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Appendix I

INSTITUTIONAL HUMAN ETHICS COMMITTEE

Avinashilingam

Institute for Home Science and Higher Education for Women
(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956) Re-accredited with 'A+' Grade by NAAC.
Recognised by UGC Under Section 12 B
Coimbatore-641 043, Tamil Nadu, India

20th January 2020

To
Ms.Kongkona Sonowal
Department of Human Development
Avinashilingam Institute for Home Science and
Higher Education for Women
Coimbatore – 641 043

Dear Kongkona Sonowal.

Ref: Your proposal No. IHEC/19-20/HD/45 entitled "Formulating an Early Childhood Education Curriculum Framework based on Developmentally Appropriate Practices(DAP) for Preschool children" submitted for approval to the IHEC on 30.10.2019.

The Institutional Human Ethics Committee of our University hereby grants approval to your research proposal No.IHEC/19-20/HD/45 entitled "Formulating an Early Childhood Education Curriculum Framework based on Developmentally Appropriate Practices(DAP) for Preschool children" submitted by you. The Approval number for the same is AUW/ IHEC/HD-19-20/XPD/45.

We wish you all the best in your research endeavours.

Regards.

S. Uma Mageshwari
Dr.S.Uma Mageshwari
Member Secretary

Institutional Human Ethics Committee

little Indians ACADEMY

"Carving the Future"

Date:.....

To Whomsoever It May Concern

Subject: Permission granted for data collection and intervention.

This is to certify that permission has been granted to **Mrs. Kongkona Sonowal** (student ID 18PHHDF003), a Ph.D. Research Scholar from the Department of Human Development, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, to conduct data collection and implement an intervention as part of her research titled: **"Effectiveness of a Developmentally Appropriate Practice-Based Curriculum Framework Focused on Emergent Literacy and Numeracy Skills of Preschoolers"**. The activities will be carried out at our institution in coordination with the concerned staff.

We extend our support for the successful completion of her research work and wish her all the best in her future endeavours.

With warm regards

Coimbatore

30th September 2022.

Jerome G

New No. 12, 9th Street Extension, Gandhipuram, Coimbatore - 641012.
Contact No: 9894 222 200 / 0422-4212220. E-mail: littleindiansacademy@gmail.com

Appendix II

Questionnaire to elicit General Profile

Fill Please in the following entries:

1. Name :
2. Age :
3. Date of birth :
4. Gender : Male ☐ Female ☐
5. Birth order : First Born ☐ Later Born ☐
6. Name of the School :
7. Class :
8. Types of family : Nuclear ☐ Joint ☐ Extended ☐
9. Locality of Residence: Rural ☐ Urban ☐ Semi urban ☐
10. Father‟s education :

Formal education ☐ Primary ☐ Secondary ☐ Graduate ☐ Post Graduate ☐

11. Mother‟s education :

Formal education ☐ Primary ☐ Secondary ☐ Graduate ☐ Post Graduate ☐

12. Father‟s occupation :

Government ☐ Private ☐ Own business ☐ Labour ☐ Others ☐

13. Mother‟s occupation :

Government ☐ Private ☐ Own business ☐ Labour ☐ Others ☐

Appendix III

Emergent Literacy and Numeracy Assessment Pack

(Reading Skills)

Print awareness

Q.1:

Place a piece of paper with the students first and last nameon the table. Say the following:	**Response**
1. Read your first and last name	
2. Point to your first name	
3. Point to your last name	
4. Point to first letter in your first name	
5. Point to last letter in your first name	
6. Tell me the name if each letter as I point(identified all letters in first name correctly)	
7. (Cover first name) point to a capital/uppercase letter	
8. Tell me the name if each letter as I point.(Identified allletters in last name correctly)	
Total Score	

Q. 2:

- Show student Dog on Grass (attached)

Say "this is a story about a dog". We will read it together, Point to each word in the first line as your read, "my dog is brown. Now you point as your read it"	**Response**
1. Point to the second line, but not to each word. Say: This says "my dog is on the grass" point to each word as you read it" One to one match with one-syllable words	
2. Point to the third line, but not to each word and say: this says "my dog is sitting" point to each word as you read it. One to one match with one and two syllable words.	
3. Cover the first two lines with a sheet of paper. Say: now I am going to ask you to point to certain words and letters. Point to the word "is"	
4. What letter does *is* end with?	
5. What letter does *sitting* end with?	
6. What is the first letter in the word *dog*?	
7. What sound does *dog* begin with?	
8. What sound does *dog* end with?	
Total Score	

Level of control	**No/little**	**Some**	**Gaining**	**Control**
Total score	0-2	3-5	6-7	8

Phonological awareness

Q.1. Rhyme Recognition

Tell the child that two words that sound the same at the end are rhyming words, such as hat and sat. Do sit and bit rhyme? (Yes) Do chair and boy rhyme? (No) (If the child appears to grasp the skill, do the same for the following pairs of words. Put a check in the box to the right of the pair if the child answers correctly.)

	Response
cake/bake	
hot/pot	
pen/pencil	
tree/bee	
fat/mat	
funny/bunny	
boy/bus	
Total	

Q.2. Rhyme Production

Say: I‟m going to say a word and I want you to tell me a word that rhymes with it. (The answer can be a real word or a nonsense word.) Can you tell me a word that rhymes with hot? (Possible answers may include: pot, mot, tot, pit etc. Put a check in the box to the right if the child answerscorrectly. Write down his/her answers on the lines provided.

1. Cake …….
2. Man …….
3. Dark …….
4. Fan …….
5. Tree …….
6. Fat …….

Total ……..

Q.3. Syllable Blending

Tell the child that I‟m going to say a word in a funny way. Your job is to put the parts together and say the whole word. (Give the following examples, pausing between syllables and have the student say the words normally.) Say: Out-side (outside), ro-bot (robot) (If the child grasps the skill, do the following words and put a check in the box if the child says them correctly.)

	Response
1. Pop-corn	
2. Can-dy	
3. Rain-bow	
4. Pa-per	
5. Ti-ger	
6. Black-board	
Total	

Q.4. Syllable Segmentation

Tell the student that I‟m going to say a word and then break it into parts, or syllables. Say: rainbow (Say it normally and clap out the two parts in rainbow while saying each part.) Then say: Rainbow (This time, push up a chip as you say each syllable). Read each of the following words, and ask the child to push up a chip while saying each syllable. It is not necessary to clap the syllables again unless the skill needs to re-taught. Put a checkin the box to the child does it correctly.

	Response
1. Sometime	
2. Everyday	
3. Basket	
4. Bedroom	
5. Helicopter	
6. Colorful	
Total	

Q.5. Phoneme Isolation of Final Sounds

Tell the child that I‟m going to say a word and I want you to tell me the last sound of the word I say. Are you ready? What is the last sound in the word pot (The child should say /t/. Do the samefor the words below and put a check in the box to the right if the child says the last sound correctly).

	Response
1. Man (n)	
2. Milk (k)	
3. Chocolate (e)	
4. Popcorn (n)	
5. Sheep(p)	
6. Potato(o)	
Total	

Q.6. Phoneme Isolation of Initial Sounds

Tell the child that I‟m going to say a word and I want you to tell me the first sound of the word Isay. Are you ready? What is the first sound in the word top? (The child should say /t/. Do the same with the words below and put a check in the box to the right if the child says the first soundcorrectly).

	Response
1. Cat (C)	
2. Dog (D)	
3. Big (B)	
4. Rain (R)	
5. Apple(A)	
6. Nest (N)	
Total	

Q.7. Phoneme Blending- Onset and Rime

Tell the student that you are going to say same words in a funny way. The job of the student is toput the pats together and say the whole word. Do these examples by segmenting each word into onset and rime. Then have the child say the whole word blended together:/m/op/ is mop, /n/est/ isnest. Put a check in the box to the right if the child says the whole word correctly.

	Response
1. /s/ /un/ (sun)	
2. /f/ /an/ (fan)	
3. /f/ /ish/ (fish)	
4. /p/ /ig/ (pig)	
5. /d/ /og/ (dog)	
6. /c/ /ar/ (car)	
Total	

Q.8. Phoneme Blending-All Phonemes

Tell the students that you are going to separate all the sounds in a word. This student is to say thewhole world. Do these examples by segmenting each sound and having the student say the whole word: for example, /s/ /i/ /t/ is sit and /s/ /t/ /o/ /p/ is stop. Read each word in segmented fashion. Put a check in the box to the right if the child says the whole word correctly.

	Response
1. /m/ /e/ (me)	
2. /b/ /e/ /d/ (bed)	
3. /sh/ /o/ /p/ (shop)	
4. /h/ /o/ /t/ (hot)	
5. /c/ /a/ /r/ (car)	
6. /p/ /l/ /a/ /n/ /t/ (plant)	
Total	

3/6: frustration level-stop testing: reassess after instruction, 5/6 : Mastery

Listening comprehension

Q.1:

Tommy is a brown dog with big ears. Every morning, he goes for a walk with his owner. Tommy loves to run after birds in the park. One day, he found a red ball under a bench. He picked it up with his mouth and brought it to his owner. His owner smiled and threw the ball for Tommy to catch. Tommy ran fast and caught the ball in mid-air. He was so happy

	Response
1. What color is Tommy?	
2. What does Tommy do every morning?	
3. What does Tommy love to chase in the park?	
4. What did Tommy find under the bench?	
5. What did Tommy do with the ball?	
6. How did Tommy feel when he caught the ball?	
Total	

3/6: frustration level 5/6 : Mastery

Writing Skills

Q.1. Number writing Recording Sheet

Materials: Writing numeral paper (attached)

Number	Response	Number	Response
0		16	
1		17	
2		18	
3		19	
4		20	
5		21	
6		22	
7		23	
8		24	
9		25	
10		26	
11		27	
12		28	
13		29	
14		30	
15			

Student Scores Meets Expectation

Correct Number…./30 Correct Number 9/30

Q.2. Alphabet writing materials:

	Response
1. Forming pre-writing shapes (line, circle, square, cross, triangle etc.)	
2. Tracing on a line with control.	
3. Coloring within the line	
4. Self generating letters independently	
5. Writing their name	
6. Writing numbers 1-10 independently	
7. Writing basic words that are recognizable (usually if it‟s in their name).	
8. Writing regular words by listening for the sounds	
8/8 Mastered, 7/8 Approaching, 6/8 Basic	

Numeracy Skills

Number and operation

Q.1. Counting Forward

Count forward beginning from a given number within the know sequence. Say, "I am going to say a number and I want you to tell me the numbers that come after it. So if I said, „3‟ you would say, „4,5,6‟	Response
1. What numbers come after 4? (5,6,7)	
2. What numbers come after 7? (8,9,10)	
3. What numbers come after 3? (4,5,6)	
4. What numbers come after 9? (10,11,12)	
5. What numbers come after 13? (14,15,16)	
6. What numbers come after 17? (18,19,20)	
6/6 Mastered, 5/6 Approaching, 4/6 Basic	

Q.2. Counting and Cardinality: Compare Number of objects:

Identify whether the number of objects in one group is greater than, less than or equal to the number of objects in another group.	Response
1. Point to the red box(pens) "Which group shows a number greater/more than the pens?" (yellow crayons)	
2. Point to the green box(pencils) "Which group shows number less/fewer than the pencils?" (paste/glue)	
3. Point to the blue box(crayon boxes) "Which group shows number equal/same as the crayon boxes?"	
4. Point to the yellow box(apples) "Which group shows number less/fewer than the apples?" (red stars)	
5. Point to the orange box(scissors) "Which group shows number greater/more than the scissors?"(blue crayons)	
5/5 Mastered, 4/5 Approaching, 3/5 Basic	

Q.3. Counting and Cardinality: Compare Numbers

Identify whether the number of objects in one group is greater than, less than or equalto the number of objects in another group.	Response
1. Point to the orange box "Which number is greater/more" (7)	
2. Point to the blue box "Which number is less" (3)	
3. Point to the red box "Which number is less?" (9)	
4. Point to the yellow box "Which number is greater/more?" (8)	
5. Point to the green box "Which number is greater/more?"(10)	
6. Point to the black box "Which number is less?" (8)	
6/6 Mastered, 5/6 Approaching, 4/6 Basic	

Q.4. Number and Operations in Base Ten

Materials: Cubes were used and sorting mat used is attached

Compose and decompose numbers from 11 to 19 into tens and some further ones. Count out 15 cubes. Arrange them on the sorting mat (filling the 10 frame first) say, "howmany groups of 10 can you make from 15?"(1), "how many ones does 15 have?(5)	
1. Count out 13 cubes. Say, "How many groups of 10 can you make from 13? (1)and "how many ones does 13 have?" (3)	
2. Count out 16 cubes. Say, "How many groups of 10 can you make from 16? (1)and "how many ones does 16 have?" (6)	
3. Count out 14 cubes. Say, "How many groups of 10 can you make from 14? (1)and "how many ones does 14 have?" (4)	
4. Count out 17 cubes. Say, "How many groups of 10 can you make from 17? (1)and "how many ones does 17 have?" (7)	
5. Count out 19 cubes. Say, "How many groups of 10 can you make from 19? (1)and "how many ones does 19 have?" (9)	
5/5 Mastered, 4/5 Approaching, 3/5 Basic	

Data analysis and measurement

Q.1.

