Abstract: This paper provides an overview and research summary of Direct Instruction (DI) mathematics programs, specifically DISTAR Arithmetic I and

, la - - · · · · n n · · · · - -on non the and a me are reply got no not erry me in the second of the second of $\mathbf{n} \bullet \mathbf{n} \bullet$ 1, 21, n, n-1 1 . 1 p.

NCTM Principles

er to concern the mass = on marie - n a boa - - . . the second of the second of - n, - 1, -, 1, - 0 . 79 $\mathbf{r} \cdot \mathbf{r} \cdot \mathbf{n}$, $\mathbf{r} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n}$ term dat government a mercia (2000), • . • . • . ن مرد م • بدر الربد النم عرال • بر () • n.n. . . 1 • , () • ... n. .. n. • n. n. • . n. • -11, n () n n · · · n (2000), · · · !-. · , , - . - . -a - - - in - - 1 1 m f , f , f(2000). n n. • , • ! (1 4) ... • , • , . . • • من روق و الله و المراق الم · a · , a • · • · · · · · · (2000), ... ar art, norman tonner, . . . or . . . n ' ~ n · · · · · · · · · · · · · · ·

Primary Approaches to Math Instruction

• 1, . . • , _n . . (2000/2001), margaret e gran e de la como continue along the second . () to a notation of new $()_{\mathbf{d}} \rightarrow \mathbf{n}_{\mathbf{n}} \rightarrow \mathbf{n}_{\mathbf{d}} \rightarrow \mathbf{$ • n- n • n n n · 1 , () , 1 n in the property of the prope , a () - • n • n n. not no - . no . Il non de de la constante de la c

Table 1

f ;

 $E_{i} = \{ \{ \{ \{ \{ \}_{i} \} \} \} \} \}$ $= \{ \{ \{ \{ \{ \}_{i} \} \} \} \} \} \}$ $= \{ \{ \{ \{ \{ \}_{i} \} \} \} \} \} \}$ $= \{ \{ \{ \{ \{ \}_{i} \} \} \} \} \} \} \}$ $= \{ \{ \{ \{ \{ \}_{i} \} \} \} \} \} \} \}$

مد من من المنظم الم المنظم المنظم

et transport transport on the name of the

- trades as trades to last read and entry as a second and entry as

Efficacy of Direct Approach in Meeting the NCTM Principles for Improving Math Instruction

- n n 1 1, - (2000) • and a few or any bound of the second of the second of the second and the second of the second o

ff ; $\mathbf{E} \bullet_{\mathbf{A}} \bullet_{\mathbf{n}} \bullet_{\mathbf{a}}$

on the state of th - · · + + - • • • • · • · • ,1 ,... •, • (.*). _n • , • • man do Marie de la compania $1. \quad \bullet_{\mathbf{n}} \quad , \quad \bullet_{\mathbf{n}} \quad = 10 \quad \dots \quad$

Table 2

f

- control of the second s h n n
- n o h no w 1. • • n•, • !-! • .- . . n· 2. n., b., b., b. . . .
- س، فیملیم میرو ا

- , • . . n ·
 - of a bearing
- 1. E • . . • n · · · n · · · n ·
- 2. E . . • n n n · .

ر بر فارا • برید • میر• پر ب_{ال} • • • مر المراعرة براوين من المراد برايا ما عرام -1 $\frac{1}{2}$ $\frac{1}{2}$ \sim 1 (E_n•1 nn, \sim n n, \sim 1), & $\mathbf{E}_{\mathbf{n}} \bullet \mathbf{1} \quad \mathbf{n}_{\mathbf{n}}, \mathbf{1} \quad , \quad \mathbf{0}). \quad , \quad \ldots$ not be a second of the second of the second

ــــــــ المحار ,, •, - • . . , • 1, 1• n · n · • · , n

Figure 1

EXERCISE 1 EQUALITY

. (.• , _n .• , ,)

or one of the common of the n q; ,. (\cdot , \cdot ,

=

(

=

and the same of the same E. , was an later . . . (n, 1.)

