

# The potential to promote social cohesion, self-efficacy and metacognitive activity

## A case study of cross-age peer-tutoring

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### Abstract

Cross-age peer-tutoring involves the partnering of students from different educational levels in a tutor-tutee relationship. This case study involves an Australian Christian school that ran a cross-age peer-tutoring program (known as the 'Buddy' Program'). Data was gathered from a mixed-method approach employing observations, questionnaires, interviews and a focus group. The study found that in this particular case: the great majority of students enjoyed the program; student tutors perceived their role as that of 'helper' or 'teacher'; there was evidence that the program contributed to enhanced confidence, self-esteem and self-efficacy among tutors and tutees; teachers, parents and participants perceived that students benefited socially and academically from the program; and the program contributed to an enhancement of metacognitive understanding among the student tutors. Finally, the study suggests that the potential benefits of a cross-age peer-tutoring program are maximised when teachers carefully plan the program and prepare both tutors and tutees for the activities of each session.

### Introduction

Peer-tutoring is a process by which a student works one-on-one with another student to instruct, guide and monitor their performance during the development of some aspect of knowledge, skill or product (Goodlad & Hirst, 1989). Cross-age peer-tutoring involves tutors who, because of age and experience exhibit more advanced knowledge and skills than do their tutees (Gordon, 2005; Mallon, 2000). In the eighteenth and nineteenth centuries,

education in the English-speaking world generally focused on literacy and numeracy and classes were often large and multi-grade. The majority of teachers were poorly trained or untrained and many schools resorted to the use of older and more knowledgeable students as tutors for younger students (Doenau, 1985; Gerber & Kauffman, 1981; Goodlad & Hirst, 1989; Mallon, 2000). By the twentieth century, governments regulated education and classes were generally organised into age-cohorts. Professionally trained teachers took responsibility for teaching their own classes and cross-age peer-tutoring was largely regarded as a practice of the past.

During the latter half of the twentieth century, the ideas of Russian theorist, Lev Vygotsky were rediscovered and popularised by the American educator, Jerome Bruner who initiated the translation of Vygotsky's work into English (Pea, 2004; Wertsch, 1985). As a result, there was, in the 1970's and 1980's, a resurgence of interest in a new kind of cross-age peer-tutoring—peer-tutoring programs in which teachers mapped out precise activities, prepared both tutors and tutees and organised and monitored the interactions between tutors and tutees (Ehly & Larson, 1980; Gordon, 2005; Mallon, 2000). This interest has extended to the New South Wales Board of Studies which notes peer tutoring as a recommended initiative (NSW Board of Studies, 2000; 2007; 2011) and sponsors a TAFE-written 'Peer Tutor Program Manual' to prepare tutors for assisting other students in reading and literacy (NSW Department of Education and Training, 2006).

Effort is needed to structure cross-age peer-teaching programs, to prepare students for these programs and to monitor and maintain them. The question can be asked: Is this effort repaid in terms of the benefits? This paper addresses this

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question in relation to a case study of a cross-age peer-tutoring program run in a semi-rural Christian primary school.

## Theoretical background

### Zones of Proximal Development and scaffolding

Vygotsky (1997) defined the cognitive region lying just beyond a young child's structures of current competence as the 'Zone of Proximal Development' (ZPD). A task set within the ZPD almost lies within the child's level of competence, but includes some elements that are beyond the child's current ability. While such a task calls for effort and offers the promise of learning, the child's solo attempts to successfully complete it are at risk of failure. However, specific one-on-one assistance provided by a more knowledgeable 'other' at the critical point of difficulty may increase the likelihood of success and create circumstances in which learning will take place. Wood, Bruner and Ross (1976) coined the term 'scaffolding' to describe this kind of one-on-one tutoring (this is the first usage of the term 'scaffolding' in educational literature).

