EXAMINING GAPS IN READING ACHIEVEMENT OF KINDERGARTEN PUPILS: EXPLORATORY DESIGN

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ABSTRACT

This study determined the gaps in reading achievement of kindergarten pupils. The exploratory sequential mixed methods design was utilized that started with qualitative phase then followed by quantitative data collection and analysis. More specifically, it aimed to construct a scale on gaps in reading achievement of kindergarten pupils in a sample of teachers. In the qualitative phase, there were ten (10) teachers who participated in the in-depth interview and seven (7) teachers participated in the focus group discussion. Moreover, a total of 300 teachers have been selected as respondents in quantitative phase. Meanwhile, the data were analyzed using the thematic analysis and exploratory factor analysis (EFA). The results show that a total of four themes have emerged in the qualitative findings that put emphasis on letter and sound identification, reading programs, instructional materials and strategies to close the gaps. The EFA results showed four underlying dimension of examining gaps in reading achievement of kindergarten pupils. To give the light of the study, the following conclusions are enumerated. Four emerging themes significantly emphasized on examining gaps in reading achievement of kindergarten pupils include letter & sound identification, reading programs, instructional materials and strategies to close the gaps. Results revealed from the Exploratory Factor Analysis (EFA) four underlying dimensions occur from the gaps in reading achievement of kindergarten pupils such as letter & sound identification, reading programs, instructional materials and strategies to close the gaps. The reliability test revealed that the overall Cronbach's Alpha was.743, which was interpreted as high, when examining gaps in reading achievement of kindergarten pupils. It means that the instrument's validity was very high and that it was suitable for use as a tool. The Exploratory Factor Analysis results revealed that there are 17 items of questionnaire sets that are suitable for factor loadings. This means that these items are appropriate for the study's measuring tools and pass the face validity test.

Keywords: kindergarten pupils, reading achievement, Exploratory Factor Analysis, Magpet Diistrict

INTRODUCTION

The early reading abilities that students develop lay the groundwork for future academic success. However, not all students have equal access to early learning opportunities and life experiences, and various groups of students may enter school with varying levels of reading proficiency.

There are already significant achievement gaps as a result of socioeconomic status when children enter kindergarten. In fact, socioeconomic status is the single most influential factor in children's school readiness. Engzell et al., (2020) report builds on existing evidence linking parents' economic resources to children's school readiness by demonstrating that, in addition to gaps in cognitive skills such as math and reading, gaps in non-cognitive skills such as persistence, self-control, and social skills exist between socioeconomically disadvantaged and advantaged children.

Students and society suffer as a result of a lack of proficient literacy and early learning skills. The achievement gap occurs when there is a lack of preparation in a child's early years. However, when children start school, the gap that existed before kindergarten usually follows them year after year. As a result, students who are falling behind will continue to fall behind (DellaVigna & Pope 2018).

According to Kraft & Falkin (2020) that factors such as unequal distribution of highly qualified and experienced teachers, harsh disciplinary policies, minimally articulated core curriculum, and a lack of consistent instructional support can result in a system that causes vulnerable students to fall further behind. Implicit bias, racism, and limited beliefs about student ability or readiness Inconsistent intervention strategies, he discovered, resulted in students who were far below proficiency not receiving adequate and sustained opportunities to accelerate their learning, while students who were barely into proficiency tended to slide in and out of proficiency. Many struggling students were given instruction and interventions that were sufficient to bring them up to proficiency but not sufficient to master reading skills.

Student achievement is greatly influenced by teacher expectations. This is critical for struggling students Papay et al., (2020). stated that students are profoundly influenced by the messages they receive about their ability from significant people in their lives. Teacher beliefs about students' abilities may be communicated unconsciously through body language, tone of voice, and word and behavior choices.

Furthermore, many working parents were struggling to educate and care for their children during the extended school closure (Harris, 2020). These one-of-a-kind educational challenges were accompanied by societal shocks such as a major economic downturn, job losses, widespread protests against racial injustice, and the tangible health threat of COVID-19. In short, extended absence from school will almost certainly have an impact on reading achievement and estimating that impact is difficult given all of the unique aspects of COVID-19 on schooling and society.

