Leaching Early Number

MONDAY

SUNDAY

OBJECTIVES FOR TODAY:

Why do we need change?

What needs to change

Overview of approach: philosophy, including 9 Guiding Principles

The Emergent Learner- closer look

The Emergent Planner

Examples of SEAL in Early Years Establishments

WHY DO WE NEED TO CHANGE?

Global, national, authority, school, classroom, individual levels of attainment present a poor picture and unrepresentative picture of ability

Achievement of Early level in P1 - 14% gap between SIMD1-5 (78% - 92%)

Poor Numeracy skills cost = £20.2 billion/year
Impact on learners lives-

twice as likely to be unemployed negative relationship to earnings linked to poor mental/ physical health more likely to be involved in crime

WHAT NEEDS TO CHANGE?

MAKING MATHS COUNT

Driving change in Scotland

"...a Maths positive nation."



Change attitude towards Maths and Numeracy in schools and society .

-transform public attitudes

-improve fluency and confidence, raise attainment

-Promote Maths as essential career skill

ROBERT WRIGHT

Robert Wright holds the position of Professor in Mathematics Education at Southern Cross University in Australia and is an internationally recognised leader in **understanding and assessing young children's numerical knowledge and strategies**, published many articles and papers in the field.

The development of the Maths Recovery Programme which focusses on the advancement of numeracy levels of young children.









Robert J. Wright Garry Stanger Ann K. Stafford Jim Martland



OVERVIEW

SEAL - Stages of Early Arithmetical Learning. It is a model that can be used to understand the development of children's numerical knowledge.

Five progressive phases of SEAL -

- Emergent (Early)
- Perceptual (Early / First)
- Figurative (First)
- Counting On (First)
- Facile (End of First Level Average Primary 4)

THE PLANNERS

Each **phase planner** is arranged into **5** strands that are key elements of number:

- Number Word Sequences (NWS)
- Numerals
- Number Structures
- Addition / Subtraction
- Early Multiplication and Division

THE EMERGENT LEARNER

Counting

- Is not counting collections accurately over 10
- Does not have one to one correspondence
- May have oral sequence in place but not coordinated with action
- May manage counting smaller collections
- If asked "How many?" may see as instruction to say the NWS

THE EMERGENT LEARNER

may say NWS to 10 but not individual following number

Will not use the dropping back strategy

BNWS are difficult even 3 to 1

Difficulty saying word before another number

Can say some numerals to 10, mostly 1 to 5

Confusion of numerals 6/9, 3/8

THE EMERGENT LEARNER

Spatial patterns (dots)

May recognise some but not all of patterns 2-6

Will count rather than immediately assign

Finger Patterns

Finger patterns within 1 to 5 but typically will look at fingers and raise slowly (growing)

Temporal (related to time) Patterns

Sound , movement sequences

Might copy temporal sounds of 2 or 3 but no larger

SO THE EMERGENT PHASE WILL FOCUS ON...

Strengthening Key Topics simultaneously

- FNWS from 1 to 20
- BNWS 1 to 10
- Numerals from 1 to 10
 - aspects; recognising, identification, sequence
- Counting Visible Items
- Spatial Patterns
- Finger Patterns 1-5
- Ascribing numerosity to Temporal and spatial Patterns and Temporal Sequences



PERCEPTUAL PHASE

Key Topics

- Number Word Sequences from 1 to 30
- Numerals from 1 to 20
- Figurative Counting
- Spatial Patterns
- Finger Patterns
- Equal Groups and Sharing



FIGURATIVE PHASE

Key Topics:

- Number Word Sequence from 1 to 100.
- Numerals from 1 to 100.
- Counting on and Counting Back
- Combining and Partitioning Involving Five and Ten
- Partitioning and Combining Numbers in the Range of 1 to 10.
- Early Multiplication and Division



COUNTING ON PHASE

Key Topics:

