LEARNING TO TEACH SMALL CLASSES
Lessons from East Asia

Maurice Galton, Kwok Chan Lai and Kam Wing Chan
While Western governments have looked to Asian classrooms for secrets that could possibly improve student performance, many governments in East Asia have embraced Western theories of learning designed to promote students’ active engagement during their curriculum reforms. The latter have also adopted policies to reduce class sizes, aiming to set the conditions for student-centred learning and catering for learner diversity. The key to success is for teachers to increase the quality of their teaching, building on the already impressive levels of student on-task behaviour in classrooms.

*Learning to Teach Small Classes* comprehensively suggests the many ways in which teachers can utilise the advantage of a smaller class to its fullest potential. It works through different case studies and gives examples of successful classroom practice in each of the core subject areas (Chinese, English and Mathematics). Chapters are included on:

- setting objectives, asking and answering questions;
- sustaining successful group and pair work;
- the use of feedback and assessment for developing independence in learning;
- bringing it all together and sustaining effective practice.

With questions for discussion and further suggested reading, this book is an invaluable resource for anyone involved in small class teaching, and East Asian teaching and education policy.

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Preface

The central aim of this book is to encourage those who teach small classes to modify their classroom practice so that it results in more active pupil participation during lessons. We wish to stress, however, that we are not advocating a special form of pedagogy that can only be used with small classes: the principles of teaching and learning which we present in the following chapters are applicable in all classroom settings; whether large or small. Indeed, we have found that teachers, once they have experimented successfully with a smaller class are only too ready to adopt similar practices when faced with an increase in pupil numbers. The value of a small class is that it is easier to put these principles into practice and to monitor the various activities on which pupils are engaged. We hope therefore that teachers who still have to cope with larger classes will, nevertheless, find what we have to say of value.

This book is the product of the experiences acquired by the three of us while working with primary teachers in East Asia to implement changes in their classroom practice. The catalyst for these changes was, in several cases, the decrease in the number of pupils in a class from forty to around twenty-five, although governments throughout the region have also advocated a shift away from traditional practice as a means of sustaining economic profitability in an era of globalisation. In Hong Kong, for example, the demand by teacher unions, supported by parents, for reductions in class size was triggered by the projected decline in primary pupil numbers overall and the consequent threats of teacher redundancy. It was argued that the existence of surplus teachers provided a unique opportunity to bring teacher–pupil ratios in line with those of the West. The response of the Hong Kong government was to set up a pilot study (2004–2008) but before it could issue its final report a decision was made to reduce the size of all primary classes, on a year-on-year basis, staring with the youngest Primary 1 pupils in September 2009. Elsewhere in the region increased prosperity and the emergence of an articulate, educated middle class created similar parental pressures for class-size reductions.

Those who argued against the change have pointed to the fact that research in the West showed that the main reason why improvements in pupils’ attainment appeared to result from having smaller classes was the increase in ‘engagement’. Levels of disruption dramatically decreased allowing teachers to concentrate on learning activities and to spend less time on classroom management. Critics have
also pointed out that student engagement in Asian countries was extremely high with pupils on-task for around 90 per cent of a lesson. Furthermore, Hong Kong, Singapore and other countries in and around the Pacific Rim regularly topped the tables of the various international studies of student attainment. Given that the workloads of Asian teachers were considerably higher than those of their colleagues in the West, it was far better, critics suggested, to make use of increased funding or any surplus teachers to reduce the number of periods taught by any one individual; thus requiring less time for planning, preparation and marking.

However, measurements of the ‘time on task’ do not tell the whole story. While it is clear that when pupils are disengaged their capacity for learning is reduced, we cannot be certain what goes on in the minds of students who from the outside appear to be focused and paying attention. Indeed, recent international studies such as the Programme for International Student Achievement (PISA), and the Progress in International Reading Literacy Study (PIRLS) have pointed to the fact that in these high-scoring Asian countries, such as Hong Kong, there is increasing diversity in scores with the ‘high flyers’ outperforming previous generations while the ‘poorest performers’ do worse. These studies also noted that pupils appeared reluctant to participate in lessons, whether to ask or respond to questions, suggesting that motivation was at low ebb. In support of this proposition, the Hong Kong small class teaching (SCT) pilot study found that scores on a composite measure of motivation, attitude and enjoyment, a student’s learning orientation, declined significantly as pupils moved up the primary school.

Thus the case for smaller classes in an Asian context is both pedagogical and social. Reducing class size offers the teacher an opportunity to create a situation where pupils actively participate in lessons, with commensurate improvements in their motivation and attitudes. It also allows teachers and pupils to develop a spirit of cooperation so that learning is seen as a shared responsibility between both parties. We argue that such an approach will better equip future generations to meet the needs of the twenty-first century.

The book consists of three parts. In Part I, Background: principles of small class teaching, we extend the above argument to make the case that the factors promoting small class teaching in an Asian context differ from those in the West and illustrate this claim by summarising various developments in different countries. We conclude Chapter 1 with an account of the Hong Kong SCT study, since it is one of the largest yet to be undertaken worldwide. Chapter 2 provides the theoretical and empirical justification for the six teaching principles we advocate for small classes.

Part II, Application of six principles to small class practice, explores five of these six principles in turn. Chapter 3 covers the setting of learning goals and extending class discussion, Chapter 4 collaborative learning and groupwork and Chapter 5 the use of feedback and formative assessment. Wherever appropriate, we illustrate the discussion with concrete examples taken from our classroom observations undertaken in the region’s primary schools.

Then in Part III, Implications for small class teaching in an East Asian context, we begin in Chapter 6 with a discussion of what it means to talk about pupils as active learners and explain that the sixth principle, pupils’ active participation
Preface

in lessons, implies more than just ‘learning by doing’. We then go on to examine some of the social and emotional aspects of teaching and learning and the potential of small classes for promoting intrinsic rather than achievement motivation; the former built on choice and cooperation, the latter on control and competition. Finally, we discuss the importance of school-based professional development in bringing about these suggested changes in classroom practice. The concluding chapter, Chapter 7, deals with various questions asked of us by school principals, subject leaders and classroom teachers concerning the implementation of SCT. These have arisen at various seminars, workshops and post-lesson discussions which we have attended over a number of years. We then offer, as an example of what can be achieved, a case study of a Hong Kong school which moved from a position of almost certain closure to a point where it is now heavily oversubscribed. We hope this will lead those readers who have doubts about the effectiveness of teaching small classes in ways that we recommend, to try it for themselves.

Maurice Galton is grateful for the award of several visiting professorships from the Hong Kong Institute of Education and particularly its Centre for Development and Research in Small Class Teaching (now re-titled as the Centre for Small Class Teaching). Not only has this made our collaboration easier, but the Centre’s involvement with small and large classes inside and outside Hong Kong in countries such as mainland China, Macau, Taiwan and Singapore has widened our horizons and we hope improved the book. We are also indebted to the Hong Kong Education Bureau, and its Research & Test Development Section, who funded the original pilot study, and subsequently supported both extended professional courses and school-based development. We particularly wish to thank the staff with the responsibility for coordinating these activities. They have proved highly efficient and supportive throughout a decade of research and implementation as the SCT pilot went to scale.

Maurice also owes a debt to the support staff back at the Centre for Commonwealth Education in Cambridge: Sally Roach, Bryony Horsley-Heather, Ruth Kuhn and Jill Gather who dealt with travel arrangements from the UK to Hong Kong, worked on the technical aspects of the figures and tables and checked the final manuscript for consistency and minor errors. Any remaining deficiencies should be attributed to the authors. Special thanks are also due to those Cambridge and Hong Kong University doctoral students in the Faculties of Education, who acted as translators when Maurice observed Chinese and mathematics lessons, conducted post-lesson discussions with subject teams, and joined course and school-based professional development sessions.

Finally, the biggest thank you must go to the teachers whose lessons we observed and who attended the courses and contributed to the various workshops and seminars. We must also include the pupils who tackled tasks with enthusiasm, put up with these strange visitors and answered our questions with courtesy and honesty. Without the willingness of teachers to give of their time and to allow us the privilege of seeing them teach there would have been no book.

Maurice Galton, Kwok Chan Lai and Kam Wing Chan
Part I

Background

Principles of small class teaching
1 Small class teaching
The East Asian context

This opening chapter sets out the argument that the case for having smaller classes in Asian countries differs from that normally put forward by educators from the developed countries from the West. It explores the specific demands emerging in East Asia as a result of these governments’ attempts to shift the balance of existing classroom practice from one where teacher talk dominates to one of more active pupil participation with both teachers and peers. The need for change is supported by recent indications that some Asian pupils, while outwardly on-task, are not fully engaged. This suggests that the present curriculum and its mode of delivery may not be sufficiently stimulating. In advocating this shift the view that this approach, based as it is on constructivist principles, is alien to Confucian notions of instruction is considered and rejected. The chapter ends with a review of recent research on small class teaching which has taken place in an Asian context.

Background

The development of school education in East Asian countries and cities, including mainland China, Hong Kong, Japan, Korea, Singapore and Taiwan, has received worldwide attention, which is largely due to the continually excellent performance of their students in international tests such as the Programme for International Student Achievement (PISA), Trends in International Mathematics and Science Study (TIMSS) and Progress in International Reading Literacy Study (PIRLS) (OECD, 2012). Their school systems have even been commended as ‘the world’s best-performing’ (Barber and Mourshed, 2007). As a result, Western governments have looked to Asian classrooms for ‘secrets’ that could possibly improve student performance in Western contexts (Chan and Rao, 2009). Paradoxically, since the mid-1990s, governments of East Asian countries have been enthusiastic in borrowing Western ‘progressive’ theories and practices to guide their large-scale reforms in curriculum and pedagogy. There is a shift in focus from traditional teacher-directed education to student-centred learning and development of generic skills that facilitate lifelong learning (Kennedy and Lee, 2010).

This era of reform coincided with a period of rapid decline in student enrolment, which has provided favourable conditions for these countries to adopt policies to reduce class sizes. These policies are universally known as small class
Background: principles of small class teaching

teaching (now abbreviated to SCT), xiaobanjiaoxue [小班教學], or small class education, xiaobanhuajiaoyu [小班化教育]. As the term suggests, SCT advocates change in classroom practices in small class environments, that is a shift from a teacher-directed approach to learning to a student-centred one. In this regard, the emphasis of SCT in East Asia is noticeably different from class-size reduction (CSR) initiatives in the West which are primarily targeted towards raising academic achievement (Lai, 2011).

In the first part of this chapter, we will review the extensive efforts to reform teaching and learning amidst the education reforms in East Asia since the mid-1990s. We will then analyse the impact of the simultaneous demographic decline and the development of SCT in various countries which aims at improving teaching and learning.

Yet some academics hold to a view that the adoption of constructivist principles and student-centred approaches in learning may run counter to the Confucian tradition and practice of the East which emphasises collectivism over individualised learning, and which links wisdom with experience and therefore values a didactic form of teaching with the pupil in the role of apprentice. We will argue in the second part of this chapter that increased active pupil participation is not necessarily at odds with ideas associated with Chinese Confucian culture. We will first review the body of literature which has attempted to depict the learning approaches of the Chinese learner in contrast to typical Western approaches to learning, followed by an exploration of the alternative viewpoints that challenge such generalisations and sometimes stereotypes. We subscribe to the view that an over-generalised view of student learning in Confucian heritage classrooms is prone to bias, as it has underestimated the enormous contextual changes and diversity arising from wide-ranging socio-economic changes and education reforms in East Asia in the past two decades (Biggs, 2009; Chan and Rao, 2009; Mott-Smith, 2011).

Education reforms in East Asia

In the past two decades, East Asian countries and regions have been carrying out nationwide and drastic educational reforms, aiming to enhance their competitiveness and meet the challenges of knowledge-based economy and globalisation in the twenty-first century (Kennedy and Lee, 2010; Phillipson and Lam, 2011). These large-scale reforms often took place following profound political, cultural and socio-economic changes in a country or region. For example, in Taiwan, the Executive Yuan set up a high-level Educational Reform Committee in 1994 to study the reform strategies after Taiwan had entered into a new era of democratisation and decentralisation following the lifting of martial law in the late 1980s. In Hong Kong, the education reform was initiated by the first Chief Executive of the new Special Administrative Region (SAR) after the resumption of Chinese sovereignty in 1997 (Hong Kong, Chief Executive, 1997). In some regions, there was wide public participation in shaping the education reforms. For instance, in Taiwan, non-government organisations and private citizens have
become very active in the past two decades in proposing reform plans to replace the traditional, rigid and examination-driven curriculum with a more humanistic, creative and student-oriented education (Peng et al., 2011).

The reforms are characterised by a vision of transforming learning, fostering holistic development of individual learners and building up their capacity for lifelong learning. For instance, in China, the Ministry of Education issued the document on basic education curriculum reform in 2001, in which a key objective was to pay ‘attention to learning processes and approaches, encouraging development of active, interdependent learning strategies’ (Zhou and Zhu, 2007: 24). In other words, it aims to shift the emphasis from teacher-centred pedagogy to student autonomy (Liu and Fang, 2009).