م العرف أم رفي في العرب ال $(-n^{-1})$

· (• l_d _n • • · , , •)

=

 $\frac{1}{2}$ $\frac{1}$ (É • • • 1₁₁ .) (" · 2. ")

contract the second second \bullet_{\bullet} 1 \bullet_{\bullet} (\bullet_{\bullet} 1.)

2, n n. • n •, -.) .)

, ...∙0.

 \sim n.f., •11, & E_{n.•1} nn, 1 , .22).

 \sim 10 $\mathbf{n} \cdot \mathbf{n} \cdot$ neva · · · · nenez · · · · · ne · nez · · · \cdots $n \cdot n \cdot n \cdot 1 \cdot n \cdot n \cdot n \cdot 1 \cdot n \cdot n$ And the section with the section of the section

& ,1).-n · n · n · n · n · n · , $\dots \cdot n^{2} \cdot \dots \cdot n^{2} \cdot n^{2$

and state of a company of the contract of the

1., • ,_n ., • , • , • , • , • , • , •

(2000). f ; h n' 'n 'n 'n 'n 'n 'n 'n 'n 'n

Figure 4

 $f = m_1 \cdot m_2 \cdot m_1 \cdot m_2 \cdot m_3 \cdot m_4 \cdot$

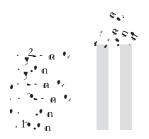
- n, n n n 20 n

- 1 °. .• .• n .√

- ... , (n. - , . , n , * , . *) ., . • . .)
- / * ; = n = n; = '* n = *; .

- Part 1 Part 25 . 11 , , . 12 ,
- Part 3 $\times 1$

Part 4 Part 5



Part 6

- . , 20 , <u>a</u> 2. , 1 • 1 .
- Part 7 0 2 0 1 1 2

Part 8

 $\ldots \ E_{n^{\bullet}} \ 1 \quad \ _{nn}, \ \ ., \ ^{*} \ n \ n^{\bullet}, \ \ ., \ \bullet \ !^{\bullet}, \ ., \& \ E_{n^{\bullet}} \ 1 \quad \ _{nn}, \ \ . \ (1 \quad \ _{\bullet}).$, , ,

•. $J.(1^{-\frac{y}{2}})$ • J. J. J. I. I.- - my - - m - - - m - m - m - - m - 10 we group of any boundary on and to an the many many to the state of the stat بالمنوان والرحوف المحاجر فراق فياجا change in the company of the contraction of not to the state of the state o $(1 \quad 0), \bullet \quad \mathbf{n} \bullet \mathbf{n} \quad \bullet \quad 1 \quad \bullet \quad 1.$

Direct Instruction Math Programs

at the real setting of a setting at the table of the setting of th er en er n n et e e e e e on on Money

on not or a property of a second . on I among the male of the $\mathbf{e}_{\mathbf{A}}$, $\mathbf{e}_{\mathbf{A}}$, $\mathbf{e}_{\mathbf{A}}$, $\mathbf{e}_{\mathbf{A}}$, $\mathbf{e}_{\mathbf{A}}$, $\mathbf{e}_{\mathbf{A}}$, $\mathbf{e}_{\mathbf{A}}$, ..., Ε. .•, .• . • . . • . . -

or on the second second the property of the contract o and the second of the second o ment of the second I to be a second of the second

and the state of t n^{1} , n^{1} , n^{2} , n^{3} , n

the state of the s of after of processing a second

والمرامر في من من ومن وورد والمراب

Table 3					
; f					
f					
Ш,••1.•п • п					
···· • · · · · · · · · · · · · · · · ·		Ÿ			
· • • • • • • • • • • • • • • • • • • •	¥				
	¥	Ÿ			
<u>791, 54 , , </u>	¥				
<u>,, , , , , , , , , , , , , , , , , , ,</u>					
•1 <u>n</u>	7				
···· 1 in 1 if					
E_ 1.,	ÿ				
·• • • • • • • • • • • • • • • • • • •	Ŋ				
// • · · · n	Ŋ	Ť.			
<u>1n</u>	Ŋ	Ť.			
<u> </u>	Y	¥			
<u>* • • • • • • • • • • • • • • • • • • •</u>	Y				
n	Y				
_••		· ·			
·, ; ,).	Ÿ	•			
10 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1					
<u>, , , , , 1 - n</u>	7	- ¥			
<u>~~ (0~ ,~ • • • • • • • • • • • • • • • • • •</u>	7				
_ , • , .		Ÿ			
	7	Ÿ			
<u> </u>	'n				
<u>™n.√·n</u>					
		<u> </u>			
-1 1. · · n		<u> </u>			
		· v			
'n- a ''-'.'n					
		· •			
· • · • · · · · · · · · · · · · · · · ·		•			
•					

