Trends in Peer Learning

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Developments in forms of peer learning 1981–2006 are reviewed, focusing mainly on peer tutoring, cooperative learning, and peer assessment. Types and definitions of peer learning are explored, together with questions of implementation integrity and consequent effectiveness and cost-effectiveness. Benefits to helpers are now emphasised at least as much as benefits to those helped. In this previously under-theorised area, an integrated theoretical model of peer learning is now available. Peer learning has been extended in types and forms, in curriculum areas and in contexts of application beyond school. Engagement in helping now often encompasses all community members, including those with special needs. Social and emotional gains now attract as much interest as cognitive gains. Information technology is now often a major component in peer learning, operating in a variety of ways. Embedding and sustainability has improved, but further improvement is needed.

Peer learning has a long history. It is possibly as old as any form of collaborative or community action, and probably has always taken place, sometimes implicitly and vicariously. In this review, however, we are concerned with explicit and deliberate peer learning.

Peer learning can be defined as the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions. It involves people from similar social groupings who are not professional teachers helping each other to learn and learning themselves by so doing.

Even this can be traced back over centuries in the written record. So what can have changed significantly in a mere 25 years? In fact, quite a lot.

Archaic perceptions of peer learning considered the peer helper as a surrogate teacher, in a linear model of the transmission of knowledge, from teacher to peer helper to learner. There was an assumption that peer helpers should be amongst the "best students" (i.e., those who were most like the professional teachers). However, the differential in levels of ability and interest in such a situation could

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prove under-stimulating for the helper, who was unlikely to gain cognitively from the interactions. More recently, it was realised that the peer helping interaction is qualitatively different from that between a professional teacher and a child or young person, and involves different advantages and disadvantages.

Most recently, there has been a great deal more interest in deploying helpers whose capabilities are nearer to those of the helped, so that both members of the pair find some cognitive challenge in their joint activities. The helper is intended to be "learning by teaching" and also to be a more proximate and credible model.

Types of Peer Learning, Implementation, and Effects

The longest established and most intensively researched forms of peer learning are peer tutoring and cooperative learning. Both have been researched more in schools than in other contexts.

Peer tutoring (PT) is characterised by specific role-taking as tutor or tutee, with high focus on curriculum content and usually also on clear procedures for interaction, in which participants receive generic and/or specific training. Some peer tutoring methods scaffold the interaction with structured materials, while others prescribe structured interactive behaviours that can be effectively applied to any materials of interest.

Confusion between "tutoring" and "mentoring" is evident in the literature. Mentoring can be defined as an encouraging and supportive one-to-one relationship with a more experienced worker (who is not a line manager) in a joint area of interest. It is characterised by positive role modelling, promotion of raised aspirations, positive reinforcement, open-ended counselling, and joint problem-solving. It is often cross-age, always fixed-role, quite often cross-institution, and often targeted to disadvantaged groups.

Cooperative learning (CL) is more than "working together" – it has been described as "structuring positive interdependence" (Slavin, 1990) in pursuit of a specific shared goal or output. This is likely to involve the specification of goals, tasks, resources, roles, and rewards by the teacher, who facilitates or more firmly guides the interactive process. Typically operated in small groups of about six heterogeneous learners, CL often requires previous training to ensure equal participation and simultaneous interaction, synergy, and added value. Having all group members work with the same information might heighten cognitive conflict but risks intra-group comparison and "competence threat". This can be avoided by a "jigsaw" arrangement for informational interdependence (Buchs, Butera, & Mugny, 2004). Higher effect sizes tend to be associated with approaches which combine group goals and individual accountability. At its worst CL can result in "the blind leading the blind" or "pooling ignorance", or one person doing all the work – hence the need for structure.

However, many schools might think they are implementing peer tutoring or cooperative learning, when all they are really doing is putting children together and hoping for the best. Bennett, Desforges, Cockburn, and Wilkinson (1984) found

that while children were often placed in groups, mostly they worked as individuals. Only one-sixth of the time was spent interacting with other pupils, and most of this was not related to the task. Little of the talk between pupils in groups enhanced the task in hand.

Sometimes hoping for the best works for some children, but typically not for those most in need. Spontaneous (untrained) tutoring behaviours can tend to be primitive (e.g., Person & Graesser, 1999), often characterised by questioning limited both in frequency and level of cognitive demand, coupled with infrequent correction of errors and the giving of positive feedback when not appropriate. Accordingly, one of the most important changes over the last 25 years has been a greater focus upon implementation integrity. This has involved sharpening awareness of the organisational variables in the delivery of peer learning.