In 1997, the Singapore government announced the vision statement ‘Thinking Schools, Learning Nation’ as the overarching descriptor of the transformation in the education system, alongside the Desired Outcomes of Education. The subsequent ‘Teach Less, Learn More’ movement from 2005 is aimed at transforming learning, particularly the quality of interaction between teachers and learners. It is about ‘teaching better, to engage our learners and prepare them for life, rather than teaching more, for tests and examinations’ (Singapore, Ministry of Education (MOE), 2009). It attempts to reduce quantity in terms of ‘rote-learning, repetitive tests, and following prescribed answers and set formulae’, and strives for quality ‘in terms of classroom interaction, opportunities for expression, the learning of life-skills and the building of character through innovative and effective teaching approaches and strategies’ (ibid.)

In addition to transforming learning, a strategy in the curriculum reforms was a move to organise traditional school subjects into major learning areas (Curriculum Development Council, 2001; Singapore, MOE, 2006; Zhou and Zhu, 2007). Schools and teachers are also encouraged to reduce their reliance on textbooks and engage in school-based curriculum development to help students develop to their fullest potential (Peng et al. 2011). Emphasis is also given at developing students’ generic skills or core competencies that are necessary for every citizen in the modern society (Curriculum Development Council, 2001).

**Demographic changes and class-size reduction in East Asia**

During the era of education reforms, most East Asian countries have also faced an unprecedented drop in birth rate and student enrolment. The imminent threats of school closure and teacher redundancy have created immense pressure on the school system. Educators have often urged the government to seize the opportunity to reduce class sizes so as to improve the quality of teaching and learning as well as solving the problem of teacher redundancy. Nevertheless, the attitudes of governments towards adopting a class-size reduction policy varied – while the governments of Shanghai and Nanjing in mainland China were proactive in initiating experimental schemes, the Hong Kong SAR government was initially far more reserved towards implementation of SCT because it considered the evidence problematic.
Irrespective of initial differences, many countries and cities in East Asia (including mainland China, Hong Kong, Macau, Korea and Japan) have implemented policies to reduce class sizes starting from the mid-1990s. These initiatives are commonly known as ‘small class teaching’ in Hong Kong, Macau and Taiwan and ‘small class education’ in China. The definition of a small class is roughly around 30, but there are significant deviations among countries because of the different socio-economic backgrounds. Yet the nomenclature suggests that the key objective of class-size reduction is to improve teaching and learning and not merely reduction in numbers. This differs from Western countries where the main benefit of smaller classes has been an increase in pupil engagement with a consequent reduction in the time spent by teachers on classroom management and a corresponding increase in instruction (Finn and Achilles, 1999). However, measurements of the ‘time on task’ do not tell the whole story. While it is clear that when pupils are disengaged their capacity for learning is reduced, we cannot be certain what goes on in the minds of students who from the outside appear to be focused and paying attention. Indeed, recent international studies such as PISA and PIRLS have pointed to the fact that in these high-scoring Asian countries, such as Hong Kong, there is increasing diversity in scores with the ‘high flyers’ outperforming previous generations while the ‘poorest performers’ do worse. These studies also noted that some pupils appeared reluctant to participate in lessons, whether to ask or
respond to questions, suggesting that motivation was at a low ebb and that the curriculum and its delivery was not sufficiently stimulating.

SCT therefore advocates a change in classroom practices in small class environments, that is a shift from teacher-directed approach to learning to student-centred learning. Small class education, on the other hand, places greater emphasis on the developmental process towards quality education, and is underpinned by core educational values. In the words of Mao Feng (2004), a senior education official responsible for shaping the direction of small class education in Shanghai:

Small class education is the process of implementing small class teaching under the guidance of core educational values. In other words, it is guided by a principle based on student development, and adoption of appropriate teaching contents, methods and technologies which support SCT. Through interaction between teaching and learning and optimization of use of resources, the process of every student having full development will be realized.

(p. 4)

SCT shares a common purpose with the prevailing education reforms in these countries which also emphasises a more student-centred education. This connection was explicitly acknowledged by some education departments. In Shanghai, Mao (2004) remarked, ‘the promotion of small class education facilitates the deepening of education reform in primary schools, as well as constructing the mechanisms to implement quality education’. Similarly, an education official of Macau SAR also commented: ‘We have seized the time of low birth rate in Macau to improve our education conditions in the context of our education reform. Hence the launching of Small Class Teaching has become a must’ (Chan, 2004).

In the following section, we will provide a summary of the development of SCT in a number of East Asian countries and regions.

**Mainland China**

The adoption of a SCT policy in China started in Shanghai, the most well-developed city in the country. In 1997, the Shanghai Municipal Education
Commission invited ten primary schools to join an experimental scheme in small class education, with class sizes of 30 or below. From the outset, it was aimed to provide equal access to quality education and to alleviate the impact of decline in school enrolment. As Zhang (1999), a senior official of the Commission, stated:

Kindergartens and primary schools should gradually streamline the classes and popularize ‘small class education’ in the regions with the right conditions to optimize the environment and conditions for the unfolding of the education of personal quality, to enhance the adequacy of education access of each student and strictly control the drainage of the teaching resources.

(p. 5)

The development of SCT in Shanghai also symbolised its desire to offer high-quality basic education during the city’s rapid economic growth in the 1990s. Dong (2001) made the following observations:

The development of small class education was to be compatible with Shanghai’s status as an international economic, financial and trade centre. It is also aimed to satisfy the imminent needs of people for culture, quality of living and high quality education.

Shanghai became the most influential region in promotion of small class education in China. Other relatively affluent provinces and cities in East China followed suit – Hangzhou, the capital of Zhejiang province, and Nanjing, the capital of Jiangsu province, began to carry out experimental schemes in SCT in the years 1998 and 2001 respectively. In September 2005, the number of primary and lower secondary schools which practised SCT in Shanghai reached its peak – 218 primary schools (44 per cent of the total), 66 (19 per cent) lower secondary schools and 31 (24 per cent) nine-year through-train schools implemented SCT (Dong, 2013). These three cities of Shanghai, Nanjing and Hangzhou jointly organised the first Changjiang Delta Symposium on Small Class Education in 2005 and have since taken turns to host this annual symposium which is always well attended by educators from other cities in China.

In the past decade, the development of SCT in Shanghai has slowed down considerably because of the need to provide school education to a large number of children of immigrant workers. Nevertheless, the development in Nanjing is particularly promising – the Education Bureau set up a Centre for Research in Small Class Education in 2008, which has been active in supporting teachers’ professional development and conducting studies on SCT. In addition, SCT has spread from large cities to a number of district-level cities in China; their target class sizes usually vary from 30 to 40 (Dong, 2013). In 2010, the development of SCT in China has been given a boost after the promulgation of the ‘National Outline for Medium and Long-term Education Reform and Development (2010–2020)’ (PRC State Council, 2010). For the first time, SCT is stated in a national document:
The quality of compulsory education shall be improved. Basic national standards and a monitoring system for the quality of compulsory education shall be established. The national curriculum standards for compulsory education and teachers’ credentials also shall be applied strictly. Curricular and teaching method reforms shall be deepened, while small-class teaching shall be promoted.

(p. 14)

Following the National Outline, many provinces and cities in China have included SCT in their own ten-year education plans. Because of the different economic and social conditions, there is a large discrepancy in the target class size and the schedule of implementation.

The experience of Chinese cities implementing SCT indicates that SCT has played a key role in teachers’ professional development and setting the conditions for student-centred learning, creativity, inquiry learning, assessment change and delivery of the new curriculum (Zhang, 2007). Many action research reports and reflective accounts have been published by teachers in books and journals and presented in symposiums and seminars (e.g. Nanjing Education Bureau, 2007). Though valuable, it is difficult to determine the scale of impact on student outcomes in the absence of large-scale empirical studies.

Hong Kong

This controversy about class size has been very noticeable in Hong Kong in the past decade in the context of a sharp decline in school enrolment and school closure. Amidst mounting political pressure to reduce class size, the former Education and Manpower Bureau (now the Education Bureau) had strong reservations, and instead commissioned a three-year research project to study the outcome of an experimental SCT scheme in 37 primary schools. After years of hot debate with the education community, in 2007, the Chief Executive elect finally decided to implement SCT in public sector primary schools by reducing the standard class size from 32–37 pupils to 25 pupils, starting from Primary 1 in the 2009/10 school year. Since then over 70 per cent of the public sector primary schools have joined the SCT scheme.

A special feature of SCT in Hong Kong is that a large variety of teachers’ professional development programmes have been organised to enhance the effectiveness of teaching and learning in small class environments. These range from government- and non-government-funded teachers’ professional development courses, seminars and workshops, and site-based support projects, as well as learning circles (a form of school-based professional development which will be discussed in Chapter 6) within and across schools set up by the government and tertiary institutions. In addition, a dedicated research and development centre on SCT has been set up in 2006 in the Hong Kong Institute of Education. It has organised frequent professional exchanges with education officials and educators in cities on mainland China, Taiwan and Macau which are implementing
SCT. In addition, research collaborations with Western scholars in SCT have also been carried out. These developments have gradually led to positive changes in primary education, as evidenced by the professional growth of principals and teachers (Lai and Ip, 2007; Ip et al., 2012).

**Singapore**

Compared with OECD countries, the class size of Singapore is relatively high. In 2005, all 132 government schools in Singapore had reduced their Primary 1 class size from 40 to 30. This reduced class size was extended to Primary 2 in 2006 (Singapore, MOE, 2004). The MOE (2013) explained the reasons for class-size reduction as follows:

- Students may have different starting points when they first enter school. This will enable the teacher to look after the wide range of student needs in each class.
- To provide Primary 1 and 2 students with more individualised attention to give them a strong grounding in literacy and numeracy.
- To ease the move from pre-school where class size is usually less than 30.

Up till now, the Singapore government is still planning on the basis of 40 students per class at the other primary and secondary years and is not supportive of reduction at these levels. It contends that ‘empirical evidence on the benefits of a smaller class size remains inconclusive’ and ‘studies have shown that teacher quality is the most important factor in achieving better student outcomes’. Instead, it is inclined to improving teacher–student ratio and specialised support in smaller classes or groups for certain subjects or student profiles. It is planned that the pupil–teacher ratio will be improved from 18 and 15 at the primary and secondary levels in 2012 to 16 and 13 by 2015 (Singapore, MOE, 2012).

**Macau**

In the mid-1990s, the number of births per year in Macau was as high as 8,000, but this had fallen to near half that number by 1999, the year when Macau became a Special Administrative Region of China. As a result, the primary school enrolment of Macau declined from 47,000 in 1999/2000 to 35,000 in 2005/06 and to 22,400 in 2012/13 (Macau, Department of Education and Youth (DSEJ), 2005, 2013). This has caused serious recruitment difficulties in private schools which comprise the majority of schools in Macau (Vong, 2013).

In the year 1999/2000, the average class sizes of primary and secondary schools in Macau were 45.7 and 43.7 students respectively (Chan, 2004). In 2001, the Macau SAR government for the first time introduced SCT in its Policy Guideline. Administrative measures were put in place to encourage SCT – schools with a class size of 35 students were allowed to receive the same level of class allowance as those with 45 students (Chan, 2004). In 2005, schools which had
included SCT in their school development plans were eligible to apply for government grants (Vong, 2013). To support teachers’ development in SCT, the government have organised teachers’ study tours to Shanghai, and invited teacher educators from mainland China and Hong Kong to conduct workshops on SCT.

In 2006/07, the Macau SAR government further extended the scheme to allow schools to progressively operate with 25 students per class. By 2008/09, the average class size of primary and secondary schools had dropped to 31 and 35.3 students respectively (Macau. DSEJ, 2013). In 2010, the government further increased the class subsidies to advance the speed of implementation of SCT. In 2011, all primary schools have implemented SCT, followed by Secondary 1 in 2012. It is planned that SCT will be implemented in the entire secondary stage in 2017/18 (‘Budget for free education’, 2013).

Despite the progress, Vong (2013) observed that there is still a huge discrepancy in class size among various types of schools and the traditional modes of teaching in large classes are still practised in small classes.

Taiwan

In the early 1990s, non-government organisations flourished in Taiwan, setting out plans for education reforms. In 1994, the influential so-called ‘410 Education Reform People’s Coalition’ rolled out its four-point plan for raising the quality of education, the first one of which was setting up small schools and small classes (Chen and Sheu, 2003). This led to the establishment of small schools with reduced-size classes in city suburbs, which embraced the concept of open education and individualised learning (Ou, 1999).

In 1997, the General Consultation Report for Education Reform, published by the Educational Reform Committee, incorporated the reduction of school and class sizes as one of its objectives. In 1998, the Ministry of Education finally announced in the Action Plan for Education Reform that the class sizes for primary and secondary schools would be reduced to no more than 35 pupils by the years 2003 and 2007 respectively. In addition, the Ministry aimed to enhance the effectiveness of SCT and advocated the ‘Spirit of Small Class Teaching’ with the objectives of fostering ‘pluralistic, individualized and adaptive’ instruction to meet every student’s ability and learning needs (Taiwan. Ministry of Education. 1998). The Minister stated that, irrespective of whether the class size is large or small, the spirit of SCT is equally applicable. It also identified five supporting strategies, including raising teacher quality, enhancing teaching–learning environments in small classes, improving curriculum and teaching materials, advancing teaching and assessment, and setting up appropriate educational expectations of parents (Chen and Sheu, 2003).