- Number Word Sequences by 2s, 10s, 5s, 3s and 4s
- Numerals from 1 to 1000.
- Incrementing Tens and Ones
- Adding and Subtracting to and from Decade Numbers
- Addition and Subtraction to 20, using 5 and 10.
- Developing Multiplication and Division





FACILE PHASE

Key topics:

- Counting by 10s and 100s
- 2-Digit Addition and Subtraction through Counting
- Non-standard ways of representing 2 Digit and 3-Digit Numbers
- 2-Digit Addition and Subtraction through Collections
- Higher Decade Addition and Subtraction
- Advanced Multiplication and Division

Soll It	Maske It	EX.Paind
32	0008	<u>3</u> tens <u>2</u> ones
		tens ones
		tens ones
		tens

9 GUIDING PRINCIPLES OF TEACHING SEAL

1. Inquiry / Problem-Based Teaching-children are thinking hard to solve problems

2. Initial assessment and ongoing assessment-teacher's current knowledge and strategies

3. Tasks are just beyond the cutting edge (ZPD)

4. Practitioner selecting from a **bank of teaching procedures-professional judgement**, settings, task

5. Practitioner supports/builds on intuitive **verbal based strategies**, which are used as basis for written forms

6. Practitioner has understanding and deliberately **fosters development of sophisticated strategies**

- 7. Practitioner observing the child **and fine-tuning teaching**
- 8. Practitioner provides sufficient and sustained thinking and reflection
- 9. Children have intrinsic satisfaction at realisations of success and progress

Chapter 5: Teaching the emergent child ...