Materials attached

Directly compare two objects with a measureable attribute	
"Look at the crayons"	
1. Say, "Which one is shorter?" (orange)	
2. Say, "Which one is longer?" (blue)	
"Look at the glue"	
3. Say, "Which one is taller?" (one on the right)	
4. Say, "Which one is shorter?" (one on the left)	
"Look at the cats"	
5. Say, "Which one is shorter?" (one on the right)	
6. Say, "Which one is taller?" (one on the left)	
"Look at the cats on the balance scale"	
7. Say, "Which one weighs less?" (one on the left)	
8. Say, "Which one weighs more?" (one on the right)	
8/8 Mastered, 7/8 Approaching, 6/8 Basic	

Geometry and spatial awareness

Q.1.

Materials attached

Correctly names geometric shapes	Response	Correctly names geometric shapes	Response
Circle		Cylinder	
Square		Cone	
Triangle		Cube	
Hexagon			
Rectangle			
8/8 Mastered, 7/8 Approaching, 6/8 Basic			

Algebra and pattern making

Q.1. Addition and Subtraction

Materials: Teddy bear counters or other counters

Represent addition and subtraction with objects. Students use the teddy bear counters to act out the following story problems.	Response
1. Say, "three teddy bears were playing in the forest. Two more came to play. How many were there? (5)	
2. Say, "eight teddy bears were at the park. One went home. How many were left at the park? (7)	
3. Say, "five teddy bears were eating chocolate. One joined them. How many ate chocolate? (6)	
4. Say, "Four teddy bears were sleeping. Two woke up. How many were still sleeping? (2)	
5. Say, "nine teddy bears were swimming in the pond. Two got out. How many were still in the pond?" (7)	
6. Say, "three teddy bears were at a party. One more came . How many were at the party?" (4)	
6/6 Mastered, 5/6 Approaching, 4/6 Basic	

Q.2. Operation and Algebraic thinking: Making 10

Materials: Cubes or other counters

For any number 1-9, find the number that makes 10 when added to a given number.	Response
1. Place 7 cubes in a row. Say "can you add cubes to make this 10?"	
2. Place 5 cubes in a row. Say "can you add cubes to make this 10?"	
3. Place 8 cubes in a row. Say "can you add cubes to make this 10?"	
4. Place 3 cubes in a row. Say "can you add cubes to make this 10?"	
5. Place 8 cubes in a row. Say "can you add cubes to make this 10?"	
6. Place 2 cubes in a row. Say "can you add cubes to make this 10?"	
6/6 Mastered, 5/6 Approaching, 4/6 Basic	

Q.3 Operation and Algebraic thinking: Decomposing numbers

Materials: Cubes (2 colors) or other two color counters

Decomposing numbers less than or equal to 10 into pairs in more than one way	Response
1. Say "can you use just two colors to make four?"	
2. Say "can you show me another way to make four?"	
3. Say "can you use just two colors to make six?"	
4. Say "can you show me another way to make six?"	
5. Say "can you use just two colors to make five?"	
6. Say "can you show me another way to make five?"	
7. Say "can you use just two colors to make eight?"	
8. Say "can you show me another way to make eight?"	
8/8 Mastered, 7/8 Approaching, 6/8 Basic	

My dog is brown.

My dog is on the grass.

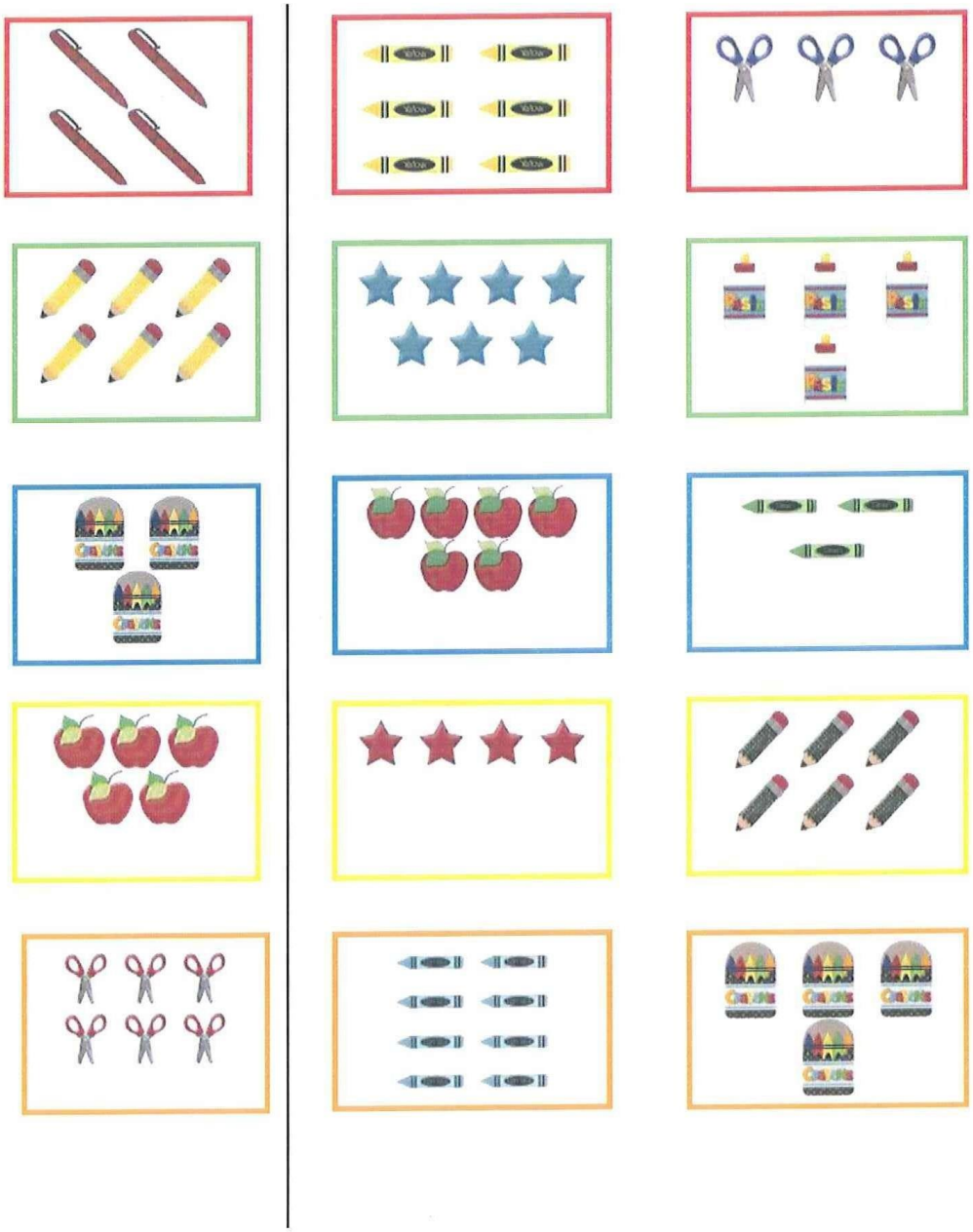
My dog is sitting.

Name: _____ Date: _____

Writing Numerals

Start with 0 and write your numbers in order.

Compare Number of Objects

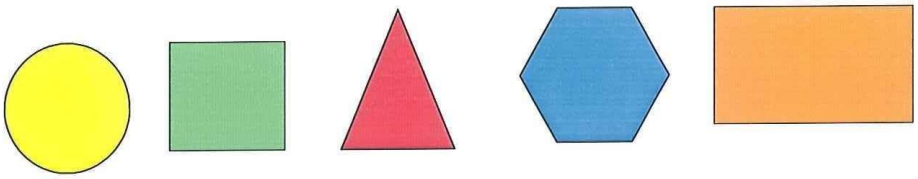


Compare Numbers:

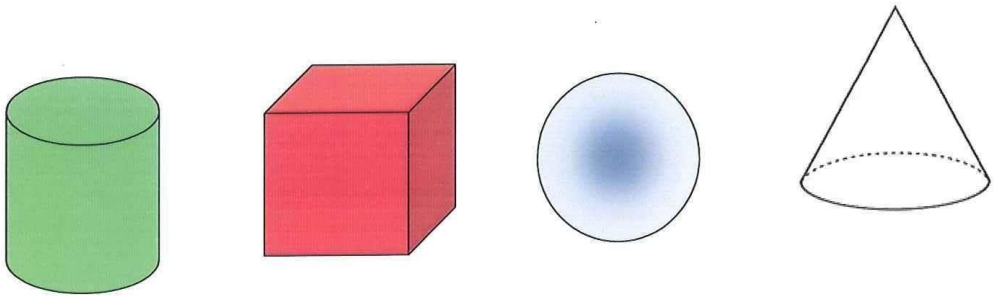
7	5
3	5
10	9
8	6
7	10
9	8

Geometry

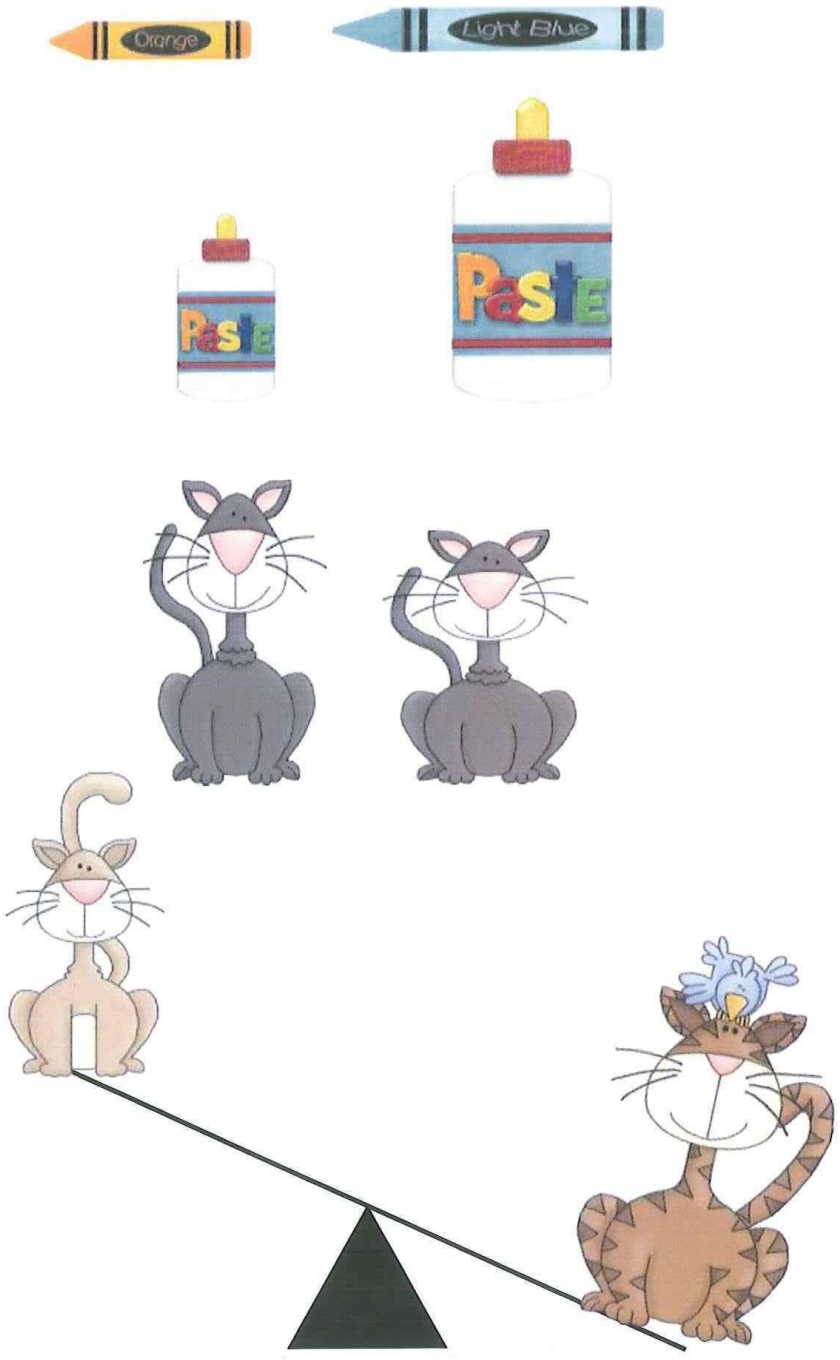
Identify 2-D Shapes



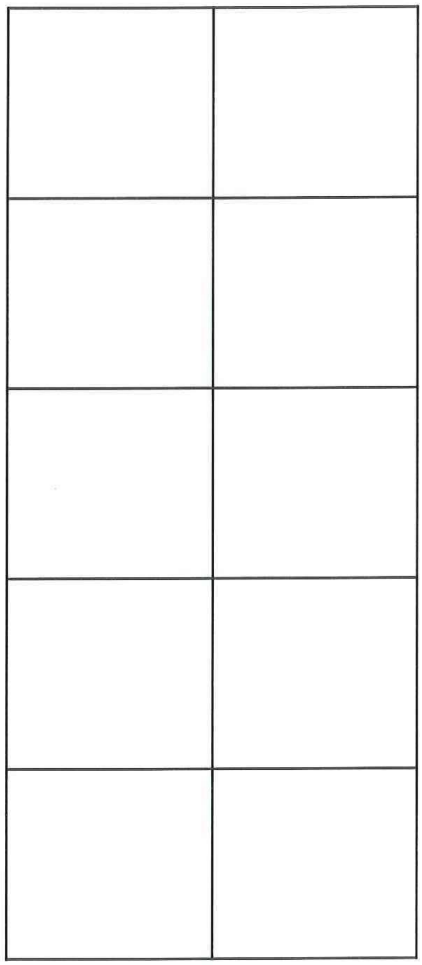
Identify 3-D Shapes



Measurement



Number Operations in Base 10
Ten Frame Sorting Mat



Appendix IV

Blue print of DAP based ECCE curriculum framework focused on Emergent Literacy and Numeracy Skills of pre-schoolers (3-6 years)