The push for further reduction of class size has been stronger since the millennium, as Taiwan has experienced a continual decline in birth rates, followed by a drastic drop in primary one enrolment from 320,058 in 2001 to 286,122 in 2006 and to a projected 195,323 in 2011. In 2006, the Ministry of Education
Background: principles of small class teaching

launched the ‘Betterment of National Education Development Programme’, which was aimed at enhancing the quality of teaching, reinvigorating educational manpower, optimising use of educational resources and protecting education rights. In addressing the accelerating enrolment decline and recognising parents’ expectations for quality education, the Ministry announced that the class size of Primary 1 would be further reduced to 29 students in 2010 (Taiwan Executive Yuan, 2006). Class-size reduction was regarded as a key measure for ‘betterment education’. A senior Ministry official was reported by the press as saying:

‘Betterment’ is a relative concept. For me, I started to teach in 1985, the class had 64 students. It was difficult to realize a lot of educational ideals, such as individualized instruction and allowing students more opportunities to express their ideas. Now with the class size halved, it should be much easier to foster student interaction or allow them to share their experiences. Therefore a major component of the ‘betterment’ process is the reduction of class size.

(‘In face of declining birth rate’, 2006)

In 2008, the Ministry announced a further extension of the class-size reduction programme to secondary schools. Class size of Secondary 1 would be reduced to 30 in 2015. Recently, the Ministry has further assured legislators that the government’s goal is to further reduce the class size to 25 students (‘Worry that teachers’, 2013).

Learners from Confucian heritage cultures

East Asian countries and regions have been characterised as Confucian heritage cultures (hereafter referred to CHCs) in which the Confucian philosophy has a deep-seated influence on all aspects of social and cultural life, including education. In a similar fashion, the term ‘Chinese learner’ has been used to refer to learners in the Greater China region, which comprises mainland China, Taiwan, Hong Kong and Macau (Watkins and Biggs, 1996, 2001; Jin and Cortazzi, 2011). In addition, ‘Asian learners’ are considered to share the same generic characteristic, encompassing countries as diverse as Japan, Korea, Singapore and Vietnam (Nguyen et al., 2006; Grimshaw, 2007; Aoki, 2008).

Confucius’ thoughts are often considered to result in social inequality as they provide a hierarchical structure which stresses mutual respect and harmony; its influence is particularly evident in the hierarchical relationships between students and teachers (Biggs 1994; Chan, 1999). In this regard, consciousness and recognition of teacher authority has been a significant aspect of Chinese traditional values and a strong element in Chinese approaches to learning (Cortazzi and Jin, 1996). Students owe respect to those who provide knowledge and the authority of teachers is such that only they – and not the students – should initiate interactions in class (Edwards and Li, 2011).
Adopting the concept of power distance, Hofstede (1980), in a study of 53 countries and regions, reported that the power-distance values between individuals within Hong Kong and Taiwan societies were larger than those of Great Britain and the United States. Hofstede (1994) further contended that, in education, in countries with a large power distance the power rests with the teachers who are respected and regarded as the fountain of knowledge; their pupils are spoon-fed with knowledge and are not encouraged to ask questions. By way of contrast, in countries with small power distance, teachers and pupils treat each other on an equal footing inside and outside schools; pupils also learn by being actively involved in asking teachers questions and discussing among peers.

Asian cultures or CHCs are also seen to generally value collectivism and discourage individual self-expression, creativity and critical thinking; whereas Western culture displays the opposite characteristics (see Hofstede, 1994; Bond, 1996; Kubota, 1999). Collectivism denotes that the Chinese believe ‘the futures of individuals from the same in-group are inter-related and that each person’s well-being depends upon the results of collective effort’ (Leung, 1996: 258). Conflict and confrontation tend to be avoided or compromised as they disrupt the harmony of the in-group (Bond, 1991; Littlewood, 1999). In the collectivist classroom, teachers’ questions are seldom answered voluntarily by individual pupils in a large group (Hofstede, 1980). Littlewood (1999) also predicts that East Asian learners will be reluctant to engage in argumentative discussion and will be reluctant to ‘stand out’ in open classrooms expressing their views or raising questions, particularly if this might be perceived as expressing public disagreement. Recently Liu and Jackson (2011) also conclude that reticence of Chinese learners is due to anxiety over making mistakes.

In the past two decades, with globalisation of education and the burgeoning economies of East Asia, there has been an increasing interest on the part of Western governments and educators to study learners from CHCs because of the excellent performance of their students. Cheng and Guan (2012) observe that a substantial body of literature has developed around the construction of two distinct learning camps: ‘the Eastern learners’ versus ‘the Western learners’ (Biggs, 1991; Flowerdew, 1998; Olaussen, 1999; Ho et al., 1999; Littlewood, 1999; Huang, 2005; Rastall, 2006; Campbell and Li, 2008; Liu and Jackson, 2011). In comparison with Western students who have been viewed as active learners presenting self-directed and independent behavioural traits in learning, Eastern students tend to be perceived as passive and reticent learners. The latter are also characterised with low levels of classroom participation, a reluctance to ask questions or think independently, a tendency to rely on teacher–student relationship, and low levels of demonstrated autonomy in study practices (Purdie and Hattie, 1996; Olaussen, 1999; Dahlin and Watkins, 2000).

Other researchers have studied the outcomes resulting from the import and application of ‘Western’ educational theories and practices, including constructivism, student-centred learning, school-based management and so on in CHC countries. At the same time, a large number of students from the Chinese-speaking world
have gone abroad and are enrolled in Western educational institutions (Shi, 2006). As a result, there is a strong imperative/need for Western educators to study the educational beliefs and practices of these learners, and understand how cultural differences affect their learning. These include an extensive body of research on Chinese students’ cross-cultural educational experiences in Western universities, particularly those enrolled on English as a Foreign Language (EFL) courses (for example, Gu and Schweisfurth, 2006; Edwards and Li, 2011), and studies comparing the learning approaches of Chinese and Western students (for example, Shi, 2006; You and Jia, 2008; Cheng and Guan, 2012).

Adopting this perspective, a number of academics have cautioned against the tendency to underestimate the educational cultural issues arising from the application of ‘Western’ education approaches in CHC countries. For instance, Nguyen et al. (2005, 2006) asserted that the implementation of constructivism and one of its applications – co-operative learning – in Vietnam has resulted in cultural conflicts and mismatches, and Western models of group learning may not be appropriate. They argued that teachers in CHCs may prefer structured learning situations with precise objectives, detailed assignments and strict time frames, and learning in small co-operative groups may have been perceived as too loose a structure and the teachers’ guidance may not always have been clear enough in the eyes of these students.

Studies of Chinese students enrolled on courses offered by Western universities suggest that by virtue of their educational backgrounds these students were ill prepared for the unfamiliar pedagogic practices they encountered in their new environment, which have led to ‘culture clashes’. For instance, in a study of Chinese students enrolled on online courses, Chen and Bennett (2012) argue these students were ill prepared for the unfamiliar pedagogic practices they encountered in their new environment, and a clash between the students’ heritage and host educational cultures led them to experience acculturative stress and what they felt were negative educational outcomes. They conclude:

> These findings challenge the claims made by proponents of constructivist pedagogy that this form of educational practice empowers and motivates all learners. While the Chinese students in this study may have found constructivist teaching especially difficult because of an educational background that espouses contrasting educational values and practices, non-Chinese fellow students may have also had the negative learning experiences identified.

(p. 689)

The concern about cultural conflicts has led to pleas for respect for cultural differences, and the need to consider the host culture’s heritage when adapting Western educational methodology to improve compatibility with or relevance in the host culture (Walker and Dimmock, 2000; Nguyen et al., 2006; Sharan, 2010). In teaching and learning that involve CHC students who are unfamiliar with ‘Western’ approaches, the development of ‘culture-sensitive pedagogy’,
‘culturally appropriate pedagogy’ and ‘mixed pedagogy’ have been advocated by various writers (Thomas, 1997; Nguyen et al., 2006; Chen and Bennett, 2012). It is argued that teachers must actively bridge the gap between the dominant culture’s preferred ways of educating children (i.e. constructivist) and those of culturally and linguistically diverse students’ home communities (Bailey and Pransky, 2005).

**Alternative perspectives**

The generalisation that characterises the Asian or Chinese learner as rote and passive learners has raised many discussions and debates. Watkins and Biggs (1996, 2001) challenged this view and tried to solve the ‘paradox of the Chinese learner’, namely how can students in the perceived ‘unfavourable’ conditions of Confucian heritage classrooms have greatly outperformed students learning in ‘progressive’ Western classrooms in international tests? They concluded that children in CHCs are socialised in ways that make them amenable to work in large classes, so that management problems are minimal and teachers can focus on meaningful learning using whole-class methods. In addition, CHC students use highly adaptive learning strategies – Watkins and Biggs (1996, 2001) argued it is quite incorrect to oppose memorisation to understanding, and to see memorisation as evidence of a ‘surface’ approach to learning. Learning through repetition is also seen to be at least complementary to understanding in CHCs (Marton et al., 1996). Other scholars have also offered contradictory views. They argued that Chinese learners valued active and reflective thinking, open mindedness and a spirit of inquiry (see Clark and Gieve, 2006).

Chan and Rao (2009) observed that there has been a trend to ‘glamorise’ the Chinese learner as more successful due to their repeated success in international tests:

> The once commonly held view that Chinese students are passive rote learners have been replaced with a somewhat glamorized view of Chinese students as successful and competent learners. Accordingly, the usefulness of adopting new teaching approaches, developed mainly in the West, has been questioned by educators, given the view that Chinese learners are apparently better students.

(p. viii)

Recently, an increasing number of writers have been critical of cultural determinism and supportive of the view of teaching and learning as situated. Mott-Smith (2011: 581) expressed concern over cultural analyses that may be ‘overly deterministic, leading to cultural reification, stereotyped views of students, and deficit models’. Clark and Gieve (2006) also cautioned on the danger of placing too great emphasis on the ‘large culture’ approach or discourses in education which overlook the personal experiences of learners. Instead, they advocate an alternative approach which focuses on ‘small culture’ explanations for the
behaviours of Chinese learners abroad. Using the concept of ‘situation identity’, they emphasise the influence of social rather than cultural context; that is, the influence of national culture on individual values and behaviour through socialisation in shared educational practices is moderated or disrupted as the individual learner is transplanted into a different context.

Similarly, reflecting on his seminal work on the Chinese learner and taking into account the changing theories of learning and teaching, Biggs (2009: x) remarked that ‘rather than talking about the Chinese learner, we should talk about Chinese learners in their various contexts and systems’.

On the other hand, an increasing number of researchers argues that there has been a distortion and misinterpretation of Confucian philosophy as being teacher-dominated and in favour of passive learning. For instance, Lee (1996) commented on the significance of reflective thinking in the Confucian tradition. He cited Confucius’s conception of learning as a process of ‘studying extensively, inquiring carefully, pondering thoroughly, sift[ing] clearly, and practicing earnestly’ (p. 35). In addition, Cheng (2000) commented:

Confucius did advocate respect for knowledge and knowledgeable persons. . . . However, respecting knowledge and knowledgeable teachers does not mean students should be compliant and passive to the teacher. This is manifested in Confucius’s well-known saying: . . . which means ‘the teacher does not always have to be more knowledgeable than the pupil; and the pupil is not necessarily always less learned than the teacher’. Confucius had another saying which is known to virtually every household in China ‘san ren xing, bi you wo shi’, meaning ‘among any three persons, there must be one who can be my teacher’. Obviously Confucius was not in favour of the idea that the pupils should blindly accept whatever the teacher imparts.

Evidence to support the viewpoint that Confucius rejected a didactic approach can be found in the sayings of the master himself. Writing on education in the Book of Rites, Lin Yutang’s (1966: 246) English translation quotes Confucius’ observation that:

The teachers of today just go on repeating things in a rigmarole fashion, annoy students with constant questions and repeat the same things over and over again. They do not try to find out what the students’ natural inclinations are, so that students are forced to pretend to like their studies, nor do they bring about the best in their talents. What they give students is wrong in the first place and what they expect of the students is just as wrong. As a result, the students hide their favourite readings and hate their teachers, are exasperated at the difficulty of their studies and do not know what good it does them. Although they go through the regular course of instruction, they are quick to leave it when they are through. This is the reason for the failure of education today.
The suggested alternative is much closer to Western constructivist ideas:

The teacher observes but does not constantly tell the pupil what to do, so that students can develop their own thinking. In his teaching the superior man guides his students but does not pull them along; he urges them to go forward and does not suppress them; he opens the way, but does not take them to the place.