If the social context is taken into account, it [problem solving or skill acquisition] is usually treated as an instance of modelling and imitation. But the intervention of a tutor may involve much more than this. More often than not, it involves a kind of "scaffolding" process that enables a child or novice to solve a problem, carry out a task or achieve a goal that would be beyond his unassisted efforts. (p.90)

Over the past three decades, the term 'scaffolding' has been linked to Vygotskian views of learning (Corrie, 1995; Pea, 2004). The point is, where scaffolding is successful and where tutees internalise the elements of knowledge, strategy or skills, the tutees' zones of competence expand into, and extend the boundaries of their initial Zones of Potential Development.

### Self-efficacy

It could be argued that a cross-age peer-tutoring program requires both tutors and tutees to function within their respective Zones of Potential Development. The activities set for the tutees by the teachers require them to consider situations that involve new or different elements of difficulty. While tutees can rely upon their older partners for guidance (scaffolding) the program requires the tutors to venture into new territory—to explore the role of guide, prompter and instructor in their interaction with the tutees. However, increasing experience in the tutoring role is capable of building a 'been there, done that' kind of confidence—a knowledge that the

young tutors have guided and aided their partners in accomplishing prior tasks, and an inner assurance that they can do so again. That inner confidence that an individual has the capacity to successfully accomplish a particular task is known as 'self-efficacy' (Bandura, 1997). While self-efficacy is generally context specific, continued successful involvement in a particular activity will begin to develop a general confidence that can transfer to other areas.

### Metacognition

It could be argued that engagement in cross-age peer-tutoring could cause the tutor to think more deeply about the cognitive aspects of the assigned tasks. That is, the act of scaffolding tutees could cause tutors to become quite deliberate and selective in the way they feed information to, model skills before and pace aspects of their interaction with their tutees. The management of cognitive resources in this way goes beyond the mere performance of cognitive functions and enters the realm of metacognition (Biggs & More, 1995). Metacognition involves the reflective, purposeful and strategic use of information and/or skills to accomplish a particular task (Pintrich, 2002; Sternberg, Kaufman & Grigortenken, 2008).

### Cross-age peer-tutoring as described in educational literature

As part of a meta-analysis of all factors contributing to student learning, Hattie (2009) reviewed the results of 767 quantitative studies involving peer-tutoring that included more than two and a half thousand participants. He employed Cohen's 'coefficient d' ('effect size') to determine interventions that produced positive and significant changes in student learning. He argued that values of 'Cohen's d' that exceed 0.4 resulted in discernable (he used the term 'visible') changes in skills and abilities of the tutees that indicated that learning had occurred. While Hattie found peer-tutoring to be generally effective in promoting student learning ( $d = 0.52$ ), he found that cross-age peer-tutoring was even more effective ( $d = 0.79$ ). The question that Hattie's work did not answer was, 'Specifically, what are the benefits to be gained by cross-age peer-tutoring?'

Friedland and Truesdall (2004) found that well-organised peer-tutoring programs permitted student tutors to provide academic assistance to their tutees in a socially pleasant and safe environment. When the peer-tutoring programs were well organised, participants appeared relaxed and comfortable with tutors filling the role of 'friend-figures' rather than 'teacher-figures'. The cooperative nature of peer-tutoring programs was found to flow on to other class

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activities (Friedland & Truesdall, 2004) and even to extend into playground activities (Ehly & Larson, 1980; Hagan & Moeller, 1971). Dennison (2000) observed instances in which younger partners in the cross-age peer-tutoring programs sought assistance from their older partners in situations unrelated to the program. She interpreted this as suggesting that the program promoted confidence among the younger partners and a sense of citizenship within the older partners. Springthall, Hall and Gerler (1992) found that the older partners were proud of their roles as tutors and generally took their responsibilities seriously. There was agreement among researchers that cross-age peer-tutoring programs were potentially able to enhance the self-esteem of both tutors and tutees (Dennison, 2000; Friedland & Truesdall, 2004; Springthall, Hall & Gerler, 1992).

