Is Grade 8 too late for extra tuition?

Implications of the PlusTime project findings (Dr CH Prinsloo)

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Research problem

- Learner performance is in crisis:
  - low average proficiency in Literacy/Languages & Numeracy/Mathematics does not bode well
  - for either future or for overall (LAs) performance

- Much is known about the depth of problem (systemic evaluations, PIRLS, TIMSS, Gr 8 WCED study in 2006, Limpopo 2007/8 study)

- Amidst many solid DoE initiatives (policy and implementation), which will require time to bear fruit, could we “shortcut” to promising practical solutions through **pilot** or **demo** projects?

Origins of (TSF) study

- TSF – WCED & TSF – HSRC explorations (since 2005/6)

- These brought together the:
  - needs of WCED
  - new foci of Shuttleworth Foundation
  - experience / expertise of HSRC

Research objectives

- To conceptualise (a) plausible intervention(s)
- To work within more immediate timeframes
- To focus on Grade 8 (early secondary school level remedies)
- To tackle communicative (literacy, English) and higher-order reasoning (Maths) bases
- To have a home-grown solution for the sake of control, feasibility and sustainability
- To obtain practical solutions (economy, cost-effectiveness)

Purpose of the study

- Long term: alleviate learner performance crisis
- Demo or pilot possible intervention(s)/solution(s)
- Determine: How? When? Learning areas? Practicality? Affordability? Sustainability?
- Help learners recover lost or damaged basic and foundational competencies
- Explore content of tuition programmes and workable approaches to their delivery
- Understand limits of interventions and complex interactions within context
- Control some conditions (to increase the chance of finding true and realistic answers)

Trade offs and balances *

- Expensive – inconclusive (pilot/demo)
- Super roll-out – realistic effort (tuition)
- Sophistication & value – practical implementation (intervention)
- Possibility – affordability (going to scale)
- Reliability – relevance (science & findings)
- Soundness – simplicity (study, report)
- Control – ownership, buy-in and realism (study, implementation)

* Of risk, scale, resources, duration, etc

Methodology

- Sample / respondents: 1 district, 8 schools, +/- 100 learners in each
- Procedures: 20-session after-school (extra) classes, baseline survey, attendance records, post-testing
- Instruments: Maths & English pre- & post-tests, questionnaires, interviews, observation, document review

Design

- Matched/paired control(-group) design
- Sample (institutional): convenient, but “typical” representation; selected/volunteered; single EMDC; 4 control & 4 experimental schools
- Sample (learners): volunteered (food acting as undue incentive in impoverished environment?)
- Learner performance as criterion measure
- Contextual background (various instruments)
- Difference-in-difference analysis
- Contextual or contributing factors/interactions

Schematic view (simplified)

Group	Pre-tests	Interv.	Post-test 1	-Time-	Post-test 2
Control (C)	O_c		O_{1c}		O_{2c}
Project (X)	O_x	X_1	O_{1x}		O_{2x}

Schematic view (illustration)

Learner performance testing schedule / design

Baseline	Intervention	Post in 2007	Diff 1	Post 1 2008	Diff 2	Post 2 2011	Diff 3
Gr 8 MCQ		**Gr 8 MCQ**		**Gr 9 exit**		**Matric exit**	
E (45)	Yes / yes / y	E (58)	13	E (60)	15	E (55)	10
Same/diff baseline		diff b (+10%pt)		diff b (+10+ %pt)		diff b (+10+ %pt)	
C (42)	No	C (45)	3	C (45)	3	C (37)	Minus 5

	Diff-in-diff Scores	**(in % points)**	**10**		**12**		**15**

Matched / paired schools

- Over-sampled potential control schools
- Collected contextual and baseline performance information from 4 experimental & 8 controls
- Made informed, consulted decision (4 pairs)
- Confirmed school, teacher, learner & parent context empirically afterwards (← delay)
- Cut 4 control schools from post-data activity
- Initial performance levels accommodated
- (Replaced one experimental school very late)
- (Teacher strike and recovery plans)

School pairs

- Determined and clustered in terms of:
  - socio-economic feeder-area characteristics, and
  - other opportunity-to-learn factors

Project schools		Control schools
Ocean View	&	Aloe
Fairmount	&	Steenberg
Vuyiseka	&	Phakama
Intsebenziswano	&	Siyazakha

Number of tests completed

(Note **3** layers of ***analysis***)		English		
		Pre or post	Pre- & post	Row totals
Maths	Pre or post	213	166	379
	Pre- & post	176	**219**	395
	Column totals	389	385	***774***

Test numbers by group & LA

Group	Phase (sub-)	Maths pre	Maths post	Eng pre	Eng post
Proj.	Test pairs	148	148	193	193
	All tests	247 45=Afr	187 25=Afr	268	213
Contr.	Test pairs	247	247	192	192
	All tests	303 57=Afr	251 49=Afr	301	197