Other writers also support these claims that it is incorrect to suggest that Confucius was opposed to constructivist teaching approaches. Ng (2000) has pointed out that ‘on careful examination, in fact, some of the pedagogical practices of Confucius are surprisingly enlightened’. Similarly Smith (2012) commented that Confucius’ approach to pedagogy would seem to align with the modern practice of personalised learning. In addition, Yang (2008) also provided extracts from the Analects that Confucian teaching is complementary to constructivist principles, including its emphases on learners building their learning on their prior experiences, co-operative learning, active learning, using learner diversity to promote learning, creating a dialogic relationship between teachers and students, the transfer of knowledge in different situations and learning through reflection.

**Teaching and learning in the changing context of small class teaching**

We support the view of seeing teaching and learning as culturally and socially situated in a changing and not a static context. As Phillipson and Lam (2011) argue:

Teaching is culturally situated. It is natural that our decision making and beliefs about teaching are, to varying degrees, influenced by our culture. However, this does not mean that Chinese teachers have to conform to the Chinese style of teaching. On the contrary, it is crucial for teachers to examine the strengths and possible weaknesses of their own personal teaching orientation. A critical mind can guide us in exercising our professional roles in the classroom and, by improving education in our own countries, we can refine our cultures, given that improving education is an important step towards positive cultural change.

(p. 18)

The case of Hong Kong, in which the six principles of SCT are advocated, is particularly interesting because it is a place where East meets West and where there are both commonalities and differences in culture between Hong Kong and mainland China. Even studies on national cultural dimensions by Hofstede et al. (2010) indicate that Hong Kong has a smaller power distance value and a higher individualism index score than mainland China.
In education, Hong Kong has roots and is grounded within a Confucius-oriented Chinese society (Kennedy, 2011), but its educational theories and practice have long been influenced by Western ideas. Due to historical factors, the Hong Kong education reform before and after reunification with China has been deeply influenced by the West, particularly UK, USA and Australia. A notable example is the wave of public administration reforms and ‘New Right’ thinking borrowed from Britain and other English-speaking countries since the 1980s, leading to school management reforms and promoting accountability in public schools (Chou, 2012). In curriculum and pedagogic reforms, the major Western influences, however, have been more liberal and have included the Activity Approach in primary schools from the early 1970s to early 1990s and the Target-oriented Curriculum (TOC) in the mid-1990s, both of which advocated pedagogic changes to cater for student-centred learning.

In addition, the far-reaching education reforms after 1997 are influenced by Western ideas of learning. The Reform Proposals of the Education Commission (2000) stated that the priority of education in the twenty-first century should be to ‘enable our students to enjoy learning, enhance their effectiveness in communication and develop their creativity and sense of commitment’. In the following year, the curriculum reform document ‘Learning to Learn – The Way Forward in Curriculum Development’ further elaborated that the overarching principle of curriculum development was ‘to help students learn how to learn’ and a learner-focused approach should be adopted (Curriculum Development Council, 2001). This curriculum and assessment reform was accompanied by an equally strong emphasis on teachers’ professional development.

Various studies of classroom practices after the implementation of the education reform indicated that changes have taken place, with traditional beliefs sitting alongside changing aims and practices (Chan and Rao, 2009). All in all, there has been a transition from traditional to more student-centred, constructivist notions of teaching. In another study, Kennedy (2011) also reviewed the early evidence of changes since the education reform. He asserted that change is under way and there is no turning back from what is undoubtedly the most serious and far-reaching set of reforms. He observed that curriculum structures have changed, there has been more experimentation with different forms of assessment, including school-based assessment, more attention has been paid to the needs of ethnic minority students, special needs education has received more support and attention, the benefits of small class teaching have been recognised and language education has been recognised as a key area for development for all students.

In SCT, as observed in the studies by Lai and Ip (2007) and Galton and Pell (2009), there have been signs of change in teachers’ thinking and classroom practice. Promising changes have also resulted from teachers taking part in the various types of teachers’ professional development courses and school-based support projects which are organised to enhance the effectiveness of teaching and learning in small class environments. Feedback from in-service teachers attending a five-week professional development course on SCT in Hong Kong
The East Asian context also suggests that a number of teachers have reflected on their existing practice and indicated a willingness to change their teaching from a teacher-dominated to student-centred approach. In the words of two teachers:

I’ve learned about student-centred learning and teaching strategies in small classes, questioning techniques and multiple assessment methods.

(Teacher A)

The course is useful in changing my traditional one-way teaching philosophy to one emphasizing on enquiry learning and student-centred learning. I’ve learned a lot about strategies in co-operative learning and questioning, as well as concepts and theories in small class teaching. It will be very useful for my teaching.

(Teacher B)

In addition, professional discourse among teachers has been fostered by the building of intra- and inter-school learning circles, and institute–school partnerships. The former is especially valuable because past experiences of large-scale systemic curriculum initiatives in Hong Kong faced the difficulty of translating top-down change strategies into classroom practice (Carless, 1997). As Galton and Pell (2009) elaborated:

Learning circles are important because they focus at any one time on a specific pedagogy, allow teachers to observe and evaluate each other’s classroom practice and thereby enhance the participants’ sense of professionalism. This allows teachers to move from a position where they looked to others to tell them what they should do to become an effective small class practitioner to a point where they are prepared to take responsibility for developing appropriate pedagogies.

(p. x)

Changes in teaching and learning have also taken place in other Chinese societies, such as mainland China and Taiwan. Similar to the observation by Chan and Rao (2009), Shi (2006) also found that, in a middle school in mainland China, the traditional emphasis on examinations co-existed with students being active learners and preferring a more interactive relationship with their teachers. Zhang (2007) also commented that the experiences in Chinese cities implementing SCT show that SCT has played a key role in teachers’ professional development and set the conditions for student-centred learning, creativity, inquiry learning, assessment change and delivery of the new curriculum.

In Nanjing, the ideals in SCT have demonstrated a clear concern on personal development of students and a focus on the humanistic education and individualised instruction. For instance, Wang (2013) postulated that the three core elements of SCT are inclusive education, individualised instruction and active classrooms.
Research into small class teaching: the Hong Kong context

The issue concerning the benefits of small classes has always been a controversial one despite a renewed interest in research on the subject in recent decades. Suffice to say, while most researchers accept that reducing class size leads to improvements in pupils’ attainment, attitudes and behaviour (Pritchard 1999; Biddle and Berliner, 2002) especially in the early years of schooling there are concerns about the magnitude of these effects and their long-term sustainability. Hattie (2005a) concludes that the effects are, at the most, of low to medium size and that more effective ways of improving pupils’ attainment can be brought about by the increased use of certain teaching strategies such as peer tutoring and group work, improved questioning and the provision of feedback which is evaluative rather than merely corrective. In the West, Finn and Achilles (1999) showed that pupils in small classes get more teacher attention but had less to say about the quality of this teacher–pupil dialogue. In Blatchford’s (2003) study pupils were more often the focus of the teacher’s attention (as opposed to being part of a class or group audience) but this talk was often social (talking about pupil experiences outside school). As a result the authors conclude that school is likely to be a more enjoyable place and that pupils have more positive dispositions towards learning.

The question of sustainability is also crucial. In Blatchford’s UK study the gains in attainment in the smaller classes in English and mathematics reduced as pupils moved up the school and in the latter case had disappeared by the time pupils reached the end of primary school (Blatchford, 2003). This problem seems common to all early and pre-school initiatives (Reynolds and Temple, 1998) and suggests that it is also necessary to re-intervene from time to time.
during the child’s passage through primary school and possibly during transition to secondary education if the initial costs are to be justified.

What can be concluded, therefore, is that research on class size cannot be reduced to a simple question of whether pupils in small classes do better than those in regular size classes. Furthermore, it is important to recognise that most of the research has been carried out in Western countries where levels of performance (although improving) are below those of Pacific Rim countries such as Hong Kong and where, as in the United Kingdom, there is a ‘long tail’ of underachievement which appears very resistant to all kinds of intervention at home, school or classroom level. There is also evidence that time spent on learning, and hence performance, is considerably enhanced in some countries around the Pacific Rim in the form of additional after-school tutoring and other forms of coaching (Bray, 1999).

In Hong Kong, at the beginning of the millennium the Education Commission instituted a series of government-backed changes in the curriculum starting in the primary phase in 2001. Under the title Learning for Life, Learning through Life, the reforms sought to reduce the impact of testing by reducing the number of bands describing the ability range of a school from 5 to 3, to encourage greater curriculum integration and the use of a broader range of teaching methods. Thus in some ways Hong Kong represents reform which, despite its international successes under the present format, was attempting to liberalise its education system, in stark contrast to what was taking place in many Western countries where there was greater pressure for conformity and increasing use of testing as an indicator of public accountability.

At the same time a decline in the number of children entering primary schools meant that many teachers faced redundancy. In response, the teacher unions and most of the elected members to the Legislative Council argued that the situation favoured a reduction in class size from current levels. The government’s response was to commission a study whose objectives were to assess the benefits of SCT in the local context and to identify the teaching strategies and support necessary to optimise its benefits. The study was launched in 37 primary schools in the 2004/05 school year. SCT was implemented progressively from P1 to P2 for two consecutive cohorts of P1 students in the 2004/05 and 2005/06 school years. Pupils were assessed at the start of the study and then at the end of three successive years, using tests specially devised by the Education Bureau. At the same time, a combined self-esteem/motivation measure, together with three measures of attitude towards English, Chinese and mathematics were also administered. These had been used successfully in several English Studies (Hargreaves and Galton, 2002; Pell et al., 2007) and had high reliability.

In any one year testing any particular cohort involved some 2000 pupils for each subject in small classes and some 3,000 in regular ones. In addition the classes of approximately 100 teachers (about 20 per cent of the sample) were systematically observed on two occasions using a modified form of the ORACLE (Observational Research and Classroom Learning) Teacher and Pupil Records (Galton et al., 1980; Galton et al., 1999). The teacher observation schedule
shared some features with that used by Blatchford (2003) in that it recorded a teacher’s interaction with pupils either individually (alone or in a class or group settings) or as part of a class or group where nobody was the focus of the teacher’s attention. Unlike Blatchford’s categories, however, it broke down task activity in greater detail recording the kinds of questions asked (factual, closed, open, about task directions, about routine behaviour) and the kinds of teacher statements made (facts, ideas, task/routine directions and various kinds of feedback). When not talking teachers were recorded either listening or engaged in interactions such as monitoring or housekeeping (handing out worksheets, tidying up, etc.). The Pupil Record, like that of Blatchford’s, recorded time on task, disruption (verbal and physical) and also the interactions between pupils when working in groups or pairs. Observers recorded two sequence of teacher behaviour (each of eight minutes) and also a three-minute sequence for each of six pupils (three boys and three girls). The order was predetermined randomly and coding took place every 30 seconds.

As in Blatchford’s (2003) study, pupils in the smaller P1 classes did better than those in regular classes in all three subjects, although the gains were relatively small. Moving from P1 to P3 the magnitude of these differences was reduced. However, when each class was divided into three cohorts (top, middle and bottom groups based on pre-test scores) gains tend to be concentrated in the top third group in regular classes, whereas in the smaller classes they were more evenly distributed suggesting that smaller classes helped teachers cope with diversity.

Turning to the observation data as in other studies no appreciable differences were found in general teaching approach. Teachers in both small and regular classes did not differ in the kinds of questions they asked or the kinds of statements and feedback offered. They did do more listening when pupils were reporting back on their work. More relevant to Blatchford’s (2003) finding that pupils in small classes were more often the focus of the teacher’s attention, no such differences emerged between pupils in small and regular Hong Kong classes. What was different, however, was the manner in which this attention was received. In the schedules whenever a teacher–pupil or a pupil–pupil interaction extended from one 30-second unit to the next it was coded ‘sustained’. In small classes a pupil’s interaction with the teacher was more often sustained. Thus the picture that emerges is of a regular classroom where teachers attempt to interact with as many pupils as possible but accomplishing this goal means that any one exchange between the teacher and a pupil is inevitably a brief one. In smaller classes a smaller proportion of the class is likely to interact with the teacher but these exchanges tended to be longer and often involved pupils reporting on their work. The conclusion to emerge from the research would suggest that in Asian classes, unlike those in the West, it is not sufficient to rely on increased pupil engagement to bring about improvement in performance, since the Hong Kong observation data recorded levels of time on task in the region of 90 per cent in both small and regular classes. To arrive at greater gains in attainment it is necessary, as Hattie (2005a) argues, to maximise the use of those classroom
interactions which both theory and empirical research demonstrate lead to sizeable improvements in learning. It is this conclusion, the need for teachers to change the way they currently teach, that provides the guiding rationale for this book. Readers wishing to learn more about the study should consult Galton and Pell (2012a), which deals with the classroom observation findings, and Galton and Pell (2012b), which examines the relationship between class size and attainment.

**Challenges**

We are well aware of the challenges facing teachers’ change of philosophy of teaching and pedagogy. Change also takes time. As Wang (2013) acknowledges, the major problems facing implementation of SCT in Nanjing include teacher-dominated classrooms and lack of student participation, teachers’ neglect of individual students, superficial and ineffective conduction of group work, and loss of classroom control which results in lack of parents’ support. The study by Galton and Pell (2009) in Hong Kong also reported that most of the time individual pupils were not in a teacher’s focus during classroom teaching, and how existing pedagogical and curricular approaches put constraints on teachers.