Render Word Statement	The second s	Addition and Subfraction	Names Shakes	Notife Sticking	Handard Strational
Purpose - To develop knowledge of PMVS in the range 1-20 and SMVS in the range 1-10	Purpose - To develop knowledge of numeroix and numeral sequences in the range 1-10	Purpose - To develop perceptual counting strategies	Purpose - To develop the initial builty to asoribe runsher to spekial patterns and under annual	Passas - To develop mila locity with making inger patients	Purpose - To develop facility with copying and counting temporal patterns and temporal patterns areas
5.1.1 Copping and Saying short FWWS is: Iro going to could from x to y and I want you to say it after me. Rously? This time say it by yourself	5.2.1 Numeral Sequences forwards: Place out a Numeral sequence. Here are some numbers. Work in we all count three. Paint to each numeral in turn, while counting Nove age the numbers with rea. New your do it yourself. Numerous 0 - 10	5.3.1 Counting items is one collection: Place out x counters (all the same colosi) How many counters are Mere? Double Sided Counters	5.4.1 Ascribing numerosity to patterns and numbers arrays: Display domino canti (in order -b nandemly). How many state do you see? Flash domino cards (in order -b nandemly). Tall ne bow many state at you see. Ready Domine Patterns 1 to 6.	5.5.1 Sequential patterns for 1 to 5, Engers seen: Watch two as I case ray Engers to stake a number. Raise a longer, Dwe Raise two Engers sequentially. One, two You do that with no. Apady Tata time do one, two times with me	5.6.1 Copying and counting temporal sequences of envelopments: Watch role as i move my hand. Make a delaberate chopping motions. One, two, three Do that with res. Ready? This time year count the number of chops i mells. Ready This time I say a rearbor and you make that number of chops. Ready
5.1.2 Copying and Seying short BMWS is: /m going to court backwards from a and / west you to say 8 after me. Ready?	5.2.2 Manueral Sequences Forwards & Backwards: Place out a numeral sequence, there are some numbers. Walch me as I acan't them Amean's and backwards. Point to each numeral in fam, while counting forwards and them backwards. Now say the numbers with ms. Now you do it yourset. Automate 0 – 10	5.3.2 Establishing a collection of given mamanaeity: Place out around 30 counters juit the same colour) Give me is from the group Double Sided Counters	Repeat above sequence using random amay cards Francism arrays 1 to 4	5.5.2 Sequential patterns for 1 to 5, Engens unseen (burney earlie). This time den't look at your fingers when you make the number on your fingers. DO three with ms. Ready After the shild response: Look of your lingers and are of you are right Repeat on the other hand Data three use your other hand.	5.6.2 Copying and counting rhythmic patterns: Linken to my pattern and see if you can copy it Clap a 2 pattern. New by the one Clap a 2-2 pattern. Similarly by the following patterns 1-2, 2- 1, 1-3, 3-1, 3-3, 2-3, 3-2 Thy to count how many claps in my pattern
5.1.3 Saying alternate numbers fervards and Inclosends: Left table tons to say the numbers, if will any nee and pas any two contains well imp going the that. Ready? This time pas start. Left's by it backwents	5.2.3 Sequencing Numerols: Place cut a sequence of cards (e.g. 1-3) nondoenty Put these cards in order fram one New say the nonthese air you point to them. Numerols 0 - 10	5.3.3 Counting Home in a new, forwards and backwards: Place out a new of x dots. Welde new count out the dots forwards and backwards, Plaint to each dot in turn New you count the dots forwards and backwards. <i>News of Dots</i> .	Ropost above sequence using pains patterns sants Pars Patterns 1 - 8	5.5.3 Benuftaneous patterns for 1 to 5, Septr seen: Hoth ne are ny lingers to main a number. This fees J are going to raise all my degres of once (model). You do the number I say. Remember raise all your freger at ance. After the children responds raise your finger. Computer your flogen with onles.	5.6.3 Gopying and counting monotonic sequences and sociality. Try to coart how many times / days. Make sline thronotonic sequences of four class. How many times? Similarly for sequences within the range 1 – 10 New 7 is year turn. Make x class.
8.1.4 Septing the most number word forwards: <i>Per galog to sourt and I want you to say the next</i> number wher I stop. <i>Ready</i> ?	5.2.4 Mameral Recognition: Place out a range of cards, randomly anangod. Point to s, point to y Mamerada 8 - 10	8.3.4 Counting Home of two collections: Place out, a red counters. Place out y Mus counters. Here are a red counters and y blac counters. Here many allogether? Rower of Delti: Red - 6, 38, 15 and 20, Dissen – 1, 2, 3, 4, 5	5.4.2 Making Spatio-Hotor Patterne: Display domino card. Make a pattern in the air to show the number of dot. This time are if you can do it without leaking at the card. Repear with Pairs and Rendom Anay Cards Domine, Pairs and Rendom Anay Cards	5.5.4 Simultaneous patterne for 1 to 5, flegere unseen (burny cars); Pot your band on your bead like me. Match on use my bigers to make a sumber, (yeade). You do the number I say: Recember value all your finger at crea. After the children responder: Look at your fingers and see of you me right.	5.8.4 Copying and counting arhythmical sequences and counds: Try to court how many times / chap. Make a fast arhythmical sequence of three claps. Hise many brief 7 Birnlard for acquerces within the range 1 – 10 Wew Els year form. Make a claps.
5.1.5 Septing the most number word backwards: On going to count and I want you to sep the next cumber backwards. Ready?	52.5 Mameral Identification: Place out a range of parts, randomly arranged. Point to y, what is this? Point to y, what is this? Assessment 0 - 10	5.3.5 Counting Heres of two rows: Place out a row of a red dets. Beside that place out a row of y blue dets. Here are a red counters and y blue counters. Here many dots allogether?	Repost above activity but this time, fleah the domine, pairs and tendore array cards. Domine. Pers and Resultan Array Cards	5.5.5 Daukle patterns 1 to 5 Put your hands out in hrant, Main tere on your right hand. Make the or your tell hand, Hene many ahopether? Say after ner – 2 whil 2 mekes 4. Repeat for other doubles Now put your bands on your head. Main: the on your right hand. Make tere on your head. Main: the on your right hand. Make tere on your heads there ner here a look. Say other was – 2 and 2 works 4.	
5.1.6 Saying the manifest word after: I'm poleg to say a cumber and I want you to say the number just after the one I way. Ready?	6.2.6 Mameral Tracks: Place out the numeral track, with numerals unceased. Watch one as I count forwards and backwards. Point to each numeral in turn while counting forwards and then backwards. More you count forwards and then backwards and point to each surface in face. Close lids on the Numeral Track and repeat previous activity. Unceasing each AFTER reading each eacher.		5.4.3 Making auditory patterns to match spatial patterns: Display donino card. Clap your hands to show the number of dots on the card. Bepoat with Pairs and Random Arrays Dontes: Para and Random Array Cards	8.5.6 Use Engre patients to keep track of temporal sequences of movement: Match rea as Lincor my Aand, Move hand in a chopping motion, three times. Dee, Inc. free. Use your frepers to keep track of hew many times i move my hand. Move hand a times. How many times i move my hand. Move hand a times. How many times i move my hand. Move hand a times. How many times i move my hand.	
5.1.3 Saying the number word before: The going its may a number and Leart you to say the number before the one Lsay. Ready?	Place out the numeral thack with numerals concred. Uncover a numeral whole earlier in this? Leave that numeral uncovered. Point to another this. So what nuceeral a under Nano? Would you like to check? Aumerate # = 10 Numeral Tracks		Repeat above activity but this time, fash the domine, pairs and random array cards. Domine, Pairs and Receipt Array Cards	5.5.7 Use finger patterns to keep track of temporal sequences of sounds: Webb ne as / dag. Clap three times. One, two, three, Use your forgers to keep track of how reany trees I dag. Clap is times. Now reany see that? Repeat with other hand. Now load, amay and keep track of how many times / dap ny hereb.	

