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CROSS-AGE TUTORING:
SHOULD IT BE REQUIRED IN ORDER
TO REDUCE SOCIAL EXCLUSION?

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Part 3

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Introduction

A study published in 1984 by Stanford University in California would have been dynamite if policy-makers seriously believed in "evidence-based" policies or that educational research could be a guide to practice. The findings from the study are particularly important in the light of increasing evidence that receiving help can be damaging calling into question many well-intentioned interventions. These topics are discussed with a view to asking what kinds of research are now needed with regard to cross-age tutoring.

A key meta-analysis of evaluation findings

The question investigated in the Stanford study by Levin, Glass and Meister (1984) was

It you have money to spend, what could you spend it on to produce the largest gain in achievement per \$100 spent?

From a large number of studies the effects of four ways of spending money were estimated. Three of these ways were obvious strategies which have been frequently tried and even more frequently advocated: reducing class size, increasing the amount of time given to instruction in Mathematics and Reading, and giving drill using computers (CAI, Computer Assisted Instruction). The fourth was Peer Tutoring, a technique which many people had never heard of and a technique that is still not seen as an essential topic in teacher training. It was this fourth method which won hands down. In the context of the large body of findings available on all four methods, Peer Tutoring was about twice as cost-effective as CAI.

Recent work in the UK has confirmed that computers are not great teachers. Integrated Learning Systems designed to manage learning through computers did not improve achievement on external examinations (Wood, 1998). (Of course, computers are essential and excellent *tools*.) The other two interventions (class size reduction and increased time) produced weak results and were costly. A recent randomised controlled trial in Tennessee of the effects of reducing class size produced positive but small effects, consistent with the findings in the Levin et al study (Nye, Hedges and Konstantopoulos, 1999; Grissmer, 1999). Though Peer Tutoring was the most cost-effective, and produced the greatest increases in achievement, there seems to have been no follow-up in terms of large scale implementations and evaluations.

This should be of concern to people interested in initiatives in social education and inclusion since Peer Tutoring is often implemented with *social* objectives in mind, rather than purely to improve achievement. However, the improvement of achievement is itself important since at-risk students are often achieving poorly and this alone causes problems for them and for their teachers.

In addition to the strong evidence in its favour, cross-age tutoring has several other features that make it appropriate for use with pupils in danger of exclusion. It is not a "deficit model" type of intervention implying that at-risk students have a problem and need help. On the

contrary, they and their classmates are asked to tutor, to help others, to be responsible. They find their classroom and day structured to deliver a service to younger pupils. They are given real responsibilities and have a genuine chance to help others. *And* they are invited to talk rather than told to be quiet. This is an attractive event for most pupils.

Cast in this new role the perception of many teachers is that the tutors almost always respond with a dedication and maturity which surprises people. However, in preparing for an encyclopaedia review in 1992 it was difficult to find any substantial evidence of the social and attitudinal outcomes of tutoring (Fitz-Gibbon, 1992) and more recent literature searches revealed a greater concentration on co-operative learning and "intelligent tutoring systems" (meaning computers-as-tutors). Particularly lacking are any long-term follow-up studies of randomised trials of tutoring on attitudes and on retention rates of students and their subsequent life-styles.

An important distinction

An important distinction is between "**Tutorial Service Projects**" and "**Learning By Tutoring**" projects (Fitz-Gibbon, 1978 a and b). In a *Tutorial Service Project* the main aim is to provide a service, namely one-to-one instruction for tutees. Thus 17 year olds might help with remedial reading. While this kind of project can be valuable and effective, it does raise questions about the use of the older pupil's time and the extent to which untrained persons are making up for a shortage of teachers. If on the other hand, the older pupils are volunteers and they are well trained and supervised neither of these objections should arise.