Because of the reading achievement gap, teachers are placing a renewed emphasis on education in the primary grades, as this time can lay the groundwork for all future learning. Because reading skills are so important in a student's academic future, this study will look at the gaps in reading achievement among kindergarten students.

FRAMEWORK

This study is based on Vygotsky's constructivism theory, in which students build knowledge based on experiences with other people (Vygotsky, 1978). Vygotsky's theory involving the

provision of experiences in educational settings is being implemented to help further understand the process of true experiential learning and the influences that it may have on students (Veraksa et al., 2016). Early childhood constructivism has been determined to be developmentally appropriate for early childhood education. In this study, the researcher will use constructivism's theoretical framework as a lens to examine students' abilities to acquire knowledge through interaction with peers and adults.

METHOD

Research Design

The exploratory design was used in this study to examine the gaps in kindergarten pupils' reading achievement as determined by their kindergarten teachers. When there were few or no previous studies to refer to or depend on in order to anticipate an outcome, an exploratory design is used. The emphasis is on obtaining knowledge and familiarity in preparation for further examination or when research challenges are in the beginning stages of investigation. Exploratory designs are frequently used to determine how best to proceed with a research or what approach would be most successful in obtaining information about a problem. Exploratory design is unstructured and informal. It's a technique for preliminary research that gives you a theoretical or hypothetical understanding of the study topic. It will not provide specific solutions to the research issue. This study is carried out to discover the nature of the problem and to aid the researcher in gaining a better knowledge of it. Exploratory research is adaptable and lays the foundation for future research (Creswell, 2016).

Respondents

The respondents of the study for quantitative was three hundred (300) kindergarten teachers at different schools in the Municipality of Magpet, Cotabato. One hundred Fifty (150) for Exploratory Factor Analysis (EFA). For qualitative, the research participants were ten (10) teachers participated in an Individual interview (IDI), and seven (7) participated on Focused Group Discussion (FGD).

Instrument

This study used an exploratory approach, including qualitative data from volunteers and quantitative data acquired through a survey instrument. During the qualitative phase, the researcher created an interview guide with questions about the gaps in the reading achievements of kindergarten pupils. The interview gave insight into the perspectives of a group of instructors on the subject. Face-to-face interviews were conducted in a semi-structured approach that offered guidance for the line of inquiry while also enabling the researcher and instructors to discuss other issues in a casual setting. Face to face interview was conducted using the video call, messenger or Skype with those who have internet access but those who do not have, face to face may be employed following the health protocols. A focus group discussion is the first tool to be employed. In this approach, a group of educators is chosen and given the opportunity to voice their thoughts on the subject at hand. When selecting members for a focus group, though, it's critical that they share comparable backgrounds and experiences. A series of in-depth interviews will be used as the study's second qualitative approach.

Interviews were conducted to have a deeper understanding of the concerns raised in the focus groups. Participants were allowed to express their thoughts and ideas about the gaps in reading achievement of kindergarten pupils.

Statistical Tools

The Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy and Bartlett's test were used to gather and evaluate interview replies. The KMO (Kaiser-Meyer-Okin measure of sampling adequacy, which provided an early indication of whether the sample size was adequate to accurately extract factors, and the Bartlett's Test, which evaluated the overall significance of the correlation within a correlation matrix, were used to assess the suitability of the data at the initial stage (Hare, 1998). The next phase included initially extracting the data and utilizing exploratory factor analysis' principal axis factoring to identify the dimensions of the unrotated factors (EFA).

It was assessed by the Kaiser-Meyer-Olkin Sampling Adequacy Test how much of the variance in your variables is attributable to underlying factors. Your matrix of association is an identity matrix, which suggests that your variables are unrelated and not suitable for structure identification, according to Bartlett's sphericity test. In the final stage, the validity of the identified factor structure was assessed, and the inter-item correlation and Cronbach's alpha.fit of each factor item were checked.

RESULTS AND DISCUSSION

This chapter deals with presentation, analysis, and interpretation of data. It includes the emerging themes of examining gaps in reading achievement of kindergarten pupils.

Emerging Themes of examining gaps in reading achievement of kindergarten pupils.

There are four themes that emerge from in-depth interview with the teachers that put emphasis the examining gaps in reading achievement of kindergarten pupils.