Organisational Variables

Methods for peer learning (PL) can vary on at least 13 organisational dimensions:

1. Curriculum content – that is, the knowledge or skills or combination to be covered. The scope of PL is very wide and projects are reported in the literature in virtually every imaginable subject.
2. Contact constellation – some projects operate with one helper working with a group of peers, but the size of group can vary from two to 30 or more. Sometimes two or more helpers take a group together. PL in pairs (dyads) is more intensive – there is less opportunity to drift into token participation in a pair.
3. Within or between institutions – while most PL takes place within the same institution, it can also take place between different institutions, as when young people from a high school tutor in their neighbourhood elementary (primary) school, or university students help in regular schools.
4. Year of study – helpers and helped may be from the same or different years of study, and/or be the same or different ages.
5. Ability – while many projects operate on a cross-ability basis (even if they are same-age/year), there is increasing interest in same-ability PL. In this the helper might have superior mastery of only a very small portion of the curriculum, or all might be of equal ability but working towards a shared, deeper, and hopefully correct understanding. Failures in "Meta-ignorance" can be a problem – the helper doesn't know that they don't know the correct facts.
6. Role continuity – roles need not be permanent, especially in same-ability projects. Structured switching of roles at strategic moments (reciprocal PL) can have the advantage of involving greater novelty and a wider boost to self-esteem, in that all participants get to be helpers.
7. Time – PL might be scheduled in regular class contact time, outside of this, or in a combination of both, depending on the extent to which it is substitutional or supplementary for regular teaching.
8. Place – correspondingly, PL can vary enormously in location of operation.

9. Helper characteristics – if helpers are those who are merely average (or even less), all partners should find some challenge in their joint activities. Although the gain of the helped might not be so great, the aggregate gain of both combined may be greater.
10. Characteristics of the helped – projects may be for all or a targeted subgroup, such as the especially able or gifted, those with disabilities, those considered at risk of under-achievement, failure, or dropout, or those from ethnic, religious, linguistic, and other minorities.
11. Objectives – projects may target intellectual (cognitive) gains, formal academic achievement, affective and attitudinal gains, social and emotional gains, self-image and self-concept gains, or any combination. Organisational objectives might include reducing dropout, increasing access, etc.
12. Voluntary or compulsory – some projects require participation, while in others helpers self-select. This can have marked effects on the quality of what ensues.
13. Reinforcement – some projects involve extrinsic reinforcement for the helpers (and sometimes also the helped), while others rely on intrinsic motivation. Beyond simple social praise, extrinsic reward can take the form of certification, course credit, or more tangible reinforcement such as money. Extrinsic reward is much more common in North America than elsewhere, and this has led to some debate about possible excess in this regard. The availability of extrinsic reinforcement can have effects on recruitment in voluntary projects, which might be good or bad.

Recent years have seen much more emphasis upon equal-opportunity involvement in peer learning, engaging all members of the educational community without exception (as in class-wide tutoring; e.g., Greenwood, Delquadri, & Hall, 1989). Interest in reciprocal tutoring has also greatly expanded (e.g., Fantuzzo, Riggio, Connelly, & Dimeff, 1989), since this enables all involved to function as both helper and helped, avoiding any social divisiveness according to perceived ability and status, and offering a richer apprenticeship for future involvement.

When planning peer learning, the following aspects of organisation need to be considered (Topping, 2001a):

1. Context – there will be problems and opportunities specific to the local context.
2. Objectives – consider what you hope to achieve, in what domains.
3. Curriculum area.
4. Participants – who will be the helpers, who will be the helped, and how will you match them? There will also have to be trainers and quality assurers.
5. Helping technique – will the method used be packaged or newly designed?
6. Contact – how frequently, for how long, and where will the contact occur?
7. Materials – what resources will be required, and how will they need to be differentiated?
8. Training – this will be needed for staff first, then for helpers and helped.
9. Process monitoring – the quality assurance of the process must be considered.
10. Assessment of students – the product and the process should be assessed; consider whether any of this should be self and/or peer assessment.

11. Evaluation – you will need to find out whether it worked.
12. Feedback – this should be provided to all participants, to improve future efforts.

