

Analyses of the data from the Education Uganda ‘slates’ project

Education Uganda initiated the ‘slates’ project in 2007. Individual slates for writing and calculation were introduced to a number of schools, starting in August 2007. Alongside the supply of slates, teachers in each receiving school were trained to use them – for example, in enabling children to give individual responses to a general question, so that teachers are able to gain a sense of which children have grasped a concept and which are still unsure, or to practice writing skills.

25 schools were trained in the use of slates in the first instance (August-December 2007), a further 50 schools in each of 2008, 2009 and 2010, and 125 in 2011 (i.e. 300 schools receiving training by the end of 2011). The total number of schools receiving slates and training is now 300. Current training is being extended to all other primary schools in the Education Uganda partnership, 450 in all, with this phase of training to be completed by the end of 2012.

A random sample of 100 schools was asked to provide information about the impact of slates, using a survey approach. This represents 30% of the whole project at the date of survey, and included participants from all five years of the project to date. 98% of this sample report continued use of slates in teaching (confirmed by independent observations from local inspectors, and Education Uganda project members).

Impact evaluation

Attendance

Comparing pre-training figures with 2011 figures, 62 schools out of the 76 recorded report an increase in attendance rates. The remaining 14 report either no change (6 schools) or a drop in attendance rates. These figures can be taken as relatively robust; however it is not fully clear how ‘before training’ has been interpreted.

Drop-out

12 schools report **increases** in drop-out rates of between 0.8% and 16.7%

The remaining 64 report either no change (4 schools) or a decrease in drop-out rates, with a range between 0.2% and 26.9% improvement.

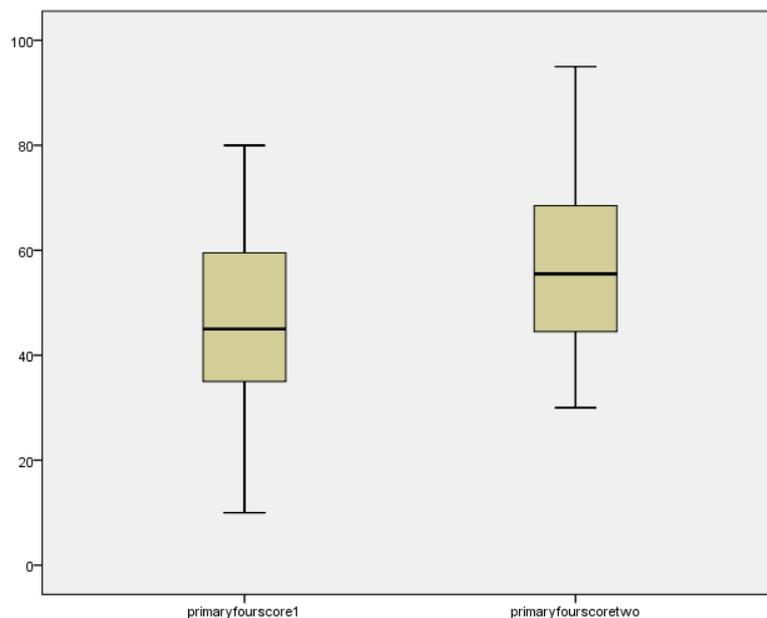
'Drop out' rates should be treated with caution, however, since it not clear how they relate to attendance rates. They are likely also to reflect a range of factors, such as mobility in the local area, availability of employment opportunities for both parents and children, possible migration related to unrest or problems in food supply.

Primary 4 scores

The majority of schools report use of slates in the early primary years, with some use in P7. For this reason, it seemed most sensible to concentrate on impact as expressed through the average attainment in **P4** tests. Although schools were asked to report on P7 matriculation rates in each division, these data are very partial, and internal evidence suggests that there is variation in the way that the question 7(e) has been interpreted. These data have therefore not been addressed here

The reported average P4 test score has increased between the date of training and March 2012, by from 2 to 25 percentage points in 71 schools, with 3 schools reporting no change and 2 reporting a slight drop. There does not appear to be a relationship between the size of the increase and the date at which the school's teachers were trained.

The box plot below clearly shows that the **range** of average scores shifted upwards, as did the median of average scores between the period before the slates were introduced and the post-training scores. (Primaryfour1 are the scores before the introduction of slates and Primaryfourtwo those from after the introduction of slates (2012)).



