Implementing cooperative learning in Australian primary schools: Generalist teachers' perspectives

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To implement cooperative learning successfully in practice, teachers require knowledge of cooperative learning, its features and terms, and how it functions in classrooms. This qualitative study examined 12 Australian generalist primary teachers', understandings of cooperative learning and perceived factors affecting its implementation. Using Johnson and Johnson's (1994) features of cooperative learning and Bain, Lancaster and Zundans' (2009) list of cooperative learning terms as a framework for analysis, we found that teachers' level of cooperative learning knowledge shaped their perceptions of the factors affecting its implementation in the classroom. The study supports the need for a deep embedding of cooperative learning pattern language in teacher training and professional development courses, and highlights the ongoing challenge of translating educational theory into effective practice on a larger scale in schools.

Introduction

'Cooperative learning', as a pedagogical strategy, has been widely researched since its establishment in the 1970s and it is often advocated as an effective classroom practice (Artzt & Newman 1997; Gillies, 2003; Leikin & Zaslavsky, 1999; Peterson & Miller, 2004; Slavin, 1985; Sutton, 1992). According to Johnson and Johnson (1989; 1994), there are two essential components of cooperative learning that students and teachers need to understand for it to be effective in practice: i) a cooperative task and, ii) a cooperative incentive structure. Cooperative tasks actively engage students in the learning process to ensure they achieve not only as individuals, but also share in the success of group members when attaining goals. Cooperative incentive structure means that the students' success is dependent on the success of their group members and vice-versa (Johnson & Johnson, 1994; Slavin, 1994). Therefore, each student has a role to fulfil in the group situation, making cooperative learning different and more complex than simple group work in the classroom. A cooperative learning approach challenges the traditional teacher- and fact-centred design that has dominated schooling for decades (Elmore, 1996).

In this paper we argue that teachers require knowledge of cooperative learning features and terms, and how these features function, to implement cooperative learning successfully in their practice. In other words, teachers require a particular professional pattern language in order to use cooperative learning effectively. Bain, Lancaster and Zundans (2009) define pattern language as the terms used to express the models and practices that represent a field of professional practice (Smethurst, 1997). For instance, if a group of teachers in a primary school want to implement cooperative learning in their classrooms they all need to know the role, process and aims of this practice and how it fits within the broader context of their profession. However, longitudinal research has shown that schools are not characterised by the frequent and sophisticated use of professional

pattern language, which limits the success of replicating good educational practice on a larger scale (Bain et al., 2009; Elmore, 1996; 2007). Bain et al. (2009) argued that:

> [b]uilding this professional practice knowledge and the capacity to share it begins in preservice education where teacher candidates should learn the professional pattern language required to exchange sophisticated ideas about student learning needs, pedagogy, assessment and curriculum. (p. 338)

With regard to cooperative learning specifically, we believe that pre-service and in-service teachers need repeated exposure and deep embedding of cooperative learning pattern language in their training (that provide teachers with time and incentive to change their practice) for the effective and widespread implementation of cooperative learning in school. That is, good educational practice needs to be a professional expectation that is established in teacher training and continued through professional development (Bain et al., 2009; Elmore, 1996; 2007).

To begin to understand teachers' knowledge of cooperative learning and perceived factors affecting its implementation, this study examined the perspectives of Australian generalist primary teachers (see endnote). This study examined teacher knowledge of cooperative learning terms and function (i.e., cooperative learning pattern language) against cooperative learning features and terms described by Johnson and Johnson (1994) and Bain et al. (2009). It also examined how teachers' level of cooperative learning knowledge shaped how they perceived and managed various factors affecting the practice of cooperative learning. Determining and understanding teachers' knowledge of cooperative learning pattern language and how this affects their cooperative learning implementation (or lack thereof) is important because the findings will inform teacher training and professional development programs.

The underlying features of cooperative learning

The seminal researchers in cooperative learning, such as David and Rodger Johnson (1994), Spencer Kagan (1994) and Robert Slavin (1989), each have slightly different approaches to cooperative learning; however they share common elements for structuring it. For the purpose of this study, Johnson and Johnson's (1994) titles of the key characteristics of this approach used in the 'Learning Together Model' have been summarised below to provide an understanding of cooperative learning principles or features.

