USING PEER EDUCATION IN ROAD SAFETY PROVISION

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Why peer education?

Traditional concepts of education as simply a process of transfer of information from teacher to learner are now widely regarded as limited both in how they characterise the nature of learning, and in their effectiveness when rigidly implemented. In the teaching of science, for instance, it is recognised that formal instruction is frequently forced to compete with widely established everyday ideas (e.g. Newton's First Law of Motion vs 'what goes up must come down'), resulting in incomprehension or rote memorising of the scientific account (Anderson, Howe & Tolmie, 1996; Driver, Guesne & Tiberghien, 1985; Howe, 1998; Pines & West, 1986). Similar problems have been described in the context of mathematics teaching (e.g. Schliemann & Nunes, 1990), and also in road safety education, where children commonly fail to see how sets of general rules such as the Green Cross Code relate to actual events (see e.g. Ampofo-Boateng & Thomson, 1990), and good knowledge of these rules is often accompanied by poor road-crossing performance (Ryhammer & Bergland, 1980).

Each of these different problems can be seen as an instance of failure a) to connect content that is often relatively abstract in character back to real contexts in which an understanding of it might be utilised; and b) to recognise that this abstract content is often drowned out by informally acquired understanding that *is* grounded in real contexts. Efforts to counteract these failures have centred on attempts to understand and harness the powerful processes that are involved in everyday informal learning, and it is from this that an interest in peer education has grown. The rationale for this is that one archetypal context in which informal learning occurs is that of joint exploration of the solution to an only partially understood practical dilemma by individuals of more or less equivalent status (Engestrom, 1987; Howe, Rodgers & Tolmie, 1990; Howe, Tolmie, Anderson & Mackenzie, 1992).

What is peer education?

Research identifies three types of peer education: cooperative learning, collaborative learning, and peer tutoring. These vary in a number of respects. *Cooperative or 'jigsaw' learning* involves carefully-planned curriculum-wide programmes of activity in which

groups of up to six same-age pupils are set a task that requires them to gain mastery of some topic and possibly an accompanying set of practical skills. This task is tackled by the group dividing up responsibility for different elements between its members, who work individually or in pairs to become expert on their own element, and then return to the group to advise or instruct them on what they have learnt – hence the term 'jigsaw' (Aronson, Stephan, Lides, Blaney & Snapp, 1978; Cohen, 1994; Sharan, 1980; Slavin, 1989). *Collaborative learning* focuses on use within standard curricula of more stand-alone exercises, in which peers of roughly equivalent ability (but some variation in knowledge) work together to achieve a joint product, challenging the limitations in each others' perspectives on the problem as part of the process of discussing and making decisions (Damon & Phelps, 1989; Doise & Mugny, 1984; Howe & Tolmie, 1998; Piaget, 1932). *Peer tutoring* brings together (typically, but not always, in pairs) similarly-aged pupils who nevertheless differ in relative expertise, with the more expert guiding the less through the completion of some activity. It is central to this guidance that the more expert partner avoids direct intervention as far as possible, but instead proceeds by verbally steering the learner's actions, drawing their attention to potential strategies, and explaining the basis of these where necessary (Philips & Tolmie, in press; Vygotsky, 1978; Wood, 1986).

Despite the obvious differences between the three approaches, they share a common emphasis on promoting learning by requiring participants to explain and justify their contrasting individual positions and understanding to each other. These exchanges compel them to clarify their thinking and to take other perspectives on board. As part of this process, more novice members of the group are helped to acquire new skills by witnessing and being involved the use of (to them) new approaches to the problem in hand. At the same time, more expert members have their understanding reinforced by having to make the steps of these approaches more explicit in order to guide the less expert. This development and consolidation of skills applies to peer tutoring in particular, but cooperative and collaborative learning often contain similar elements.

It is important to stress that use of peer education in classroom settings is substantially different in character from the discovery learning advocated by the Plowden Report (Central Advisory Council for Education, 1967), and has nothing of the whiff of anarchy associated with that approach (Damon & Phelps, 1989). On the contrary, peer education programmes typically require careful planning in terms of, amongst other things, the tasks that are used, the decisions that have to be taken, and the steps that have to be discussed en

route to those decisions, as well as provision of task resources in terms of both material and concepts. They also usually involve some level of supervision from teachers, who make strategic interventions when appropriate (Blatchford, Kutnick, Baines & Galton, 2003). This planning and supervision provides the means by which debate is focused on key areas of educational concern, and thus constitutes the mechanism for targeting gains in understanding with relatively high precision.