However, it is in **Learning By Tutoring** projects that maximum benefits can be derived. We can call the project **Learning by Tutoring** when the tutors are teaching work which they themselves need to learn and practise in order to enhance their understanding and retention. Thus tutors are not being "used". Indeed, it is generally *the tutors* who gain most, although the tutees also gain considerably. Nor are tutors removed from their classes; generally the entire class tutors for two or three weeks.

The effectiveness of cross-age tutoring in improving learning is not just demonstrated in the Levin, Glass and Meister 1984 study but was presaged in an extensive meta-analysis of 65 controlled trials (Cohen, Kulik and Kulik, 1982). That study also found that the tutors generally gain even more than the tutees, that 3 or 4 week projects seemed maximally effective and that effects were twice as large in mathematics as in reading. Effect Sizes in mathematics were of the order of 0.60 meaning that the average tutor scored higher than 73 percent (almost three quarters) of similar pupils who had studied the topic by normal lessons. This contrasts with Effect Sizes for reduced class size of about 0.20 giving the average tutor a score better than 58 percent of a control group.

The studies mentioned (Levin, Glass and Meister, 1984 and 1986; Cohen et al. 1982) are just some of the research studies showing how effective Peer Tutoring can be in improving the learning of *both* tutors, and tutees. For example Hartley (1977) examined 153 studies in the teaching of Mathematics. These were all studies from the US but similar, though less dramatic, results have been obtained in the UK (Fitz-Gibbon, 1990; Topping, 1987). This research evidence is certainly strong enough to reassure anyone who is worried that tutors might be wasting their time.

Whether the aims are cognitive or related to attitudes and behaviour, if the project is designed to benefit the tutors there is little danger of its being seen as a misuse of tutors' time. As for

the tutees, they are frequently involved only for 20 or 30 minutes a day and they can hardly fail to benefit from the individual attention, as indeed is found to be the case when measurements are made. Moreover they enjoy the experience of having an older tutor and enjoyment should be part of school. To make wider adoption of cross-age tutoring more likely, a few more suggestions regarding the kind of organisational features that seem to work are presented in table 20.1 before further discussion of more theoretically driven arguments and a glance at the accumulating evidence of negative effects from some other approaches designed for at-risk students. We will also consider later the responsibilities of policy makers and the research community.

Table 20.1: Practical advice

In the following list of the steps which you might take in setting up a Peer Tutoring project, the advice given arises from reflections on the literature and on the practical experience gained from about a dozen projects run in the north east of England following initial use of cross-age tutoring in inner-city Los Angeles.

Suggested Steps in Setting up a Learning by Tutoring Project

1. *Identify tutors and the task on which they are to work.* If your main concern relates to tutors' attitudes and behaviour you will still need to choose well-defined and manageable tasks for the tutors, tasks which will be clearly helpful for the tutees. Educational games may be a good choice here but there is much to be gained in esteem and seriousness by choosing a high prestige subject like mathematics and seriously having the older students tutor in this area. Equally, even if the main emphasis is on academic learning, it is good to include a game or two. The exact topic chosen must be (a) one that they need to learn or practice, (b) well-defined and testable.
2. *Seek out available and suitable tutees.* The tutees should generally be at least two years younger than the tutors. A greater age gap is needed if tutors are at risk of exclusion because it is essential that they feel secure in their role as tutors. A six year gap should ensure this. Mathematics can be particularly valuable as it is neutral and important and produces many chances to assess tutees' progress. The most convenient arrangement for everyone is for you to use an entire class as tutees. Is there a suitable class which meets at the same time as the tutors' class? If the two classes, the tutors' and the tutees', meet five periods a week, three of these times could be for tutoring leaving two periods in which the tutors prepare materials and discuss teaching methods with you. If there are more tutees than tutors, some tutors can work with pairs of tutees rather than one-to-one. If there are more tutors than tutees, tutors can take it in turn to tutor and those not tutoring can prepare materials and plan new lessons, with your help or with the help of the teacher of the tutees. If there is not an entire class of tutees available you will need to find a time when tutees can be pulled out from their other activities.
3. *Locate a venue.* The ideal venue for tutoring is a large room with booths around the walls. Free-standing display boards make excellent partitions from which to create the booths. In the centre of the room is the teacher's desk and a table on which the materials and resources are kept. If booths cannot be created, arrange the furniture so that tutors and tutees face outwards from the centre of the room and therefore disturb each other as little as possible. It is important that the tutor's attention is focussed on