Nevertheless, we believe that the implementation of SCT in East Asia, with its focus on pedagogic shifts to student-centred learning and catering for learner diversity, has given opportunities for improvement in teaching and learning. In addition, we do not consider teachers’ professional development or pedagogy should be considered as an opposing policy alternative to SCT as suggested by some writers (see Rivkin et al., 2000; Hong Kong, Legislative Council, 2002, 13 November; Hattie, 2005b). Rather, professional development and SCT should be considered together, as the former can be used to help teachers harness most of the opportunities of smaller classes (Blatchford, 2011). Besides changes at the classroom level, Lai et al. (2014) also suggest that the benefits of SCT will be maximised if the implementation of SCT is addressed at both the system and the whole-school level, to ensure that structural and instructional approaches make the most of class-size reduction.

In the next chapter, we will discuss how changes in pedagogy hold the key to improvement in pupil performance.
Learning for teaching and teaching for learning

In the first chapter we have set out the case for a less teacher-directed approach to learning and have argued that increased active pupil participation is not necessarily at odds with ideas associated with Chinese Confucian culture. In the context of small class teaching (SCT) we have suggested that changes in pedagogy hold the key to improvement in pupil performance, because unlike the situation in the West there is little opportunity to raise the levels of pupil engagement, since in most Asian classrooms this is already extremely high. In this second chapter we therefore look at the key principles which govern more active modes of learning and the consequences for teachers who strive to adopt such an approach.

In this chapter we shall set out certain key principles that we believe can help to maximise the benefits of reducing class size. These principles lie at the core of effective learning. This is not to say, however, that adopting these principles is all that a teacher needs to do when moving from a class with up to 40 pupils to one where the number is in the range of 20 to 25. Improved pupil performance is not the only criterion of effective teaching. Equally important is the nature of the teacher–pupil relationship. This leads to a relaxed atmosphere where pupils feel able to confide in their teacher, where pupils are motivated by enjoyment of what they are doing rather than the pressure of needing to perform, and where pupils are willing to take risks in their learning rather than exhibiting dependency because of fear of failing.

The need to reform teaching in ways that enable pupils to think ‘out of the box’ so that they are more creative and imaginative has long been an important educational policy directive in many Asian countries as well as in the West. In the first chapter, we have introduced the start of large-scale educational reforms in many East Asian countries since the end of the last century. We noted that in Singapore, for example, teachers have been exhorted to teach less so that students will learn more (Lee, 2004). According to Gopinathan (2010: 130) this shift in emphasis by the then Prime Minister, Mr Lee Hsien Loong, marked a transition from an ‘efficiency driven to an ability driven’ education system which could develop ‘knowledge workers who are better able to cope intelligently with the complexities of the new century’. In Hong Kong the Education Commission document *Learning for Life, Learning through Life* (Education Commission, 2000) gave rise to a concrete set of curriculum proposals by the Curriculum...
Development Council (CDC, 2001) titled Learning to Learn. The guiding principles of the new approach included the development of generic skills (creativity, critical thinking, communication, etc.) structured under key learning areas (KLAs) and the use of a range of teaching methods to produce these desired outcomes Yeung et al. (2012). Similar initiatives have occurred in Taiwan, Macau and mainland China. The catalyst for these changes was, according to the Hong Kong Education Commission, the recognition that ‘Society is undergoing fundamental change. As it transforms from an industrial society into an information society and as our economy shifts from manufacturing to knowledge-based activities knowledge has become an essential element of our daily lives and our economy’ (p. 15).

In addition for the need of a knowledge-based society other factors such as the impact of information technology and an increasingly competitive world in the context of globalisation fuelled the need for change. Furthermore, the increased capabilities of its citizens resulting from these reforms would give rise to a demand for greater scrutiny of governmental decisions leading to the wish for greater participation in the political sphere. Equally importantly, however, was that at a time when policy-makers were beginning to see the need for changes to the existing educational system, academics were rethinking their ideas about the nature of learning. Whereas previously, the idea that children passed through different stages of development tended to promote an ‘apprenticeship’ model of learning, now the prevailing view was that the child’s ways of thinking and learning were no different from that of the adult (Wood, 1998). What differentiated the two was the latter’s superior knowledge and experience of the world which allowed for more sophisticated elaborations. Readiness, a key concept in learning, was no longer therefore to be defined as the stage of development reached by the child but was a combination of the existing state of the child’s knowledge but also of his or her capacity to learn with help of others (Wood, 1998: 26). Thus learning is essentially a collaborative process. Furthermore, according to Pintrich (2002) as children develop they become ‘more aware of their own thinking and more knowledgeable about cognition in general’ and this allows them to use this awareness to learn better by becoming ‘metacognitively wise’. As such, children can recognise what are acceptable forms of reasoning within a specific discipline (e.g. in science the use of fair testing in the design of an experiment) so that they can both monitor their thinking and recognise errors.

Ideas about learning are important because they have implications for the way that we teach (Simon, 1981). Gage (1978) has provided a useful definition of pedagogy as the science of the art of teaching. He argues that the science of teaching derives from ideas about learning, while the art of teaching consists of the teachers’ attempts to put these ideas into practice in a variety of different classroom contexts. The latter is what we generally refer to as the teachers’ craft knowledge. Charles Desforges, an ex-primary teacher and leading researcher on these matters, observes that schools would be even more successful in developing these principles that Simon called for nearly four decades ago, if we could all
learn to ‘share and use the knowledge we have about learning’. Desforges accepts that there is a vast body of knowledge of learning which emerges from the everyday practice of teachers, but he observes that this knowledge is difficult to get at and therefore difficult to share. Thus we cannot base our ideas about pedagogy solely on teachers’ craft knowledge. But Desforges also observes that there is a small but strong body of scientific knowledge about learning to be gleaned from psychological research. However, he argues that while this knowledge is easy to get it is difficult to apply. He therefore suggests that we need to bring the practical knowledge of teachers and the theoretical knowledge of researchers together in order to promote advanced teaching practices (Desforges, 2003: 14).

One of the earliest attempts to link different theories of learning to particular teaching approaches was undertaken by Joyce and Weil (1972). These authors devoted specific chapters to various interpretations of learning, and then illustrated their use from transcripts of actual lessons in which teachers either deliberately or intuitively made use of these particular ideas. Joyce and Weil make the point at the outset of the book that attempts to compare one teaching method with another or to fashion one overall general teaching method have a chequered history. Comparative studies generally show, these authors claimed, ‘that differences between different approaches are for specific objectives and they go on to say ‘that although the results are very difficult to interpret the evidence to date gives little encouragement to those who would hope that we have identified a single reliable multi-purpose teaching strategy as the best approach’ (Joyce and Weil, 1972: 8).

Because researchers have developed a multitude of different ways of representing the processes that we describe as learning, Joyce and Weil begin by defining what they term a number of families of models. Although these different families are not mutually exclusive, they do represent distinct approaches to learning and teaching according to Joyce and Weil. There are, for example, models based on theories about information processing or behaviour, others which draw upon ideas about social interaction, and models which tend to emphasise the development of personal understanding and self-actualisation. The task of linking these families of models with a specific repertoire of teaching activities results in a series of networks that are extremely complex. In the information processing category are listed seven alternative/complementary approaches, in the social interaction five, and in the personal models a further five. Recognising that such a degree of complexity was likely to limit the take up of these ideas a simpler version was created (Joyce et al., 1997). However, it still remains a complex and rather formidable task for teachers to master the intricacies of all the different combinations.

Ways of knowing

For the above reasons Galton and Pell (2009) in their study of SCT in Hong Kong argued that a more useful starting point, from a practitioner’s point of
view, might be to consider the kinds of knowledge demands which different tasks make upon the learner, and then to select an appropriate model of learning from the many which seeks the inculcation, accumulation or development of this particular kind of knowledge. The starting point of this analysis is a simple three-part typology, which was constructed by Patricia Alexander and her colleagues, and was based on a synthesis of a number of articles in educational journals concerning the different ways that the authors wrote about knowledge when referring to learning (Alexander et al., 1991). These researchers argued most knowledge acquisition involved procedural, conceptual or metacognitive knowledge. Procedural knowledge is defined as more than knowing what or the acquisition of new facts or new skills (usually called declarative knowledge). It also involves knowing how, that is the ability not only to locate new information but also in which circumstances to make use of it (conditional knowledge). In today’s primary classroom, where the use of the World Wide Web is fairly commonplace, the ability to locate information, restructure it for a particular purpose, and then to use it to illustrate a point or principle would encompass this kind of procedural knowledge.

Conceptual knowledge, Alexander et al.’s second overarching category, concerns the knowledge of ideas, the way they function and the conditions in which they should be used. The term refers, by implication, to complex and often non-linear knowledge structures, unlike some simple mathematics or science concepts where the different parts constitute the definition of a whole (e.g. simple fractions or states of matter). A key process in the acquisition of conceptual knowledge is the capacity to recognise instances of belonging and not belonging to a given class which defines the concept, as in the ability to understand what constitutes a mammal and what one does about creatures such as whales. Because there are often a potentially large number of characteristics that can be used to define any classification we often create sub-categories which Alexander et al. (1991) term domain knowledge. Concepts which are central to a specialised field of study then become part of discipline knowledge. The final component of conceptual knowledge is the ability to convey these ideas to others. This involves knowledge about the use of appropriate language (discourse knowledge). Within the framework of a given discipline, it is also necessary to use a form of words that allows meaning to be conveyed as propositional statements. This has to be done in ways which make use of knowledge of the language registers that are appropriate for a given audience. Alexander et al. (1991) define knowledge of the available and relevant styles of spoken and written communication as syntactic and rhetorical knowledge respectively.

The third part of the typology, metacognitive knowledge, concerns the capacity to be aware of one’s cognitive processes and an ability to regulate or manage this process unaided. In recent years, the renewed interest by psychologists into this aspect of learning stems from the key part such knowledge plays in ‘helping students become responsible for their own cognition and thinking’. Metacognition also involves what Shulman (1986, 1987) has called strategic knowledge, or the ability to recognise what is an acceptable form of cognitive
processing within a given domain or discipline and what does not conform to these rules. Alexander et al. (1991) argue that beside strategic knowledge (i.e. knowledge of appropriate and legitimate strategies) there must also be self-knowledge. This form of knowledge concerns the learner’s capacity to regulate their cognitive processing and involves an ability to recognise errors and to monitor one’s thinking. In Figure 2.1 these various strands of the typology are presented in diagrammatic form by way of a summary of Alexander et al.’s (1991) schema.

### A framework for learning?

During this process of acquiring these three different types of knowledge there must be a shift in the way that information is processed. At the core of this transformation, according to Bereiter (1991), is a distinction between learning as an additive process and learning as reorganisation. This view is in some ways very similar to the model of learning put forward by Bennett et al. (1984) in their attempt to determine how well primary teachers matched tasks to their pupils’ immediate needs. Among various categories these researchers distinguished between tasks that were designed to provide pupils with new knowledge in incremental steps and those that taught them to restructure existing knowledge so that problems could be examined in new ways or pupils could discover rules or ideas for themselves. Within Alexander et al.’s (1991) typology, which to a degree appears also to be a hierarchy, children move from a point where they acquire knowledge that is already known by others, to a point where they can
order that knowledge within particular frameworks, to a further point where they can, without too much assistance, interrogate their own thought processes in creating their personal frameworks or restructuring existing ones. It is in this sense therefore that pupils eventually become ‘metacognitively wise’. (Galton, 2007)

Robin Alexander (2001: 344) is unhappy with some of Patricia Alexander’s definitions. He criticises, in particular, the use of procedural knowledge as a ‘catch all’ term. He prefers to separate knowledge acquisition (declarative knowledge) from knowledge of routines, which can be defined as knowing where to gain such knowledge and how best to use it (conditional knowledge). One of the reasons why Robin Alexander is keen to sub-divide procedural knowledge is because his interest in classroom discourse leads him to emphasise the importance of Edwards and Mercer’s (1987) distinction between principled and ritual knowledge. Edwards and Mercer point out that one purpose of teaching rules and relationships is to lead pupils to an understanding of certain principles (the way certain kinds of knowledge are organised) which belongs to the second of Patricia Alexander’s typology categories of knowledge as conceptualisation. But learning a rule can also lead to merely repetitive performance in which the rules or procedures are memorised but cannot be applied in novel settings in a way that would support deeper understanding. Desforges (2003: 20) illustrates this by a story of a teacher who taught vocabulary by writing words and their definitions on the board and then getting the children to memorise everything that he had written. In the next lesson, as a practice/extension task, the class were asked to make up a sentence using the new vocabulary. One of the words on the list was ‘stimulate’ which the teacher had defined as to ‘stir up’. One pupil wrote as her sentence, ‘Mother stimulated the soup’.

