July 2022

Box 06, Folder 06 - “The Addition of Groups” (E.M.S - ED-437 folder)

Edwin Mortimer Standing

THE ADDITION OF GROUPS

Ater ~~xxxx~~ I - IO straight into he Decimal System

A sort of Scaffolding .

A Big Jump

Filling in the Interstices --- Counting

Roll (show it)

Also counting in tens .

(in practice some tme)

But also PARALLEL EXERCISES

Atthe same time . The exploration goes on

e.g. addition with the Number rods

Go nb explroing with the units - adding and subrasting .

"When I speakof parallel exercises I mean those exercises which are separate from one another in themselves ; but which refer to one whole .

They are separate exercises , and the child can begin with one or the other , as they do in the Casa dei Bambini with he sendorial exercises "

So the Decimak System gives the Fundamental -...

But there are many other exercises which are different from one another - which taken together serve to illustrate the deails - and make a profoundimpression "

Now we come to the special point - the adding togethher of groups of units .

As usual - our principles

a) Separate the difficulties

b) Give ech in a separate exercises -- and --

c) as a fascinating whole .

'HE SHORT BEAD STAIR

ntages

›) colours save time c)quick d) attractive

a triangle

a parallelogram .

Another case of suddenly going from number to geometry .

(e.g. the Units of each hierarchy in the Decimal sysyem)

EHE USES OF THE SHORT BEAD STAIR

MANY AND VARIED .

a) Making up Tens game

b) Adding grouns 3 4 7 8

c) Subraction . (show the wooden movab;e beads)

d) also for Multiplication later .

bothshort ----- and long .

Show at his stage the Small Aeroplane Game .

THE HYMN BOARDS

ThÖught it out in Church - like Galileo (the pendulum) ?

a) IO --I9

I- Do it with beads and numbers

2) do it with writing in a book

c) The Undoing of it

also with writing afterwards .

THE IMPORTANCE OF KNOWING PERFECTLY AND QUICKLY THESE GROUP COMBINATIONS .

E.G 7 8 I5

6 9 I5

8 4 I2 ---------because if so -----

--- so 37 8 45

66 9 75

48 4 52

A@OSSO DE DIECI OVER THE BACK OF TEN

Suppos there are chairs in three rooms 7 4 5

The adding can only be done in one way - BY THE DECIMAL SYSTEM

And what does that mean ?

It means that every time we arrive (past nine) to IO we arrive at a different group. So we have to reduce the different groups to groups of ten .

SO------TX~~X~~xxx&xxx@x

7 4 5 II 5 IO I £ I6

SO TWO DIFFICULTIES

a) to know the result which comes from the union of units

b) to realsie the group is always reduced to IO somethin

Difficulty a) the esult of the unioon of groups is to be a fact of memory .- to be visualised .

Addition Board -- show it

THE SIMPLIFICATION OF THE GROUP NG TO THE ESSENTIALS

SO --- to find out which are the essential minimum ofgroups to be learned by heart .

For this we must

I) eliminate what is really counting .

II) eliminate what is really just the structure of the decimal system .

So - as always with Montessori - we try to bring order and dis~~c~~tinction , and economy , where there has been confustion

Thus i n find the groups which make 7

we eliminate I 6 and 6 I

in finding the groups which make 7 (contd) we also eliminate 5 2 , which is the same as 2 5

Again in finding the groups which make up a number over IO such as I7 we eliminate IO 7 - as just part of the decimal system (units tens etc being put together .

And 4 (4) we eliminate all the numbers such as I2 5 which is really the same difficulty as the groups that compose 7 . For it is always IO 7 .

So if we take the numbers I -- I9 we find thigs work out as in this diagram .

I of course does not come into it , nor 2(why)nor even 3(why) It begins therefore at 4 --- and goes on to I8 . Not I9 which is just the decimal system - tens and units again .

So we get theis table : and looking at it we find it remarkably symmetrical about a centra no. In fact it comes out rather like an aeroplane . Hence the name aeroplane .

BUT IT IS NOT YET A HELPFUL ACTIVITY

HOW CAN WE MONTERROI)ISE IT ?

Turn it into a material for activity and concetntratio and epetition .

Demonstrate the smaller model

And get them to do it .

Control of error

a) doing it with the beads

b) using the addition table

c) when every card is used - the space is filled in .

Suggestions

a) at leaisure taking as long as one likes .

b) timing oneself -- and

c) trying to breaktones own ecord .

I

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II

DEMONSTRATE THE SHORT BEAD STAIR

Its advantages

a) small b) colours save time c)quick d) attractive

a triangle 

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Another case of suddenly going from number to geometry .

(e.g. the Units of each hierarchy in the Decimal sysyem)

THE USES OF THE SHORT BEAD STAIR

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10 — 99 and Anecdote

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6 + 9 = I5

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66 + 9 = 75

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7 + 4 + 5 , II + 5 , = IO + I + 5 = I6

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