It is only a small step from increasing confidence, self-worth and independence to the development of self-efficacy—the inner assurance that one has the knowledge, skill and experience to execute a particular course of action (Bandura, 1997). The use of cross-age peer-tutoring programs focused upon reading have been found to promote self-efficacy in both tutors and tutees (Friedland & Truesdall, 2006; Kreuger & Braun, 1999). The levels of reading confidence of tutees involved in the programs were found to increase and tutees were also found to be more likely to persist with reading activities because they believed that they were successful. Tutors were found to enjoy their tutoring roles, to believe that they were successful tutors and to look forward to further involvement in the tutoring program.

One element that appeared to be omitted from discussions of the benefits accruing from cross-age peer-tutoring was the topic of metacognitive behaviour.

The study

The setting and objectives of the peer-tutoring program

A Christian school in a semi-rural setting ran a cross-age peer-tutoring program called the 'Buddy Program'. This program employed year six students as tutors in weekly, 30-minute, one-to-one sessions

with kindergarten students. At the onset of each new program, the Buddies were carefully matched to each other and the ongoing relationships between Buddies were monitored. The program was structured with activities explained to the Buddies at the beginning of each session. However, sessions were not structured so tightly as to preclude pleasant social interaction between buddy partners.

The teacher in charge of year six students has been designated as 'Teacher Six' and the kindergarten teacher as 'Teacher K'. The two teachers believed that the Buddy Program had the potential to foster pleasant social relationships between students from the upper and the lower ends of primary schooling and to enhance a cooperative environment of citizenship among the student-participants. In particular, the teachers wanted the older students to feel that they had an important part to play in helping kindergarten students acclimatise to the school setting and they wanted the kindergarten students to feel a sense of comfort and belonging. In order to facilitate this aim, the teachers ensured that the program was structured in such a way as to permit time for a degree of social interaction.

Research questions

The following questions were asked of this research:

- 1. What are the students' perceptions of the activities within the Buddy Program?
- 2. Do students enjoy working with their 'Buddy' in the Buddy Program?
- 3. What do year six students perceive as their role in the Buddy Program?
- 4. Does the Buddy Program contribute to the development of self-efficacy among the students involved?
- 5. Does the program contribute to metacognitive awareness among the year six students?

Participants

The Buddy Program at the school involved three year six classes (81 students) and three kindergarten classes (67 students). The study focused on one year six class comprising 27 students and one kindergarten class involving 22 students (see Table 1). In the two classes under study, five of the kindergarten students were each teamed with two year six tutors.

Method

The research employed a mixed-method approach involving the collection of data through:

- 1. observation of student interaction during their tutoring session;

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Table 1: Students involved in the study, by class and sex

| Class        | Male | Female | Total |
|--------------|------|--------|-------|
| Kindergarten | 9    | 13     | 22    |
| Year six     | 10   | 17     | 27    |

2. interviews with students and teachers;
3. a focus group with year six students; and
4. questionnaires to parents or care-givers and year six students.

Field notes were used to record observations of student interaction during tutoring sessions. Notes were made detailing the structure and content of the sessions. Field notes were also used to create a record of semi-structured interviews with five year six students (three male), four kindergarten students (two male) and the focus group with year six students.

The student questionnaire was completed by 24 of the 27 year six students and 16 questionnaires to parents or care-givers were completed and returned to the researcher.

## Results

### Students' perceptions of activities

Figure 1 provides a representation of year six students' response to questions in the questionnaire about the kind of activities in which they and their Buddies were jointly involved during the Buddy sessions. The three activities that dominated their recall of such activities included teacher-directed assignments, literacy involvements and free time for talking and playing. Other activities such as, art and craft, Mathematics and sport and games were recalled by fewer students.