Letter & Sound Identification. The sounds of the letters are learned and recognized by the child during early childhood. However, many of the kindergarten students in this study were unable to produce letter sounds or identify letter names and sounds. Young children's alphabet knowledge varies greatly depending on their experiences with and exposure to print. The response of the teachers explain these ideas as follows:

> *“As a teacher, there were lots of gaps I have encountered in reading achievement of my kindergarten pupils. These are sounding of letters into a word and letter identification.”(IDI_P4)*

> *“Initial sounds of the letters because if the pupils cannot know the sounds of the letter he/she can’t read it. As a teacher, we need to teach them first the initial sound of the letters so that our pupils can identify the sounds and letters of the alphabet for them to read easily.” (IDI_P5).*

> *"Kindergarten learners didn't know the initial sound of the letters. If a child can't give the initial sound correctly the child can't read. Teaching them different sound of the letters without the follow up at home, it's useless." (FGD_P4)*

Many kindergarten students from low-income families enter formal schooling behind their peers in terms of early literacy development. As a result, they are at risk of developing reading difficulties in the future. According to research, explicit instruction is required for success in early literacy sub skills such as letter naming knowledge and phonological awareness. Closing the early literacy development gap may require this (Ouellette & Sénéchal, 2017).

Letter naming knowledge and phonemic awareness have been shown to aid in the learning of letter-sound correspondences in studies. The importance of explicitly teaching these two skills to students cannot be overstated. The extent to which these skills emerge in kindergarten students attending school in a large, urban district and from backgrounds that put many of them at risk for reading acquisition is of interest in this study (Paige, 2018).

Reading Programs. The department of education and the school come up with different programs to intervene with the problems with letter and sound identification. Teachers implemented the programs based on the circumstances at their school. The responses of the teachers are indicated below.

> *"Phonetics awareness among kindergarten pupils, Drop Everything and Read and conduct of Summer Reading." (IDI_P1).*

> *"Summer reading program. It encourage children to read and to read often." (IDI_P7)*

> *"The ECARP or Every Child A Reader Program and organization which allow s the family involvement in school." (IDI_P2).*

> *"Print more instructional materials/ reading materials in our group chat in our District namely (CNR) or Care for Non-Reader. (FGD_P1)*

> *"Early grade Reading Assessment (EGRA), Home Visitation." (FGD_P5).*

Jones (2018) aimed to demonstrate that students would learn alphabet letters more effectively if their exposure to and practice with them were increased, difficult letters were given more attention, and lessons were explicitly taught through dispersed review cycles.

Borleffs et al., (2019) cited that it is ideal to introduce the alphabet knowledge concepts throughout the emergent literacy years through interactive games and exercises like sorting and matching. These exercises give pupils a safe setting in which to learn these novel ideas.

Instructional Materials. In delivering instructions, instructional materials act as a conduit between the teacher and the students. They may also serve as motivation in the teaching-learning process. It is used to keep students' attention and prevent boredom. Instructional materials are critical for teaching, especially for inexperienced teachers. Teachers rely on instructional materials in all aspects of their teaching. They require background information on the subject they are teaching. The response of the teachers are indicated below.

> *"Kindergarten teachers need to use varieties of instructional materials. Using interactive IM's, using multi- media presentation to catch attention of the pupils (IDI_P1).*
>
> *"Textbooks, digital learning resources, plays and lectures."(IDI_P2).*
>
> *"Reading materials, flash cards for the letters and sound" (IDI_P9)*
>
> *"I have to provide more instructional materials or IM's in order for them to recognize easily my given activities about letter sounds and letter names" (FGD_P1)*

For educational objectives and goals to be met, educational resources must be accessible. The educational resources available and the way they are utilized directly affect how well an educational institution accomplishes its objectives. Educational resources can be categorized as human, material, physical, and financial resources (Boateng, 2019).

Educational resources, sometimes referred to as instructional materials, are used to monitor students' information assimilation, enhance their knowledge, skills, and capacities, and contribute to their general growth and raising. The benefits of instructional materials include lower production costs, the ability to teach a large class of pupils at once, and the ability to increase students' attention and interest (Dussling, 2020).

Strategies to close the Gaps. A good way to close reading learning gaps is to practice phonics and phonemic awareness. Basic phonics skills include letter recognition and letter-sound fluency. Reading requires decoding, which requires seeing letters and quickly producing their sounds. Teachers employed a variety of strategies when teaching letter and sound identification. The responses of the teachers are indicated below.

