.1016/j.caeai.2023.100132.

[25] I. Celik, "Exploring the determinants of artificial intelligence (AI) literacy: Digital divide, computational thinking, cognitive absorption," *Telemat. Informatics*, vol. 83, 2023, doi:10.1016/j.tele.2023.102026.

[26] B. Naghdipour, "English writing pedagogy at the crossroads: The case of Oman," *J. Second Lang. Writ.*, vol. 52, 2021, doi:10.1016/j.jslw.2021.100815.

[27] D. Tsz et al., "Using digital story writing as a pedagogy to develop AI literacy among primary students," *Comput. Educ. Artif. Intell.*, vol. 3, 2022, doi: 10.1016/j.caeai.2022.100054.

[28] R. Yang, "An empirical study on the scaffolding Chinese university students' English argumentative writing based on Toulmin model," *Heliyon*, vol. 8, no. 12, 2022, doi:10.1016/j.heliyon.2022.e12199.

[29] H. K. Widyaningrum et al., "Android application Appy pie to support students writing stories skill through flipped classroom learning models," *Int. J. Adv. Sci. Eng. Inf. Technol.*, vol. 12, no. 2, pp. 530–538, 2022, doi: 10.18517/ijaseit.12.2.12719.

[30] J. Su and W. Yang, "Artificial intelligence in early childhood education: A scoping review," *Comput. Educ. Artif. Intell.*, vol. 3, 2022, doi: 10.1016/j.caeai.2022.100049.

[31] S. S. Al-Qatawneh et al., "The representation of multiple intelligences in an intermediate Arabic-language textbook, and teachers' awareness of them in Jordanian schools," *Heliyon*, vol. 7, no. 5, 2021, doi: 10.1016/j.heliyon.2021.e07004.

[32] H. Sundari, "Analyzing needs of online-based EFL academic writing course: Students' voices in course design," *Res. Dev. J. Educ.*, vol. 8, no. 1, 2022, doi: 10.30998/rdje.v8i1.11215.

[33] A. Bewersdorff et al., "Myths, mis- and preconceptions of artificial intelligence: A review of the literature," *Comput. Educ. Artif. Intell.*, vol. 4, 2023, doi: 10.1016/j.caeai.2023.100143.

[34] H. Sundari and L. Leonard, "Exploring needs of academic writing course for LMS in the new normal," *JTP - J. Teknol. Pendidik.*, vol. 22, no. 3, pp. 140–150, 2021, doi: 10.21009/jtp.v22i3.16073.

[35] E. Lavrenteva and L. Orland-Barak, "Conceptual-analytical framework for exploring culture in EFL coursebooks: Analysis of teaching materials from a multimodal perspective," *Soc. Sci. Humanit. Open*, vol. 7, no. 1, 2023, doi:10.1016/j.ssaho.2023.100441.

[36] H. Arip, B. E, and R. S, "Needs analysis of teaching materials poetry appreciation for Kuningan University students," *Proc. Int. Conf.*, 2021, doi: 10.4108/eai.12-12-2020.2304981.