Given the clear shift in the range and median values, these figures were subjected to a paired-samples t-test, to determine the probability that the introduction of slates to the schools was the key factor in the changes:

The paired samples t-test shows significance at the $p < 0.00001$ level – in other words highly unlikely to be due to chance, highly likely to be due to intervention.

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	primaryfour1 – primaryfour2	-8.68	9.71	1.46	-11.63	-5.73	-5.93	43	.00000046

Perceived gains from the use of slates

2 sets of data contributed to this part of the report: the individual responses from schools in response to question 8, and the separate discussion offered by the letters from head teachers and others.

Question 8: General observation on the use of slates

Only 2 schools reported that slates were not being used. This was attributed to ‘not being able to access them due financing problems’ in one case; in the other, only 2 teachers had received training (recruited from other schools). One school reported that the teachers who had been trained in use of slates had left the school, resulting in diminished use of slates.

Overall, there was general endorsement of the use of slates. Benefits were seen to be:

- Participation by learners (40)
- Increased general attainment (26)
- Improved motivation of learners (20)
- The ability of teachers to assess learners (14)
- More child centred learning (8)
- Improved class control (3)
- Specific learning gains in
 - Spelling (23)
 - Handwriting (40)
 - Reading (25)
 - Calculation and mastery of formulae (5)

- Drawing (2)
- Sorting and classifying (1)
- Self-expression (1)
- Speed and accuracy of learner responses (3)
- Manipulation skills (1)

A number of schools mentioned the financial implications of increased use of chalk, and some also requested an increased supply of slates, so that all children could be using slates at the same time.

Commentary: the identification of learning gains may reflect the individual agendas of the head teacher completing the form. Does the large number of responses identifying handwriting and spelling as significant gains reflect a perception that these were previous areas of concern? Is it surprising that only 5 respondents identify gains in mathematical skills?

A thematic analysis of the 18 letters supplied has also been undertaken. 9 schools sent letters, including responses from school managers, parents, class teachers and pupils. No adjustment has been made below to put individual school responses together for the purposes of reporting

These identified benefits of slate use as:

- Participation & competition (11)
- Engagement (11)
- Spelling (8)
- Attendance/enrolment (6)
- Handwriting (6)
- Academic achievement & critical thinking (6)
- Teachers able to identify learners' attainment levels (5)
- Leadership skills among learners (5)
- Reading & writing (4)
- Improved teaching (3)
- Children sharing (3)
- Improved discipline/class control (2)
- Staff pleasure in teaching (2)
- Child centred teaching (2)
- Children taking responsibility (2)
- Children's memory development (2)
- Creativity in teachers and learners (1)
- Opportunities for children to practise skills (1)
- Learner self-confidence (1)
- Children able to self-correct (1)

some also identified challenges:

- insufficient supply of slates (7)
- class size (2)

- children copying each other (2)
- careless use of water by children (1)
- poor quality of locally manufactured slates (1)
- parents not buying books (1)
- older pupils not wanting to use slates (1)

all identified additional needs/requests:

- chalk supply (10)
- slate per child (3)
- water containers (3)
- dusters (2)
- refresher courses/ additional training (2)
- more classrooms (1)
- need to do monthly assessment/tests (1)
- classroom water supply (ie sink & tap) (2)
- storage cupboard (1)
- smaller classes (1)
- more contact from the project (2)
- exchange opportunities for Ugandan teachers (1)
- visits from British teachers & pupils (1)

Some recommendations for future data collection:

1. Avoid asking respondents to calculate percentages; there were numerous errors (using the spreadsheet to calculate percentages meant that we could identify and eliminate these, but meant that everything had to be re-checked)
2. It would be useful to know not only how many teachers were trained, but how many teachers in the school as a whole, and how many of the teachers with slate training are still on the staff
3. Question 6 (a-e) should refer to the year prior to training
4. Questions 6e & 7e should ask for:
 - number of pupils registered in P7
 - number taking the matriculation examination
 - number of pupils achieving in each division

If numbers for these could be obtained year on year, this would present figures in a much more meaningful way, and enable statistical use of the figures to consider longer-term impacts

5. General observations on the use of slates (Q8) could be rephrased to ask about the effect on teachers, and the impact on learners. 'General observations' seems to encourage responses such as 'they use too much chalk'

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