1. *Positive interdependence* exists when group members perceive that they are linked with each other in a way that one cannot succeed unless everyone succeeds.
2. *Individual and group accountability* refers to the group being accountable for achieving its goals, but also each member being accountable for their contribution and for learning the material.
3. *Promotive interaction* occurs when members share resources, such as learning material as well as help, support, encourage, and praise each other's efforts. Promotive interaction aims to enhance group cohesion.

4. *Teaching students the required interpersonal and small group skills*, such as communication, positive reinforcement, constructive feedback and problem solving skills is necessary, in addition to students learning the academic subject matter.
5. *Group processing* exists when group members reflect on how well they are achieving their goals and maintaining effective working relationships and then make adjustments accordingly.

Johnson and Johnson (1994, 1999), among other researchers, argue that these five underlying principles must be implemented simultaneously in order for cooperative learning to be effective in the classroom (Dyson & Grineski, 2001; Kagan, 1994; Slavin, 1989). In their study on pattern language development, Bain et al. (2009, pp. 341-2) listed the following terms under cooperative learning within their "Pattern Language Lexicon": Face to face interaction; positive interdependence; interpersonal skills; focus on group processes; individual accountability; social cohesion; cognitive elaboration; metacognition; procedural; declarative; all levels of learning; differentiation; and motivation. We were interested in the teachers' use of these terms, and their knowledge of the cooperative learning features outlined above, when they were asked to describe their understanding and experience of cooperative learning. The following review of literature reveals that very few studies have examined generalist primary teachers' knowledge and perspectives of these cooperative learning principles/features. That is, little is known about whether teachers have the professional pattern language required to meet Johnson and Johnson's (1994, 1999) and Bain et al.'s (2009) criteria, and thus the training and competency to use cooperative learning successfully in practice.

The research and practice of cooperative learning

Cooperative learning has been thoroughly studied in relation to its effect on student achievement, with substantial evidence suggesting that this structured style of learning is effective in maximising the learning outcomes of a range of students (Gillies, 2003; Johnson & Johnson, 1994; Johnson, Johnson & Smith, 2004; Slavin, 1995; Slavin, 1996). Since cooperative learning is such a well -researched area one would assume that teachers broadly implement this approach. However, cooperative learning is often under-utilised in schools (Muijs & Reynolds, 2005) and "the extent of its use has not been firmly established" (Lopata, Miller & Miller, 2003, p. 233). Research has shown that cooperative learning groups are rare, because many educators are not well trained, often seek shortcuts to quality group work, perceive time as a barrier to its implementation, and/or tend to assume that traditional classroom groups will suffice (Antil, Jenkins, Wayne & Vadasy, 1998; Johnson & Johnson, 1994). More research is needed to explain how teachers' knowledge of cooperative learning can shape what teachers' perceive as barriers to effective implementation, thus affecting the success of cooperative learning in practice.

This apparent lack of effective use of cooperative learning by teachers may be due to teachers not having the professional pattern language required to use cooperative learning successfully (Bain et al., 2009). In addition, Jacob (1999), Kohn (1998) and Putnam (1998) highlighted that a key problem with teachers' learning about this approach is that the cooperative learning theories and terms presented to them in teacher training rarely

consider the context in which the teacher is situated. This finding has significant implications for teachers as they need to situate cooperative learning in their specific context and negotiate the various factors affecting its implementation, such as the age and behaviour of the students (Joyce, 1999; Slavin, 1995), the size of the class (Turnbull, Turnbull, Shank, Smith & Leal, 2002), the time and support they have (Gillies, 2003; Jacob, 1999; Putman, 1998), the amount and type of student training (Putnam, 1998; Kohn, 1998; Veenman, Kenter & Post, 2000), the level of teacher and student understanding (Joyce & Showers, 1995) and so on. In addition, Veenman et al. (2000, p. 285) state that "there is limited information regarding both teachers' and pupils' perceptions of cooperative learning as an effective method of learning". This notion is also highlighted by Abrami, Poulsen and Chambers (2004) who believe an understanding of teacher use of cooperative learning remains segmented and incomplete.