f;

Structure of DI Math Programs

140, 10). $E_{n} \cdot E_{n} \cdot E$

on " or -- " to - of," ;

Table 6							
; f			f	nd. n		m.	
11 1							
<u> </u>							
<u>**** 10 10 1</u>							
<u> </u>	Ť						
	*		7				
<u> </u>	Ť						
1,0.10	7	'n	Ψ.	7	*		
	*	7	7	•	'n	¥	*
· · · · · · · · · · · · · · · · · · ·	7	ĭ	Ψ	7	Ψ	¥	
<u></u>	7						
······································		¥					
// · / n n * · • • / n • •							
· · · · · · · · · · · · · · · · · · ·		'n	Ÿ		Ť	Ť	Y
<u> </u>				Ÿ	Ÿ	¥	
• • • • •		¥					Υ
<u>™1 · n · · · · n</u>		7	¥				
<u> </u>		**	**	¥			
<u> </u>		¥	Ÿ	¥	*		
		*	*				
-1 1n		¥				7	
· · · · · · · · · · · · · · · · · · ·						*	
// • / n n n ,* • • • · n							
			*				
<u>-1 1, n n n </u>			*	¥			
21. n 1. 1 n			¥	¥	*		
			Ψ.	¥	*	7	
E n							
>> 1 1				¥			
E n. · n.							
n iv me			¥				
•••n			7	7	7	74	
**************************************				*	*	*	Ψ.
-			*				Ψ.
•			*				Ψ.
,1,•			¥	¥			*
, •			*				
		-					·
							,

Figure 6

f ;

f , f

TASK 2 SYMBOL IDENTIFICATION Introducing a New Symbol

TASK 2 SYMBOL IDENTIFICATION Introducing a New Symbol

Group Activity

, 19

Group Activity

, , , _R .

4



a. This is a four.
What is this?
Yes, this is a four.

b. O Is this a four?

This is

a four.

Is this a four?

2

a. This is a two.
What is this? 2.
Yes, this is a two.

4

4

c. . $\frac{1}{100}$. Is this a four?

f. a. a Individual Test

lividual Test

d. When I touch it, tell me what it is.
e. (. . . .) Get ready.

f. A Landividual Test

 \mathbf{n} - \mathbf{n} \mathbf{n} \mathbf{n} \mathbf{n} \mathbf{n} \mathbf{n} \mathbf{n} \mathbf{n} \mathbf{n} \mathbf{j} (1) \mathbf{n} \mathbf{n} \mathbf{j} to the contract of the contrac late or a second or ever

Research Synthesis on DI Mathematics Programs

 \sim $1, \cdots, 1$ not be made to the second n • * • • • n' · n· · · · · · · · العمر في المراجع في المراجع في الم n - • • •

A Tarring of the same - n-· ,- n-, • , n \cdot n $(1 \quad 0)$ ••, ; () , . . •, , n • • 0 . n , n^{1} , n^{2} , nof the pelling of the period o - l., n , l. (• , n• • • l. .•, ., . , -, , •• - , , . . • n•). . n· •• ., 1%. - n. - · · · · · · · · ... n. n. .. %... Act at new contract to the at a n ن بار روزانی می است. د بار روزانی می است.

and the second second حلا ملفه معلمان معلى و الس l • . • . • l, l, · d · · · · · العراق مارزم U .. n .. - • M 1 . . . n n . • . • . • _{ID} (استر رحمت • حود و ب · A A , I A , A A , A $(1 \quad 1)$. . W. n = - . · · • in inf y toin ← · · · · 1. n. - . . . - . n. \mathbf{n} \mathbf{n} \mathbf{n} \mathbf{n} \mathbf{n} , .• • ,, · • · . • 12. ,

Table 7

, . .