Content Areas	Indicators	Learning objectives	Milestones				Learning Pedagogy			
			36 to 42 months	**42 to 48 months**	**48 to 54 months**	**54 months and older**	**36 to 42 months**	**42 to 48 months**	**48 to 54 months**	**54 months and older**
Emergent Literacy Skills (Reading Skills)	Phonological awareness	Notices and discriminates rhyme	Begins to identify words that rhyme. Shows a growing ability to discriminate and identify sounds.	Completes rhyming word pairs and spontaneously generates rhyming words. Determines whether two words rhyme	Identifies similar rhyming words	Creates a group of rhyming words when given a word	Play-based teaching methods	Scaffolding teaching methods	Experimental teaching methods	Play based teaching methods
		Notices and discriminates alliteration	Participates in singing songs, rhymes, and chants that emphasise initial sounds. Becomes aware that some words begin with the same sound.	Shows growing awareness of the beginning and ending sounds of words. Develops an initial understanding of alphabet letters and their associated sounds.	Matches the beginning sounds of some words and notices words with the same initial sounds	Begins to match more words with the same initial sounds	Scaffolding teaching methods	Scaffolding teaching methods	Scaffolding teaching methods	Experimental teaching methods
		Notices and discriminates smaller and smaller units of sound	Recognises and understands individual words within a sentence. Understands and can identify separate syllables within a word.	Recognises that sounds correspond to letters of the alphabet and combine to form words.	Recognises syllables in words by segmenting and blending	Verbally blends and segments the onset and rhyme in one-syllable words.	Scaffolding teaching methods	Scaffolding teaching methods	Play based teaching methods	Experimental teaching methods

Content Areas	Indicators	Learning objectives	Milestones				Learning Pedagogy			
	Print awareness	Uses and appreciates books	Orients a book correctly; turns pages from front to back; recognises familiar books by their covers	Understands basic features of a book (title, author, illustrator); associates specific books with their authors	Identifies basic features of a book (e.g., title, author, illustrator) and begins to associate books with specific authors.	Uses different types of books appropriately according to their purpose.	Modeling teaching methods	Experimental teaching methods	Modelling teaching methods	Scaffolding teaching methods
		Uses print concepts	Understands that text carries meaning and can be read. Points to where reading begins and recognises the direction of reading (left to right, top to bottom).	Shows growing awareness of the different functions of print, such as signs, letters, newspapers, lists, messages, menus, upper- and lowercase letters, and some punctuation.	Develops awareness of the different forms and functions of print (e.g., signs, letters, newspapers, menus, punctuation)	Begins to recognise that words are made up of individual letters. Identifies and reads familiar environmental print (e.g., logos, signs).	Scaffolding teaching methods	Scaffolding teaching methods	Modeling teaching methods	Demonstration teaching methods
	Listening comprehension	Demonstrate ability to receive information, ability to share ideas, thoughts, and opinions	Engages actively during reading and participates in book-related conversations	. Uses specific language or phrases from the book appropriately at the right moments.	Asks and answers questions about the text; refers to pictures to support understanding	Recognises story-related problems, events, and resolutions during conversations with an adult	Scaffolding teaching methods	Demonstration teaching methods	Demonstration teaching methods	Scaffolding teaching methods
Writing Skills	Alphabet writing	Demonstrates Alphabet writing skills	Makes scribbles or marks to represent ideas or feelings. Produces controlled linear scribbles	Imitates letters or letter-like shapes and creates letter strings.	Makes letter-like shapes (e.g. lines, curves) and strings of marks. Repeats simple letter formations.	Writes some letters correctly. Begins to write own name with partial accuracy.	Demonstration teaching methods	Scaffolding teaching methods	Scaffolding teaching methods	Experimental teaching methods

Content Areas	Indicators	Learning objectives	Milestones				Learning Pedagogy			
	Number writing	Demonstrates Number writing skills	Makes controlled linear scribbles. Creates mock letters or letter-like forms.	Produces letter strings that resemble writing	Traces over dotted or raised numerals with guidance. Begins to copy simple numbers	Independently writes numbers 1 to 5, showing emerging control though some shapes may be uneven	Experimental teaching methods	Scaffolding teaching methods	Scaffolding teaching methods	Scaffolding teaching methods
Emergent Numeracy Skills	Number concepts and operations	Counts	Verbally counts to 10; counts up to five objects accurately, using one number name for each object (one-to-one correspondence).	Verbally counts to 20; counts 10–20 objects accurately; understands that the last number said represents the total quantity (cardinality); identifies the next number (1–10) in a counting sequence.	Counts reliably to 20 Accurately counts 6–8 concrete objects and states the total Identifies what number comes next when counting within 1–10	Uses number names when counting to 100 Accurately counts 10 objects Names the number immediately before and after any given number up to 20	Play based teaching methods	Play based teaching methods	sDemonstrate teaching methods	Scaffolding teaching methods
		Quantifies	Instantly recognises and names the number of items in a small set (up to five) without counting (subitising); combines and separates up to five objects and describes the parts.	Creates sets of 6–10 objects and explains how they are composed; identifies which part has more, less, or the same (equal); uses counting strategies such as counting all or counting on to determine the total.	Creates sets of up to 10 objects and uses counting (all or counting on) to explain which group has more, fewer or the same. Describes their reasoning in simple terms.	Creates sets of up to 10 objects and uses counting (all or counting on) to explain which group has more, fewer or the same. Describes their reasoning in simple terms.	Demonstration teaching methods	Play-based teaching methods	Scaffolding teaching methods	Play-based teaching methods

Content Areas	Indicators	Learning objectives	Milestones				Learning Pedagogy			
		Operation	Solves simple “more than” and “less than” problems using concrete objects.	Solves simple addition and subtraction problems using concrete objects	Solves simple “more than” and “less than” problems using concrete objects	Combines and removes items to solve addition and subtraction problems (e.g. starts with five toy animals, adds two or takes one away and finds the new total).	Scaffolding teaching methods	Experimental teaching methods	Experimental teaching methods	Experimental teaching methods
	Data analysis and measurement	Demonstrate the ability to sort and classify objects	Sorts objects by one attribute into 2 or more groups. Knows some ordinal numbers like first, second, third.	Describes the sorting rule using simple language (e.g., "All the red ones go here"). Matches and groups objects that are the same or different.	Compares two or more groups of objects and determines which group has more, less, or the same number Begins to group items by a single attribute (e.g., colour or size)	Sorts and classifies using two or more attributes Begins to explain sorting rules and justify groupings	Play based teaching methods	Experimental teaching methods	Experimental teaching methods	Demonstration teaching methods
		Compares and measures	Compare and put items on order by their size, length, weight, time, age, volume or area.	Uses non- standard measurement. Uses numbers when comparing.	Uses everyday items (e.g., blocks, hand spans) to measure length or height Compares objects based on differences in length, weight, or temperature using descriptive words (e.g., heavier, taller, colder)	Begins to use informal measurement tools more consistently Arranges objects in order (e.g., shortest to tallest) and starts using measurement terms (e.g., longer, lighter) with emerging accuracy	Experimental teaching methods	Experimental teaching methods	Demonstration teaching methods	Demonstration teaching methods

Content Areas	Indicators	Learning objectives	Milestones				Learning Pedagogy			
	Algebra and pattern making	Able to recognize and understand patterns	Copies and extends an ABAB pattern using coloured beads or objects (e.g., red, blue, red, blue- "ABAB pattern") Predicts the next element in the sequence	Creates original patterns using two or more attributes (e.g. colour, size, shape) Explains the rule of their pattern.	Sorts objects by one attribute into two or more groups (e.g., colour, size, shape). Recognises some ordinal numbers such as *first*, *second*, and *third*.	Creates original patterns using a variety of materials, based on one or more attributes. Recognises, creates, and explains more complex repeating patterns and simple growing patterns.	Play- based teaching methods	Demonstration teaching methods	Experimental teaching methods	Experimental teaching methods
	Geometry and Spatial sense	Understanding of shapes	Recognises a small number of basic shapes and their names (e.g., circle, square, triangle).	Uses mathematical language to describe shapes (e.g., circle, triangle, rectangle, square) and their parts or features (e.g., sides, corners).	Identifies, Names and points out common 2D and 3D shapes (e.g. circles, squares, cylinders, spheres) in everyday settings. Makes shapes by arranging items (e.g. sticks, play-dough) or drawing.	Explains that a shape remains the same when turned, flipped or slid. Combines or splits shapes to form new ones (e.g. cuts a rectangle to make two squares).	Play - based teaching methods	Scaffolding teaching methods	Modeling teaching methods	Experimental teaching methods

Content Areas	Indicators	Learning objectives	Milestones				Learning Pedagogy			
		understands spatial relationships	Demonstrates understanding of spatial relationships between objects (e.g., near/far, over/under, inside/outside).	Understands and uses basic positional language (e.g., in, on, under, behind, next to, between).	Follows directions using basic positional terms (e.g. “Put the doll next to the car,” “Place the block under the table”). Recognises and names positions when asked (e.g. “Where is the ball? It’s above the box.”).	Uses positional language independently to describe where things are (e.g. “The teddy is behind the chair,” “My drawing is on top of the table”). Creates simple maps or models of familiar spaces (e.g. play area, classroom) to show where objects are located.	Scaffolding teaching methods	Scaffolding teaching methods	Modeling teaching methods	Demonstration teaching methods

Appendix V

Detailed DAP based ECCE curriculum framework focused on Emergent Literacy and Numeracy Skills of 4-5 years old children with sample lesson plans

Content Area	Indicators	Learning objectives	Milestones (learning outcomes)		Learning Pedagogy	
			48 to 54 months	54 to 60 months	48 to 54 months	54 to 60 months
Literacy Skills Reading skills	Phonological awareness	Notices, recognises and discriminates rhyme	Identifies similar rhyming words	Creates a group of rhyming words when given a word	**Experimental ideas:** Uses plastic alphabet letters to spell the word "ball", then changes the first letter to form "tall", "fall", etc. Reads each word aloud and says, "I made lots of rhyming words."	**Play-based ideas:** Explores rhyming through a rhyme-matching game after listening to a rhyming story.
		Notices, recognises and discriminates alliteration	Matches the beginning sounds of some words and notices words with the same initial sounds	Begins to match more words with the same initial sounds	**Scaffolding Ideas:** Use visual aids, such as picture cards, to help children pair words with the same beginning sounds, supporting visual and auditory connections.	**Experimental ideas:** Provide a set of words and have children categorise them by initial sounds. Discuss their reasoning behind each grouping.
		Notices, recognises and discriminates smaller units of sound	Recognises syllables in words by segmenting and blending	Verbally blends and segments the onset and rhyme in one-syllable words.	**Play based ideas:** Say a word like "banana" and have children clap for each syllable (e.g., "banana" – ba-na-na) to help them segment and count syllables.	**Experimental ideas:** Present pairs of words with the same rhyme but different onsets (e.g., "cat" and "bat"). Ask children to identify the onset and rhyme, reinforcing

Content Area	Indicators	Learning objectives	Milestones (learning outcomes)		Learning Pedagogy	
			48 to 54 months	54 to 60 months	48 to 54 months	54 to 60 months
						awareness of sound parts.
	Print awareness	Recognises that print carries meaning and is used for different purposes	Identifies basic features of a book (e.g., title, author, illustrator) and begins to associate books with specific authors.	Uses different types of books appropriately according to their purpose.	**Modelling Ideas:** During a read-aloud session, show the book‟s cover, and point out and explain the title, author, and illustrator.	**Scaffolding Ideas:** Draw attention to environmental print and explain its purpose (e.g., “That sign says „Stop‟, so I will stop the car”). Talk aloud while using printed materials, like a recipe or instructions.
		Understand that print carries message in the story	Develops awareness of the different forms and functions of print (e.g., signs, letters, newspapers, menus, punctuation)	Begins to recognise that words are made up of individual letters. Identifies and reads familiar environmental print (e.g., logos, signs).	**Modeling Ideas** Demonstrate how to hold a book correctly and turn pages from right to left. Use “Big Books” and point to each word while reading aloud, asking “What does it say?”	**Demonstration Ideas** While reciting from a familiar book such as *Brown Bear, Brown Bear, What Do You See?*, point to each word as it is spoken. When pretend reading, model moving the finger from the end of one line to the beginning of the next.
	Listening comprehension	Demonstrate ability to receive information, ability to share ideas, thoughts and opinion	Asks and answers questions about the text; refers to pictures	Recognises story-related problems, events, and resolutions during conversations with an adult	**Play based Ideas** Providing animal figurines, sound recordings, or images to encourage children to listen and mimic animal sounds. Responds, “The dog barked loudly. The	**Demonstration Ideas:** Discussing the story with open-ended questions. Helping children make picture books about their own experiences.