There is obviously a case to be made for sometimes learning rules as a series of rituals such as, for example, learning to count to a hundred in tens. One of the key differences noted by Maurice Galton when sitting in P1 classes in Hong Kong in comparison with UK classrooms is the extensive time taken over learning definitions and rules in the first years of formal schooling. In one classroom, for example, a whole 60-minute lesson was devoted to identifying the key characteristics which define rectangles. Children were encouraged to bring various empty packages (fruit juice cartons, washing powder, etc.) from home, draw around the outlines and identify the rectangular shapes. The next lesson investigated the special case of the square, the next irregular quadrilateral shapes. In another class, the children played a variety of number games designed to create fluency in counting and manipulating numerals from one to ten. Hong Kong pupils top the international league tables in mathematics, yet from an English perspective these lessons appeared to ‘over-teach’ these topics. Similar examples to the Hong Kong approach can be found in some continental European countries. In Switzerland, for example, children entering the primary school after the age of six and a quarter spend much of the first year mastering the decimal number system in performing the four basic arithmetic operations (addition, subtraction etc.). The evidence suggests that this initial extended
concentration on manipulating numbers, much of it through rapid oral ques-
tion and answer sessions, pays off later on where 11-year-old Swiss pupils were
observed successfully completing tasks that are generally set for Year 9 (14 years)

There is, of course, no way of knowing how an individual pupil perceives
rules and procedures other than when he or she comes to use them. We know
from the study of experts, and by definition experts must be metacognitively wise,
that they have a principled understanding of rules whereas the less competent
performer generally has a ritualised one (Berliner 1994). Competent performers
typically go through a recitation of the rules and by a process of trial and error
attempt to find the one which applies in a given case. Experts, on the other
hand, seek to reconceptualise the problem in ways which allow them to identify
the most appropriate rule to apply. The latter process is much faster and explains
why Grand Masters at chess can compete with a computer. Thus making the
distinction between principled and ritualised knowledge, while useful in the
analysis of discourse and for helping teachers to think about the way a task
should be structured, doesn’t in practice require changes in Alexander et al.’s
(1991) typology provided, as is implied by these writers, that the three categories
are viewed as part of a continuum. This is because, for Patricia Alexander, the
acquisition of declarative knowledge involving rules or routines is a means to
an end (that end being to make pupils metacognitively wise) so that her main
concerns are with principled rather than ritual knowledge. Further, from the
point of view of developing an appropriate pedagogy for teaching rules and
routines it matters little whether the desired outcome is to promote Bereiter’s
(1991) ‘additive learning’ (as with learning the ten times table) or learning as
‘reorganisation’ (as with teaching vocabulary definitions of words such as stimulate
to use in sentences) since the principles of instruction are much the same.

Learning as information processing

That being said, there seems a remarkable degree of agreement, as Desforges
(2003) has claimed, concerning the implications for teaching what Alexander
et al. (1991) term ‘procedural knowledge’. At its simplest, learning can be con-
ceived as a series of outcomes which result in an enduring change in knowledge
or skill as a result from exposure to some experience. These outcomes are then
committed to memory. Bredo (1997) has claimed that this kind of learning is
underpinned by behaviourist theories, because it envisages the knowledge to be
acquired can be broken down into small steps and a degree of reinforcement
can then be provided at various points along the way whenever success has been
achieved. Such learning is also said to be *associationist* because one important
technique for retaining this new knowledge in the memory is to build up chains
whereby certain stimuli produce specific responses. Watkins (2003) describes
this process as ‘learning as being taught’ or LBT for short.

More generally the kinds of processes used to acquire this form of learning
can be encompassed within a general model known as information processing.
According to Meadows (1993: 213) the term is a collective noun for a series of explanations about how children use certain cognitive processes in order to process information that they acquire. The early theorists such as Atkinson and Shiffrin (1968) suggested a parallel existed with computer hardware and computer software in their account of the memory system and distinguished between the memory structure, which is analogous to the computer hardware, and the manner in which the memory is controlled, which is analogous to the software. Successful learning therefore depends ultimately on the speed of operation and the memory capacity. According to this simple model, the mind like a digital computer has both short- and long-term memory stores and a central processing unit. The unit exercises executive control by utilising specific procedures and routines when solving particular problems. Many of these problems in computing are solved by a process of approximation and iteration. With the latter procedure, the first solution is arrived at by guesswork, perhaps on the basis of previous experience. This guess is then used for the initial calculation and the result fed back into the programme to provide a better solution. The result of this second calculation is again put back into the system and the process goes on till very little improvement can be detected in successive iterations. This process of successive iteration clearly has parallels with the view of thinking adopted by Bennett et al. (1984), which they termed restructuring and tuning. Central to the theory is the idea of rehearsal (or practice) (Meadows, 1993: 213), which enables information to be retained in the working memory (analogous to the central processor) for longer periods of time, and makes it more likely that it will be retained in the long-term memory store for subsequent retrieval.

Classroom studies by Alton-Lee and Nuthall (1992) and Nuthall (2000, 2004) have supported and developed these ideas regarding the function of the working memory. He and his research partner, Adrienne Alton-Lee, a former primary teacher, found that information that was relevant for answering multiple-choice-test items correctly was unlikely to be retained for more than two days, unless linked to other representations already in the working memory or which again entered the memory on the subsequent day. These researchers also found that pupils could generate simple constructs when there was an appropriate mix in the working memory consisting of a combination of specific information, generalisations, visual stimuli, word meanings and skills. In any one instance, the most effective combination depended on the task demand so that a test question asking pupils to write down the temperature recorded on an accompanying picture of a thermometer was more likely to be answered correctly if the pupil had experience of carrying out the practical procedure of measuring temperature.

This brief account is a relatively simple presentation of the main ideas behind information processing models of cognition, but nevertheless sufficient to meet the aim of establishing some general principles of teaching based on this working model of how pupils learn. As Meadows (1993: 223) argues, while the models work well for ‘tasks which require conscious effort and strategic thought’, they are less helpful in explaining tasks which children in the nursery appear to perform spontaneously (e.g. building a tower out of rectangular blocks). Perhaps
more crucially in the search for suitable working theories of learning, information processing fails to account for what might be termed ‘instantaneous restructuring’, where one’s ideas are transformed in a moment of inspiration rather than through the process of iteration discussed earlier.

Learning as constructing and reconstructing knowledge

This leads to the second possible working theory of learning based on the idea of **constructivism**. Whereas the computer analogy tends to see the take-up of information as a somewhat passive activity, at least initially, the constructivist approach regards the process as an interactive one. According to Piaget, for example, new information interacts with what we already know in two main ways. First, the new information is modified so that the brain can **assimilate** what we already know and, second, what we know already is modified to **accommodate** this new information. Thus in the earlier example of classification the pupil may well include a whale within the category of mammals because of similarities in the way its offspring are produced and reared, while ignoring the other characteristics that would associate it more closely with fish and other water creatures. Once, however, these latter characteristics are taken into account it becomes necessary for the pupil to modify the original conception of what constitutes a mammal, because of the **cognitive conflict** that arises when all the salient features of the whale are identified.

This kind of learning has been described as an active process of sense making. According to Conner (2003), ‘learning is determined by what goes on in children’s heads and with how they make sense of the world. They do this by relating experience to existing organised concepts and principles which vary with each individual’s past experience’. In this approach the process of gaining new knowledge (or applying that new knowledge to different contexts) is seen as actively constructing and then reconstructing one’s ideas. The process involves relating these new experiences to existing concepts which in turn are conditioned by previous experience. Watkins (2003), taking a similar approach, also describes this kind of learning as individual sense making or LIS for short. In contrast to LBT there is therefore no assumption at the outset that the learner is essentially a blank canvas or an empty container into which new knowledge must the programmed. Instead, the starting point is a belief that each individual has partial understanding of the world which s/he brings to every new experience. Thus in one lesson on evaporation for a class of ten-year-olds Galton placed a full glass of water onto a hot radiator at the start of the school day. By the afternoon some of the water had disappeared. To the question, ‘Where has the water gone?’ the pupils offered a variety of answers among which were, ‘You drank it, sir!’, ‘The glass has got bigger’ and ‘Some of the water has escaped into the air’. In this situation, therefore, the teacher needs to find a starting point that takes account of individual pupil differences, unlike the simple information-processing model where a definition of evaporation would be presented to the class either verbally or more probably by means of a demonstration.
One metaphor which has been used to describe the role of the teacher within this constructivist framework is that of ‘teacher as a gardener’ since primary teachers are very fond of horticultural metaphors (Cortazzi, 1991). Successful gardeners are skilled at planting seeds in suitable soil and aiding propagation by a combination of judicious watering and the application of fertiliser. In the same way teachers are seen to foster this process of construction and reconstruction by providing the necessary stimulating environment (soil conditions), offering well-thought-out interventions (judicious watering) and engaging in supportive feedback by way of encouragement (fertiliser application).

Critics of the LIS model argue that an important defect is its lack of attention to cultural influences (Daniels, 2001). If, critics ask, the process simply involves an individual attempting to make sense of the surrounding world why is it that the concepts that pupils with similar cultural backgrounds acquire have so much in common? For example, the notion of creativity in Western countries places a high value on the uniqueness of what is produced, whereas in Pacific Rim countries it pays greater attention to striving for perfection. In one school visited in Hong Kong, for example, the head teacher was a master calligrapher who enjoyed great esteem as an artist. His sole life’s work as an artist consisted of repeated attempts to reproduce a perfect reproduction of the earliest manuscripts of the basic one-thousand characters that constitute the main source of all written communication in the Chinese language.

Socio-cultural contexts in learning

The answer to the above question, according to Bredo (1997), is that all learning is situated within a specific context. In this approach the learner engages in the process of cognitive development within a community as a way of gradually gaining acceptance as a full member of that community (Brown and Campione, 1990; Lave and Wenger, 1999). It extends the notion of reconstruction and construction but in a social context, so that the learner instead of being stimulated solely by the interaction with the environment now does so mainly by engaging in discourse with others who are more knowledgeable (Watkins, 2003). For this reason it is often referred to as social constructivism. One of the best examples of this kind of learning occurs in the training of teachers. There would be few practitioners who would argue that they learnt more from their college courses than they did in working alongside their colleagues during teaching practice. Watkins (2003: 14) terms this form of learning as ‘building knowledge as part of doing things with others’ (LBKO).

The theory that underpins learning as LBKO is derived mainly from the work of the Russian psychologist, Vygotsky. At the heart of this theory, according to Wood (1998: 10) is the role of instruction in human development. One of the best known of Vygotsky’s concepts is the zone of proximal development (ZPD) which he defined as ‘the gap which exists for an individual child between what he is able to do alone and what he can achieve with help from one more knowledgeable or skilled than himself’ (Wood 1998: 26). Robin Alexander
Background: principles of small class teaching

(2001: 425) takes a similar view to that of Wood, quoting Vygotsky’s maxim that ‘the only good teaching is that which outpaces development’. He prefers a different translation of the ZPD which replaces the word *proximal* with either *next* or *potential*, because this emphasises the importance of teachers having high expectations when helping children through the zone (Alexander, 2008b: 11).

More importantly, in the search for simple but useful working models of learning that can be used to fashion certain principles of teaching, Smith (1999: 159) argues that that most viewpoints (whether individual (LIS) or socially constructivist (LBKO)) would agree to the following propositions:

1. Construction is undertaken by learners not teachers.
2. Learners’ constructions make use of available beliefs and expectations in grappling for new ones.
3. Teaching can provide the opportunity for, not the guarantee of, even the transmission of knowledge.

Teachers constructing their own learning of small class teaching

The following illustrates how Hong Kong and Shanghai teachers constructed their learning of constructivism and social constructivism in teachers’ professional development courses in SCT which were taught by Kwok Chan Lai. The teachers, working in groups of three or four, were given a diagram with two circles representing the *teacher* and the *learner*. The task consisted of two parts. First, each group was asked to mark and draw on the diagram to show the role of the teacher and learner as well as their interrelationship in a constructivist classroom. Each group was invited to present their drawing to the class – Figures 2.2 and 2.4 were the presentations from Hong Kong and Shanghai teachers respectively, emphasising the student in charge of his/her own learning and the teacher as the facilitator or guider.

Subsequently each group was asked to re-develop its diagram to depict the relationship between the teacher and learner in a social constructivist classroom. Figure 2.3 shows the work of one Hong Kong group which portrayed the students as a community of learners who are building their knowledge through social tools such as language and play. They were also aware of the importance of teachers designing classroom tasks to attend to the ZPD of the learners. Figure 2.5 shows a drawing by a group of Shanghai teachers, symbolising a social constructivist classroom as a flower with the teacher as the flower centre and the students as interlocking flower petals.

Shayer (1997) agrees that for the purpose of devising an effective strategy of intervention in the classroom, as a means of promoting *cognitive acceleration* in pupils, it makes little sense to distinguish between these different constructivist approaches. Brown and Palincsar (1986: 34–5) also argue that it is a mistake to see Piaget’s ideas about child development in direct opposition to that of
Figure 2.2 A constructivist classroom (by Hong Kong teachers).