Teacher directed activities included, worksheets and specific projects that actually involved, among other things, art and craft. However, when asked what activity they enjoyed most, 16 of the 23 students identified art and craft as the preferred subject area to work on with their kindergarten Buddy.

In response to specific questions about reading activities, a total of 15 year six students reported instances of having their kindergarten Buddy read simple words and phrases to them ('often' or 'sometimes') and all reported that they had their Buddy identify words and letters at some time during the sessions. During interviews, some year six students reported helping their kindergarten Buddy identify letters and sound-out words. Just over one half of the year six students (12) reported instances in which they read to their Buddy ('often' or 'sometimes').

These perceptions are in keeping with the teachers' aims of making the Buddy Program meaningful by providing structure and asking the year six students to mentor their Buddies and scaffold their efforts while allowing some free time for talking and playing.

### Students' enjoyment of the peer-tutoring program

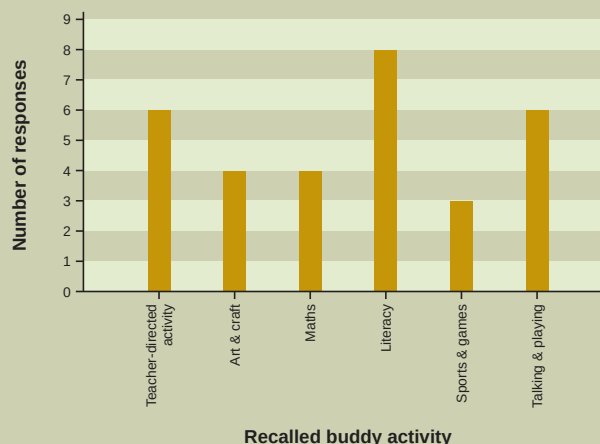
Observations made by the first author, interviews and responses to the year six and parent questionnaires were in accord that both kindergarten and year six students showed an enjoyment of the program and increased feelings of happiness as a result of it. At the outset of each session, Buddy partners were seen to search each other out and greet each other warmly, often with hugs. Interactions during the work period were observed to be pleasant with occasional bursts of laughter interspersing enthusiasm for the on-going project.

It was clear to the first author that the majority of kindergarten partners were comfortable in their relationship with their older tutors. During interviews, the kindergarten students stated that the time spent with their older Buddy was "fun" and that they enjoyed the interaction because their Buddy "helped" them and "played games" with them. When asked what they enjoyed most with their Buddy, they described hands-on and physical activities.

The year six students had observed the Buddy Program in action while in their junior years and, within the questionnaire, they described their anticipation toward involvement in the following ways. "Oh wow! This is going to be so much fun!" and "I was excited." Of the 23 year six students who completed the questionnaire, 19 students used words such as "happy", "good" and "great" to describe their feelings about themselves after the Buddy sessions. One year six student wrote that the program made him "feel great! It actually leaves me with a warm fuzzy feeling as I go back to

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**Figure 1: Data from the year six questionnaire: Students' recall of buddy activities**



class.” When asked how they would feel if the Buddy Program were to be stopped, one year six student said, “I would feel like they were stabbing me with a knife.” Another said, “I would feel very confused because why would they stop people helping little kids.” Yet another said, “I would feel sad because I love to spend time with my Buddy.”

In response to the parental questionnaire, six parents of kindergarten students reported that their child had made comments to the effect that, interacting with their Buddy was “fun”, “nice”, “good and fun” and that the child and the Buddy were “good friends” and “did fun things” together. One parent of a kindergarten child reported that her child “loves their [the year six student’s] help”. Six parents of year six students reported that their children often spoke about their younger buddies.

These results suggest that almost all of the year six and kindergarten students found the Buddy Program enjoyable and meaningful.