the tutee and he or she is not distracted by same-age friends. The arrangement of the room can be influential in achieving that situation. (Feel triumphant if you are able to accomplish these first three steps. In a survey of over 90 tutoring projects scheduling was reported as the major problem. The second major problem was "more demand for tutoring than we could accommodate a rather positive problem" (Fitz-Gibbon, 1978).)

4. *Pre-test and pair up tutors and tutees.* It is important that the tutor knows more than the tutee. Some kind of assessment is therefore useful before tutors are assigned particular tutees. Teachers usually give a short pre-test, and pair the top tutor with the top tutee and so on down the list. It would be invidious to pay any attention to sex in these pairings, but sometimes teachers feel they need to take personality into account. Discussion between the tutors' teacher and the teacher of the tutees may be helpful in arranging the pairs.
5. *Provide a small amount of pre-service training for the tutors.* It is essential that the tutors know exactly what they are going to do during the first few sessions, because they will be surprisingly nervous at the prospect even the most brash among them. However, until they actually start tutoring the motivation level and attitudes will not usually change. It seems to be only after they have met the tutee that they develop the sense of commitment and responsibility which makes them work hard. Consequently, plan more for "in-service" training than for pre-service training. The in-service training, consisting of planning future lessons, preparing materials and discussing teaching problems, can be undertaken in sessions between tutoring sessions, or immediately before straightforward academic work – 20 minutes is sometimes long enough for the tutees to concentrate. If tutors have an hour available, the first 20 minutes might be taken up in briefing and preparation, the next 20 minutes spent on tutoring, and then the last 20 minutes on discussing how the tutoring went that day and clearing up. However, if tutoring itself is scheduled for an entire hour, tutors can undertake a variety of activities such as teaching and games. Your own judgement, based upon the tasks to be accomplished, your knowledge of the tutors and tutees and the exigencies of the bell schedule, will be your guide.
6. *Prepare materials for the tutoring sessions.* Tutors may be able to help in this preparation, for example, by making up flash cards, or by writing out cards with a maths problem on one side and the solution on the other.
7. *Run the tutoring sessions with a light touch but all antennae out.* The tutoring sessions must, of course, be supervised by a teacher. Tutors may need assistance but generally you will want to observe unobtrusively. If a tutor is teaching incorrectly it is probably better to wait till after the session to point this out.
8. *Test the tutees then share and discuss the results with the tutors.* This testing conveys to tutors the seriousness of the task they are undertaking and it allows you to check on the effectiveness of the tutoring and diagnose and prescribe activities for various tutees for the next few sessions. Tutors often show more interest in their tutees' progress than they have been showing in their own.
9. *End the project and start planning the next one.* Some schools have used tutoring as a regular activity throughout the year, but generally it is thought better to use it intermittently say three weeks at a time to emphasise particularly important parts of the syllabus.
10. *Write a report* and, particularly if you conducted a controlled trial, send an account to the Evidence-Based Network (www.cem.dur.ac.uk/e-beuk).

Theoretical reasons for the impact of cross-age tutoring

People are fond of theories but they are not much use unless built on strong data. If theories are not proven, tested and referenced to evidence, they are hypotheses rather than theories and may mislead us. Here, however, are a few hypotheses/theories that possibly explain some of the effectiveness of cross-age tutoring.

Hawthorne effect – not important?