More research is needed on the factors affecting the effective implementation of cooperative learning from the perspective of the teachers. Such research will help explain these discrepancies between theory and practice and improve teacher training courses so that they translate into effective practice in schools. Therefore, our study asks the following questions: (1) What are generalist primary school teachers' understandings of cooperative learning (i.e., their level and sophistication of cooperative learning pattern language and knowledge of cooperative learning principles/features)?; and (2) How do teachers' levels of understanding shape the perceived factors affecting cooperative learning implementation?

Method

Participant sample

Twelve participants, three male and nine female, were recruited through snowball sampling (Cohen & Manion, 1989; May, 2001). That is, the teachers who the first author (AH) initially contacted identified colleagues who may be interested in participating in the study. Proportionally there are more female generalist primary teachers in New South Wales (NSW), Australia and therefore the participant sample is reflective of this trend. Institutional ethics approval was gained prior to data collection and each participant gave informed consent.

Teachers ranged in years of teaching experience, from one to sixteen years (see Appendix A). The three educational sectors in NSW (Department of Education and Training, and Association of Independent Schools and Catholic Education Commission as non-government sector) were represented in the sample, with seven participants from the Department of Education and Training and five from the non-government sector. The participants were employed in geographically dispersed rural and regional settings throughout NSW with student populations of between eight and approximately 350. Of the twelve participants, ten completed their educational degree at the same rural university, however, their degree completion as a group spanned twenty years. The remaining two participants gained their qualifications from different Sydney metropolitan tertiary institutions. It is acknowledged that by drawing largely on a sample of teachers

from a regional setting and selecting teachers trained primarily at the same institution, the sample is not representative of all generalist primary teachers across NSW. This study attempts to provide in-depth and rich detail on cooperative learning terms and practice for a particular group of teachers.

Data collection

Semi-structured interviews were used to examine teachers' understandings of the term cooperative learning (research question 1) and their perceived factors affecting its implementation (research question 2). Each participant was informed about the topic before their interview, with the interview length ranging from 20 – 45 minutes depending on the participant. The shorter interviews were conducted with participants who were known to the interviewer (AH), which meant that a 'settling in' phase was not necessary. Each interview began with a screening question: What do you understand by the term cooperative learning? Depending upon this initial response, the interviewer classified the participants into one of three categories (limited, general or detailed understanding of cooperative learning) and posed different questions (refer to Appendix B for Interview Schedule based on initial classification). As the dialogue progressed, the interviewer moved flexibly between categories in order to ask a range of questions to accurately represent the full extent of a participant's cooperative learning knowledge. For instance, if the participant demonstrated deeper understanding of cooperative learning than the interviewer initially thought, then she shifted with her questions to the higher categorisation to probe for further knowledge. Essentially, the three categories acted as a loose guide for selecting questions to probe participants' depth of cooperative learning knowledge and use. Each participant's categorisation (i.e., limited, general or detailed) was only finalised during the analysis stage, as explained below.

Data analysis

The interviews were audio-taped, then transcribed and read several times. Initially, each transcript was coded by using three codes, i) understandings, ii) opportunities, and iii) barriers. The codes, 'opportunities' and 'barriers' focused on those factors that affected each teacher's implementation of cooperative learning. This intra-textual analysis approach (Maykut & Morehouse, 1994) resulted in the identification of raw data themes within each teacher's transcript that represented factors affecting cooperative learning. Some of these raw themes included child centred, working together, roles, groups of mixed abilities, peer communication and support, student training, teacher reflection, age of students, student behaviour, teacher control and class size.

The code 'understanding' was further divided into 'limited', 'general' and 'detailed' by comparing teacher knowledge of cooperative learning terms and functions against cooperative learning features and terms described by Johnson and Johnson (1994) and Bain et al. (2009). A word search of each transcript found that none of the teachers used the specific terms outlined by Bain et al. (2009), however, a couple of teachers made reference to them. Therefore, 'limited' referred to participants having minimal or no understanding of the underlying principles of cooperative learning as defined by Johnson

and Johnson (1994) and others (e.g., Kagan, 1994; Slavin, 1989), as well as no use of the cooperative learning pattern language terms identified by Bain et al. (2009). 'General' referred to those participants who displayed an understanding of some cooperative learning features, functions and terms, but did not use Bain et al.'s (2009) cooperative learning pattern language terms. 'Detailed' referred to the participants who articulated all or most of the principles of cooperative learning and who frequently showed an understanding of cooperative learning pattern language in their responses. (See Appendix A.)