**Year six students’ perceptions of their role in the Buddy Program**

Most year six students perceived their role as that of ‘a teacher’ or ‘a helper’ with the assigned activities (see Figure 2). In reality, both roles essentially involved scaffolding the kindergarten students’ efforts with these activities. In interview, one year six student revealed an understanding of the scaffolding role when she said, “It is a fun thing...working with a Buddy and helping them create a thing that is purely their idea.” This perspective was consistent with observations of student interactions in which the year six students were seen to provide assistance or even co-labour with the kindergarten students

on assigned projects. Only two year six students reported that they felt they had not taught their Buddies anything.

Five responses to the questionnaire indicated that the year six students saw their task as that of a role model. During interviews, year six students saw their role as “teaching right and wrong” and teaching “kindness” and “manners”. Rather than teaching, they were modelling kindness and manners before their Buddies. One year six student stated that, “because I’m knowing that if I teach him what’s right while he’s small then he’ll be good when he grows up.”

As a result of the freedom allowed by their teachers, four year six students indicated that a part of their role was to be a friend and provide enjoyment for their kindergarten Buddies.

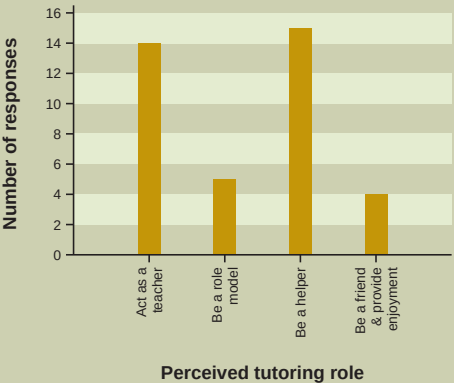
**Evidence of self-efficacy among the buddies**

The Buddy Program allowed for repeated interactions that had the potential to foster an inner confidence within the participants. The researcher observed students approach sessions with a manner that can be described as confident excitement. During an interview, one year six student stated that her Buddy was “cheerful” and “excited to see me”. Another said she enjoyed helping her Buddy and that after each session she “felt like I’ve made a great achievement”. Kindergarten students were observed to respond positively to the help provided and the year six students exhibited enthusiasm in being able to help their Buddies. Results from the questionnaire indicated that they were confident in being able to help their Buddies with their ‘work’. Specifically, they indicated confidence in helping with craft activities, reading and mathematics. Only two students indicated any reservation about their ability to provide help.

In responses to the questionnaire, parents of year six students described their perceptions of the benefits of the program to their children. The Buddy Program: increased their children’s “self-confidence and self-esteem”; developed “leadership skills”; gave the children “feelings of importance” stemming from a sense of being a “role model” and “mentor”; developed feelings of “self-worth”; and gave a sense of “belonging” and “empowerment”.

Evidence of growth in confidence and assertiveness was not limited to the year six students. The researcher noted that during interactive sessions, kindergarten Buddies took the lead role in almost a quarter of the activities observed. Further, parents of kindergarten students noted: that their child “feels good when their Buddy comes to spend time with them”; that it made their

**Figure 2: Tutoring roles as perceived by year six students**



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**Table 2: Findings in relation to the research questions**

| Research questions                                             | Findings                                                                                                            |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Question 1:</b> Students' perceptions of the program        | The students saw the program as blending substantive activity with pleasant social interaction.                     |
| <b>Question 2:</b> Students' enjoyment of the program          | A large majority of kindergarten and year six students found the program to be satisfying and enjoyable.            |
| <b>Question 3:</b> Year six students' perception of their role | Year-six students saw their role as that of a teacher and helper who modeled behaviour and skills to their buddies. |
| <b>Question 4:</b> Development of self-efficacy                | Evidence of increased confidence, assurance to perform and sense of empowerment in both tutors and tutees.          |
| <b>Question 5:</b> Metacognitive awareness                     | Evidence of a growing awareness of the year six students' knowledge and of deliberate management of that knowledge. |

kindergarten child “feel important” to have a year six student spend time with them; that the period with their older Buddy gave them a greater sense of “confidence” and that the interaction “makes them feel special”. In addition, Teacher K stated that she observed increased levels of confidence amongst her students, especially their confidence in approaching older students. She also mentioned that the interactions developed their cooperation skills.