Effects

When peer tutoring or cooperative learning is implemented with thoughtfulness about what form of organisation best fits the target purpose, context, and population, and with reasonably high implementation integrity, results are typically very good (Topping, 2001a; Topping & Ehly, 1998). The research evidence is clear that both peer tutoring and cooperative learning can yield significant gains in academic achievement in the targeted curriculum area. In the case of CL, this can be for all members of the group. In the case of PT, both tutees and tutors can gain – if the organisation is appropriate. This latter finding helps dispel concerns that engagement in peer tutoring might be a "waste of time" for more able tutors – but with the caveat about organisation.

Additionally, both CL and PT can simultaneously yield gains in transferable social and communication skills and in affective functioning (improvements in self-esteem, liking for partner or subject area; regarding CL see Johnson & Johnson, 1986; Slavin, 1990, 1995; regarding PT see Cohen, Kulik, & Kulik, 1982; Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003; Sharpley & Sharpley, 1981). Although these are more elusive to measure and are not found as reliably as academic gains, they represent considerable added value for no more input.

Peer learning has also been noted to be among the most cost-effective of learning strategies (e.g., Levine, Glass, & Meister, 1987). Some studies certainly demonstrate high effect size at low delivery cost. However, even in the research literature there are occasional reports of peer learning programs which did not show significant effects. Additionally, the average effect size across many studies is generally modest, again emphasising the importance of appropriate selection of method for purpose and context, and the need to quality assure implementation.

A Theoretical Model of Peer Learning

So, peer learning works. At least, it does if you organise and implement it well. But how does it work? This is not merely a matter of obscure academic interest, since a deeper understanding of how peer learning obtains its positive effects should enable both researchers and practitioners to design ever more adaptive and effective forms of peer learning. For many years peer learning was under-theorised, supported by old sayings such as "to teach is to learn twice". In the last 25 years, a number of researchers have conducted work with strong implications for building theory in peer learning (e.g., Chi, Siler, Jeong, Yamauchi, & Hausmann, 2001; King, 1998). However, a plethora of theories does not help the hard-pressed practitioner.

Accordingly, Topping and Ehly (2001) synthesised existing research into a single theoretical model (Figure 1). This initially assigns some of the main sub-processes into five categories.
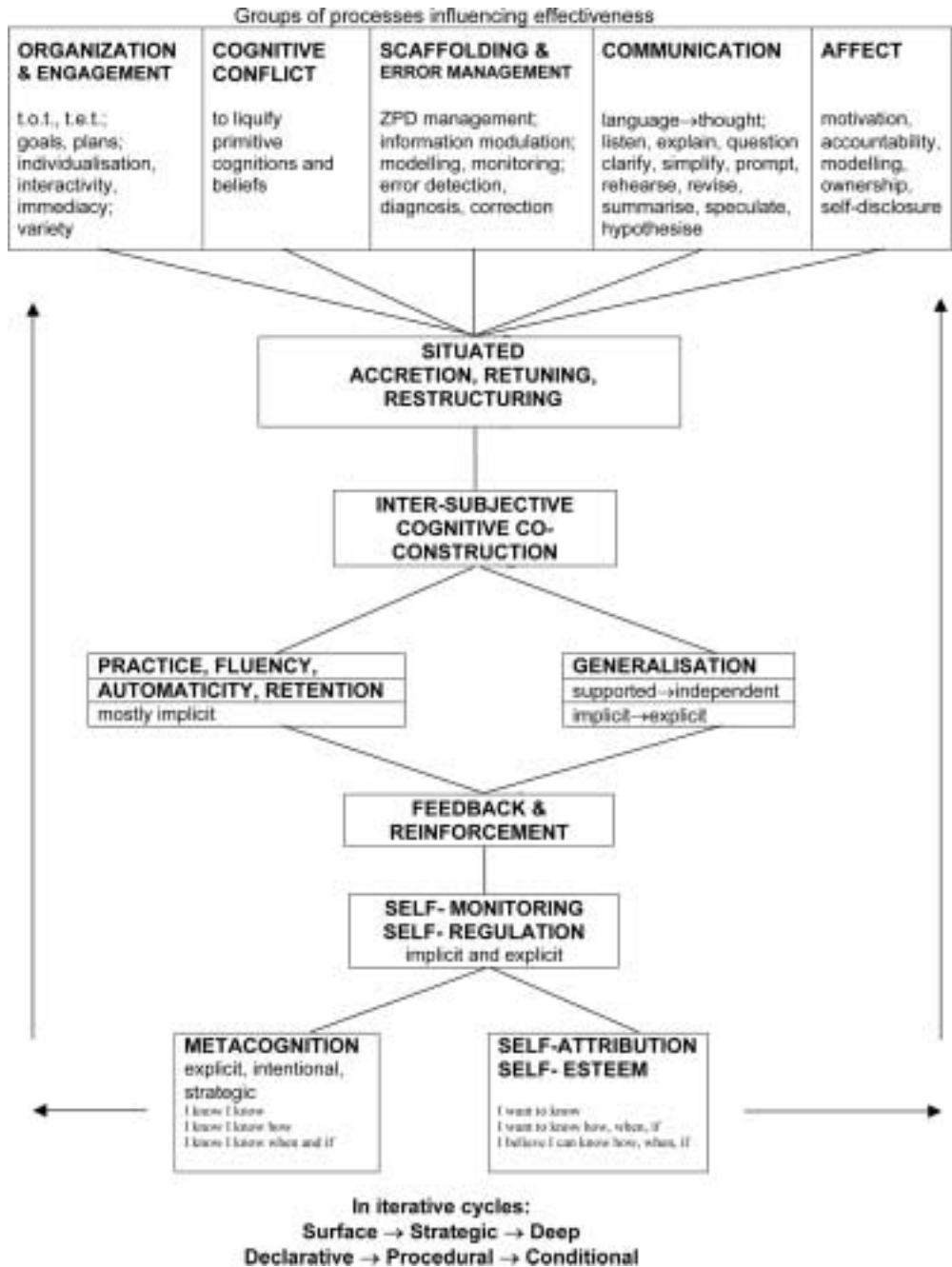