The next phase of analysis involved the first and second authors examining the common themes across the whole data set, with particular attention being given to how the teachers' level of cooperative learning knowledge shaped their perceptions of the factors affecting its implementation. This approach is called inter-textual analysis (Maykut & Morehouse, 1994) and it allowed the researchers to link similar raw data themes that were represented across individual participants together, drop irrelevant themes and develop higher order themes (more refined concepts) to ensure that themes specifically addressed the two research questions (Strauss & Corbin, 1990). For example, the raw themes 'working together', 'student training' and 'teacher control' were merged to develop the higher order theme of 'teacher planning and control'. To facilitate consensus and verification on the representativeness and interpretation of the codes derived from the interviews, ongoing discussions among the authors occurred, enabling critical reflection on the emergent themes. Four key themes were identified in regard to cooperative learning knowledge and perceived factors affecting the implementation of cooperative learning in primary schools: 1) teachers' level of understanding, 2) students' age, 3) the behaviour of students, and 4) teacher planning and control.

Findings and discussion

Although it is recognised that the factors identified in each theme are interrelated and affect each other, in the following section each theme will be discussed separately.

Teachers' level of understanding

Teachers' cooperative learning knowledge affected the way they perceived and managed factors such as students' age and class size, student behaviour, and teacher control and planning. Of the twelve participants in this study, half were categorised as having limited understanding of cooperative learning (5 female and 1 male). Of the remaining participants, four were seen as having a general understanding (3 female, 1 male) and two showed a detailed understanding (1 female and 1 male). (Refer to Appendix A.)

Miss Anderson demonstrated 'limited' cooperative learning knowledge when she said, "I don't have much understanding of it … it's something to do with group work and working as a team". This teacher has equated group work with cooperative learning and does not appear to realise that cooperative learning extends beyond traditional group work (Artzt & Newman, 1997; Johnson, Johnson & Holubec, 1993; Kohn, 1998). For example, she added:

> … I have used group work … you can get around to each group and see what they're doing, I try and make it so that there is a higher achiever that can sort of control the group, and then a lower achiever so they can benefit … the higher achiever can help the lower achiever.

Miss Anderson's response illustrates a number of misconceptions about students' ability to perform particular roles. Johnson and Johnson (1994) argue that every student should be provided with the opportunity to develop the skills needed to fulfil different roles. Bain et al. (2009) uses the phrases 'all levels of learning' and 'focus on group processes' to describe cooperative learning pattern language in this regard, but Miss Anderson assumes that the role of leader has to be filled by a student who is perceived to be of higher ability. She appears to assume that the lower achiever is the one who benefits from the group process, which can lead to a breakdown of positive interdependence and individual and group accountability, as articulated by Johnson and Johnson (1994).

Mrs Booth articulated more clearly her 'general' level of cooperative learning knowledge by stating:

> Cooperative learning to me is the children working cooperatively in small groups through research tasks or undertake lessons or activities and it's more child-centred and directed rather than teacher-directed.

This response highlights the characteristic of positive interdependence as a way of structuring cooperative learning (Bain et al., 2009; Johnson & Johnson, 1994). Although Mrs Booth admitted, "I've mostly had experience with year one and I haven't used it very much, because it's very hard to do...." Mrs Booth implies that the age of the students in Year One (6 and 7 years old) and the difficult teacher planning and control that is required for effective cooperative learning implementation restricts her usage of this approach. These findings will be explored further in the remaining themes.

Mr Toby provided a more 'detailed' understanding of cooperative learning:

> Cooperative learning to me would be children working together … to develop an understanding of what is being taught … first off maybe individual instructions by the teacher and then moving together to get the children to teach each other, because the way they explain it to each other is at their level, and much better than the way the teacher can actually explain it to them. So, we give them some sort of guidance and then allow for the students to do their own building and teaching to each other.

Mr Toby's (detailed) response demonstrates a recognition of three principles of cooperative learning (Johnson & Johnson, 1994): positive interdependence, by "… children working together …"; promotive interaction, by "… get[ting] the children to teach each other …" and students promoting the success of others through encouragement and support; and, students being taught social and team building skills and then using them to work collaboratively. It also demonstrates recognition of the teacher's

role as a facilitator. Although Mr Toby does not use the exact cooperative learning pattern language terms outlined by Bain et al. (2009), he does describe 'face to face interaction', 'positive interdependence', 'interpersonal skills', 'social cohesion' and 'all levels of learning' in his explanation above.