Evidence on the benefits of peer education in the context of road safety education

There is extensive evidence of the positive effects of peer education from across a wide variety of areas, including road safety-related work on the training of pedestrian skills. For example, the early research on which the Kerbcraft programme was based found, counter-intuitively, that peers trained in small groups on identification of safe crossing routes exhibited more stable gains in both their skill levels and their capacity to explain their judgements than children who were trained individually (Thomson, Ampofo-Boateng, Pitcairn, Grieve, Lee & Demetre, 1992). These differences were attributed to peer discussion producing a grasp of the factors to consider when making road-crossing decisions that was more explicit and therefore more robust. Further evidence on the effectiveness of training in small groups was provided by the Drumchapel project, from which Kerbcraft was derived (Thomson & Whelan, 1997). Similarly, a large-scale programme of simulation-based training using the trainer-small group combination in four areas of pedestrian skill (identification of safe crossing routes, deployment of attention at the roadside, timing of crossing with vehicle movement, anticipating future vehicle movement) confirmed that this approach led to robust and even cumulative gains in skills and understanding across the four areas, especially among older primary age pupils (Tolmie, Thomson, Foot, Whelan, Sarvary & Morrison, 2002).

Subsequent research (Tolmie, Thomson, Foot, Whelan, Morrison & McLaren, 2005) examined in greater detail the learning processes involved in these settings, focusing on the use of computer simulations to train children in what to attend to when making crossing decisions. This confirmed that roadside performance and ability to explain judgements both improved to a greater extent when trainers worked with groups of three than when they trained individual children. It also established that, as previously conjectured, exchange of ideas between peers was central to these enhanced gains, and identified the important strategic role played by the trainer in resourcing such exchanges. This characteristically involved drawing children's attention to issues that had not been

considered, providing them with explicit reasons why these mattered, and then retiring into the background to allow the group to discuss these ideas.

Peer tutoring in adolescent road safety education?

Although the trainers involved in all the research described above were adults (usually parents who needed no more than basic guidance in how to run training sessions), past work (e.g. Foot, Shute, Morgan & Barron, 1990) has established that older children are capable of taking on the same role with minimal difficulty. Indeed, they may have some potential advantage over adults, in as much as learners are less likely to simply defer to the expert view under these conditions, engaging with it and even challenging it to some extent instead, thus forcing a better quality of debate. Peer trainers are also more likely to 'speak the same language' as trainees, facilitating communication and debate still further.

One implication of this is that peer tutoring using the trainer-small group combination may have an important potential value in adolescent road safety education. Recent research (Tolmie, Thomson, O'Connor, Foot, Karagiannidou, Banks, O'Donnell & Sarvary, 2006) has established that better pedestrian skills tend to lead to safer road-crossing behaviour on the part of young adolescents. However, although these skills are in general reasonably well-developed by 12 years of age, individual variability is high and greater consolidation would therefore be helpful. One substantial obstacle to this, though, is a growing trend amongst adolescents as they get older towards peer-reinforced carelessness, and a tendency to regard road safety issues as childish. Under these circumstances, adult tutoring is likely to be counterproductive since it would merely tend to confirm this impression of childishness.

A peer tutoring system involving, for instance, Year 9 pupils working as trainers with Year 7 pupils would get round this difficulty, and would be likely to have further crucial advantages. Firstly, it would serve to promote and consolidate enhanced skills amongst the Year 7 pupils, who would take the message more seriously since it emanated from their 'cooler' seniors. Secondly, it would re-focus the attention of Year 9 pupils on road safety issues, consolidate *their* existing skills, and promote a greater awareness of gaps which the effort to train others would help correct. It would also serve to counteract any sense of childishness surrounding road safety issues which they might feel, since they would be in the senior, and responsible role, something which is known to impact positively on adolescents' behaviour in this context (Lupton & Bayley, 2001). Thirdly, if one of the

target areas for training were the perception of cues to future vehicle movement ("reading the road") – a skill area where abilities were found by Tolmie *et al.* (2006) to be least developed amongst children at the point of primary-secondary transition – then there would be strong potential for it to make a contribution to pre-driver education, since this is the area of greatest overlap between pedestrian and driver skills.

The basic simulation materials for running a computer-assisted version of such a system already exist in the Crossroads programme (Tolmie *et al*., 2002; Tolmie, Thomson, Foot, Whelan, Sarvary, Morrison, Towner, Burkes & Wu, 2003; Tolmie, Thomson, Foot, Whelan, Sarvary & Morrison, 2006), and these could be extended without difficulty to make them more age-appropriate. Practical models for the running of peer tutoring schemes are available from a number of sources, including the various BP-sponsored initiatives in this area. The net costs of setting up schemes along these lines must be acknowledged, both in terms of organisation and provision of basic guidance on tutoring to the more senior pupils, each requiring some form of additional support over and above current provision. However, given that adolescents might reasonably be regarded as an intractable population with a pronounced need, the cost-effectiveness of extra resourcing may well be high, especially if there were demonstrable benefits for pre-driver training. It should also be noted that the overhead involved in schemes of this type may prove less than adult-led training, since tutors would be on the spot rather than having to be brought in. Pilot research would serve to establish both the feasibility and impact of a peer tutoring system of this kind, and would also provide a model that might be usefully extended to other contexts.

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