4%, n ... !! -n • n ·· · · · · n · · · er ni i ne e e a n • • • • • 1.11 n

1 pt 21 - de - 15 t - 25 no tipo ata a tipo antigar i po-. . .

> the problem to the second · del · a n · · · · n · · · · · · 11.4% . · · · · 1.2 %

.....



· na na . 11 = +r, , m . r na - 1/2 - 2 - 2 - 1 n - 2 - 2 - 1 - 1 - n $\sim n^{2}$ Late to the transfer of the late of the la - عر عرفي الماس والمناس الماس الم $1., \mathbf{a}(\mathbf{b}) \cdot ... \mathbf{a}(\mathbf{b}) \cdot \mathbf{a}$... •• n · n • • • n • • · · · n no bear of the no

 . In I have a now more than the $\mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n} \cdot \mathbf{n}$ marin land and normal - يروي الرويد مرور و يروي الوريد the set of the second second second a . . . ne l'en a a . · · · · · 'الروحي فحريها إساده برده برحالي و مرمان م روان و الله and the straining of a section net years to be en $(\mathbf{n}_{1}^{\dagger})_{n}$ -0.000 . • 1 •

س• الما • • ، ، به مر • رموس• • الله $(\bullet, \bullet_0 \& \downarrow, 1)$ market, market and market $-\mathbf{e}_{\mathbf{p}}$ •• 1 n • . 1. , 2 n • _ \ , _ • • , _ • • • • n . - , • (• ., & n. • , 2000 n. • & ... , 1 • M_{m···m}, 1 • 4) b, ... • M_{···} • b // • / n/ ·

& 1,1 1 n . 1,1 1 1,2004 n . 1,2004 ,1 1 . . & . n . 1.

a market are a comment فينزف لأغرب والعبروج والفافين في the last property of the second ين در مريز د ياف بالله م , lo, al, a , on -, - \ b no, o , no, - o, . . \ \. the second of the section of the second • من ومن والسائم في السائم في السائم الس or on it was a larger e ne tal a secondario - Land , I , I , I o n , a , I -