Figure 2.3 A social constructivist classroom (by Hong Kong teachers).
Vygotsky. They suggest that the two theories are different ends of a continuum and in support of this view they represent the process of learning as ‘theory change’. Some changes can be brought about by supportive (social) interaction while others can arise out of a situation where new experience conflicts with our existing knowledge producing the necessary degree of cognitive conflict. In a nice and apt description they make the point that at one extreme, that of the
social interactionist, we hold conversations with others whereas at the other extreme of the continuum, that of the lone scientist, we have similar conversations with ourselves. The essential point, however, is that the nature of the discourse is the same or similar in both cases (Brown and Campione, 1994). Thus in seeking to create a simple working model of learning as a process of construction and reconstruction it seems that there is much to be said for combining Watkins’ (2003) two categories, learning as individual sense making (LIS) and learning through building knowledge as part of doing things with others (LBKO).

Learning as developing expertise

When talking about learning, particularly when referring to ways that demonstrate their pupils’ increased understanding, teachers use a variety of descriptions (Entwistle and Smith, 2002). They talk about pupils ‘internalising knowledge and skills’, ‘working out the rules or patterns’, ‘making concrete versus abstract representations’ and ‘organising ideas and reasoning’. Primary teachers, however, more often talk about pupils as ‘independent learners’ or ‘independent thinkers’ and this seems to imply something more than the ability to argue with oneself as suggested by Brown and Palincsar (1986). Patricia Alexander (2004: 10) contends that the study of expertise (and by definition experts must be independent thinkers) in the academic context is a neglected area of research. She argues that the acquisition of knowledge is a core objective for education and that a key aspect in this process is the ways in which individuals move away from a reliance on others for the acquisition of knowledge to a process where they can ‘discover it for themselves’. However, the research into expertise which took place in the 1970s and 1980s was primarily dominated by the notion of ‘artificial intelligence’. The researchers sought to determine the characteristics of expert problem solvers so that these features could be programmed into ‘intelligent machines’ or used to train non-experts. This has limited the application of this research to school settings, partly because in the work on artificial intelligence most attention has been paid to differences between novices and experts and not with the process by which one makes the journey from one extreme to another. Alexander (2004: 12) argues that since students will rarely leave school at 18 as experts in any subject domain it is the process of transformation into experts through the stages of acclimation, competence and proficiency that are most relevant to teachers. At the acclimation stage pupils begin to grasp the elements of strategic knowledge (Shulman, 1986) which help constitute a domain (the forms of legitimate knowledge, what counts as evidence, ways of establishing the validity of a proposition, etc.). But because these pupils lack the ability to distinguish between accurate and inaccurate (or relevant and tangential) information they are hampered in their thinking which therefore operates at a surface level. At the competence stage pupils’ domain knowledge is more comprehensive and principled and a mixture of surface and deep level strategies are used. The final transformation towards proficiency and expertise is marked by
a shift away from these ‘surface level’ thinking strategies towards those which are of a ‘deep processing kind’ and a capacity to engage in problem finding as well as problem solving.

This stress on the importance of situating the development of expertise within the different knowledge domains recognises that academic disciplines are at the centre of formal schooling and that any working theory needs to relate to this ‘unique socio-cultural context’ (Sternberg, 2003). However, cognitive processes by which this expert knowledge is acquired and gradually honed are common and concern what in her earlier writing Patricia Alexander et al. (1991) defined as metacognitive knowledge. To become an independent thinker requires an individual to have knowledge of their own cognitive processes. There are two essential parts to this knowledge one which concerns the development of a repertoire of strategies that can be used when confronted with a problem, and the other which consists of control mechanism that can decide which strategies are likely to lead to success and which to failure. In scientific hypothesising, for example, Alexander et al. (1991) argue that there is a need to develop mechanisms for evaluating different guesses, predicting the best solutions and for developing ways of testing these predictions.

It follows from the previous paragraphs that there is a specific role for teachers in helping children to become ‘metacognitively wise’. Indeed, Robin Alexander (1995: 31) has suggested that one of the key problems that can arise in primary schools when teachers seek to turn children into independent thinkers is the adoption of the maxim that ‘we mustn’t teach, we must let them learn’. Alexander objects strongly to this position:

Underlying this [is a] simple confusion of teaching with telling which can be readily sorted out. Once this is done there is a genuine pedagogical issue: the degree of the teacher’s mediation in the child’s learning. I use mediation as the most neutral term available but of course the linguistic minefield here is a pretty extensive one and many of the other words of common currency carry strong adverse loading – direction, intervention, pushing, interfering, forcing, intruding. The competing imperatives therefore are clear and acute. While ideology dictates a teacher’s role of facilitator and encourager, common sense (not to mention recent classroom research) indicates the benefit for children of powerful interventions by teachers, especially the kind which generate cognitive challenge.

There are some researchers, who while agreeing with Alexander’s proposition that it is important for teachers to present their pupils with situations which challenge existing thinking frameworks, would by inference suggest that the teachers’ role in developing expertise is limited. This is because they view experts as people who are born and not made. Thus both Gardner (1995) in respect to art and music and Noice and Noice (1997) with regard to acting consider natural inherited talent to be the main determinant of expert performance. These writers argue that talent is a key to determining the final level of accomplishment
and also in developing and sustaining interest. However, there are others who contest this proposition, notably Ericsson (1996) who suggests that ‘much of the popular evidence for talent and explicable creativity is based on accounts that cannot be subjected to scientific analysis’. In support of the proposition that expert performers can be studied as ‘an empirical phenomenon’ he cites numerous studies from various domains such as athletics, chess and music to argue that motivation to practise for extended periods and a capacity to acquire from experience the ability ‘to circumvent some basic information-processing limits’ by enhanced ‘anticipation based on predictive advanced cues’ is the key determinant (Ericsson 1996: 43). In applying the discussion to the development of expertise in teaching, Berliner (2002) takes up a position similar to Ericsson and cites Glaser (1996) to argue that about two dozen propositions about expertise are defensible. Among these are the following:

1. Expertise is specific to domains. This concurs with Patricia Alexander’s (2004) proposition that rather than teaching children generalised skills it is important to teach them to think as scientists, historians, creative writers etc. Even where generalised skills are taught (e.g. concept mapping) it is important to use these in different subject domains so as to ensure transfer from one domain to another.

2. Expertise does not develop linearly. At certain times plateaux occur that indicate shifts in the child’s understanding and the stabilisation of certain automatic procedures.

3. Experts structure knowledge more effectively and represent problems in qualitatively different ways to non-expert thinkers. In general their representations are both deeper and richer and they are able to recognise meaningful patterns much faster than others.

4. Experts are also able to impose meaning when confronted by different stimuli. As such they are to be regarded as ‘top-down processors’ whereas non-experts are often misled by the ambiguity imposed by different stimuli and are likely to be bottom-up processors. Experts develop automaticity in their behaviour to allow conscious processing of more complex information. They also develop self-regulatory processes (or executive control) as they engage in these activities.

**Linking learning with teaching**

The above views of learning lead to different models of pedagogy, one which supports the notion of transmission of knowledge and the other which supports the application of that knowledge in ways that demonstrate understanding (Good and Brophy, 2002). Acquisition of procedural skills therefore differs from what is generally meant by the term understanding. Unfortunately, as Howard Gardner and Boix-Mansilla (1994: 199) observe, ‘while most observers would endorse the goal of teaching for understanding there have been only scattered attempts to find what is meant by this phrase’. Leach and Moon (1999) suggest that
teachers tend to regard attempts to teach for understanding as a means of engaging students, sustaining their interest in continuing enquiry and leading them to see larger connections. For Brophy (2004: 40), ‘Students who learn content with understanding not only learn the content itself but appreciate the reasons for learning it and retain it in a form that makes it usable when needed’.

Furthermore, rather than contrast these two approaches in ways that forced earlier generations of teachers to polarise their choice of pedagogy between traditional and progressive teaching, Good and Brophy argue that it makes more sense to regard the two approaches as being complementary, since without the necessarily procedural knowledge and skills pupils will find it difficult to engage in the kind of higher-order cognitive activity out of which understanding and metacognition develops. As used by Brophy, understanding is contrasted with the mastery of content by memorisation through drill and practice. It therefore encompasses the acquisition of skills and procedures in the first strand of Alexander et al.’s (1991) typology.

Teaching as transmission

As we saw earlier, some of the ideas involving information processing have developed by using the analogy of the mind as a digital computer with its central processing unit, its short-term working memory and its long-term storage facility. The human short-term memory is very limited in the number of chunks of information it can hold at any one time. Our success in transferring it to our long-term memory store in a way which allows us to retrieve it from time to time depends on our ability to use certain routines. These routines enable us to encode the information and provide opportunities for repeated rehearsal of these procedures.

It has been shown that only about 40 per cent of material presented in an hour-long lecture is remembered immediately afterwards. After one week this drops to around 17 per cent unless we take steps to slow down the rate of loss. Although in the first years of primary school children tend to use repetition as the main way of retaining information, other more effective strategies (which do more than retain the information in the short-term memory for a few extra seconds) begin to develop by the time children have reached their fourth year in school.

More pertinent to the teaching of primary school pupils is the work of the late Grahame Nuthall and his collaborator Adrienne Alton-Lee, which was referred to earlier. These researchers spent time observing the teaching of certain New Zealand curriculum units in a number of schools. Pupils were pre-tested and then tested immediately after the class session, as soon as the unit had ended. They were then again tested and interviewed 12 months after the unit was originally taught to see how much of it they had remembered. Thus these researchers were able to distinguish between knowledge that was already known before the unit was taught and knowledge that was acquired as a result of
the teaching (incorrect answer on pre-test but correct answer on post-test). In a similar fashion the researchers could also determine what was not learnt during the unit (incorrect answers on both pre- and post-test) and what knowledge was retained over time (correct on both the immediate post-test and again 12 months later). Nuthall and Alton-Lee (1993) found that, typically, item-relevant information or experiences would be retained in the student’s working memory for no longer than two days, unless it could attach itself to other bits of item-relevant information that was already in the working memory, or that had been retrieved from long-term memory during that or the subsequent day. This suggests that a crucial element of the particular pedagogy required when teaching for transmission will concern itself not only with the introduction of new knowledge (the analogy is with the initial programming of a computer) but also with the repeated use of that knowledge either in the form of homework or by recapitulation at the start of the next lesson. Such procedures are incorporated into a teaching approach known as ‘direct instruction’ (Denham and Lieberman, 1986). This approach is not to be confused with the term ‘direct teaching’ which had been used by earlier researchers (Anderson, 1939; Flanders, 1964) to distinguish between teachers who spent most of the lesson lecturing students when imparting information or giving task instructions. This contrasts with ‘indirect teaching’ which involved teachers in questioning pupils and accepting and using their ideas with a degree of warmth and enthusiasm.

Direct instruction arose from attempts to put the theoretical concept of ‘mastery learning’ into practice (Carroll, 1963; Block, 1971; Bloom, 1976). These authors wished to challenge the conventional view of ability (as measured by intelligence tests) as something fixed and largely predetermined so that only some children were capable of learning certain things. Carroll argued that, in principle, any pupil could be taught anything if allowed sufficient time to learn. He expressed this principle in the proposition that the degree of learning was directly proportional to the ratio of time actually spent by a pupil on a task, divided by the time needed by the pupil to master the demands of that task.

Harnischfeger and Wiley (1978) have indicated a number of key components in relation to the time spent on the task. First, successful teachers were accurate in their diagnosis of the pupil performance levels in that they did not teach subject matter which was already known or which was too advanced. Second, high levels of pupil teacher interaction took place concerning the presentation of information, monitoring work and giving feedback about performance. Such interactions usually took place in a class setting. Third, teachers spent time discussing the structure of the lesson prior to introducing new material. Fourth, teachers endorsed a value system which emphasised academic goals and encouraged students to take responsibility in helping each other and in sharing material. These components and the instructional processes outlined in the previous paragraphs can be combined to provide a summary of the direct instruction approach (Rosenshine, 1979):
Background: principles of small class teaching

1. Starts with seat work and recapping the content previously taught.
2. Introduces new work either through teacher instruction or modelling or by demonstration.
3. Makes sure pupils grasp these new ideas by a question and answers session in which the questions are rapid so that interaction and pace is kept high.
4. Practises examples by working first as a class or group and then individually.
5. Looks back at the end of the lesson and reviews the new learning and links it to previous skills and knowledge acquired.

Throughout the 1970s and the 1980s numerous studies of classrooms were undertaken which indicated that direct instruction was very effective when teachers sought to enable pupils to acquire new skills or procedural knowledge (Brophy and Good, 1986), such as when teaching mathematics procedures, English grammar, historical knowledge, map-reading skills, and scientific knowledge and procedures. However, it was also found that direct instruction was less successful when the skills and the knowledge to be taught could not be broken down into explicit steps. Thus areas like mathematical problem-solving, discussing social issues, writing or making a critical analysis of other people’s writings were less successful when direct instruction was used (Rosenshine, 1987). This conclusion is echoed in the advice given to prospective teachers by Desforges (1995: 129): ‘Direct instruction is best used for knowledge transmission, for showing, telling and demonstrating. It is never on its own sufficient to ensure deeper understanding, problem solving, creativity or group work capacities.’