Content Area	Indicators	Learning objectives	Milestones (learning outcomes)		Learning Pedagogy	
			48 to 54 months	54 to 60 months	48 to 54 months	54 to 60 months
					cat hissed and ran away	
Writing skills	Alphabet writing	Demonstrates alphabet writing skills	Makes letter-like shapes (e.g. lines, curves) and strings of marks. Repeats simple letter formations.	Writes some letters correctly. Begins to write own name with partial accuracy.	**Scaffolding Ideas:** Encourage children to repeat strokes, curves and simple shapes. Model each component of a letter (e.g. "This line down, then a curve").	**Scaffolding Ideas:** Positively acknowledge every attempt (e.g. display their writing). Provide tracing sheets and guided hand-over-hand support to refine letter shapes.
	Number writing	Traces numerals following a model Writes numbers 1–5 independently (accuracy may vary)	Traces over dotted or raised numerals with guidance. Begins to copy simple numbers	Independently writes numbers 1 to 5, showing emerging control though some shapes may be uneven	**Play based Ideas** Fill shallow trays with sand or salt; invite children to trace numerals using their fingers or a stick, reinforcing fine-motor control.	**Experimental Ideas:** Take children outdoors to form numerals using natural materials (e.g. sticks arranged on the ground) or to write numbers in soil with their fingers.
Emergent Numeracy Skills	Number and operations	Able to count, recognize numbers (counting)	Counts reliably to 20 Accurately counts 6–8 concrete objects and states the total Identifies what number comes next when counting within 1–10	Uses number names when counting to 100 Accurately counts 10 objects Names the number immediately before and after any given number up to 20	**Experimental Ideas:** Scatter 6–8 small objects (e.g. pebbles, blocks). Ask children to count them aloud, then discuss "How many are there?" to reinforce cardinality. Use songs or rhymes that incorporate counting up to 20.	**Demonstrate Ideas:** Place magnetic numerals on a board and model counting them in order. During snack time, count out pieces (e.g. grapes) together, asking "How many shall we each have?" and counting on to divide.

Content Area	Indicators	Learning objectives	Milestones (learning outcomes)		Learning Pedagogy	
			48 to 54 months	54 to 60 months	48 to 54 months	54 to 60 months
		Able to understand the relationship between numbers and quantities (quantifies)	Creates sets of up to 10 objects and uses counting (all or counting on) to explain which group has more, fewer or the same. Describes their reasoning in simple terms.	Creates sets of up to 10 objects and uses counting (all or counting on) to explain which group has more, fewer or the same. Describes their reasoning in simple terms.	**Play based Ideas:** Create a toy grocery store: children "shop" for items, count their selections (e.g. "I have five apples and you have eight oranges – you have more items than me"), then compare totals to discuss "more," "fewer" or "the same".	**Scaffolding Ideas:** Uses play areas to pose problems such as, "You had eight kites and two flew away – how many are left?" and prompts children, "I had ten cars but left two at Grandma"s, so now I have ten, nine, eight.""
		Able to combine and separate quantities of objects (operation)	Solves simple "more than" and "less than" problems using concrete objects	Combines and removes items to solve addition and subtraction problems (e.g. starts with five toy animals, adds two or takes one away and finds the new total).	**Experimental ideas:** Provide sets of objects such as blocks, stones, and invite children to group or separate them freely. Ask, "Which group has more, which has fewer, or are they the same?"	**Experimental ideas:** Give children a fixed number of items (e.g. five toy animals) and encourage them to add or remove pieces during play. Pose questions such as "What happens if we add two more?" or "How many will there be if one goes away?"
	Data analysis and Measurement	Able to count and compare quantities accurately, demonstrating the	Compares two or more groups of objects and determines which group has more, less, or the same	Sorts and classifies using two or more attributes Begins to explain sorting rules and justify groupings	**Experimental Ideas:** Provide two groups of different objects (e.g., small stones and large plastic toys). Children place each group into	**Demonstration Ideas:** Collect natural objects such as leaves, stones, and flowers. Model sorting based on colour (e.g., green vs. brown), size

Content Area	Indicators	Learning objectives	Milestones (learning outcomes)		Learning Pedagogy	
			48 to 54 months	54 to 60 months	48 to 54 months	54 to 60 months
		ability to sort and classify objects based on attributes such as size, color, or shape	number Begins to group items by a single attribute (e.g., colour or size)		separate containers of water. Observe and compare how high the water rises. Discuss how both quantity and size affect displacement.	(small vs. large), or type (leaf vs. stone), encouraging children to do the same and describe their groupings.
		Understand measurement attributes- length, weight, volume, area, time and able to compare, order and classify	Uses everyday items (e.g., blocks, hand spans) to measure length or height Compares objects based on differences in length, weight, or temperature using descriptive words (e.g., heavier, taller, colder)	Begins to use informal measurement tools more consistently Arranges objects in order (e.g., shortest to tallest) and starts using measurement terms (e.g., longer, lighter) with emerging accuracy	**Demonstration Ideas:** Engage the child in measuring tasks using both standard and non-standard tools (e.g., string, cubes, measuring sticks). Model how to compare objects by length, height, or weight using everyday vocabulary like "shorter," "taller," "heavier," "lighter."	**Demonstration Ideas:** Encourage the child to arrange objects based on measurable attributes and explain their reasoning. Use a common measuring stick or hand spans to compare how long or tall items are during play.
	Algebra and pattern making	Able to recognize and understand patterns	Copies and extends an ABAB pattern using coloured beads or objects (e.g., red, blue, red, blue- "ABAB pattern") Predicts the next element in the sequence	Creates original patterns using two or more attributes (e.g. colour, size, shape) Explains the rule of their pattern .	**Experimental Ideas:** Provide coloured beads arranged in an ABAB sequence and ask children to continue the pattern. Then discuss why they chose each bead.	**Experimental Ideas:** Offer materials like coloured paper, buttons or fabric squares of various sizes and shapes. Encourage children to design their own repeating patterns and describe the rule they followed.

Content Area	Indicators	Learning objectives	Milestones (learning outcomes)		Learning Pedagogy	
			48 to 54 months	54 to 60 months	48 to 54 months	54 to 60 months
	Geometry and Spatial sense	Understand two or three-dimensional shapes and understand the features and attributes of the shapes	Identifies, Names and points out common 2D and 3D shapes (e.g. circles, squares, cylinders, spheres) in everyday settings. Makes shapes by arranging items (e.g. sticks, play-dough) or drawing.	Explains that a shape remains the same when turned, flipped or slid. Combines or splits shapes to form new ones (e.g. cuts a rectangle to make two squares).	**Modeling Ideas:** Introduce shapes through real objects: compare a tin can (cylinder), a ball (sphere) and an ice-cream cone. Match 3D shapes with familiar items during play ("This pillar is like our rubbish bin – it‟s a cylinder.").	**Experimental Ideas** Provide paper shapes for children to cut and reassemble (e.g. cut a rectangle into two squares). Encourage children to handle shape blocks, rotate them and say, "It‟s still a triangle no matter how I turn it."
		Able to understands spatial relationships	Follows directions using basic positional terms (e.g. "Put the doll next to the car," "Place the block under the table"). Recognises and names positions when asked (e.g. "Where is the ball? It‟s above the box.").	Uses positional language independently to describe where things are (e.g. "The teddy is behind the chair," "My drawing is on top of the table"). Creates simple maps or models of familiar spaces (e.g. play area, classroom) to show where objects are located.	**Play-based Ideas:** Play "treasure hunt" using position words: "The treasure is under the red cone," "Look behind the chair." Use building blocks to follow and give instructions ("Place the blue block beside the green one").	**Demonstration Ideas:** Construct a simple floor-map of the play area with toy figures, modelling how to mark landmarks and paths. Show children a map of the classroom and ask them to find or place objects according to your directions.

SAMPLE LESSON PLANS

<table>
<tr><td colspan="2">Name of the Activity: Make and Change a Rhyme</td></tr>
<tr><td colspan="2">Curriculum content area: Literacy and Language, social, emotional</td></tr>
<tr><td colspan="2">Focus Area: rhyming, building relationship with peers and adults</td></tr>
<tr><td>Age group: 48 – 54 months</td><td>Learning context: small group</td></tr>
<tr><td>Objectives:
✓ Children will explore and identify rhyming words by manipulating the initial sounds.
✓ Children will develop listening skills and phonological awareness by engaging in a collaborative rhyming game.</td><td>Materials required:
• Plastic alphabet letters
• individual trays
• Rhyming word picture cards (optional)
• Visual chart with rhyming endings (e.g., -all, -at, -ig)
• Simple rhyming story</td></tr>
<tr><td colspan="2">Procedure:
Gather the children in a small group at a table or floor mat. Begin by engaging them with a short rhyming story. Say: ―Today, we‘re going to play with words that rhyme. Do you know what rhyming words are? They sound the same at the end—like ball and tall‖. Show the word ball using plastic letters on a tray or on the table and sound it out. Then replace the first letter with a new one to form a new word, for example: fall. Emphasize the rhyme by saying the pair aloud: ―Ball – Fall –and how they rhyme‖
Activity:
Provide each child with a small tray containing several beginning consonants and one rhyme (such as -all, -at, or -ig). Guide them to make the first word (ball) and say it out loud. Then ask them to experiment by changing the first letter to make a new word. Children may create and read words like tall, call, wall, or mall. As they build, encourage them to say the rhyming pairs aloud and compare them with peers. Children can also be invited to match picture cards to the words they form or use them to create visual rhyming pairs. Throughout the activity, the teacher circulates and supports struggling children by offering prompts like, ―What if we try _c‘ instead of _b‘? That gives us call‖
After everyone has had the chance to make several rhyming words, regroup to share their favorite rhymes with the class.
Special considerations:
▪ Offer extra support for children who are still developing letter recognition by using picture cards along with plastic letters.
▪ Use visual aids to model rhyming in a fun and animated way.
▪ For transitions, the teacher can say a non-rhyming word and let children ―fix it‖ with a rhyming word (e.g., ―Time to line up like a... cake!?‖ and let children correct it with ―snake!‖).</td></tr>
</table>

Name of the Activity: Rhyme Match-Up (Find the words that sound the same)	
Curriculum content area: Literacy and Language, social, emotional	
Focus Area: rhyming, building relationship with peers and adults	
Age group: 54 – 60 months	Learning context: small group
Objectives: ✓ Children will identify and generate rhyming words. ✓ Children will develop listening skills and phonological awareness by engaging in a collaborative rhyming game. ✓ Children will practice turn-taking and sharing ideas in a group setting.	**Materials required:** ✓ A space for children to form a circle. ✓ A simple song or rhyme for warm-up.

Procedure:

Instruct the children to form a circle and explain that they will be singing and playing a rhyming game. Say: Today, we‘re going to play a fun game where we make words that rhyme. First, let's sing a little rhyme together, and then we‘ll play the game.

Lead the children in singing a simple rhyme. Repeat the rhyme a few times so the children get familiar with the sound patterns

Game Instructions:

- "I‘m going to say a word, and you need to think of a word that sounds the same at the end."
- "For example, if I say 'chair,' you might say 'bear' because they sound the same at the end."
- "We will go around the circle, and each person will think of a new word that rhymes with the last word."

Activity:

The teacher starts the game by saying the first word, for example, ―ball‖. The teacher turns to the first child in the circle and asks them to think of a word that rhymes with "ball‖. If the child responds with "doll," the teacher praises them and then moves to the next child, asking them to find another rhyming word, like "hall," and continues praising correct responses while encouraging participation. The game moves around the circle, with each child taking a turn to offer a rhyming word. If a child struggles, the teacher offers gentle hints, such as, "How about 'call'? That rhymes with ―ball‖. This continues until every child has had a chance to contribute. Once the round is complete, the teacher can introduce a new word, such as "book," and start the rhyming process again, keeping the children engaged and excited to participate.

Special considerations:

- As a teacher directs the group to the next activity, she can change the ending sound in the key word of her instructions and have children ―correct‖ her. For example, saying various animal names using a different ending sound (e.g. sheep for chair).