Students' age

Teachers who were classified as having general or limited level of cooperative learning knowledge viewed students' age as a barrier to cooperative learning. Mrs Booth, who demonstrated a general understanding, said:

> I don't think year one children really know … how or what they're supposed to be doing. You can put them in groups to do group work and exercises together, but it has to be really specific to what the task has to be, what they're trying to achieve because if there isn't that real direction there, they could use the whole time and achieve nothing or only one child will get something out of it.... So, I think it does, it is something I think would be more beneficial for older children.

Mrs Booth (general) felt that the age of the students significantly influenced their ability to work and perform in groups. However, cooperative learning has a record of over 25 years of success among students aged five years to high school level and is considered to be an efficient and appropriate strategy for younger students (Bruffee, 1995). Therefore, if teachers have the cooperative learning pattern language required to give students explicit instruction on how to work in a group, as per the principle of 'teaching interpersonal and small group skills', the age of the student should not impact on its effectiveness (Bain et al., 2009; Johnson & Johnson, 1994).

Mr Toby (classified as having detailed knowledge) described how he taught students communication, positive reinforcement, constructive feedback and problem solving skills before they were put into groups. He also said:

> I always get my class to elect a leader... that way that leader is responsible for their group and they [children] will sort of – well the children that I've taught are more responsive to a child leader than a teacher-leader.

Mr Toby recognised that placing students in groups and telling them to work together does not in itself result in cooperative efforts, in accordance with Artzt and Newman (1997); Johnson, Johnson and Holubec (1993); Kohn (1998). Mr Toby articulated the need to "… teach them how to work with their group". He also detailed the explicit instruction that needs to occur in order for cooperative learning to be effective. To do that he showed an understanding of cooperative learning pattern language terms such as 'social cohesion', 'interpersonal skills', 'motivation' and 'interaction'. Likewise, Giraud (1997) states that cooperative learning groups provide a natural setting for peer tutoring. Students who lack aptitude or prior knowledge can gain from contact with students having different skills. Therefore, our findings support the idea that teachers need knowledge of cooperative learning terms and function to teach students the social skills

required to interact positively with each other, as well as the academic content (Battistich, Solomon, & Delucchi, 1993; Gillies, 2003; Johnson & Johnson, 1994; Slavin, 1995, 1996; Stevens & Slavin, 1995; Veenman et al., 2000).

Like Mr Toby, Miss Louise, who demonstrated a limited understanding of cooperative learning, acknowledged that students needed to be given explicit instruction before working in cooperative learning groups. She said, "… another barrier that I've noticed is that some of the children really need to be trained to do cooperative learning". However, unlike Mr Toby, she failed to provide explicit explanation as to what and how this should occur. She appeared to lack the cooperative learning pattern language required to make sense of how to address this perceived barrier.

Miss Louise believed that in order for young students to work in the type of group necessary for cooperative learning, time needed to be spent on teaching students the skills. Johnson and Johnson (1994) and Gillies (2003) argued that detailed planning and the teacher acting as a facilitator are ways to address the above mentioned potential problems. Putnam (1998) states that it may take two to three years of using cooperative learning procedures before teachers feel comfortable with using this approach, because they need to understand what dynamics lead to successful group work and the reasons why groups fail. On top of this, teachers need to manage student behaviour.

Behaviour of students

In general, teachers with a general or limited understanding of cooperative learning saw student behaviour as a factor negatively affecting the use of cooperative learning, whereas teachers with a detailed understanding were able to identify ways in which a cooperative learning approach could help manage student behaviour in positive ways. Mrs Kingston, who had a general understanding, said:

> ... if children don't stick to the task, and misbehave and muck around, you have to watch those particular children all the time - that can be one barrier.