Figure 1.   Theoretical model of peer-assisted learning

The first of these includes organisational or structural features of the learning interaction, such as the need and press inherent in PL toward increased time on task (t.o.t.) and time engaged with task (t.e.t.), the need for both helper and helped to elaborate goals and plans, the individualisation of learning and immediacy of feedback possible within the small group or one-on-one situation, and the sheer excitement and variety of a novel kind of learning interaction.

Cognitively, PL involves conflict and challenge (reflecting Piagetian schools of thought, and necessary to loosen blockages formed from old myths and false beliefs). It also involves support and scaffolding from a more competent other, necessitating management of activities to be within the zone of proximal development of both parties (reflecting Vygotskian schools of thought, and necessary to balance any damaging excess of challenge; Vygotsky, 1978).

The helper seeks to manage and modulate the information processing demands upon the learner to maximise the rate of progress – neither too much nor too little. The helper also provides a cognitive model of competent performance. However, the cognitive demands upon the helper in terms of monitoring learner performance and detecting, diagnosing, correcting, and otherwise managing misconceptions and errors are even greater – and herein lies much of the cognitive exercise and benefit for the helper.

PL also makes heavy demands upon the communication skills of both helper and helped, and in so doing develops those skills. A participant might never have truly grasped a concept until having to explain it to another, embodying and crystallising thought into language – another Vygotskian idea, of course. Listening, explaining, questioning, summarising, speculating, and hypothesising are all valuable skills which should be transferable.

The affective component of PL might also prove very powerful. A trusting relationship with a peer who holds no position of authority might facilitate self-disclosure of ignorance and misconception, enabling subsequent diagnosis and correction. The helper's modelling of enthusiasm, competence, and the possibility of success can influence the self-confidence of the helped, while a sense of loyalty and accountability to each other might help to keep the pair motivated and on-task.

These five categories or sub-processes feed into a larger onward process of the helper and helped extending each other's declarative knowledge, procedural skill, and conditional and selective application of knowledge and skills by adding to and extending current capabilities (accretion), modifying current capabilities (re-tuning), and (in areas of completely new learning or cases of gross misconception or error) rebuilding new understanding (restructuring). These are somewhat similar to the Piagetian concepts of assimilation and accommodation. This leads to the joint construction of a shared understanding between helper and helped – which is firmly situated within the current authentic context of application, and adapted to the idiosyncrasies in their perceptions (i.e., is inter-subjective), so might not represent absolute truth, but forms a foundation for further progress.