Instruments

- Mathematics - Gr 8 multiple-choice test (in Afrikaans & English)
- English - Gr 8 multiple-choice test
- Learner contextual questionnaire (Afr & Eng)
- Parent contextual questionnaire (3 languages)
- Teacher & tutor contextual questionnaires
- School and principal contextual questionnaire
- Tutorial contents and attendance sheets

- Briefing sessions, detailed administration procedures

Nr of questionnaires completed

Item/Lang	Project	Control	Total
LRQ Afr	48	45	93
LRQ Eng	247	216	463
LRQ Total	**295**	**261**	**556**
PRQ Afr	48	49	97
PRQ Eng	49	67	125
PRQ Xh	113	127	240
PRQ Total	**210**	**252**	**462**

Main findings (Difference-in-difference analyses)

All - Mathematics

Group (n=774)	Pre- (n) %	Diff. in %-pts	Post- (n) %	Atten-dance
Experi-mental (n=358)	(62) 29,1	+0,7	(62) 29,8	Lo
	(86) 27,7	**+3,7**	**(86) 31,4**	Hi
	(148) 28,3	**+2,4**	**(148) 30,7**	All pairs
	(247) 27,7	+2,6	(187) 30,3	All
Control (n=416)	(247) 30,1	**+3,9**	**(247) 34,0**	All pairs
	(303) 29,6	+4,2	(251) 33,8	All

All - English

Group (n=774)	Pre- (n) %	Diff. in %-pts	Post- (n) %	Atten-dance
Experi-mental (n=358)	(89) 32,4	+1,2	(89) 33,6	Lo
	(104) 30,7	**+2,7**	**(104) 33,4**	Hi
	(193) 31,5	**+2,0**	**(193) 33,5**	All pairs
	(268) 30,9	+2,2	(213) 33,1	All
Control (n=416)	(192) 35,9	**+1,0**	**(192) 36,9**	All pairs
	(301) 35,6	+0,9	(197) 36,5	All

Additional correlations (LP)

Decimals omitted when not 1	Mpre	Mpst	Mdif	Matt	Epre	Epst	Edif	Eatt
Mpre	1							
Mpst	46**	1						
Mdif	-41**	62**	1					
Matt	02	17*	05	1				
Epre	23**	26**	06	05	1			
Epst	22**	26**	07	-01	51**	1		
Edif	-05	01	04	-03	-47**	52**	1	
Eatt	05	**24****	12	74**	-01	-04	02	1

Summary of previous tables

- Project group benefited above control group only overall for English
- Learners with high attendance levels benefited more than those with low attendance levels consistently and overall only for Mathematics
- Learners perform consistently over time and across Learning Area (= ability)
- Attendance levels for learners are consistent across tuition Learning Areas (= commitment)
- English tuition attendance benefited Maths outcomes (as did reading/writing exposure, & English teacher)

Findings: Contextual factors and their influence

(on performance, and performance improvement)

Conundrum

- If extra classes did not help, what did/would?
- Were the interventions good enough? (& …)
- Could more be done while retaining feasibility?
- Are other conditions and factors too strong?
- Would these comprise tutor, teacher or school expertise and functioning?
- Would these lie in learner context/background?
- Would they consist in foundational knowledge?

At this point some detailed indications can be given of such factors and their influence, but it is proposed they be discussed on enquiry only

Conclusions

- Tuition attendance did not lead to performance improvement consistently -- i.e.: (i) across Learning Areas, and (ii) with the fact and / or extent of attendance
- Exception !!: Mathematics high attendance > low attendance
- Important context/background has mediated tuition
- These can come in a mix/range of conditions:
  - Within learners (ability, motivation, ambition)
  - Outside them, e.g., parent socio-economic status & direct support
  - Teacher and tutor ability and motivation (within a given ceiling)
  - Provided learners attend only one programme (overload to learners; and tutors?) [=> external tutors?]
  - School infrastructure
  - In addition to tuition contents as such, &
  - How enacted (attendance, pedagogy, etc.)
  - Not to forget test administration conditions

Implications

- So, it seems as if one has to first evaluate context / conditions, and then customise a tuition approach (no thing like one size fits all)
- While keeping some standards, though
- In an ideal situation, learners would have enough time, be motivated, have supporting teachers and parents, a decent background (else remediation first, with good tutors, and well-structured, -articulated and coherent contents, etc.)
- Remembering – Foundation Phase (FP) + Intermediate Phase (IP) under-achievement constrains the ceiling

Should tuition be considered at all?

- It depends …
- Qualifiers and conditions:
  - One Learning Area at a time
  - Sound contents and delivery
  - Not beyond serious remedial indications
  - Within an integrated and graded understanding (i.e., progression from Grade 1 to 8+, with each phase dealt with in its own right and remedially as required, and each child uniquely too, etc.)
- Thus – it has to be a strong option at the right time and in the right situation

Whereto (go to) from here?