THE PLANNER

The planner works **progressively downwards** for each of the 5 strands

Chapter 5:	Teaching	the	emergen	t child

	The second se	PROFESSION OF A DESCRIPTION OF A DESCRIP		A REAL PROPERTY AND A REAL	
Purpose - To develop knowledge of FN/NS in the range 1-29 and BN/NS in the range 1-10	Purpose - To develop knowledge structurates and numeral sequences in the range 1-10	Parposa - To develop perceptual counting strategies	Parpose - To develop the initial facility to desirble number to spekial peterss and	Parpose - To develop initial facility with making logar patients	Purpose - To develop facility with copying and counting temporal petitiens and temporal
5.1.5 Complex and Expiring about FMMSTs: In- ping to could from it by and I want you to say it abor no. Roudy? (b): Site say it by poursal?	5.2.1 Numerical Sequences Transardler Place opti- Rhammari Segueto, Alver are some nambers. Nicht neu al Acasel Brein Plaint Is each numerial in tarn, will coatting Alser jage the numbers with me, Alian you du at paramitit. Numerical S-10	6.3.1 Gearting terms in one collection: Pioce out x continue; (if the same colour) Haw many outries are these? Double Sided Counters	6.4.1 Associating inspectrum (b) to partnerms and nambus arrays): Display downlow card (or order -9 randiardy). <i>How every</i> also do you age? Frank downlow cards (in order -9 randiardy). Tell risk bow every also do you nee, Rhisty Davisso Palatone (1 to 6).	5.6.1 Sequential patterns for 1 to 5, Regress seen: Match to as 1 rais exp Segues to reads a crastear Rease a larger. One Rease fue Segues sequentially. One, Ann	6.6.1 Copystag and constitute torepositil sequences on theresements: Webhinks and income my Annut. Make a collevation despiring invations. One. Inco. There Do that webs non. Receip? The Other position count file investment of choose I readie. Receip? The Other of counts of the Annutation of a choose I readie. Receip?
1.5.2 Cooping and Reping shart BMME's: An party and the term of the sent point of the term of the sent point is day if alther the Plandy?	5.2.2 Namerol Bioposters Forwards & Biochardele Plans null a rearreal sequence. How are score asystem, Watch are set assert have Arreards and bockherde. Point to sack rearreal in tain, when counting forwards and free bockworth. How say the mumbers with res. Nov point 0.4 pointerst.	5.3.2 Extablishing a collection of given restremently files out annual 36 counters (all the same solaut) Give rise a from the group Double Saled Counters	Report above sequence using random emily certie Remove empy 1 to 4	5.8.2 Bespannikal patterns for 1 to 5, Regara unseen desense away. This inter dark this isk synce fragma when you make the number on your fingers. Do three with res. Ready. After the debit response. Look of your fingers and use of you are right Repost on this differ hand Table the user your other hand.	E.8.2 Graphics and counting rhythmic patterns : Likew for try pathers and saw of pasi can carry K Gias a 2 pattern. New try this cas. Caps a 3-2 genera. Bindwich try for following patterns 1-2, 3- 1, 1-3, 3-1, 3-3, 3-3, 3-2 Try to sourt how energy claps in my pattern.
1.3.3 Seging alternate reinforce transitions indexed. Let's laber Acids to say the surfaces. I fit say use and you say how and we will keep pang the that. Ready?	6.2.3 Sequencing Numerals: Place to La acquirité d'Eards (u.g. 1-2) rundonty PAL these caste et under Anno conc. Joine ady d'an exclusive au you point to them. Numerals 0 - 10	5.3.5 Guarding litera is a rese, forwards and hadreades: Pace out a row of a data. Welch rese- count out the data Knowled and backwards, Paint to each dot in turn New you count the data forwards and backwards. Rows of Data	Repeat allow sequence using pairs patients cards Peru Patiente 1 - 6	5.6.3 Bieruttanseus patterns for 1 to 5, Reger voor: Hacht ein aus my Engans to evalu a number. This fina J am gong humans all my Brigens at cross preseds Your os the namber I say. Recomment raise all your deger at anose. Alles the shifteen responds raise your linger. Compare your finance with mina.	6.6.3 Capying and counting monotonia sequences and exaudia: Top to pour town many dense / days, Mokes size, monotonic sequences of four class, How comy lense? Similarly for sequences within the seque 1 – 10 New it is over tern. Mokes or class.