Subsequently, PL enables and facilitates a greater volume of engaged and success-ful practice, leading to consolidation, fluency, and automaticity of core skills. Much

of this might occur implicitly – without the helper or helped being fully aware of what is happening. Simultaneously or subsequently, PL can lead to generalisation from the specific situated example through which a concept is learned, extending the ability to apply that concept and its developmental variants to an ever-widening range of alternative and varied contexts in multiple communities of practice.

As this occurs, both helper and helped give feedback to each other, implicitly and/or explicitly. Indeed, implicit feedback is likely to have already occurred spontaneously in the earlier stages. PL increases the quantity and immediacy of feedback to the learner very substantially.

Explicit reinforcement might stem from within the partnership or beyond it, by way of verbal and/or non-verbal praise, social acknowledgement and status, official accreditation, or even more tangible reward. However, reinforcement which is indiscriminate or predominantly for effort risks over-weighting the significance of the reinforced concept in the network of understandings of the learner.

As the learning relationship develops, both helper and helped should become more consciously aware of what is happening in their learning interaction, and more able to monitor and regulate the effectiveness of their own learning strategies in different contexts.

This development into fully conscious explicit and strategic metacognition not only promotes more effective onward learning, it should make helper and helped more confident that they can achieve even more, and that their success is the result of their own efforts. These affective and cognitive outcomes feed back into the originating five sub-processes – a continuous iterative process and a virtuous circle. As the PL relationship develops, the model should continue to apply as the learning moves from the surface level to the strategic and on to the deep level, and from the declarative into the procedural and conditional.

Simplistic forms of peer tutoring, focusing on drill and practice, seem likely to utilise only a few of the possible channels or sub-processes (typically only organisation, perhaps some communication, scaffolding and error management, practice, and reinforcement – fewer than half of the total possibilities). More elaborate and cognitively demanding forms of peer tutoring, such as peer tutoring in thinking skills (e.g., Topping, 2001b), aim to utilise all the channels, with both tutor and tutee operating and benefiting in every channel. This might be enhanced and assured by role reciprocation. The greater the differential in ability or experience between helper and helped, the less cognitive conflict and the more scaffolding might be expected. Too great a differential might result in minimal cognitive engagement (let alone conflict) for the helper, and unthinking but encapsulated acceptance (with no re-tuning or co-construction) by the helped. Of course, if the helper is older, more experienced, and therefore more credible, but actually has no greater correct knowledge or ability than the helped, then a mismatch and faulty learning might occur in a different way.

Teachers are likely to need to be particularly attentive to the channels in the lower and later parts of the chart: the development of generalisation, self-regulation, metacognition, and enhanced self-esteem and motivation; the progression from implicit

to explicit, and from dependency on support to increasing independence; the shift from simple thinking to higher order and more abstract thinking, moving from the surface level to the strategic and on to the deep level, and from declarative knowledge into the procedural and conditional; and the completion of the loop, the joining of the circle, the acceleration of the dynamic spiral, for both helper and helped.

Extension of Peer Learning to More Challenging Subjects

Much peer learning in schools originally targeted core skills areas, such as reading (Topping, 1987) and mathematics (Topping & Bamford, 1998). Where peer tutoring was deployed specifically for practice and consolidation purposes, this sometimes resulted in narrow "drill and skill" approaches (especially in the United States). However, teachers became more confident and trusting in children, and slowly moved to use peer learning in a less mechanistic way and in more challenging subject areas. Peer learning extended to spelling and writing (e.g., Nixon & Topping, 2000), and then moved onwards to science (Topping, 1998a; Topping, Peter, Stephen, & Whale, 2004). More recently, peer learning has extended to thinking skills (an area in which some teachers feel under-confident; Topping, 2001b; Topping & Bryce, 2004). Most recently, peer learning in thinking skills has shown compelling effects on cognitive modifiability (Topping & Trickey, submitted). As peer learning began to take hold in college and university education, PL was increasingly applied to a very wide range of subjects.

Extension of Forms of Peer Learning

While peer tutoring and cooperative learning remain the most widely used and best evaluated forms of peer learning, other forms have developed and are used increasingly. Unfortunately, in some cases new forms have been widely adopted before being adequately evaluated, and the implementation quality of some new forms has been extremely variable. A classic example is "circle time" – very popular with teachers and widely adopted in elementary schools in the United Kingdom, but completely devoid of robust evidence on effectiveness until recently, and then found to be no more effective than untrained intuitive teacher behaviour (Miller & Moran, submitted). Similarly, various forms of peer mediation and peer befriending schemes have been implemented, often in the hope that angry conflict and bullying will be reduced, but with highly varying quality and results (insofar as the largely descriptive nature of the literature in these areas permits such interpretation). There is good evidence that problem-solving strategies can be effectively taught to children as young as four, but that is not quite the same thing.