- In terms of WCED practice:
  - Debate and discussion (policy level ?)
  - Further reality checking
  - Build out the implications
  - Convert to action plan elements identifying responsibility, activity, timeframe, and costing

- In terms of wrapping up the report:
  - Any remaining fine-tuning
  - Print, submit and officially distribute report
  - Communicate and disseminate more (www)
  - Disseminate through an academic article

Recommendations

- Integrated approach: FP → IP → SP/FET
- Strong focus on Foundation Phase:

  Numeracy and (<=) Literacy
- First assisting schools to maintain normal teaching success with basics of FP curriculum, that learners have to digest properly
- Then designing remedial interventions across the board from early (Gr 1-3) through ongoing (Gr 4-6) to late (Gr 7-9)
- Keep interventions as indigenous to schools and teachers as possible (else many implications for capacity & funds) (but else, consider quality gains)
- Guard against an inefficient afternoon economy
- Address incentives/remuneration honestly
- Twin high schools and feeder schools

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End

Thank you!

(1a) Learner demographics

- Sex: girl students' Maths and Eng scores improved more than for boys
- Test language (for Maths only): Afrikaans outperformed English
- Home language: isiXhosa learners were outperformed in English by Eng & Afrikaans learners
- isiXhosa learners showed greater Maths improvement (full dataset)

(1b) Learner demographics

- Age: turning 14 in Gr 8 (born in 1993 for the 2007 study) was the optimal age for performance improvement
- 13-year olds did second best, then the 15-year olds
- Outside this, very quick deterioration
- Exception: for black students, they had to be older (with 1 to 2 years) for optimal improvement

(2) Teacher as factor

- In isolated instances Maths improvement was related to who the learners' teacher was
- Same applied, a bit more clearly, for English improvement
- Slight evidence that who the English teacher was, contributed to Maths improvement

(3) Tutor as factor

- Learner performance was seldom unchanged. It rather increased or dropped – suggesting pivotal contribution
- Above the role of tuition contents and quality
- Consistent for English, & almost for Maths
- No difference having internal teachers or external people as tutors
- Undergoing tuition programmes in two learning areas at the same time seemed to be too taxing

(3a) Tuition combinations

- Mathematics (Wiskunde) tuition only, and in Afrikaans
- English tuition only
- Mathematics (Wiskunde) tuition in Afrikaans, and English tuition
- Mathematics tuition (in English), and English tuition
- Mathematics tuition only (in English)

(3b) Tutor-based outcomes

Eng / Mth	Decrease in performance		Increase in performance		No chng
Sch	Lo att	Hi att	Lo att	Hi att	
S	9112	9112 9111	121 122 9111 112	121 122 112 9121	9121
M		221 223	221 222 223 213	213	
B	321 322 323 311 313	321 323 312	312	311 313	
Z	421 9421 9411	9411		421 9421	

(4a) Learner context

No (or very inconsistent or little effect):

- learner access to school
- own bed or bedroom
- proximity or visits to library
- reported assistance from parents (incl. parent reports on frequency of school contact)
- reported levels of time loss in classrooms
- teacher feedback to homework, tests
- parent qualifications (on Maths)

(4b) Learner context

- Reported Grade 7 performance levels in Maths, English and Life Orientation only linked to Maths improvement
- Facilities at home: for Maths, satellite TV appears detrimental, but PCs not
- For English, both appear conducive
- Reading opportunity: for both LA s, esp. with high tuition attendance, the more books (own and others') at home, the higher the improvement

(4c) Learner context

- Reading more newspapers is associated with Maths improvement (with high attendance)
- Reading more magazines is associated with English improvement (with high attendance)
- Time spent on home chores, visiting shops to buy groceries: in various combinations affected Maths and English marks as such, even the improvement scores
- Time spent on homework, even in other subjects, enhanced English performance as such and improvement scores

(4d) Learner context

- Perceived time use and support at school: order and discipline in English classes was related to English performance improvement
- Parent qualifications were related to English performance and score improvement across the experimental and control groups
- Parent reading/literacy behaviours and English improvement was related only in the experimental group
- Parent reading and writing ability was related to Maths improvement only in control group
- Parents' reported support with homework was related to English improvement

(4e) Learner context

- Classroom - frequency of Maths tests and Maths improvement
- Having Maths textbooks for individual use only with tuition led to improved performance
- Also English textbooks - improvement and general performance, irrespective of tuition
- Extra Maths lessons led to Maths improvement (with tuition and proj. group)
- Attending extra Eng lessons was associated with Maths improvement too!

(5) School as factor

- Sample was relatively small
- In one school - both LA s improved above the average
- Such changes could be ascribed to: good management; infrastructure; staff selection, mentoring, ability and commitment?
- Rather than influences from teacher factors, which would kick in in the absence of such anchoring by school

Learner context profile

(could relate some frequencies here from the draft report if there is time)