Name of the Activity: Number Hunt and Write

Curriculum content area: Literacy and Language, social, emotional, Mathematics, Fine Motor Skills

Focus Area: number recognition, number recognition, sensory-motor skills, peer interaction

Age group: 48 – 54 months

Learning context: small group

Objectives:

- ✓ Children will identify and recognize numbers 1 to 5 in the classroom environment.
- ✓ Children will practice number formation by tracing in sand trays.
- ✓ Children will engage in sensory exploration while developing fine motor coordination.

Materials required:

- Large number flashcards (1 to 5), hidden around the classroom or play area
- Individual trays with a thin layer of clean sand

Procedure:

Gather the children in a small group, seated in a circle or at a table. Begin with an enthusiastic invitation: "Today, we‟re going on a special number hunt! Numbers are hiding all over our classroom. When we find a number, we‟ll trace it in the sand with our fingers. Ready to be number detectives?"

Demonstration:

Hold up a flashcard with the number 1. Show it to the children and say: "This is number one. Let‟s all say „one‟ together. Now watch as I trace it in my sand tray." Trace the number slowly and clearly with your finger in the sand tray. Invite children to do the same.

Activity:

- ✓ Place an individual sand tray in front of each child.
- ✓ Explain that number cards (1 to 5) are hidden around the room.
- ✓ Children will search for a number card. When they find one, they will return to their tray and trace that number in the sand.
- ✓ Encourage children to say the number aloud as they trace: "This is number four. I‟m tracing four"
- ✓ Allow children to repeat tracing the same number or go find the next hidden number.
- ✓ Invite children to share their tray with a peer: "Look- I made number 3! Can you try it in your tray?"

Special considerations:

- For children who need additional support, place laminated number cards under clear trays for guided tracing.
- Reinforce positive behavior and participation with encouraging language.

Name of the Activity: Finger Painting Numbers

Curriculum content area: Mathematics, Fine Motor Skills, Creative Arts

Focus Area: Number formation, sensory exploration, creativity

Age group: 54 – 60 months	Learning context: small group

Objectives:

- ✓ Children will explore number writing using finger painting techniques.
- ✓ Children will develop fine motor skills and number recognition through tactile and visual experiences.
- ✓ Children will express creativity while learning number shapes.

Materials required:

- ✓ Large sheets of paper or chart paper
- ✓ Non-toxic finger paints in multiple colors
- ✓ Number cards (1 to 10) for reference

Procedure:

Gather the children in a small group around a table covered with newspaper or a washable cloth to protect the surface. Begin by showing a large number card, such as the number 5, and invite the children to say the number aloud together. Demonstrate how to dip your finger gently into the finger paint and slowly trace the shape of the number on a large sheet of paper while saying the number aloud. Encourage the children to explore the texture of the paint by touching a small dab and describing how it feels, such as cold, smooth, or sticky.

Activity:

Give each child a large sheet of paper and several colors of finger paint. Show number cards one by one and invite children to select the number they want to paint first. Encourage them to dip their fingers into the paint and carefully trace the shape of the chosen number while saying the number aloud. As they paint, remind them to take their time, enjoy mixing colors, and focus on making the correct number shape. Circulate among the children, offering praise and gentle guidance to support their efforts, for example, complimenting how well they are forming the curves or lines. After painting several numbers, encourage the children to share and compare their artwork with peers, discussing which colors and shapes they liked best. To wrap up, engage the group in a counting song or rhyme to reinforce number recognition and create a joyful atmosphere. Finally, help children clean their hands with wet wipes or towels, and encourage them to proudly display their finger-painted numbers for the group.

Special considerations:

- Encourage gentle finger movements to help children learn number shapes and avoid frustration.
- Provide positive reinforcement to build confidence and engagement.

Name of the Activity: Matching Numbers to Quantities

Curriculum content area: Literacy, Numeracy, Social Development

Focus Area: Number recognition, quantity matching, one-to-one correspondence, collaborative play

Age group: 48 – 54 months

Learning context: small group

Objectives:

- ✓ Children will understand the relationship between numbers and quantities.
- ✓ Children will practice counting objects with one-to-one correspondence.
- ✓ Children will build social and communication skills through collaborative play.

Materials required:

- ✓ Number cards (1–10)
- ✓ Pretend picnic items (toy fruits, cups, plates, sandwiches, etc.)
- ✓ Small picnic baskets or trays
- ✓ Mat for group play
- ✓ Visual aids showing number-quantity examples (optional)

Procedure:

Invite the children to sit together on a mat or carpet and introduce the activity with excitement: Today, we are going on a fun pretend picnic! Each picnic basket has a special number card that tells us how many yummy pretend food items to put inside. We will work together to count the right number of fruits, cups, and cakes and pack each basket carefully. This will help us learn how numbers and amounts go together, and we'll have fun playing and talking with our friends and hold up a number card (e.g., ―3‖) and ask, ―If this basket gets number 3, how many apples should we pack?‖ Allow the children to count out three toy apples and place them in the basket. Reinforce that each picnic basket will have a different number card and they will need to pack the correct number of items.

Divide the children into small groups. Provide each group with a basket, a number card, and a variety of pretend food items. Guide the children as they work together to count and pack the correct number of items in their basket, encouraging conversation and collaboration:

- ―Do we have enough grapes?‖
- ―We need two sandwiches—can you help me find one more?‖

After all baskets are packed, bring the group together and take turns sharing what each basket contains. Count the items together as a group:

- ―Let's see what's in basket number 4. One, two, three, four oranges—great job!‖

Special considerations:

- Use visual supports or dot patterns for children who need help connecting numbers to quantities.
- Support children who struggle with counting by counting aloud with them or guiding their fingers.
- Encourage peer support and cooperative behavior by pairing children with varied abilities.

Name of the Activity: Count, Compare, and Talk

Curriculum content area: Numeracy, Cognitive Development

Focus Area: Number sense, comparison, reasoning

Age group: 54 - 60 months

Learning context: small group

Objectives:

- ✓ Children will understand the relationship between numbers and quantities.
- ✓ Children will create sets of up to 10 objects and use counting strategies to explain which group has more, fewer, or the same.
- ✓ Children will describe their reasoning in simple terms.

Materials required:

- Counting objects (e.g., buttons, blocks, counters, beads)
- Individual counting mats or trays
- Number cards (1–10)
- "More, Fewer, Same" visual cue cards
- Clipboards and crayons (optional for drawing sets)

Procedure:

Begin the session by gathering the children in a small circle. Present two small groups of objects and ask, ―Let's count how many are here.‖ Encourage them to count aloud with you and then compare both groups using the terms ―more,‖ ―fewer,‖ or ―same.‖ Model how to explain their thinking: ―I see 3 here and 5 there. Five is more than three, so this group has more.‖

Activity:

Each child receives a small tray with 10 assorted counting objects. Begin by asking them to pick and count a specific number of items (e.g., ―Can you make a group of 6?‖). Let the children count the objects one by one and place them on their mat. Then, instruct them to partner up with another child. Each pair compares their groups.

Example:

- Child A has 6 blocks.
- Child B has 4 buttons.
- The teacher asks, ―Who has more? How do you know?‖
- Child A might say, ―I have 6, and she has 4. Six is more than four because we counted and mine has two extra.‖

As the activity continues, rotate number cards to prompt children to build new sets (e.g., "Now make a group of 7!"). Encourage children to build multiple sets and compare them each time—either with a peer or with previously made sets. Children are encouraged to explain their comparisons using simple reasoning:

- ―I took away 2, now I have fewer.‖
- ―We both have 5. They are the same.‖

For additional challenge, introduce a mystery bag: Children draw a number card from the bag and build a matching set, then find a peer who has ―more‖ or ―fewer‖ objects. This encourages mobility, comparison, and communication.

Throughout, the teacher scaffolds understanding by asking open-ended questions like:

- ―Can you show me how you counted?‖
- ―What happens if you add one more?‖
- ―Who has the fewest? How do you know?‖

Special considerations:

▪ For children needing support, reduce the maximum count (start with up to 5).

▪ Use color-coded number cards or object trays for visual learners.

▪ Encourage children to use drawing or stickers to represent and compare their sets.

▪ Pair children thoughtfully to support peer learning—strong counters with developing ones.

Appendix - VI

Glimpses of implementing DAP – Based ECCE Curriculum Framework Focused on Emergent Literacy and Numeracy Skills of Preschoolers

Avinashilingam Institute for HomeScience and Higher Education for Women
(Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD
Re-accredited with A++ Grade by NAAC. CGPA 3.65/4, Category I by UGC
Coimbatore - 641 043, Tamil Nadu, India

Appendix L2

(Item No 5 of Check List)

Details of Research Publications

S. No.	Article	Journal	Other Details Vol/No/Page No/ Year	Published in UGC- CARE / Scopus Indexed/ Web of Science
1.	EFFECT OF PARENTAL EDUCATIONAL STATUS ON LITERACY AND NUMERACY SKILLS OF PRESCHOOL CHILDREN	The Journal of Research ANGRAU	Vol. 51(2): 114-124 April – June 2023. https://doi.org/10.58537/joranграu.2023.51.2.13	UGC- CARE
2.	INFLUENCE OF PARENTAL EDUCATION ON WRITING SKILLS OF PRESCHOOLERS	The Indian Journal of HOME SCIENCE -2024	Vol.36 (1), 414-425 January- ~~July~~ 2024 ISSN 0970 2733 IHMSF-36(1-538)2024	UGC- CARE

*Proof of list of Journals from Internet to be attached along with copies of reprints.

Scholar : Kongkona Sonowal

Supervisor : Arocha Maraichelvi 20/1/25

Checked By: 20/1/25 21.1.2025
HoD/Dean of Respective School

The scholar Miss. Kongkona Sonowal (Reg. No. 18PHHDF003) has published her research papers in the following journals

1. The Journal of Research ANGRAU - indexed in UGC care list Group I from June 2019 to present,
2. The Indian Journal of Home Science - indexed in UGC Care List Group I from July 2020 to present.

This may be considered.

20.01.2025

Asst. Librarian.

ISSN 0970-0226

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Lam, Guntur - 522 034

Dol: https://doi.org/10.58537/jorangrau.2023.51.2.13

J. Res. ANGRAU 51 (2) 114-124, 2023

EFFECT OF PARENTAL EDUCATIONAL STATUS ON LITERACY AND NUMERACY SKILLS OF PRESCHOOL CHILDREN

KONGKONA SONOWAL* and K. AROCKIA MARAICHELVI

Department of Human Development, Avinashilingam Institute of Home Science and Higher Education for Women, Coimbatore– 641 043

Date of Receipt : 28.2.2023

Date of Acceptance : 24.4.2023

ABSTRACT

The study was conducted to understand the effect of parental educational status on the literacy and numeracy skills of their children in their early years. A randomized sample of 300 pre-schoolers from five zones of the Coimbatore district along with their parents' information accounted for the study conducted in the year 2022. A modified Literacy and Numeracy Assessment Pack was used as a tool for the study. Results revealed that the father's and mother's educational status is an influencing factor in preschoolers' literacy skills ($F(4, 2,79)=2.62$ $p= .035$ and $F(4, 2,79)=2.67$, $p= .032$, respectively). Whereas, the interaction between the parent's educational status was also found statistically significant ($F(12, 2,79)=2.85$,$p=.001$) in relation to their children's literacy and numeracy skills. Preschooler's literacy and numeracy skill influenced by their parent's educational status and it helps children in their later experiences in shaping children's brain development.

Keywords: Literacy and Numeracy Assessment Pack, Literacy skills, Numeracy skills, Preschool children, Parental education, School readiness

INTRODUCTION

Early childhood is a developmental stage that offers a critical window of opportunity to shape the trajectory of a child's holistic development (Gerber *et al.*, 2010). The quality of early experiences that a child gets makes a critical difference in creating a base for their future reading and arithmetic skills. Numeracy skills of children in their early years are said to predict their mathematical skills in school (Watts *et al.*, 2014; Zhang *et al.*, 2014; Koponen *et al.*, 2016; Koponen *et al.*, 2019; Schneider *et al.*, 2017; Chu *et al.*, 2018; Geary *et al.*, 2018). Early language and literacy skills also had been proven to predict their later reading skills (Torppa *et al.*, 2010; Ziegler *et al.*, 2010; Psyridou *et al.*, 2018; Hjetland *et al.*, 2020).

The findings of Kleemans *et al.* (2012) and Baker (2014) reported that the parent-child literacy and numeracy practices are interrelated to the development of the child's literacy and numeracy skills, sparked a research question in the investigator- Whether the literacy and numeracy skills of children in their early years is

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predicted by the educational status of the parents?

According to Nelson *et al.* (2016) the level of education of parents has a strong association with academic problems during the beginning of the school year. Considering that early experiences create a significant impact on a child's literacy and numeracy development, a study with 3-6-year-old children becomes imperative. Moreover, the collated literature pertaining to the role of parent education in developing the literacy and numeracy skills of early childhood has warranted gaps in the Indian context. As only a handful of research was carried out in India portraying a certain understanding of the effect of parental education on early literacy and numeracy skills, additional researches are very much needed. Accordingly, the aim of the current study was to examine the association between the educational status of the parents with that of the development of emerging literacy and numeracy skills during early childhood.