14.6 Seging the result summer wood forwards: the yorky to solver and / wood point to any the next sumbar wher J shap. Receip?	5.2.4 Nameral Recognition: Place out a range of conto, randomic prompted Point to a, point to y Automatic 0 - 10	8.3.4 Counting means of two collections: Place out, a red counter. Place out p bits counters. Here are x and counters and y bits counters. Here many adoptities? Removed Outp. Red 6, 36, 98 and 20, Graphics - 1, 2, 3, 4, 5	L.3. Making Spation-Holser Patternet: Display downs card, Making a pathero in the air to alrain the rearboth of clubs. This time one if you can do it without history at the card Repost with Pairs and Random Anage Commun. News and Random Anage.	5.5.4 Simultanesses partnerse for 1 to 5. Angues unseen dynamy oestij. Hori ywyr thord in ywyr ther llwr rw, Wych nia war ny frigan fe nafar a nanther ymddi) Yw do the number I say. Renanther isline al ywn Riger of onos Allan fan ddialwr negasarle, Look al ywr fegens ant en orden am neft.	E.4.4 Coppleg and counting anythmical sequences and sounds: Typ to source how charge dress / does that a fast advection of the count
5.55 Suppling the meet number word andwarder: Or goong to course and revel you to say the next number backwards, Revely?	5.2.5 Nurversel Hastification: Place de la range of cards, randomly arranged. Plant Is a, web a Nu? Plant Is y, web a Nu? Narwards S - 10	5.3.5 Covering tienes of two rows: Place cut a row of a red citi. Beside that place out a now of y blue data. Here are a rod ocertain and p blue counters. Place many data allogether?	Report above esting but the low, fault the domain, pain and landow amay cards. Domain, Pars and Remain Army Cards	3.3.5 Devalue patterns 1: to 3 PAJ por Anado: an I-Multi Millis (no on pour style Anat. Bilan Inni on you MP Anni. Heur Inny Aloppetern 2: Syn den ren – 2 and 2 values 4. Propent for other studies for other studies. The star Anat. Mala Inno or your Aloppeter? Take your Inness starts and Mala Inno or your Aloppeter? Take your Inness starts and Alopeter 2. Sign effort mo. – 2 and 2 malas 4.	
5.4.6 Septrag the martitum world after: (or going- to any a cumber and) were paid to have the syndror plat after the one I say. Ready?	5.3.6 Mannersk Trackis: Flago out its enteregi task, with numerick uncoverse, Wadd ne as I could forestde and Accievanty. Part to each horizer and the second fragments and then horizers. Also your could forest and then bookensis appring sech sector and fragment track and separat provide sech under in Ass. Close Bo on the Numeric Track and separat presents are in un-barr. Ad Blook AFTER		5.2.3 Waking auditory patterns to reach sparfal patterns: Ospoy downs card: Ospoy part hands is show the number of data on the card. Repeat with Pairs and Random Anays Domine, Pairs and Readom Anay Cards.	5.5.6 Use forger gatterns is long-track of foregoing sequences of informerset. Which the use is involved long the sequence of the sequence of the sequence long on the sequence of the sequence of the sequence of the sequence of the sequence of the sequence of reven my hand. When hand is lines. Non-neary was dest?	
5.13 Enging the number word indexe. In point to say a number and 7 energy pairs to say the number defuse the one 1 say. Roady?	Place as the numeral facts with numerate conserve. Uncover a numeral, What synthemic this? Leave that numeral uncovered, Point to another Id. So what numeral is under Awar? Would you like Is a sheet? Numerate 7 – 10		Repeat above activity but this time, flash the domine, pains and random array cards.	6.5.7 Use freque patientes la loca practic el temporal sequences el mandei: Welch ne ne / clas. Das tress tines. One, leo, tirre. Use your fogues la loca france many leosa i day. Clas el tema / francemony enc blas? Expensivel. editor hand Man had anay and hasp back of box estary times /	