Mrs Kingston's response highlighted the assumption that when children are working in groups, there is potential for a lack of on-task learning. Mr Patterson, who had a limited understanding, agrees that students 'misbehaving' can affect implementation:

> … problem children is a definite one, kids who aren't all at the same level although having said that, it could actually increase the kids who aren't performing well abilities, you know that could work either way. … children who pretty much just misbehave … they won't get in there to do something for the greater good of the group …

At the same time, Mr Patterson recognises that the level of ability of students can have a positive effect in cooperative learning settings, and perhaps minimise behavioural issues. For instance, in structuring for individual accountability – one of the principles of cooperative learning – teachers actively ensure group members are assigned roles so that

they are individually responsible for their contribution, as well as accountable to the group (Artzt & Newman 1997; Gillies, 2003; Leikin & Zaslavsky, 1999; Sutton, 1992). This approach can minimise the opportunity for children to 'misbehave', 'muck around' or 'get a free-ride' (i.e., social loafing; Joyce, 1999; Slavin, 1995).

Furthermore, Mrs Peters (limited) highlighted the dynamics of the class group as a factor affecting implementation:

> I suppose working out the dynamics of the group to start with because unless
> you sort of look at that then you don't know whether that group is going to
> work.

Mrs Peters recognised that in order to have effective groups, teachers need to know their students and then plan the groups to accommodate for different individuals. However, later in the interview, Mrs Peters said that "the time" spent compiling this information from students was a barrier to effective implementation. One objection to implementing cooperative learning in schools was that educators do not have the time to prepare cooperative learning activities (Kohn, 1998; Putnam, 1998). In addition, teachers may not have adequate time to undergo professional development or training, or have the elicited support from school systems and administrators of institutions to feel competent using cooperative learning in their classroom context (Jacob, 1999; Kohn, 1998; Putnam, 1998).

In this study, it was the teachers with detailed cooperative learning knowledge, who described actions implemented in the classroom that minimised behavioural issues and facilitated the group processes by applying principles of cooperative learning, such as 'positive interdependence', 'individual accountability' and 'promotive interaction' (Johnson, Johnson & Holubec, 1993). For example, Mr Toby said:

> To stop them getting a free-ride within group work, they all have responsibility
> within the group; they all have to come back with a certain piece to explain to
> somebody else. Or when a group's finished, you could have three different
> groups and three different topics, and when that group has finished, they have to
> go and explain what their group was about to the other children, who weren't in
> their group. So, they need to participate because they can't teach the other
> children or they didn't listen in their initial group.

Evidently, if teachers are not given the time and support, nor being repeatedly exposed to cooperative learning pattern language in their training courses, to develop and explicitly teach these interpersonal and task skills to young children, then the quality of cooperative learning implementation is affected (Bain et al., 2009; Kohn, 1998). Research by Veenman et al. (2000) highlighted that teachers devoted minimal time to teaching group work skills even though observations indicated high student time-on-task levels and both students and teachers reported improvements in social skills and on-task behaviour. Teaching students skills in cooperation and the ability of teachers to manage the behaviour of children coincides with the control a teacher has in the classroom context, the training they have in cooperative learning and the planning they put into their learning design.

Teacher planning and control

Teachers with a general and limited understanding of cooperative learning expressed difficulty in planning and control, whereas the teachers with a detailed understanding recognised the need for a delicate balance between teacher control and student autonomy. To achieve the latter, it was acknowledged that careful teacher planning is required.

Mr Toby (detailed) explained that in cooperative learning settings some children seek to be uninvolved in the group process:

> … children who will tend to allow other children to do all the work for them, children lazing [and thinking] 'well, good, group work, I can sit back and have a rest'.

As an extension of the previous theme, Mr Toby believed that the 'free-rider problem' (Joyce, 1999) only occurs if there is a lack of teacher planning and control in the learning environment. Elmore (1996) stated that the majority of teaching in schools is characterised by teacher control and student submissiveness and powerlessness, in essence a teacher-directed learning environment. However, a student-centred learning environment, which is more conducive to cooperative learning, provides students with opportunities to explore, examine and critique content and concepts whilst applying their knowledge, understandings and skills to solve real-life problems (Slavin, 1995).

For teachers, however, it may be difficult to relinquish control of their students. For instance, teachers with a general and limited understanding of cooperative learning saw lack of teacher direction as a barrier. For example, Mrs Darling (general) said:

> I think very young teachers are frightened about [implementing cooperative learning approaches] - it's much harder to discipline than the chalk lessons.