Peer Counselling and Education

Mediation and befriending schemes might have elements of peer counselling within them, and there is some limited evidence that peer counselling can be at least as

effective as adult counselling, but this is not a high benchmark. Equally, such schemes might be construed as containing elements of peer education (peers offering credible and reliable information about sensitive life issues and the opportunity to discuss this in an informal peer group setting). Again, evidence of effectiveness is limited, although some well-structured programs delivered to high quality standards have shown measurable effects (Topping, 1996a).

Peer Monitoring

Another interesting area of development is peer monitoring (peers observing and checking the behaviours of others in the group with respect to appropriateness and effectiveness). For some years the literature has contained occasional reports of peer monitoring of unwanted behaviour (often in locations difficult for adults to supervise). More recently peer monitoring has been extended to learning behaviours (which is less contentious for participants) and operated on a class-wide basis, with excellent results (e.g., Brown, Topping, Henington, & Skinner, 1999).

Peer Assessment

However, the area which has seen most growth in widespread use and in development of the evidence base is peer assessment (peers evaluating the products or outcomes of learning of others in the group). Having learners "mark", "grade", or quantitatively assess the products of their peers places them too much in a teacher-like role, and the result can be learner social discomfort and a central tendency in the assessments – everyone is rated "average". Much more cognitively demanding for the assessor is giving formative and qualitative feedback, which is likely to be both more socially comfortable and more useful to the assessee. The benefits for both parties have been extensively documented, more in higher education (Topping, 1998b) than in schools (Topping, 2003a), but the latter is growing. Peer assessment can enhance self-assessment, and both can yield metacognitive gains.

Peer Learning in Other Contexts

Much research into peer learning has been conducted in schools, where it has come to be used with increasingly improbable learner groups. For example, peer tutoring has been found effective on a large scale with tutors as young as kindergarten or first grade (five to six years old; e.g., Fuchs, Fuchs, Mathes, & Simmons, 1997; Mathes, Howard, Allen, & Fuchs, 1998). Peer learning is increasingly found in colleges and universities (Topping, 1996b, 1998b). All of these are relatively controlled contexts which are somewhat amenable to systematic measurement.

However, peer learning has increasingly been used in other contexts, some more challenging because of longer-standing learning failure in those to be helped (as in peer learning with adults of restricted literacy in domestic or community contexts; e.g., Scoble, Topping, & Wigglesworth, 1988), some because of greater transience

and fluidity (voluntary organisations, after-school clubs, libraries, churches), some because learning is not the primary goal of the organisation (as in workplace learning), and some because the population involved as helpers and helped have their own considerable intrapersonal challenges (as in peer tutoring in prisons).

Peer Learning with Exceptional Learners

It might be thought that regular students would have difficulty delivering tutoring to peers with learning disabilities, developmental delay, or other exceptional needs. However, in recent years the literature has gone beyond this to demonstrate that learners who themselves have educational challenges can act effectively as tutors to other learners (e.g., Scruggs & Osguthorpe, 1986). For example, Shanahan, Topping, and Bamford (1994) described reciprocal peer tutoring between regular elementary school students and students from a school for children with severe learning disabilities. Spencer and Balboni (2003) reviewed 52 studies in which elementary and secondary school-age students with mental retardation served as tutors and/or tutees in academic, social, and daily living/self-help skills.

The gains for the tutors themselves have been increasingly emphasised. Maher, Maher, and Thurston (1998) found deploying disruptive students as peer tutors effective in improving the tutors' achievement and behaviour, as well as advantageous for the tutees. However, Sutherland, Wehby, and Gunter (2000) reviewed eight experimental studies of the effectiveness of cooperative learning for students with emotional and behavioural disorders, and concluded that results were mixed.

Scruggs and Mastropieri (1998) reviewed the effectiveness of peer tutoring with tutors and tutees with special needs, and concluded:

1. Students with special needs benefit academically whether tutees or tutors.
2. Tutors benefit less academically if there is no cognitive challenge for them.
3. Participants benefit more if carefully selected and trained.
4. Participants benefit more if progress is continuously monitored.
5. Improved attitudes to the curriculum area are frequent.
6. Improved interactions with partners outside tutoring sessions are frequent.
7. More generalised attitudinal or interactive gains are less consistent.