THE PLANNER

The planner is ideally used *horizontally*, so that each strand reinforces the understanding and



E.g. oral counting 1-3, reinforced by numerals 1-3, counting activities 1-3, dot patterns 1-3, finger patterns 1-3 etc

THE PLANNER

Emergent Level is numbered **5** – chapter 5 in the green book The **strands** on the planner are numbered across the way

e.g. 5.1 5.2 5.3 etc

The progressive **activities** for each strand and numbered down the way

e.g. 5.1.1 5.1.2 5.1.3

LOOKING AT NUMBER STRUCTURE 5.4-5.6

Oral counting 5.1, numerals 5.2 and addition and subtraction 5.3 are progressive and easy to follow.

"...the most commonly observed characteristic of low attaining mathematics students is a persistent dependence on counting by ones."

Developing Number Knowledge: Assessment, Teaching and Intervention with 7-11 year olds by Robert J. Wright, David Ellemor-Collins and Pamela Tabor

"The research found an important difference between the low and high achieving students – the high achieving students used number sense."

5.4 SPATIAL PATTERNS TO DEVELOP THE INITIAL FACILITY TO ASCRIBE NUMBER TO SPATIAL PATTERNS AND RANDOM ARRAYS

Subitising – ability to instantaneously recognise the number of objects in a small group without the need to count .



https://www.youtube.com/watch?v=xFcXHhV5s10

http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/maths/assessment/Pages/lvl1trust.aspx

WHAT DOES THE PLANNER SAY ? 5.4.1 (DOTS) — *ACTIVITY 1 PROGRESSION*

- Ascribing numerosity to patterns and random arrays: DOMINO CARDS 1-6
- 1. **Display** domino card (in order-randomly)
- How many dots do you see?
- 2. Flash domino card (in order- randomly)

Step

Step

Step

- Ascribing numerosity to patterns and random arrays: RANDOM ARRAY CARDS 1 4
- 1. **Display** random array card (in order-randomly)
- How many dots do you see?
- 2. Flash random array card (in order- randomly)
- Ascribing numerosity to patterns and random arrays: PAIRS PATTERNS CARDS 1 6
- 1. **Display** pairs patterns card (in order-randomly)
- How many dots do you see?
- 2. Flash pairs patterns card (in order- randomly)

WHAT DOES THE PLANNER SAY? 5.4.2 (*FINGERS AND DOTS) ACTIVITY 2 PROGRESSION*

- Making Spatio-Motor Patterns
- 1 .Display domino card.