> *"I strongly believe in the philosophy of learning by doing so kindergarten pupils discover their learning by themselves and let them realize basic principle that will be apply to the learning process. To discover own learning is a lifelong learning." (IDI_P4).*
>
> *'In our training, the speaker always emphasis the best strategies suited to our pupils so that I can apply to my students that we need to have also trainings to our parents on reading." (IDI_P5).*
>
> *"Motivate pupils to read." (IDI_P8).*

"Teach them through playing letters and sound reproduction." (IDI_P10).

"The role of a teacher to elevate the reading achievement is to have a pre- reading activities before establishing the purpose for reading and activate the learners' prior knowledge" (IDI_P8).

Another strategy for closing reading gaps is to expose children to a diverse vocabulary. Texts are made up of words, and they contain both familiar and unfamiliar words. The more words a child knows, the easier it will be for him or her to understand passages, stories, and other types of text (Katz, 2017).

Our students' success will be determined by their ability to read fluently and dexterously. Despite widespread recognition of the importance of reading, our classroom still has a reading gap, which is caused by a variety of factors such as parental wealth, education, and book ownership, as well as classroom practice. To close the gap, we must ensure that every teacher has the necessary knowledge and skills to confidently teach reading (Quigley, 2020).

Construction of investigating the examining gaps in reading achievement of kindergarten pupils Scale

Table 1 discusses the examining gaps in reading achievement of kindergarten pupils that are chosen based on their frequency of occurrence from the reaction in the qualitative interviews, based on the narratives of the participants. Using the exploratory factor tests, this 17 item questionnaire was subjected to data reduction techniques (EFA).

Table 1

Examining Gaps In Reading Achievement Of Kindergarten Pupils Scale Items

Items
My pupils could not identify letter name and letter sounds.
My pupils cannot read the letter and cannot produce the sounds.
My pupils cannot identify the initial sounds of the letters.
My pupils are using the phonetics awareness in Drop Everything and Read.
My pupils' family is involve in school for the ECARP or Every Child A Reader Program.
My pupils are visited in their home as part of the school home visitation program.
My pupils attended the summer reading class to help them in the letter name and letter sound identification.
My pupils are provided with varieties of instructional materials, interactive IM's, and multi- media presentation to improve their reading.
My pupils attended the (CNR) or Care for Non- Reader program.
My pupils are provided sufficient supplies in reading materials.
My pupils' parents are inform to follow up every day with their child to develop the reading skills of their children.
My pupils use textbooks, digital learning resources, plays and lectures

My pupils use reading materials, flash cards for the letters and sound.

My pupils are motivated to read.

My pupils learn through playing letters and sound reproduction.

My pupils use technology in improving reading.

I personalize student learning path, offer the right level of scaffolding at the right time and supply at home the resources for parents

Dimensions of examining gaps in reading achievement of kindergarten pupils Scales

Testing the 17 items in the examining gaps in reading achievement of kindergarten pupils' scale to examine the in-reading achievement of kindergarten pupils. The Kaiser Meyer-Olkin Measure (KMO) of sampling adequacy and Bartlett's Sphericity Test were performed to ensure that the build could be tested for factor analysis. Table 2 shows that the KMO value is.711 higher than the recommended value of.5, indicating that the sample is worthy and sufficient for factor analysis. According to Kaiser (1974), values greater than.5 are acceptable for acceptance. Furthermore, values between.5 and.7 are mediocre, values between.7 and.8 are good, values between.8 and.9 are high, and values above.9 are exceptional.

Meanwhile, the Bartlett test was used to see if there is any redundancy between the variables that we can summarize with a few variables. The findings revealed that the p-value is critical (p.05), implying that the data has patterned relationships and that factorability is assumed. As a result, we had a value of.711 in KMO. This demonstrates that when a strong partial correlation exists, the degree of information between the variables greatly overlaps. As a result, factor analysis is credible.

Table 2
KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.711
Bartlett's Test of Sphericity	Approx. Chi-Square	2243.503
	df	136
	Sig.	.000

Derivation of Factors Structures for Examining Gaps In Reading Achievement of Kindergarten Pupils.