The researcher is also aware that by examining the role of parental education on the literacy and numeracy skills of their children does not help the children directly but what can be done is to formulate strategies of compromising the lacunae found in the parental educational background with the education or classroom set up of the child. A major strategy that can compensate for the predicting effect of socio-demographic variables is by providing a unified curricular setup abiding by core considerations namely developmentally suitable, individually appropriate, and social & cultural relevance. These considerations form the base areas of the principle of Developmentally Appropriate Practices (DAP). DAP promotes each child's optimal development and learning through a strengths-based, play-based approach to joyful, engaged learning. DAP offers an environment to the children that promote both language acquisition, numerical knowledge, and a positive sense of self that allows children to take responsibility for their own learning. Such recourses and experiences throughout the early childhood years, birth through age eight, are thought to positively affect the development of literacy and numeracy. The objectives of the study are: to analyse the effect of parental educational status on the literacy skills of children in their early years and to analyse the effect of parental educational status on the numeracy skills of children in their early years. The hypothesis of the study is: **H01:**The educational status of the father does not have an effect on the literacy skills of the children in their early years, **H02:** The educational status of the mother does not have an effect on the literacy skills of the children in their early years, H03:The educational status of the father does not have an effect on the numeracy skills of the children in their early years and H04: The educational status of the mother does not have an effect on the numeracy skills of the children in their early years.

MATERIALS AND METHODS

A sample size of 300 preschoolers both boys and girls between the age of 3-6 years were randomly selected to analyze the effect of parental educational status on their literacy and numeracy skills. The sample for the study was drawn from all five zones of the Coimbatore district through the lottery method of selecting private-run kindergartens in the year 2022.

Survey method was adopted for this study. The children of 3-6 years after the parental consent were tested on their literacy and numeracy skills individually in their respective kindergartens during school hours by the investigator. The testing lasted roughly an hour for a child and was completed in two sessions of 30 min each and 3 hours a day on all working days. The data collection process was continuality carried out for three months.The tools used for the study arethe parental profile of the respondents: a questionnaire with items concerning the details of the parents of selected respondents regarding their educational status, filled by the respective parents; and the Literacy and Numeracy Assessment Pack – a self-formulated Literacy and Numeracy Assessment Pack based on the kindergarten common core state standards of North Carolina for language and Math (2010). Based on the developmental milestones of children aged 3-6, the assessment pack was designed. The pack comprised 22 items in two dimensions namely- emergent literacy skills and emergent numeracy skills. The number of items belonging to emergent literacy skill was 13 and emergent numeracy skill was 9. Emergent literacy skills comprised 2 major domains namely reading and writing. The reading domain has 2 sub domains, print language concept, and phonological awareness skill test. The reading domain encompasses 11 items. The minimum to the maximum range of scores for each item of print language concept was 0 to 8 (0-2= no concept, 3-5= some, 6-7=gaining, 8=control), and the minimum to the maximum range of scores for each item of phonological awareness skill test was 3 to 6 (3=frustration level, 6=mastery level).The writing domain has 2 items. The minimum to the maximum range of scores was 2 to 8 (6=basic, 7=approaching, 8= mastered).The emergent numeracy skill had a total of 9 items assessing the ability of the children incounting forward, counting and cardinality, comparing the number of objects, comparing numbers, number and operation in base ten, data analysis and measurement, operation, and algebraic thinking (addition and subtraction and making the number 10) and decomposing numbers. The minimum to the maximum range of scores was 3 to 6 (3=basic, 5=approaching, 6= mastered).

For the purpose of this study, both the face and content validity of the tool were ensured. To ensure the validity of the questionnaire, the initial drafts of the questionnaire were examined by five experts, and based on the suggestions and comments of these experts, the necessary corrections were made and the final questionnaire was trial tested on a sample of 20 preschoolers. The collected data showed that the preschoolers did not have problems responding to the items in the pack and hence used for the remaining sample.

The collected data was coded, classified, and tabulated. A two-way MANOVA was performed to examine whether the literacy and numeracy scores of the respondent kids differ by the father's and mother's educational status and it was also examined if the score differs by the interactive effect of the parental educational status. The results are interpreted and presented as below.

RESULTS AND DISCUSSION

The independent variable for the study is the 'parental educational status' that has got two groups, namely the 'father's educational status' and the 'mother's educational status'. The

Table 1. Summary statistics based on the level of parent's education (n=300)

S.No.	Dependent Variable	Education level	Father's Education		Mother's Education	
			Mean	SD	Mean	SD
1	Literacy skill	No formal education	42.83	3.22	44.71	1.98
		Primary & lower secondary	51.22	2.89	45.30	1.55
		Higher secondary	45.37	1.57	49.59	1.89
		Undergraduate	50.38	1.01	53.85	2.57
		Postgraduate and above	45.87	2.22	44.95	2.67
2	Numeracy skill	No formal education	35.66	3.50	40.90	2.15
		Primary & lower secondary	42.27	3.14	37.84	1.68
		Higher Secondary	39.07	1.71	41.48	2.06
		Undergraduate	40.19	1.10	44.51	2.79
		Postgraduate and above	45.25	2.41	41.76	2.89

dependent variable was also categorised as two, namely the 'literacy score' and 'numeracy score' of the respondents. Hence, it was decided to use multivariate analysis of variance (MANOVA) to statically compute the data.

a. Descriptive Statistics

The mean and SD of literacy and numeracy scores procured by the respondents based on the level of parental education were presented in Table 1.

The literacy skill among the respondents was higher among children, whose father's educational status was at primary & lower secondary level of education and the mother's educational status at the undergraduate level (M(SD)=51.22 (2.894) and M(SD)=53.85 (2.57) respectively). However, the lowest mean score on the literacy skills of the preschoolers corresponds to the parents with no formal education (M(SD)=42.83(3.22) and M(SD)= 44.71 (1.98)..

A higher mean on the numeracy skill corresponds to the postgraduate fathers and undergraduate mothers (M(SD)=45.25(2.41) and M(SD)=41.76(2.89), respectively). As with literacy skills, the least mean score on numeracy skills was among children whose fathers had no formal education. However, the mothers with the next level of education (i.e.) primary & lower secondary had children with a lower score in numeracy skills.

Considering the sum of assessment figures based on mean score, it can be concluded that the better the educational status of the parents, the better the literacy and numeracy scores of children in their early years.

b. Tests of assumption

The assumptions of MANOVA namely, multivariate normality, linear relationship, outliers, multicollinearity, and homogeneity of variance were carried out. For checking the homogeneity of covariance, the Box's M test for equivalence

of covariance matrices was used to compare the variations in multivariate tests, and the results are presented in Table 2.

Table 2. Test for homogeneity of covariance

S.No.	Box's M	125.761
1	F	2.104
2	df1	51
3	df2	2334
4	Sig.	.000

Box's test with Box's M=125.761,F(51, 2334)=2.10, and p=.000 indicates the heterogeneity of covariance matrices across groups. Hence, the sphericity (homogeneity) seems to be not met. Accordingly, the tests for equality of variances in the literacy and numeracy scores were also conducted presented in Table 3.

As indicated by the significant p-value, the assumption that the variance of each variable was equal across the groups was met in one of the dependent variables the literacy score. However, as the group sizes are equal, Pillai's trace was considered for further analysis.

c. Multivariate and univariate analysis of variances

The test results of the multivariate analysis within the subjects were depicted in Table 4.With Pillai's Trace criterion, the combined dependent variables (Literacy and Numeracy scores) were significantly different by the levels of fathers education (Pillai's=.08,F ((8,5,58)=3.12,p=.002, partial η2=.043). Also, there was a statistically significant difference procured by children based on the interaction effect between father's and mother's educational status (Pillai's=.16,F ((24,5,58)=2.08, p=.002, partial η2=.082). The statistically significant results confirm that the combined measure of literacy and numeracy of the respondents do indeed differ based on parental education and it can be concluded that the literacy and numeracy scores of the kids significantly depend on the educational status of the parents. This finding was partially

Table 3. Levene's test of equality of variances in literacy and numeracy scores

S. No.	Variables	F	df1	df2	p
1	Literacy score	1.81	20	27	.059
2	Numeracy score	2.25	20	27	.002

Table 4. Multivariate analysis of variance for literacy and numeracy skills

S. No.	Effect	Pillai's Trace Value	F (df1, df2)	Sig.	η2
1	Father's Education	.08	3.12 (8, 558)	.002	.043
2	Mother's Education	.05	1.81 (8, 5,58)	.072	.025
3	Father's Education and Mother's Education	.16	2.08 (24, 5,58)	.002	.082

Table 5. Univariate analysis of variance for literacy and numeracy skills based on the parents' educational status

S.No.	Source	Dependent Variable	Sum of Squares	Mean Square	F(df1, df2)	p	η2
1	Father's Education	Literacy skill	956.69	239.17	2.62(4,2,79)	.035	.036
		Numeracy skill	622.78	155.69	1.45(4,2,79)	.217	.020
2	Mother's Education	Literacy skill	974.33	243.58	2.67(4,2,79)	.032	.037
		Numeracy skill	350.59	87.64	.81(4,2,79)	.515	.012
3	Father's Education & Mother's Education	Literacy skill	3119.70	259.97	2.85(12,2,79)	.001	.109
		Numeracy skill	1993.24	166.10	1.54(12,2,79)	.107	.062
4	Error	Literacy skill	25388.13	90.99			
		Numeracy skill	29925.65	107.26			

consistent with Akinsanya *et al.* (2014) who found that parents' education had significant influence of only the numeracy skills in children. However, the current study revealed that the mothers' education (Pillai's=.05,F ((8,5,58)= 1.81,p=.072, partial η2=.025) was not statistically significant.To investigate the parental educational status effect on each of the two dependent variables-Literacy and Numeracy scores a univariate F test using an alpha level of 0.05 was performed (Table 5).

Table 5 distinctly depicts that both father's and mother's educational status were statistically significant with their child's literacy skill with F(4, 2,79)=2.62,p=.035,η2=.036 and F(4, 2,79)=2.67, p=.032,η2=.037,respectively. The above table also depicts a significant effect on the literacy score of the respondents based on the interactive effect of both parents' educational status (F(12, 2,79)=2.85, p=.001) in relation to their child's literacy skill and the partial eta square value η2 is .109, showing a moderate effect size. Majzub and Kurnia (2010), who investigated the effect of the children literacy skill based on their parents' education level observed similar result and concluded that children's literacy skill was influenced by their parent's education level.

d. Pair-wise comparisons

The mean performance difference was also checked since the multivariate and the univariate tests revealed that the literacy and numeracy scores are significantly different across the level of parental education. The mean of the literacy and numeracy scores were compared in a pair-wise format across all categories of parental education to determine which mean differences were significant (Table 6).

The literacy score of the respondents did not depend on the different levels of the father's education, though mean difference (I-J) was found. Thereby the numbered H01, which states that 'the educational status of the father does not have an effect on the Literacy skills of the children in early years' stands accepted.

Table 6. Pair-wise comparisions of father's and mother's educational status with literacy and numeracy skills (n=300)

Dependent Variable	Education level (I)	(J)	(J) Father's Education			(J) Mother's Education		
			Mean Difference (I-J)	SD	Signi-ficant	Mean Difference (I-J)	SD	Signi-ficant
Literacy skill	No formal education	Primary and Lower Secondary	-5.32	3.49	1.000	1.25	1.80	1.000
		Higher Secondary	-6.53	3.02	.315	2.84	1.73	1.000
		Undergraduate	-7.74	3.00	.105	-2.45	1.91	1.000
		Postgraduate and above	-8.47	3.27	.102	-1.11	2.38	1.000
	Primary and Lower Secondary	No formal education	5.32	3.49	1.000	-1.25	1.80	1.000
		Higher Secondary	-1.21	2.19	1.000	1.59	1.45	1.000
		Undergraduate	-2.42	2.16	1.000	-3.70	1.66	.272
		Postgraduate and above	-3.15	2.53	1.000	-2.36	2.19	1.000
	Higher Secondary	No formal education	6.53	3.02	.315	-2.84	1.73	1.000
		Primary and Lower Secondary	1.21	2.19	1.000	-1.59	1.45	1.000
		Undergraduate	-1.20	1.26	1.000	-5.29**	1.59	.010
		Postgraduate and above	-1.94	1.82	1.000	-3.95	2.14	.661
	Undergraduate	No formal education	7.74	3.00	.105	2.45	1.91	1.000
		Primary and Lower Secondary	2.42	2.17	1.000	3.70	1.66	.272
		Higher Secondary	1.20	1.24	1.000	5.29**	1.59	.010
		Postgraduate and above	-.73	1.78	1.000	1.34	2.28	1.000
	Postgraduate and above	No formal education	8.47	3.27	.102	1.11	2.38	1.000
		Primary and Lower Secondary	3.15	2.53	1.000	2.36	2.19	1.000
		Higher Secondary	1.94	1.82	1.000	3.95	2.14	.661
		Undergraduate	0.73	1.78	1.000	-1.34	2.28	1.000

Table 6 contd....

Table 6 contd....