Citing the "Hawthorne effect", anything new is often thought to be effective merely because of its novelty. However, there is work suggesting, by experimentation, that the "Hawthorne effect" or novelty has only weak effects (Adair, Sharpe and Huynh, 1989). Indeed the original Hawthorne studies were meticulously re-examined and the ever increasing productivity in the Hawthorne factory was attributed more to feedback mechanisms than novelty (Parsons, 1974). Operators were checking their productivity on the computer print-out and then seeing if they could increase it. Looking back at Levin, Glass and Meister (1984) the Computer Assisted Instruction would have been equally novel, but it did not have the impact of cross-age tutoring. Novelty is not a sufficient explanation.

Cognitive Consistency theories – behaviour alters attitudes?

Cognitive consistency theories postulate that we all try to keep a consistent set of beliefs. Thus if a student finds himself helping a younger child, the student will believe that he is helpful, since he has observed his own helpful behaviour (cf Bem, 1967). This has been found in practice, with questionnaire responses to a semantic differential showing an increase in the choice of "helpful" as a self-description following participation in peer tutoring. These theories suggest that students assigned to work with younger pupils will see themselves as helpful, and will tend to like the younger pupils, in order to make their attitudes consistent with their behaviour. This commitment to the tutee is certainly seen in cross-age tutoring projects.

Role theory – new role, new behaviours

Assigned to tutor a younger child, the student has a new role and roles are powerful influences on behaviour (Sarbin, 1976). Now, instead of listening and obeying, he or she is planning, explaining, exercising authority and implementing a supportive relationship with a younger child. A new role, *if accepted*, results in new behaviours. The strategies described in Box 1 are designed to obtain role-acceptance, which may well be the key to the success of cross-age tutoring. In particular, the provision of clear teaching objectives and the monitoring of the *tutee's* progress are essential in demonstrating that the cross-age tutoring is a serious activity. The tutors should participate in the monitoring of progress, introduce new topics, and feel a sense of accomplishment when their tutees demonstrably learn. The application of "value added" measure to tutoring would be valuable, so that tutors can see the *progress* of their tutees compared with that of other tutees (Fitz-Gibbon, 1996 and Tymms, 1999, provide an introduction to value added measures).

Verbalisation and Generative Learning

Cognitively oriented theories might seek explanations for the effectiveness of cross-age tutoring in the fact that the tutor has to give explanations and there is evidence that verbalisation aids learning (Ausubel, 1968) and that having to generate explanations will encourage learning (Osborne & Wittrock, 1985; Wittrock, Marks & Doctorow, 1978).

Time on task

If more time is spent on a task, the achievement on that task should, it seems logical to believe, increase until the task has been mastered or failed. However, simply assigning more time does not always result in the students' brains being engaged with the learning task. The motivation to put in the effort needed to master the work is critical. Time on task is an intermediate step but motivation is the essential element. What strikes observers and participants in cross-age tutoring is the amount of time on task and the concomitant almost complete elimination of disruptive behaviour (Fitz-Gibbon, 1990).

Policy implications

Why is cross-age tutoring for which there is so much good evidence, not widely used? Four points are important. One is that it *is* fairly widely used, particularly in reading (Topping, 1987, 1988) and some US programmes (Slavin and Madden, 1979; Slavin, 1989) although in the US within-class co-operative learning has been adopted without, it seems to me, as much evidence in its favour as there is in favour of cross-age tutoring.

Secondly the power of well-controlled, randomised trial to inform us reliably as to what works, is only just becoming widely recognised in the social sciences outside the US and an understanding of these methods is rarely part of the training of teachers or administrators. In particular, the need for long-term follow up from randomised controlled trials has not become a routine part of policy development. As Campbell advocated, promising reforms should be conducted as experiments (Campbell, 1969). Otherwise we remain dangerously ignorant of the most important long-term effects. Although the positive short-term cognitive outcomes of tutoring are well established, the social and attitudinal outcomes are not. There appear to be no trials estimating the long term impact. It is not sufficient to show short term gains and positive attitudes. The good experience of a cross-age tutoring project could be followed by even greater rejection of ordinary schooling thus causing, in the long term, less positive outcomes.