References

, . , ., & E_{n-•1 nn}, .(1). • • 1 , ., . . • , . ., & . . . (2000/2001, $(2), \bullet, \bullet$. • n, ., &] , . (1 , .] / . . .). $\mathbf{E} \bullet_{\mathbf{n}} \bullet_{\mathbf{n}} \bullet_{\mathbf{n}} \bullet_{\mathbf{n}} \bullet_{\mathbf{n}} \bullet_{\mathbf{n}} \bullet_{\mathbf{n}} \bullet_{\mathbf{n}} \bullet_{\mathbf{n}}$ (2002). O ; 14, 2002, // . 1 .. , . /, . , 200 . . . - من المستريد المستر 🤋 n 🔐 , . . (1 - 0)...• , . . n- . . . • • n • • n المال في والمالين عن والأواف والما \sim 0.0, ., & E_{0} •1. 00, . (1 0). $\sim_{\mathbf{n}}$, ..., & $\bullet_{\mathbf{n}}$, ...(1). .,, . ., & ₀, • , . E. (2000). E • . . • f (2), 122, 142. \mathbf{r}_{1} , \mathbf{n}_{2} , \mathbf{n}_{3} , \mathbf{n}_{4} , \mathbf{n}_{5} , \mathbf{n}_{5} $(2), 4^{\frac{1}{2}}, 1.$ $\mathbf{E}_{\mathbf{n}} \cdot \mathbf{1}_{\mathbf{n}\mathbf{n}}, \dots, & \sim \mathbf{n}_{\mathbf{n}\mathbf{n}}, \dots (\mathbf{1}_{\mathbf{n}}).$ 11 m - 1, 1 m $\mathbf{E}_{\mathbf{n}} \cdot \mathbf{1}_{\mathbf{n}\mathbf{n}}, \dots, & \sim \mathbf{n}_{\mathbf{n}\mathbf{n}}, \dots (\mathbf{1}_{\mathbf{n}}).$ $\mathbf{E}_{\mathbf{n}} \cdot \mathbf{1}_{\mathbf{n}\mathbf{n}}, \dots, & \sim \mathbf{n}_{\mathbf{n}} \cdot \mathbf{n}, \dots (1 2).$; 1. . , . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / , . . . / $E_{n} \bullet \bot_{-nn}, \ , \not = -_{n \cdot n}, \ , \ , \ \bullet \downarrow \downarrow, \ , \& E_{n} \bullet \bot_{-nn}, \ .$ ≈1. . , . . / , - . M. $E_{\mathbf{n}} \bullet \bot_{\mathbf{n}\mathbf{n}}, \dots, \bullet_{\mathbf{n}\mathbf{n}}, \dots, \bullet \Downarrow, \dots, \& E_{\mathbf{n}} \bullet \bot_{\mathbf{n}\mathbf{n}}, \dots$.ml. . , . . / , - . M. $E_{n\cdot} \bullet \bot_{-nn}, \ ., \not \simeq_{-n\cdot n'}, \ ., .\bullet \Downarrow, \ ., \& E_{n\cdot} \bullet \bot_{-nn}, \ .$ 79.1. ± , . . / , - . M. $E_{n\bullet} \stackrel{\bullet}{=} 1 \quad \text{nn}, \quad , \stackrel{\bullet}{=} \quad \stackrel{\bullet}{=} n \stackrel{\bullet}{=} 1 \quad , \quad , \quad \stackrel{\bullet}{=} \stackrel{\downarrow}{=} 1 \quad , \quad , \quad & E_{n\bullet} \stackrel{\bullet}{=} 1 \quad \text{nn}, \quad .$ (1 ,). ..., 1 . . . / , $1_{0}, ..., 0, \bullet, ..., \approx, \bullet, E., \& ..., (1-1)... 0$ non-to-retor (1), 2, 2.

op• n · n · · · · · · · · · · (2001). \mathbf{E} , \mathbf{E} . •. تــم & _{n. . . .} . . . • 11, . (1 4). • n · n, . / - . M. • • N•., . . (2000/2001, • • • / n ,). البريم محمد وينجي ويريد ويريد ويريد , (2), •4, (1), •2, •. . (1). بالله و الله و $, \bullet_{\alpha} \bullet, \quad , \quad , \quad \bullet_{\alpha} = \quad , \bullet_{\mathbb{N}} \circ, \quad . \, E., \quad , \bullet_{\mathbb{N}} \circ, \dots$ $\frac{1}{f} = \frac{1}{f}, \quad \frac{1}{f}, \quad$ $\mathbf{E}_{\mathbf{n}}$, $\mathbf{E}_{\mathbf{n}}$, ..., (2001). (2000). ; 20,2002, ... 10, f; in the second .., .• II , ..., & ... /. ., . (2004). \dots ; f , $n \rightarrow 0$ $n \rightarrow$

n. · , ., & · , . (1). . . . n · · . (2), 1^y, 2. -n • n - n - - - (1), 7, 14. • n, ., 1• ., ., & n n, . (1 $\frac{3}{2}$). .. , .., & ..., ... (1 $^{\circ}$). , . . . , $_{n}$, the extension of the contract of $\mathcal{L}_{\mathbf{n}}$, $\mathbf{L}_{\mathbf{n}}$, $\mathcal{L}_{\mathbf{n}}$, \mathcal{L} , e . • n - W. - n • $\bullet \bullet_{\mathbf{n}}, \sim \bullet_{\mathbf{n}}, \bullet_{\mathbf{n}},$ (2), **4**, . (2), y_0 , y_{\bullet} . $(1, 1, \dots (1^{-1}), \dots 1, 1, \dots, \dots 1)$ $\mathbf{a} = \mathbf{a} \cdot \mathbf{a} \cdot$ n . . , 202, 214. , 1., ;

Author Note