Ster

Ster

- -make a pattern in the air to show number of dots
- -make pattern in air without looking at the card
- Repeat with Pairs and Random Arrays

- Making Spatio-Motor Patterns
- 2 .Flash domino card.
- -make a pattern in the air to show number of dots
- Repeat with Pairs and Random Arrays

WHAT DOES THE PLANNER SAY? **5.4.3** –(AUDITORY AND DOTS)*ACTIVITY 3 PROGRESSION*

- Making auditory patterns to match spatial patterns
- 1 .Display domino card.

Ster

Ster

- Clap your hands to show the number of dots on the card.
- Repeat with Pairs and Random Arrays.

- Making auditory patterns to match spatial patterns
- 1 .Flash domino card.
- Clap your hands to show the number of dots on the card.
- Repeat with Pairs and Random Arrays.



SUBITISING IN THE ENVIRONMENT





SUBITISING IN ART AND LANGUAGE



OTHER RESOURCES FOR SUBITISING









PLANNED ACTIVITIES; GROUP WORK



POSSIBLE ACTIVITIES

Snack table - have the number of items the children can have. Introduce the domino, pairs and random array. Adding in each one once it has been introduced to the children. Then when children are familiar with all arrays - mix them up.

Washing number line with domino, pairs and random patterns

This can also be done on toilet doors

Play dominoes, snap (with domino cards, pairs and random arrays)

Mix them all - play dominoes and snap with the mixture of cards

Round and Round - (orchard toys) using the dice to move the appropriate number of spaces

Ladybirds (orchard toys) - recognising domino patterns and counting collections

Snakes and ladders /Play any games with a dice

Make dominoes out of playdough, children throw the dice and add stones to make the domino pattern to match the dice

POSSIBLE ACTIVITIES

Put out an empty dice with square blank paper, ask children to add numbers to the dice, using domino, patterns or random numbers.

Ask children to make the domino game by filling in the dots in the card patterns, laminate and the children can use these to play with or take home.

Children can make their own domino, random, pair flash cards to use in the nursery and then take home

Paint stones - dots, numbers

Hunt for objects to match the number on the dice

Have a number line with numbers, ask children to add the dots in different patterns i.e. domino, pairs and random arrays

Make dominoes out of playdough, children throw the dice and add stones to make the domino pattern to match the dice

5.5 FINGER PATTERNS; GROWING AND THROWING TO DEVELOP INITIAL FACILITY WITH MAKING FINGER PATTERNS

Finger patterns provide **multisensory** input and convey the ordinal and cardinal aspects of number

Neurocognitive research suggests that children with good finger-based numerical representations show better arithmetical skills and that training finger gnosis /finger sense enhances mathematical skills.

Moeller et al (2011)





WHAT DOES THE PLANNER SAY ? 5.6, 5.7 FINGERS WITH MOVEMENT AND SOUND

 Track and count a sequence of movement (1-5) with finger pattern- practise each hand

5.7 Temporal sequences of

sound

5.6 Temporal

Sequences of Movement

> Track and count sound sequences(1-5) with finger patterns – practise each hand



USING RESOURCES





Signs /pictures are used all around the learning environment : Snack area, how many can play?

In conversations and questioning :show me how many in our group today ?

POSSIBLE ACTIVITIES

We are going to tidy up in 'X' seconds, listen to my claps and tell me how many seconds

Music area - have challenges up. Children take a number and then beat the drum the right amount. When confident with this activity, children can work independently and in pairs with this task.