Dependent Variable	Education level (I)	(J)	(J) Father's Education			(J) Mother's Education		
			Mean Difference (I-J)	SD	Signi-ficant	Mean Difference (I-J)	SD	Signi-ficant
Numeracy skill	No formal education	Primary and Lower Secondary	-7.08	3.79	.634	0.07	1.95	1.000
		Higher Secondary	-9.39**	3.28	.045	1.48	1.88	1.000
		Undergraduate	-8.18	3.25	.126	-2.39	2.07	1.000
		Postgraduate and above	-14.11**	3.55	.001	-4.59	2.59	.777
	Primary and Lower Secondary	No formal education	7.08	3.79	.634	-.07	1.95	1.000
		Higher Secondary	-2.31	2.38	1.000	1.42	1.58	1.000
		Undergraduate	-1.11	2.35	1.000	-2.46	1.81	1.000
		Postgraduate and above	-7.03	2.75	.111	-4.66	2.38	.515
	Higher Secondary	No formal education	9.39**	3.28	.045	-1.48	1.88	1.000
		Primary and Lower Secondary	2.31	2.38	1.000	-1.42	1.58	1.000
		Undergraduate	1.21	1.37	1.000	-3.88	1.72	.256
		Postgraduate and above	-4.72	1.97	.177	-6.08	2.32	.094
	Undergraduate	No formal education	8.18	3.25	.126	2.39	2.07	1.000
		Primary and Lower Secondary	1.11	2.35	1.000	2.46	1.81	1.000
		Higher Secondary	-1.21	1.37	1.000	3.88	1.72	.256
		Postgraduate and above	-5.92**	1.94	.025	-2.20	2.48	1.000
	Postgraduate and above	No formal education	14.11**	3.55	.001	4.59	2.59	.777
		Primary and Lower Secondary	7.03	2.75	.111	4.66	2.38	.515
		Higher Secondary	4.72	1.97	.177	6.08	2.32	.094
		Undergraduate	5.92**	1.94	.025	2.20	2.48	1.000

**Significant at 1% level *Significant at 5% level

However, the mother's educational status has a significant impact on the groups of mothers in the higher secondary level of education with that of the undergraduate mothers (I-J (SD)= - 5.29(1.59),p=.010). The negative mean difference between the mother with higher secondary and the undergraduate mothers indicate that the undergraduate mothers have kids acquiring better score in literacy. With reference to clarification of hypothesis numbered H02 that states 'the educational status of the mother does not have an effect on the Literacy skills of the children in early years' stands rejected.

The numeracy score of the respondent kids did not correspond to the levels of mothers' education, though a mean difference (I-J) was found. Thereby the numbered H04, which states that 'the educational status of the mother does not have an effect on the Numeracy skills of the children in early years' stands accepted.

However, the father's educational status has a significant impact on the groups of fathers with no formal education with that of the fathers with a higher secondary level of education (I-J(SD) =-9.39,(3.28),p=.045). The negative mean difference between the father with no formal education with the other two levels of higher secondary and postgraduate fathers (I-J(SD)=-14.11,(3.55), p=.001) indicated that with higher educational status, the kids acquire better scores in numeracy.

Also, Table 6 revealed that the father's educational status has a significant impact on the groups of fathers with undergraduate fathers with that of the postgraduate fathers (I-J (SD) = - 5.92,(1.94),p=.025). The negative mean difference again indicates that the higher th father's education better is the child's numerac score between the undergraduate fathers an the postgraduate fathers indicating that th postgraduate fathers have kids acquiring bette scores in numeracy. Thereby the numbered H0: which states that 'the educational status of th mother does not have an effect on the Numerac skills of the children in early years' stand: rejected.

Drawing on the results of this study, the paper concludes that parental education does have a moderate effect on the literacy an numeracy score of children in their early years. But improving the educational status of the parents is not the possible solution whereas, looking out for a suitable solution among young children is feasible. What can we be done to enhance the literacy and numeracy skills of these children to nullify the impact of parental educational status on them?

Irrespective of the socio cultural context, and economic status, every child born is given equal access to a curricular framework that is developmentally appropriate, culturally responsive, and socially relevant. The other extraneous predictors become nullified. Aligned to this and to the Indian National Education Policy 2020, this research puts forth a recommendation to provide a unified DAP-based curriculum to children in their early years.

CONCLUSIONS

The literacy skill of the children in their early years was dependent on the mother's educational status, wherein the mothers with higher education have kids acquiring better scores in literacy (I-J(SD)=- 5.29(1.59),

p=.010).The numeracy skills of the children in their early years were dependent on the father's educational status and the fathers with a higher educational status had children with better numeracy skills (I-J(SD)=-5.92, (1.94), p=.025). Moreover, the literacy skill was not associated with the father's educational level and the numeracy skill was not dependent on the mother's education.

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INFLUENCE OF PARENTAL EDUCATION ON WRITING SKILLS OF PRESCHOOLERS

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ABSTRACT

Parental educational status is important in promoting children's writing skill development and later academic performance. The study was conducted to understand the effect of parental educational status on their children's writing skills in their early years. A randomized sample of 281 preschoolers from all five zones of the Coimbatore district along with their parents' information accounted for the study. A modified Writing Assessment Pack was used as a tool to measure the level of writing skills of the selected preschoolers. MANOVA statistics were done to test the statistical significance of the effect of parental education on the writing skills of preschoolers. The results showed that the writing skills of the preschoolers were not significantly different based on the parent's education individually. Furthermore, the univariate analysis confirms that a significant effect was found on the scores procured by children on Numeral writing skills within the interactive effect of father's and mother's education $\{F(11,261) = 2.31, p = .010, \eta 2 = .08\}$ in relation to their children's writing skills. The pair wise comparison confirms that the higher the father's education, the higher the writing skills of the preschoolers pertaining to both components - Numeral writing and Emergent writing skills. Mothers' education, in a way, confirms the same only in the Emergent writing skills. Preschooler's writing skill is influenced by their parent's education and later its experiences in long-term educational and career success. Hence, in order to support children's writing skills, the current research would support a policy implication towards the developmentally appropriate practice early childhood curriculum.

Keywords: Writing Assessment Pack, writing skills, preschool children, parental education, school readiness.

INTRODUCTION

Writing readiness skills are essential skills that enable preschoolers to develop the ability to hold and move a pencil fluently and effectively to produce legible writing. Early writing refers to children's first representations of spoken language via written symbols and letters (Puranik et al., 2014), writing names (Gerde et al., 2012), understanding letter-sound mappings (Puranik et al., 2018) and composing a message (Quinn et al., 2021). Having well-developed writing readiness skills promotes preschoolers' self-esteem and academic performance (Kid Sense Child Development Corporation., 2020).Moreover, children's writing in the early years is a good

predictor of their later reading and writing skills in school (Albuquerque and Alves 2019; Kessler et al., 2013).

Treiman (2017) has stated that writing is a mentally challenging task and Elimelech and Aram(2020) stressed its intensity among preschoolers as it is at this stage, that they begin to explore the sound-letter relationships. Aram et al. (2013) confirmed that preschooler's literacy achievements in the early years of school are predicted by their writing skills. Neumann (2016) stated that during writing interactions, parents help their children understand the principles of writing. Subsequently, there is evidence across numerous languages that the nature of parents' writing support predicts children's early literacy skills across orthographies (Bemba – Kalindi et al., 2018; Hall et al., 2015; English – Bindman, 2014; Arabic – Aram et al., 2013; Spanish – Levin et al., 2013; Chinese – Lin et al., 2009).

Puranik et al. (2018) found that home practices associated directly with writing are conceptualised as parental teaching or child-independent practices. They confirmed that the incorporation of essential features of early writing was associated with the frequency of parent–child interactions around writing with a specific didactic focus. With this realization, the researcher proposed a research question 'what are the factors influencing parental involvement? One such is educational status. In fact, studies on parental involvement in children's writing skills show that the factors that significantly influence are: employment status, marital status, family size, and the parental educational level (Porumbu and Necsoi 2013; Epstein et al. 2009; Fantuzzo, Tighe & Childs; 2000). Contrary to Mattingly et al. (2002) and Fan and Chen (2001) concluded that parental involvement is not related to the writing achievement of their preschoolers.

Furthermore, the collated literature pertaining to the role of parent education in developing the writing skills of early childhood has warranted gaps in the Indian context. As only a small number of researches were carried out in India portraying a certain understanding of the effect of parental education on early writing skills, additional research is very much needed. Accordingly, the aim of the current study was to examine the association between the education of the parents and the development of writing skills during early childhood.

The investigator is also aware that studying the impact of parental education on the children's writing abilities won't directly assist the children but formulating strategies for compromising the lacunae in the parental support within the education or classroom setup of the child would help. The most important strategy that can compensate for the predicting effect of socio-demographic variables is by providing a unified curricular setup abiding by core considerations namely developmentally suitable, individually appropriate, and social and cultural relevance**.** These considerations form the base areas of the principle of *Developmentally Appropriate Practices (DAP).*

DAP promotes each child's optimal development and learning through a strengths-based, play-based approach to joyful, engaged learning. DAP offers an environment to the children that promotes language acquisition, numerical knowledge, writing ability and a positive sense of self that allows children to take responsibility for their own learning. Such recourses and experiences throughout the early childhood years, from birth through age eight, are thought to positively affect the development of writing.

OBJECTIVE

To analyse the effect of parental education on the writing skills of children in their early years.

HYPOTHESES

$H_0$1**:** The education of the father does not have an effect on the Numeral Writing Skill of the children in their early years

$H_0$2**:** The education of the mother does not have an effect on the Numeral Writing Skill of the children in their early years

$H_0$3**:** The education of the father does not have an effect on the Emergent Writing Skill of the children in their early years

$H_0$4**:** The education of the mother does not have an effect on the Emergent Writing Skill of the children in their early years.

MATERIALS AND METHODS

A sample size of 281 preschoolers comprising both boys and girls between the age of 3-6 years were randomly selected to analyse the effect of parental education on their writing skills. The sample for the study was drawn from all five zones of the Coimbatore district through the lottery method of selecting private-run kindergartens. A survey method was adopted for this study by using two tools namely the Parental profile of the respondents and the modified Writing Assessment Pack.

Parental profile tool: It was a questionnaire with items concerning the details of the parents of selected respondents regarding their education, filled by the respective parents.

Modified Writing Assessment Pack: The writing Assessment Pack based on the Kindergarten Common Core State Standards of North Carolina served as the base for the assessment. Though the pack was designed based on the developmental milestones of children aged 3-6 years, the Assessment Pack was modified for the current research to fulfill certain criteria related to the relevance and suitability to the Indian context. Accordingly, the pack comprises two components namely Numeral Writing and Emergent Writing Skills and each component has one item.

The minimum and maximum score for each of the component and its corresponding grades were projected in Table I.

Table I: Score and Grades of the components of writing skills

Components	Minimum to Maximum		Grades		
			Basic	Approaching	Master
Numeral Writing	0	30	0-10	10-20	20-30
Emergent Writing	6	8	6	7	8

The children of 3-6 years after the parental consent were tested on their writing skills individually in their respective kindergartens during school hours by the investigator. The testing lasted roughly half an hour for a child and was completed in one session of 15 min each and 1 hour a day on all working days. The data collection process was continuously carried out for three

months. For the purpose of this study, both the face and content validity of the tool were ensured. To ensure

the validity of the questionnaire, the initial drafts of the questionnaire were examined by five experts, and based on the suggestions and comments of these experts, the necessary corrections were made and the final questionnaire was trial tested on a sample of 20 preschoolers. The collected data showed that the preschoolers did not have problems responding to the items in the questionnaire and hence used it for the remaining sample.

Category	Levels of Education	Frequency	Percent
Fathers Education	No formal education	10	3.7
	Primary & Lower Secondary	22	7.7
	Higher Secondary	98	35.0
	Undergraduate	115	41.0
	Postgraduate and above	36	12.7
Mothers Education	No formal education	42	14.7
	Primary & Lower Secondary	71	25.3
	Higher Secondary	91	32.3
	Undergraduate	54	19.3
	Postgraduate and above	23	8.3

Table II: Parents' Educational Status of the selected respondents

The collected data was coded, classified, and tabulated. A two-way MANOVA was performed to examine whether the writing score of the respondent pre-schoolers differed by the parental educationand it also examined if the score differs by the interactive effect of the parental education. The results are interpreted and presented below.

RESULTS AND DISCUSSION

The results were discussed in two subdivisions i) Educational Status of Parents ii) Effect of Parental Education on the Writing Skills of Children

i) Educational Status of Parents

The parental educational status of the selected children was given in the Table II

The table clearly portrays that the majority of fathers (53.7%) were graduates, whereas the graduate mothers were approximately half of the graduate fathers. Moreover, the percentage of illiterate women was 14.7%, which was three times higher than the number of illiterate fathers.

ii) Effect of Parental Education on the Writing Skills of Children

The independent variable for the study was the parental education which has two groups, namely the father's education and the mother's education, and the dependent variable was the writing score (2 components namely Numeral writing, and Emergent writing skills) of the respondents. Hence it was decided to use Multivariate Analysis of Variance (MANOVA) to

statistically compute the data. The results were presented and discussed in four parts: descriptive analysis, the test of assumptions; Multivariate and Univariate analysis of variance on the writing score; and Pairwise comparisons.

a. Descriptive statistics

The mean and SD of the writing scores procured by the respondents based on the level of parental education were presented in Table III.