Thirdly cross-age tutoring requires considerable efforts to organise since it involves going outside the four walls of one classroom and making arrangements for pairing students across year groups. This considerable effort is unlikely to be made unless there is compelling evidence, or perhaps even compelling policy, for implementing cross-age tutoring.

Furthermore there is not sufficient evidence relating to systematic variations of features of cross-age tutoring: the topics, the age-gap between tutor and tutee, the classroom design, the training provided to tutors, the age-groups, etc. Should every schools routinely have a room set up for and dedicated to tutoring? The most difficult, the most at risk, might be better off in the tutoring room than anywhere else.

Fourthly, and very importantly, some currently used interventions other than cross-age tutoring need to be experimentally evaluated as money may be being spent in ways that are actually harmful. For example, we keep hoping that good intentions will ensure good outcomes. Has trying to talk children into good social attitudes by mentoring or counselling been demonstrated to be effective? One such intervention for which there has been long-term follow up showed that highly expensive interventions, by trained and well-meaning professionals who provided help to families over a period of five years, seemed to increase offending later by the at-risk young males in those families helped compared with those not helped (McCord, 1978). Helping seemed to have been damaging. Indeed there are other disturbing examples of counselling actually being counter-productive. For example, a sure

formula for creating career delinquents seems to be to send at-risk youngsters to remedial summer camps for counselling (Dishion et al, 1999; Dishion and Andrews, 1999).

These findings may not be consistent with what we like to believe but they must be taken seriously. As evidence accumulates for behaviour being not well (if at all) under the conscious control of the individual (Bargh and Chartrand, 1999) we need to focus on designing *schools*, not on individual children. Under the headings "empower and monitor" (1992) and "Darwinian schools" (1998) I have described school practices such as monitoring-with-feedback, two year gaps between intakes, extensive cross-age tutoring and an attention to building on students' strengths and making schools enjoyable, ie designing the kinds of schools one might design if guided by research evidence. Many of us believe schools are damaging to some pupils and cross-age tutoring could reach those pupils and keep them from becoming subject to exclusion. But this needs to be demonstrated by experiments of *policy-level variables*.

One notable example of a reform (reducing class sizes) conducted as a policy-level experiment has recently been accomplished on a significant scale with thousands of pupils and hundreds of teachers: the Tennessee class-size experiment, (Nye, Hedges and Konstantopoulos, 1999; Grissmer, 1999). Cross-age tutoring should be evaluated on such a scale and the effects of randomised variations in implementation strategies and levels of funding should be evaluated over many years.

Conclusions

Cross-age tutoring has a large number of well controlled studies in its favour and almost universal approval from those who have tried this organisational change. Since at-risk students are often achieving poorly in schools, and this is a factor in causing disruption and then exclusion, and since cross-age tutoring has been demonstrated again and again to have positive effects on learning, it should certainly be tried. During cross-age tutoring projects, there are usually impressive improvements in co-operation levels as well as achievement gains for both tutors and tutees.

But should it be required? How do research findings become adopted into practice? If you are a policy-maker you will want to be guided by strong evidence before advocating expenditures and actions. Perhaps advocating is enough. Certainly schools will take on many new practices if there is funding available to support the extra time and effort. If schools have access to monitoring data, comparing the achievements of their pupils with those of similar pupils in other schools, then it will be easier to develop a good trial of cross-age tutoring. It is this kind of trial and development that public sector management should promote Finding out "what works".

If you are a teacher you will not want to waste time on projects that do not work and teachers do not have to wait for funds or policies. Cross-age tutoring is an activity that brings joy into work. It might become the intervention of choice for schools that wish to produce not only good academic progress, but also good social outcomes, *and* to have inclusion without disruption.

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