Similarly, Miss Kingston (general) commented:

> Another barrier is there's no teacher-direction. Not no teacher-direction, but say certain points that a group can be working without teacher direction and then list some key elements that if the teacher was there they'd have to focus their attention on that.

These responses highlighted that some teachers may not employ cooperative learning, because they perceive that allowing for more student control could increase behavioural management issues and lack of student focus.

On the other hand, Mrs Chenny (detailed) believed that barriers to implementing cooperative learning could be easily overcome by teachers:

> … they're only there if you set them ... I don't see any barriers there to it. [It] comes down to the individual; do you want to do it or don't you? Do you want

to include the children in the decision-making process? It's up to the individual
to come to terms with that and go for it.

In this instance, Mrs Chenny expressed the stereotype that good teaching is an individual trait. This assumption, however, can be problematic, because it assumes that teachers cannot be taught how to change their practice (Elmore, 1996; 2007).

Conclusion

The findings in this study highlight the challenges that teachers face when attempting to implement an instructional methodology that is well theorised and advocated, but not well embedded in teacher training nor traditionally supported in schools. The study showed that only two teachers in the sample had the knowledge and cooperative learning pattern language required to meet Johnson and Johnson's (1994) and Bain et al.'s (2009) criteria. None of the teachers used or referred to cooperative learning pattern language terms, such as 'cognitive elaboration', 'metacognition' or 'declarative'. These findings are consistent with longitudinal ethnographic studies in the field (Cuban, 2003; Elmore, 1996; 2007) highlighting the difficulties of translating educational theory into practice on mass in schools. According to Bain et al. (2009, p. 347), "[e]fforts to address this issue begin with the methods employed in preservice education." In addition, we believe that it can continue to be addressed in ongoing teacher professional development courses and through the use of incentives.

Moreover, our study shows that the extent to which factors were perceived as barriers to cooperative learning, or issues that could be effectively managed by teachers, differed depending on the teacher's knowledge of cooperative learning features and function. On the one hand, teachers who were classified as having detailed cooperative learning knowledge did not see the age of students as a barrier to effective implementation. Instead they demonstrated the ability to assign roles and tasks to students of ranging abilities. They saw student behaviour as something that could be managed through teacher planning and facilitation and by relinquishing some control to allow for student input.

On the other hand, teachers classified as having limited or general cooperative learning knowledge typically saw the young age of primary school children as a barrier when attempting to implement cooperative learning. They also perceived potential problems with student discipline, staying on-task, and, in general, did not feel comfortable allowing students to make decisions or work independently. Therefore, while it is acknowledged that this data is self-reported (i.e., teachers were not observed implementing this approach) our finding that those few who had a more sophisticated understanding of cooperative learning features, functions and pattern language described more effective cooperative learning practice, provides preliminary evidence to support the view that when teachers have this pattern language and understanding it can lead to more effective practice (Antil et al., 1998; Bain et al., 2009; Lopata et al., 2003; Veenman et al., 2000). Coupling this outcome with the finding that most teachers in the sample had limited knowledge and practice of cooperative learning (and little or no use of cooperative learning pattern language) reinforces the need for the embedded design of cooperative

learning pattern language in teacher training (Bain et al., 2009) and continuous structural support for the implementation of cooperative learning in primary schools (Joyce & Showers, 1995; Kohn, 1998; Putnam, 1998; Veenman et al., 2000). As explored by Jacob (1999), a large number of teachers who start to use cooperative learning do not receive support from instructors, administrators, schools or colleges, and that teachers normally learn about cooperative learning through one-off workshops. Without repeated exposure to cooperative learning pattern language throughout teacher training programs, or the reinforcement of this language in ongoing professional development courses, how can we expect teachers to adopt cooperative learning effectively in practice? How can we improve practice in education on a larger scale if teachers do not have the required professional pattern language to manage the barriers and implement cooperative learning successfully?

Our findings highlight the complex challenge of changing the core of educational practice from the traditional teacher-led and fact-centred pedagogy to a student-centred, cooperative inquiry approach (Elmore, 1996; 2007). Therefore, our study shows that Elmore's (1996, p. 11) observation is still relevant some 15 years on:

> We can produce many examples of how educational practice could look
> different, but we can produce few, if any, examples of large numbers of teachers
> engaging in these practices in large-scale institutions designed to deliver
> education to most children.