Socio-Emotional and Transferable Skill Gains

Even in programs principally targeting cognitive/academic gain, social and other transferable skill gains might accrue. Affective changes in attitude to school, the teacher, the subject, peers, and to the self might also be found. Schunk and Zimmermann (1994) argue that such changes are important for sustainability and generalisation, since they enhance self-belief, internal attribution for success, and consequently self-regulation of subsequent learning behaviour. They can help develop "educational resilience", which might sustain the learner through transitions to less optimal learning environments.

For example, in one cross-age peer tutoring project in reading in 34 classrooms, only three teachers did not observe gains in student motivation, confidence, enjoyment, and relating during the tutoring sessions. Only seven teachers did not observe these and self-esteem gains generalising outside the tutoring sessions, although these wider effects tended to be less strong (Topping, 2003b). A recent study of cooperative learning in science found that gains in transferable cooperative learning skills predicted social gains both in and out of class. Urban single-age classes tended to start lower in social cohesiveness, but made the biggest gains in this and in self-esteem as a result of CL (Topping et al., submitted). Gumpel and Frank (1999) successfully deployed direct peer tutoring of social skills to social rejectees.

Information Technology and Peer Learning

In recent years, information technology has begun to permeate peer learning in various ways. First, peer learning at a distance in online communities has been extensively explored. Graham (2002) reviewed the research into creating effective cooperative learning in face-to-face and virtual environments for distance education, with particular emphasis upon creating the groups, structuring learning activities, and facilitating group interactions. Davies (2000) researched computerised peer assessment in university. McLuckie and Topping (2004) defined and devised means of assessing the transferable skills needed for effective peer learning in online contexts, identifying the advantages and disadvantages of the online context.

Second, software has been developed intended to help manage peer learning, providing a management information system for the coordinator or facilitator of a program (e.g., I-Help; Bull & McCalla, 2002). This is particularly necessary in cross-age or cross-institution peer learning in complex distributed environments.

Third, formative computer-aided assessment has been linked to tutoring systems, so that both helpers and helped receive regular, frequent, and timely feedback on the effectiveness of their learning together (e.g., Topping, 1999).

Finally, systems have been devised for tutoring by artificial intelligences (e.g., Merrill, Reiser, Ranney, & Trafton, 1992), but these have some way to go before approaching the skill levels and adaptability of human tutors.

Embedding: Systemic approaches

Peer learning has moved from a method perceived as being only for a few selected learners, to a method used on a class-wide equal opportunity and inclusive basis. Some schools have developed whole-school approaches to the deployment of various forms of peer learning. However, greater critical mass does not ensure sustainability. Where the main driver and/or organiser is one person, their departure can lead to the collapse of the initiative. Abrami, Poulsen, and Chambers (2004) found that expectation of success was the most significant factor distinguishing users and non-users of CL, suggesting a need for implementation support that impacts upon both teacher organisation skills and self-efficacy. It is important that several colleagues are engaged

in a peer learning program, and that embedding the program across the learning organisation and succession planning is carefully considered well in advance.

Arguably, there is no better apprenticeship for being a helper than being helped. Many schools with cross-year class-wide peer tutor programs actively promote the equal opportunity and apprenticeship advantages of this model. Every student who is helped in a lower grade fully expects from the outset to become a helper when in a higher grade. As students are helped in preparation for becoming helpers, any ambivalence about receiving help decreases. The asymmetry between helper and helped is reduced, and the stigma often otherwise associated with receiving help disappears. All the students have the chance to participate and the opportunity to help, which makes them all feel equally valuable and worthwhile. Sometimes students who are helped in one subject are simultaneously helpers to students in a lower grade in the same subject. Those who are helped in one subject might be helpers to their own age peers in another subject. Even the most able student in any grade can be presented with problems that require the help of an even more capable student from a higher grade, and thereby can learn that no-one is as smart as all of us.

Over time a critical mass of teachers who support peer learning can develop in the school. PL builds on individuals' strengths and mobilises them as active participants in the learning process – this is true for teachers as well as students. Not only do helpers learn the subject better and deeper, but they also learn transferable skills in helping, cooperation, listening, and communication. PL encourages personal and social development. All of this influences the school ethos, developing a cultural norm of helping and caring. PL can contribute to a sense of cohesive community.

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