To determine the number of factors, the 17-item scale was tested using an unrotated factor matrix with estimates of eigenvalues, percent of the variance, and cumulative variance. Eigenvalues represent the total amount of variance that a given principal component can explain. In theory, they can be positive or negative, but in practice, they always explain positive variance. It's a good sign if the eigenvalues are greater than zero (Baglin, 2014). According to the Kaiser criterion, all components with eigenvalues less than 1.0 are dropped, with 1.0 being the eigenvalue equal to the information accounted for by an average single item (Preacher et al., 2013).

Meanwhile, 4 factors with eigenvalues greater than one were identified in the model. Each item's loading factor corresponds to a factor score greater than.40. This indicates that there was a sufficient correlation between factors and variables; thus, the item can be considered a component of the specific factor.

The Table 3 shows the pattern matrix using Principal Axis Factoring with a Promax rotation method of Promax with Kaiser Normalization. It can be observed in the results the loadings of items in the three factors are above .4. Field (2005) supports the notion that.4 is both recommended and required to obtain the desired factors. Furthermore, there is no item cross-loading or no loading at all, indicating that the items best represent their factors. Hair et al. (1998) emphasize that loadings indicate the degree of correspondence between the variable and the factor, with higher loadings indicating that the variable is representative of the factor.

Table 3
Pattern Matrix Four-Factor Model

	Factor			
	1	2	3	4
My pupils could not identify letter name and letter sounds.		.852		
My pupils cannot read the letter and cannot produce the sounds.		.904		
My pupils cannot identify the initial sounds of the letters.		.811		
My pupils are using the phonetics awareness in Drop Everything and Read.	.468			
My pupils' family is involved in school for the ECARP or Every Child A Reader Program.				.422
My pupils are visited in their home as part of the school home visitation program.	.560			
My pupils attended the summer reading class to help them in the letter name and letter sound identification.				.635
My pupils are provided with varieties of instructional materials, interactive IM's, and multi- media presentation to improve their reading.	.761			
My pupils attended the (CNR) or Care for Non- Reader program.				.911
My pupils are provided sufficient supplies in reading materials.	.646			
My pupils' parents are inform to follow up every day with their child to develop the reading skills of their children.	.730			
My pupils use textbooks, digital learning resources, plays and lectures	.474			
My pupils use reading materials, flash cards for the letters and sound.	.659			
My pupils are motivated to read.			.529	
My pupils learn through playing letters and sound reproduction.			.765	
My pupils use technology in improving reading.			.696	
I personalize student learning path, offer the right level of scaffolding at the right time and supply at home the resources for parents			.607	

Extraction Method: Principal Axis Factoring, Rotation Method: Promax with Kaiser Normalization.

As shown in Table 4, factor analysis was used to analyze variables and group them into appropriate factors for further statistical analysis. The Factor Correlation Matrix provides the estimated correlation between the two extracted factors. It has a value between -1 and 1, with -1 indicating a perfectly negative linear correlation between two variables, 0 indicating no linear correlation between two variables, and 1 indicating a perfectly positive linear correlation between two variables. The greater the distance between the two variables, the stronger the relationship. The stronger the relationship, the greater the difference between the factor and pattern matrices.

Table 4

Factor Correlation Matrix				
Factor	1	2	3	4
1	1.000	.056	.587	.462
2	.056	1.000	.124	.268
3	.587	.124	1.000	.497
4	.462	.268	.497	1.000

Extraction Method: Principal Axis Factoring
Rotation Method: Promax with Kaiser Normalization

Final Version of Examining Gaps in Reading Achievement of Kindergarten Pupils Model. The final version of the instrument which is the output of this study is presented in the form provided in Table 5. The scale consists of 17 items. Specifically, a total of three (3) items in letter and sound identification, five (5) items in reading programs, four (4) items for instructional materials, and five (5) items for strategies to close the gaps. Using the 5 Point likert Scale from 5- strongly agree, 4- agree, 3- moderately agree, 2- disagree & 1- strongly disagree is shown below.