We cannot continue to view effective educational practice as an individual trait that only some teachers possess. Rather, we need to view "successful teaching…as a set of learned professional competencies acquired over the course of a career" (Elmore, 1996, p. 16). In addition, exposure to training will not necessarily change teaching practice "unless that training also brings with it some kind of external normative structure, a network of social relationships that personalize that structure, and supports interaction around problems of practice" (Elmore, 1996, p. 21). In particular, our study showed that teachers need time and structural support to develop curriculum units that embody cooperative learning approaches to teaching. The existence of external professional norms of cooperative learning competencies and incentives that encourage teachers to try innovative approaches, like cooperative learning, will "give visibility and status to those who exemplify them" and "trait theories of teaching competence should diminish" (Elmore, 1996, p. 19).

Given the limited sample size in the current study, more research is needed with larger, more diverse samples and the use of more controlled measures. Further research needs to consider generalist primary teachers' understandings and definitions of cooperative learning, preparedness to employ cooperative learning in the classroom and experiences of using this approach. Also, given that we did not assess the implementation of cooperative learning in this study, a follow-up could involve testing the influences of teachers' cooperative learning knowledge on its implementation and measuring the effects of the mediating factors identified in the current study, such as the children's age and behaviour and teachers' perceptions of the need to control. Gaining more insight into teachers' perspectives, uses and understandings of cooperative learning will shed light on how to:

(a) effectively address the (perceived and actual) barriers faced by teachers in their unique context and; and, (b) manage the ongoing challenges of translating theory into practice on a larger scale across schools.

Endnote

In Australia the 'primary' setting refers to the level of schooling for students aged between 5 and 13. The US equivalent is called elementary school or grade school. The generalist primary teacher refers those who are qualified and expected to deliver all aspects of the diverse primary curriculum, such as English, Mathematics, Science, Creative Arts, Humanities and Physical Education (Ardzejewska, McMaugh & Coutts, 2010).

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Appendix A: Participant demographic details

Pseudonym	Gender	Teaching status	Teaching experience	Cooperative learning knowledge categorisation
Miss Anderson	Female	Casual	0-2 Years	Limited
Mrs Hill	Female	Permanent	3-5 Years	Limited
Miss Louise	Female	Temporary	0-2 Years	Limited
Mr Patterson	Male	Temporary	0-2 Years	Limited
Mrs Peters	Female	Permanent	10 + Years	Limited
Miss Robinson	Female	Casual	3-5 Years	Limited
Mrs Booth	Female	Permanent	3-5 Years	General
Mr Clayton	Male	Temporary	0-2 Years	General
Mrs Darling	Female	Permanent	10 + Years	General
Mrs Kingston	Female	Permanent	10 + Years	General
Mrs Chenny	Female	Permanent	10 + Years	Detailed
Mr Toby	Male	Temporary/Perm	0-2 Years	Detailed

Appendix B: Interview schedule based on initial classification

Screening question: What do you understand by the term cooperative learning?

Limited	General	Detailed

Cooperative learning:
 - Small groups work
 - Group goals
 - Group characteristics
    * mixed abilities
    * mixed genders
    * two to six members
 - Individual accountability
 - Equal opportunity
 - Team competition
• What opportunities do you feel exist for using cooperative learning in the classroom?
• How do you think you could use this strategy?
• What barriers might inhibit your use of cooperative learning?
• In what KLAs do you/ might you use cooperative learning?
	• Do you use cooperative learning in your classroom?
	• How do you use cooperative learning in your classroom?
	• What opportunities do you feel exist for using cooperative learning in the classroom?
	• What barriers might inhibit your use of cooperative learning?
	• What do *you* need to know to make the implementation of cooperative learning successful?
	• How did you learn about cooperative learning?
	• In what KLAs do you/ might you use cooperative learning?
		• How do you use this strategy in the classroom?
		• What opportunities do you feel exist for using cooperative learning in the classroom?
		• What barriers might inhibit your use of cooperative learning?
		• What do you believe *teachers* need to know and understand about cooperative learning to ensure they can successfully implement cooperative learning?
		• How did you learn about this strategy?
		• In what KLAs do you/ might you use cooperative learning?

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