Table III: Summary statistics of the Writing score procured by the Preschoolers based on their Parental Education ***N=28***

Dependent Variable	Education level	Father's Education		Mother's Education	
		Mean	***SD***	***Mean***	***SD***
Numeral writing skill (Max: 30-Min: 0)	No formal education	10.40	1.58	12.57	.96
	Primary & Lower Secondary	15.03	1.40	13.72	.76
	Higher Secondary	14.85	1.07	**16.24**	**1.24**
	Undergraduate	14.86	.49	15.68	.92
	Postgraduate and above	**15.28**	**.51**	15.75	1.06
Emergent writing skill (Max: 8-Min: 6)	No formal education	4.90	.56	5.41	.34
	Primary & Lower Secondary	6.15	.17	5.84	.27
	Higher Secondary	6.09	.18	**6.51**	**.43**
	Undergraduate	**6.53**	**.49**	6.26	.32
	Postgraduate and above	5.83	.37	6.42	.37

The Numeral writing score was higher among children, whose father's education was at the postgraduate level and the mother's education at the higher secondary level {*M*(*SD*)=15.28(.51) and *M*(*SD*)=16.24(1.24) respectively}. However, the lowest mean score on Numeral writing corresponds to the parents with no formal education {Father's-*M(SD)* =10.40(1.58);Mother's -M *(SD)*=12.57(.96)}.

Undergraduate fathers and mothers with higher secondary levels of education showed a higher mean score on the second component of writing skills, the Emergent writing skill {*M(SD)* =6.53(.49) and *M(SD)* =6.51(.43) respectively}.As with the Numeral writing skill, the preschoolers of parents with no formal education displayed the lowest mean score on Emergent writing skills {*M(SD)*=4.90(.56) and *M(SD)*=5.41(.34) respectively}.

In total, in one of the two components of writing skills assessed among the children of 3-6 years, the mean score states that the fathers who have had the postgraduate level of education had children procuring better scores in Numeral writing. Another component showed a higher score among children whose fathers had undergraduate levels of education. Whereas, in relation to the mother's education, the mean score confirms that the mothers with the higher secondary level of education had children obtaining a higher score in both the two components of writing skills. However, to confirm the results, statistical computation becomes imperative. Accordingly,

MANOVA was carried out further. As MANOVA necessitates certain tests of assumption the following sections provide the same.

b. Tests of assumptions

The assumptions of MANOVA namely, multivariate normality, linear relationship, outliers, multicollinearity, and homogeneity of variance were carried out. For checking the homogeneity of covariance, the Box's M test for equivalence of covariance matrices was used to compare the variations in multivariate tests, and the results were presented in Table IV.

Table IV: Test of Homogeneity of Covariance

Box's M	98.41
F	1.92
df1	45
df2	2753
Sig.	.000

Box's*M* =98.41, *F* (45,2753)=1.92, and *p*<.001 indicate the heterogeneity of covariance matrices across groups. Hence, the sphericity (homogeneity) seems to be not met. Accordingly, the tests for equality of variances in every component of writing score were also conducted and presented in Table V.

Table V: Levene's test of equality of variances in writing scores

Components of writing score	F	*df1*	*df2*	*Sig.*
Numeral writing skills	3.23	19	261	.000
Emergent writing skills	1.80	19	261	.023

As confirmed by Levene's test for equality of variances, Table III showed that the homogeneity of variance was violated for both the components of writing score *F*(19,261)= 3.23,*p*=.000 and *F*(19,261) = 1.80,*p*=.023}.Consequently, the group sizes were equal and hence, Pillai's trace was considered for further analyses. Accordingly, the Multivariate and Univariate tests were performed, analysed, and reported as below.

c. Multivariate and univariate analysis of variances

The test results of the multivariate analysis within the subjects were depicted in Table VI.

Table VI: Multivariate analysis of variance for writing skills

Effect	Pillai's Trace Value	F(*df1, df2*)	*Sig.*	*η2*
Father's Education	.02	.96(8,522)	.465	.01
Mother's Education	.97	.85(8,522)	.551	.01
Father's & Mother's Education	.66	2.11(22,522)	.048	.12

With Pillai's Trace criterion, the dependent variables (2 components of Writing put together)were not significantly different based on the parent's education individually{Fathers- *F*(8,520)=.96, *p*=.465,*Pillai's Trace*=.02, and *η2*=.01 and Mother's- *F*(8,520)=.85, *p*=.551, *Pillai's Trace*=.97, and *η2*=.01}.However, there was a statistically significant difference in the overall writing score procured by children based on the interaction effect between the father's and

mother's education {*F*(22,522)= 2.11,*p*=.048, *Pillai's Trace* =.66, and *η2*=.12}.Yang and Chen (2023), who investigated the effect of the children's writing skills based on their parents' education level observed contradictory results and concluded that parental educational status had no significant impact on preschoolers' writing abilities.

As the statistically significant result was obtained in the interaction effect in the multivariate tests, further follow-up tests were computed and the results of the univariate analysis of variance reporting the influence of the independent variable on each of the dependent variables (2 components of writing) was projected in Table VII.

Table VII: Univariate Analysis of Variance for the components of writing skills based on the parents' education

Source	Dependent variable	Sum of squares	Mean square	F(*df1,df2*)	*p*	*η2*
Father's Education	Numeral writing	112.01	28.00	1.32(4,261)	.262	.02
	Emergent writing skills	11.50	2.87	1.09 (4,261)	.361	.01
Mother's Education	Numeral writing	111.26	27.81	1.31 (4,261)	.265	.02
	Emergent writing skills	11.22	2.80	1.06 (4,261)	.374	.01
Father's & Mother's Education	**Numeral writing**	**538.74**	**48.97**	**2.31 (11,261)**	**.010**	**.08**
	Emergent writing skills	36.42	3.31	1.25 (11,261)	.249	.05

A significant effect was found on the scores procured by children on Numeral writing skills within the interactive effect of father's and mother's education {*F*(11,261) =2.31, *p*=.010,*η2*=.08}. There was no significant effect on the other sources considered over the dependent variable. As at least only one component of the writing skill had significant results in relation to the interactive effect of their parent's education, pair-wise comparisons were performed further to determine which group of parents (based on the education) had children having better writing scores.

d. Pair-wise comparisons

The mean of the writing scores was compared in a pair-wise format across all categories of parental educational status to determine which mean differences were significant and tabulated in Table VIII.

Table VIII Pair wise comparisons of father's and mother's educational status with writing skills

Dependent Variable	Education levels (I)	(J)	(J) Father's Education			(J) Mother's Education		
			Mean Diff (I-J)	SD	Sig.	Mean Diff (I-J)	SD	Sig.
Numeral writing	No formal education	Primary and Lower Secondary	-2.84	1.76	.109	.07	.89	.941
		Higher Secondary	**-4.85***	**1.53**	**.002**	.60	.86	.487
		Undergraduate	**-4.04***	**1.51**	**.008**	-.37	.94	.695
		Postgraduate and above	**-5.75***	**1.64**	**.001**	-.70	1.23	.572
	Primary and Lower Secondary	No formal education	2.84	1.76	.109	-.07	.89	.941
		Higher Secondary	-2.01	1.11	.072	.54	.72	.460
		Undergraduate	-1.20	1.08	.272	-.44	.81	.592
		Postgraduate and above	**-2.91***	**1.25**	**.021**	-.76	1.13	.503
	Higher Secondary	No formal education	**4.85***	**1.53**	**.002**	-.60	.86	.487
		Primary and Lower Secondary	2.01	1.11	.072	-.54	.72	.460
		Undergraduate	.81	.63	.204	-.97	.78	.213
		Postgraduate and above	-.90	.89	.313	-1.30	1.11	.244
	Undergraduate	No formal education	**4.04***	**1.51**	**.008**	.37	.94	.695
		Primary and Lower Secondary	1.20	1.08	.272	.44	.81	.592
		Higher Secondary	-.81	.63	.204	.97	.78	.213
		Postgraduate and above	**-1.71***	**.86**	**.049**	-.33	1.17	.780
	Postgraduate and above	No formal education	**5.75***	**1.64**	**.001**	.70	1.23	.572
		Primary and Lower Secondary	**2.91***	**1.25**	**.021**	.76	1.13	.503
		Higher Secondary	.90	.89	.313	1.30	1.11	.244
		Undergraduate	**1.71***	**.86**	**.049**	.33	1.17	.780

Emergent writing skills	No formal education	Primary and Lower Secondary	-1.00	.623	.110	-.014	.31	.966
		Higher Secondary	**-1.07***	**.54**	**.047**	.427	.30	.164
		Undergraduate	-.85	.53	.109	-.035	.33	.916
		Postgraduate and above	-.91	.57	.113	-.571	.43	.191
	Primary and Lower Secondary	No formal education	1.00	.62	.110	.014	.31	.966
		Higher Secondary	-.07	.39	.848	.441	.25	.087
		Undergraduate	.14	.38	.712	-.021	.28	.941
		Postgraduate and above	.08	.44	.855	-.558	.40	.166
	Higher Secondary	No formal education	**1.07***	**.54**	**.047**	-.427	.30	.164
		Primary and Lower Secondary	.07	.39	.848	-.441	.25	.087
		Undergraduate	.21	.22	.334	-.462	.27	.094
		Postgraduate and above	.15	.31	.620	**-.998***	**.39**	**.012**
	Undergraduate	No formal education	.85	.53	.109	.035	.33	.916
		Primary and Lower Secondary	-.14	.38	.712	.021	.28	.941
		Higher Secondary	-.21	.22	.334	.462	.27	.094
		Postgraduate and above	-.06	.30	.843	-.536	.41	.196
	Postgraduate and above	No formal education	.91	.57	.113	.571	.43	.191
		Primary and Lower Secondary	-.08	.44	.855	.558	.40	.166
		Higher Secondary	-.15	.31	.620	**.998***	**.39**	**.012**
		Undergraduate	.06	.30	.843	.536	.41	.196

The table shows the following:

Numeral writing: Father's education showed a significant difference between the groups of fathers with no formal education with that of the higher secondary, undergraduate, and postgraduate fathers {*I-J (SD)*=-4.85 (1.53), *p*=.002), *I-J (SD)*=-4.04 (1.51), *p*=.008 and *I-J (SD)*=-5.75 (1.64), *p*=.001respectively}. The negative mean differences in all three comparisons indicate that the children of fathers with no formal education were poorer in Numeral writing skills. Hence, higher the education of

the fathers, the higher the preschoolers' performance in numeral writing. Therefore, the hypothesis numbered $H_0$1 stands refuted, denoting that the education of the father does have an effect on the Numeral writing skill of the children in their early years.

The table also states that the mothers' education in between the groups did not show any significant variation. Hence, the writing skill of a preschooler was not influenced by the education of the mothers. With reference to the clarification of hypothesis numbered $H_0$2 which states "the education of the mother does not have an effect on the Numeral Writing Skill of the children in their early years" stands accepted.

Emergent writing skills: Preschoolers whose fathers with no formal education significantly varied with that of their higher secondary completed father counterparts in their child's performance in Emergent writing skills {*I-J (SD)*=-1.07 (.54), *p*=.047)}. The negative mean differences indicate that the higher secondary fathers had children performing better in Emergent writing skills. Thereby the numbered $H_0$3 that states "the education of the fathers does not have an effect on the Emergent writing skills of the children in their early years" stands rejected. No other significant pair wise variations with fathers' education were found. The data relevant to the mother's education confirms that the postgraduate mothers have had preschoolers performing better in Emergent writing skills in comparison to the children of mothers with a higher secondary level of education {*I-J (SD)*=-99(.39), *p*=.012}.Thereby the numbered $H_0$4 that states "the education of the mother does not have an effect on the Emergent writing skills of the children in their early years" stands rejected.

On the whole, the parental education of the selected preschoolers had an effect on their writing skills in terms of the interaction between the fathers and mothers' education. The pair wise comparison confirms that the higher the father's education, the higher the writing skills of the preschoolers pertaining to both components. Mothers' education, in a way, confirms the same only in the Emergent writing skills.

CONCLUSION

The results showed that the writing skills of the preschoolers were not significantly different based on the parent's education individually. However, the univariate analysis confirms that a significant effect was found with the component, Numeral writing skills of the children within the interactive effect of father's and mother's education. However, the issue cannot be fixed by raising the parents' education whereas; looking out for a suitable solution among the young children is feasible. What can we do to improve these preschoolers' writing abilities? Irrespective of the socio-cultural context, or economic status, when every child born is given equal access to a curricular framework that is developmentally appropriate, culturally responsive, and socially relevant, the other extraneous predictors become nullified. Aligned with this and with the Indian National Education Policy 2020, this paper puts forth a recommendation to provide a unified DAP-based curriculum to children in their early years.

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