Table 5
17 Items Examining Gaps in Reading Achievement of Kindergarten Pupils Scale

	1	2	3	4	5
Letter & Sound Identification					
My pupils could not identify letter name and letter sounds.					
My pupils cannot read the letter and cannot produce the sounds.					
My pupils cannot identify the initial sounds of the letters.					
Reading Programs					
My pupils are using the phonetics awareness in Drop Everything and Read.					
My pupils' family is involve in school for the ECARP or Every Child A Reader Program.					

My pupils are visited in their home as part of the school home visitation program.

My pupils attended the summer reading class to help them in the letter name and letter sound identification.

My pupils attended the (CNR) or Care for Non- Reader program.

Instructional Materials

My pupils are provided with varieties of instructional materials, interactive IM's, and multi- media presentation to improve their reading.

My pupils are provided sufficient supplies in reading materials.

My pupils use textbooks, digital learning resources, plays and lectures

My pupils use reading materials, flash cards for the letters and sound.

Strategies to close the Gaps

My pupils' parents are inform to follow up every day with their child to develop the reading skills of their children.

My pupils are motivated to read.

My pupils learn through playing letters and sound reproduction.

My pupils use technology in improving reading.

I personalize student learning path, offer the right level of scaffolding at the right time and supply at home the resources for parents

Legend:

5 = Strongly agree
4 = Agree
3 = Moderately agree
2 = Disagree
1 = Strongly Disagree

Reliability Test on the Examining Gaps in Reading Achievement of Kindergarten Pupils Questionnaire

Below are the tables that present the reliability scale for each of the factors on the extracted examining gaps in reading achievement of kindergarten pupils' questionnaire in this study.

Table 6. Overall Reliability Test

Scale	Cronbach's Alpha
Letter & Sound Identification	.760
Reading Programs	.756
Instructional Materials	.714
Strategies to Close the Gaps	**.721**
Overall Reliability	**.743**

Based on table 7, it shows that the ten item-statement on the factor letter & sound identification got a Cronbach's Alpha equivalent to .760. This means that the items represent good correlation and this factor letter & sound identification can be considered as a highly reliable items.

Table 7.

Factor 1 letter & sound identification Reliability Statistics

Cronbach's Alpha	N of Items
.760	3

Based on table 8, it shows that the five item-statement on the reading programs got a Cronbach's Alpha equivalent to .756. This means that the items represent good correlation and this reading programs can be considered as a highly reliable item.

Table 8.

Factor 2 Reading programs Reliability Statistics

Cronbach's Alpha	N of Items
.756	5

Based on table 9, it shows that the four item-statement on the instructional materials got a Cronbach's Alpha equivalent to .714. This means that the items represent good correlation and these instructional materials can be considered as a highly reliable items.

Table 9.

Factor 3 Instructional Materials Reliability Statistics

Cronbach's Alpha	N of Items
.714	4

Based on table 10, it shows that the four item-statement on the strategies to close the gaps got a Cronbach's Alpha equivalent to .721. This means that the items represent good correlation and these strategies to close the gaps can be considered as a highly reliable item.

Table 10.
Factor 3 strategies to close the gaps Reliability Statistics

Cronbach's Alpha	N of Items
.721	5

Overall, based on table 11, it shows that the extracted examining gaps in reading achievement of kindergarten pupils' questionnaire got a Cronbach's Alpha equivalent to .743. This means that the items represent good correlation and this examining gaps in reading achievement of kindergarten pupils' questionnaire can be considered as a highly reliable items.

Table 11.
Examining gaps in reading achievement of kindergarten pupils' Questionnaire

Reliability Statistics

Cronbach's Alpha	N of Items
. 743	17

CONCLUSIONS

Four emerging themes significantly emphasized on examining gaps in reading achievement of kindergarten pupils include letter & sound identification, reading programs, instructional materials and strategies to close the gaps. Results revealed from the Exploratory Factor Analysis (EFA) four underlying dimensions occur from the examining gaps in reading achievement of kindergarten pupils such as letter & sound identification, reading programs, instructional materials and strategies to close the gaps. The reliability test revealed that the overall Cronbach's Alpha was.743, which was interpreted as high, when examining gaps in reading achievement of kindergarten pupils. It means that the instrument's validity was very high and that it was suitable for use as a tool. The Exploratory Factor Analysis results revealed that there are 17 items of questionnaire sets that are suitable for factor loadings. This means that these items are appropriate for the study's measuring tools and pass the face validity test.

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