Actions - finger songs e.g. fish alive, 5 little men in a flying saucer

Books

Use any number stories and instead of saying the number - clap the number and the children say how many claps. Ask the children to look away when you clap and say how many.

WHAT DOES THE PLANNER SAY? COPYING AND COUNTING TEMPORAL PATTERNS AND SEQUENCES 6.1-MOVEMENT 6.2 6.3 6.4-SOUND



RESOURCES





POSSIBLE ACTIVITIES

Use movement outside and in PE - copying and counting rhythmic patterns

Use sounds, counting sequences in the music area

Clap - we are going to tidy up in 'X' seconds...

What's the time Mr. Wolf?

Hickory Dickory Dock - song

Drumming games

Use your body for tapping and clapping

Using musical instruments

HOW CAN WE INTEGRATE SEAL INTO OUR ESTABLISHMENTS?- LOOKING AT GOOD PRACTICE

- -10 schools trained last year: Colgrain, Inverary, Lochgilphead, Kilmartin, Park, Kirn, Dunoon, Sandbank, Tobermory, Salen;
- -More training this year including: JLB, Kilcreggan, Rosneath, Rockfield, Tarbert, Dalintober, Bowmore and Port Ellen, Tayvallich, Carradale and Drumlemble;
- -Using the SEAL approach in Early Years > Primary

SEAL

Embedded in: Play experiences

Group time – Adult lead

Everyday routines

e.g. tooth brushing & snack time

GROUP TIME - GROUP A



Temporal sequences & sounds

Watch me as I strike the drum...

Children could use their fingers to keep track of how many

Now look away...

Repeat

Children could clap back how many strikes they heard

Throw me how many strikes of the drum you heard etc.

GROUP TIME - GROUP B



Numicon

Variety of different sized boxes

Use of language – bigger than, smaller than etc.

Numicon inside each box

Counting the circles in the Numicon

Growing/throwing the number

Clapping the number

GROUP TIME - GROUP C



Shiny Numbers

Focused on identifying the number

Throwing the number / growing the number

Putting the numbers in order

Showing the number on their fingers (some count first)

GROUP TIME - GROUP D



Dot patterns

Identifying the wooden numbers

Counting how many dots on the dot card

Matching the wooden number to the correct dot pattern

Ordering the cards and wooden numbers

NUMICON



The use of apparatus builds children's mental image of abstract concepts, and helps to develop their understanding of the connections between different areas of mathematics

Multi sensory approach

Developing fluency, reasoning and problem solving

Seeing patterns – making connections

NUMICON



Free play

Experimenting

talking/symbolising/ representation

predicting/visualising

making connections

playfulness

reflecting on thinking

"This piece is bigger, it has more holes, I can put 7 stones in this piece and only 5 in that piece..."

SEAL - OUTDOORS











SEAL - INDOORS





Children need to make their own connections through playing and exploring.

General feeling of 'calm' in the nursery, natural materials were heavily utilised also.

Resources available were familiar to the children as they would be used during the group time. Influencing the way in which children would play with them.





Deepen understanding through varied contexts

Five currant buns...

Talking tins

Wooden numbers

Domino patterns

Opportunity for children to use the skills they are developing through the adult led group activities within their free play

SNACK TIME



Use of finger patterns and Numicon flashcards to indicate how many of each item to take at snack time

Building an awareness of number in a variety of contexts and everyday routines

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TOOTH BRUSHING



Focus on questioning How many children are here today? Is anybody not here? How many altogether? Can we clap that number? Children would number /order themselves Throw me the number of children here? Setting out the portions of toothpaste similar to the Numicon structure Children taking tissues when number is called



SEAL - PACE

Planners - Repetition is okay, no rush to get to the end of the planner

Progress in planner only once children are deep in their understanding of that aspect

Deepen understanding through a range of experiences and contexts

Develop a flexibility with numbers

Phases – Emergent and Perceptual – achieved on average by end of Primary one.

RESOURCES

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