This sense of confidence and assurance to perform and the feeling of empowerment and self-worth are all a part of development toward self-efficacy.

### Metacognitive skills

Two thirds of the year six students surveyed indicated that the process of helping their Buddy made them more aware of the things that they knew and could do. This inner awareness hinted at a dawning of metacognitive activity. As a result, the first author returned to the year six students and convened a focus group to further explore this issue. All of the year six students in the focus group agreed that having to explain something to their Buddy made them pause and consider their own knowledge and skills. One student said that he thought about how his Buddy might understand an idea before he explained it to him. Another student said that working with his Buddy “helps you to remember what you know.” A year six girl said that helping her Buddy with reading and spelling “reminded me of letter sounds which has helped me with my spelling”. In relation to number properties and helping her tutee count in groups, one student said, “I had to think about strategies for counting in two's and three's.” A second, student said she planned the “use of dice” in teaching her Buddy “about counting”. A

male year six student said that explaining a picture graph to his Buddy was not enough. In order to help him understand he had to “show” his Buddy “how a picture graph worked” (model the construction of a picture graph to him). Three more of the five students agreed that “showing” (modelling) was better than explaining. Finally, after reflecting on the interaction with her kindergarten Buddy, one student stated that the tutoring process made her “understand the importance of being kind [and] patient”.

### Discussion

The teachers designed the Buddy Program to facilitate the inclusion of kindergarten students into the school. The change from the home environment to the culture of primary school can be quite abrupt for some kindergarten students. The teachers hoped to use the program to create pleasant and useful social links between the older students and the new arrivals. In so doing, they wished to provide the senior students with a sense of place and purpose while at the same time, acclimatising the kindergarten students. The results indicate that the teachers have achieved this and more (see a summary of findings against research questions in Table 2).

The students were well aware of the social-citizenship aspects of the program. In the eyes of the students, the Buddy Program blended meaningful academic activities with time provided for enjoyable, social interaction. The kindergarten students not only enjoyed their association with their older Buddies, but also appeared to bond with them. A number of year six students indicated that they saw their role as modelling appropriate values, relationships and behaviour. The enjoyment factor combined with the responsibility of tutoring meant that the year six

“*The process of helping their Buddy made them more aware of the things that they knew and could do*”

students found a sense of fulfilment in the program that was likely to have been linked to the substantive nature of the activities involved (Mathematics, reading and art and craft). Many year six students perceived their role as 'helper' and 'teacher' and observations made by the researcher, combined with descriptions provided in interviews, indicated that tutors variously scaffolded tutee activities or modelled skills and behaviour to their tutees. Success in the interaction had a spin-off effect for both year six and kindergarten students. Evidence suggested that a sense of self-efficacy grew in both groups. Year six students generally felt they were successful in their tutoring roles and kindergarten students were seen to grow in confidence to the point where a number of them took the lead in some activities. These findings are consistent with literature.

The most significant finding related to the onset of metacognitive thought among the year six students. While the literature is generally quiet in relation to the tutoring role and its effect on metacognition, the findings suggest that, in this instance, the role of tutor has caused some year six students to consider how they can best convey an idea or skill to their Buddy. This implies that the role of tutor can induce some students to manage their cognitive resources in order to achieve an optimal outcome. While this finding is tentative, it certainly advocates further direct research.

Implicit in these findings is the suggestion that this program worked because students knew what was expected of them. The program was structured, students were prepared for their roles and for the activities and teachers monitored events. Without this effort, the outcomes of the program could have been very different.

## Conclusion

This paper acknowledged that constructing and maintaining an effective cross-age peer-tutoring program requires effort on the part of teachers and asked if the benefits of such a program were worth the effort. The findings of this case study clearly answer in the affirmative. **TEACH**

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