Teaching for understanding

Desforges’ assertion (backed by a wealth of research evidence) that direct instruction is best used for knowledge transmission and is less effective when deeper understanding is required is also reflected in Alton-Lee and Nuthall’s (1998) distinction between the generation of specific knowledge constructs and more generalised generic schema. They argue, for example, specific constructs such as ‘What causes rain?’ or ‘What is an anticyclone?’ are inevitably linked to larger generic schemas about the nature of the physical world. In one example, when a pupil was asked to describe why she thought it was colder at night she replied that it was ‘because when it was cold people might want to have warm clothes and that people on the other side of the world would like a time when they had the sun so that it was much better to sleep when it was dark’. In constructing this response it is clear that the pupil lacked a general schema which included knowledge that the sun is a source of heat and that the earth goes round the sun. Furthermore, she also lacked the metacognitive awareness to be able to recognise that her argument or explanation was inadequate. Understanding involves the application of procedural knowledge in the development of these generic schema or concepts. As discussed earlier at the beginning of the chapter, the process by which conceptual understanding develops, as interpreted by those
who espouse constructivist models of learning, requires the teacher to create a classroom in which ‘thoughtful discourse’ (Brophy 2004: 294) regularly occurs as a means of helping pupils to reconstruct and transform their ideas.

For Howard Gardner (1999: 169) too, understanding also embodies the operation of higher-order cognitive processes beyond information processing since ‘students exhibit understanding when they can invoke ideas flexibly and appropriately to carry our specific analyses, interpretations, or critiques – and especially to perform their understandings with respect to new material’. The idea of viewing understanding as performance is central to Gardner’s position for two main reasons. The first of these stems from the ‘common-sense’ observation that although understanding must involve the ‘assimilation and transformation of knowledge, from the perspective of the teacher and the learner the physical events which occur in the mind or brain are far from transparent and, strictly speaking, irrelevant to their educational missions’ (Gardner 1999: 160). But the second equally important reason for requiring students to perform their understandings is that it challenges ‘traditional ways of doing (or not doing) things’ whereby the teacher is required to ‘look beyond mastery of dictionary definitions or the recitation of textbook examples’. Gardner goes on to suggest that

Focusing on performance immediately marks an important shift: Instead of ‘mastering content,’ one thinks about the reasons why a particular content is being taught and how best to display one’s comprehension of that content in a publicly accessible way. When students realise they will have to apply knowledge and demonstrate insights in a public form, they assume a more active stance vis-à-vis material, seeking to exercise their ‘performance muscles’ whenever possible.

(1999: 161)

However, the capacity to solve problems or critique new material, while it does go some way to predicting growth in a pupil’s understanding, is not always an infallible guide to expert performance. This is because in many cases, such as crosswords, it is possible to solve problems by trial and error once one has an inkling (from past experience) of the compiler’s strategies for setting clues. For this reason other psychologists argue that it is always necessary for pupils to demonstrate their complete understanding in an observable way by making their thinking visible to the audience. This involves verbalising the various strategies used to solve the problem and reflecting on the relative strengths and weaknesses of each approach.

Brophy (1992) has reviewed various programmes designed to teach understanding across a range of subject disciplines. He notes that in attempting to create a suitable classroom climate in which thoughtful discourse can take place these programmes have a number of common features. First, and most important, content is organised around a limited set of powerful ideas in a way that engages students’ interests (Roth, 2002). For example, in a science lesson on sources of energy the teacher first introduced the topic to a class of ten-year-old pupils
with reference to global warming and its consequences. Second, the pupil’s knowledge about the topic is explored and used as the starting point for instruction. In the above example the teacher asked pupils to think about various sources of energy and how they were converted to other forms. This was done by showing pictures of various objects on an overhead projector (a torch, a solar panel on the roof of a house, a car, a wind turbine, etc.). Third, the pupils’ initial ideas are then challenged by allowing them to explore the phenomena in question. Whenever possible this is done through direct, hands-on experience rather than by the use of texts or through the teacher’s narrative descriptions. In the above lesson pupils were provided with a number of simple experiments involving a magnifying glass (to heat paper), tuning forks (which were struck and placed on a tightly stretched string), and batteries and bulbs. Following the practical work the class discussed whether their initial ideas about energy needed to be modified in the light of their experiments.

Cultivating thoughtful discourse

As reported in Brophy (2004), one researcher (Newman, 1992) conducted a survey of several thousand secondary students and asked them what motivated them to take part in class discussions. Most said that discussion worked best when the content of the lesson was authentic in the sense that they could link the ideas involved to their own everyday experience and not necessarily, as is sometimes suggested, that there was a practical outcome. Newman (1990) in an earlier study identified a number of features that characterise thoughtful discussion. The key ones are summarised below:

1 Students generate original and unconventional ideas through the use of open questions which allow a range of possible answers.
2 Students are given plenty of time to think before being required to answer questions.
3 The teacher presses students to explain and justify their assertions rather than accepting them or reinforcing them indiscriminately.
4 The teacher models the characteristics of ‘thoughtful discourse’ in his response to students by showing interest in their ideas and by ‘thinking aloud’ when engaged in problem solving.

The use of open questions has been a long-standing problem in teaching. Edwards and Mercer (1987) offer reasons why this situation persists. Class discussion usually consists of a sequence of what these researchers call ‘cued elicitations’ whereby when a teacher asks a question he or she simultaneously provides clues as to the information required. Thus intended open questions often end up by becoming closed, in that pupils come to accept that although the question allows for many answers there is only one which the teacher really wants from them. Many teachers’ open questions are also often combined with heavy prompts, clues and cues so that in reality the approach does not differ
from direct instruction. This is illustrated in the following extract from a science/music lesson where pupils have to arrange different-sized sticks to produce a simple xylophone:

Teacher: How did I arrange these?
First child: You sort of . . . you put one here, and you put the medium there, and you put the skinny one there, and then you put the other medium there, and then you put the fatso there, and then you put the skinny one there.
Second child: When you listen on there you’ll see what we said.
Teacher: That’s right. But let’s look at these sticks again. Why did I put them this way?
Second child: Because you made a design full of steps.
Teacher: Steps, that’s right. How can you tell they’re steps?
First child: Because one is medium, then the other one’s skinnier, then it gets medium again, then it gets fatter, and then it gets skinnier.
Teacher: Well, there are other types of steps too. Just look at the tops.
First child: It gets fatter.
Teacher: Just a minute. Just look at the tops of these sticks.
First child: But . . .
Teacher: Just look at the very top. What can you tell me about the top?
Second child: Looks like train tracks.
First child: They look like steps on the ends.
Teacher: Very good, like steps; but what can you . . . How can you tell they are like steps? One is . . .
Second child: One is high.

(Budd-Rowe, 1974: 254–5)

Here the teacher repeats the pupils’ answers (‘Steps. That’s right’) offers clues (‘Just look at the top’ repeated three times) and indicates the correct answer (‘One is . . .’). It is clearly not an easy matter for teachers to break away from this pattern of discourse. Indeed, some studies show that teachers are often unaware of how much guidance they give (Galton, 1989: 38). This is because unlike direct instruction where the teacher mostly controls the exchanges, during class discussion pupils are able to manipulate the situation for their own ends. When asked by Galton (1989: 73), pupils offered a range of strategies for avoiding being picked by the teacher to give an answer. They mainly achieved this result by giving an impression that they required more thinking time. Being asked difficult questions was accordingly to one pupil ‘like walking on a tightrope’. Pupils said they often worried lest they lost face with peers in such situations. If they volunteered too many acceptable answers too quickly they could earn the reputation of being a ‘boff’. If they offered too few answers they might be regarded as ‘thick’. It was therefore much safer to persuade teachers to answer their own questions. Thus when faced with a challenge pupils attempted to strike a bargain with the teacher. In return for not attempting to subvert the
discussion (by disruption, joking or attempting to distract the teacher from the topic) pupils expected that in turn the teacher would not expose them to humiliation by forcing them to answer so that they ‘feel silly in front of their friends’ (Galton, 1989: 72). Faced with a new class at the beginning of a new school year a certain amount of this exchange bargaining will take place till each side (pupils and teachers) are reasonably content and a working consensus is established (Pollard, 1985). For this reason open questions are not always the best means of promoting thoughtful discussion. Dillon (1990), for example, argues that sometimes a provocative statement by the teacher can be more effective in producing sustained responses from the class. Other interventions designed to get a pupil to elaborate on his or her initial answer (‘Tell us more about that’ or ‘Perhaps you could think of an example’) or indirect questions (‘Why do you say that?’) are also useful (Dillon, 1990).

**Dialogic teaching**

One attempt to improve this situation has been to promote what Robin Alexander (2008b) terms ‘dialogic teaching’. Alexander argues that the present situation is exacerbated by using such descriptions of classroom discourse as *interactive* whole-class teaching which tends to focus on the organisational aspects of the pedagogy and ‘not what matters most: the quality, dynamics and contents of the talk’. Dialogic teaching is intended to promote a community of inquiry where ‘learning is not a one-way linear communication but a reciprocal process in which ideas are bounced back and forth’ (Alexander, 2008b: 22). For dialogic teaching to be successful it must fulfil the following criteria in that it should be:

1. **Collective**: teachers and children address learning tasks together, whether as a class or as a group.
2. **Reciprocal**: teachers and children listen to each other, share ideas and consider alternative viewpoints.
3. **Supportive**: children can articulate their ideas freely without fear of embarrassment over wrong answers, thereby helping each other to reach common understandings.
4. **Cumulative**: teachers and pupils build on their own and each other’s ideas and chain them into coherent lines of thinking and enquiry.
5. **Purposeful**: in that teachers plan and steer classroom talk with specific educational goals in view.

Dialogic teaching therefore attempts to minimise the use of rote, recitation and instructional talk in favour of discussion and dialogue. In the latter case the teacher and pupils (or group of pupils) achieve common understandings through structured and cumulative questionings which ‘guide and prompt, reduce choices, minimise risk and error and expedite handover of concepts and principles’ (Alexander 2008b: 34). For this to happen requires that pupils acquire what
Alexander terms *a repertoire of learning talk*, most of which has been shown to correlate positively with effective discussion within collaborative group structures (Webb, 1989). This includes the ability to explain, to argue cases, to give reasons to back up assertions and to arrive at conclusions through negotiation rather than through majority decisions (Webb and Mastergeorge, 2003). Alexander argues that in order to engage in such dialogue pupils must be taught this repertoire of *talk* skills and this is supported by research (Kagan, 1988). Alexander also suggests it is better to concentrate on the first of his three principles (collectivity, reciprocity and support) in the initial stages since accumulation also requires teachers to restructure and re-sequence subject matter in ways that allow them to ‘scaffold pupils’ thinking from present to desired understanding’ (Alexander, 2008b: 45).

Mercer et al. (1999) also concur that it is necessary to train children in order to promote what they term *exploratory* talk, which is very similar in its conception to Alexander’s notion of dialogic talk. These researchers have offered empirical evidence that inducting children into an explicit collaborative style of reasoning within discussion has led to improvement in scores on tests of non-verbal reasoning Mercer et al. (2004). Their study of talk in primary science lessons supports the view that training in these talk skills is required in order to promote effective discussion. Mercer and colleagues note that children may get little experience of such talk ‘in their lives out of school’ and that teachers ‘rarely make their own expectations or criteria for effective discussion explicit to children’. As a result children are rarely offered guidance and training in how to communicate effectively in groups. According to Mercer et al., even when the aim of talk is made explicit, for example they are told to ‘talk together to decide’ or to ‘Discuss this in your group’, there may be ‘no real understanding of *how* to talk together or for *what* purpose’ (Mercer et al., 2004: 361).

Among the guiding principles used for training pupils to engage in exploratory talk were the following:

1. All relevant information is shared.
2. All members of the group are invited to contribute.
3. Opinions and ideas are respected and considered.
4. Everyone is asked to make their reasons clear.
5. Challenges and alternatives are made explicit and are negotiated.
6. The group seeks to reach agreement before taking a decision or acting.

After training Mercer et al. (2004) were able to show that the quality of the talk improved. There were nearly four times as many uses of words such as *because, I think*, etc., and nearly 50 times as many sustained utterances (defined as exceeding 100 characters).

**The use of suitable wait times**

The second key element in promoting ‘thoughtful discourse’ is for the teacher to use suitable wait times. Some researchers prefer the use of the term ‘reflection time’
or ‘thinking time’ since it implies more active participation. But the term initially referred to the amount of time children were given to answer a question. One of the earliest studies by Rowe (1986) was able to record two kinds of wait time:

**Teacher:** How would you measure the time if you didn’t have a watch? *(Pause for first wait time)*

**Pupil:** I would use the sun.

**Teacher:** *(Pause for second wait time)* That’s an interesting answer. Can you say a little more about how you would use the sun?

Rowe found that in a classroom where pupils rarely answered questions wait times were extremely short (less than three seconds). Moreover, slower learners were given the least time to answer, presumably because the teacher wished to save these pupils from any embarrassment in front of their peers, and because s/he did not anticipate they would be able to respond in a useful way. The second wait time was particularly important because teachers would frequently repeat the first answer that the pupils gave, thereby indicating approval, or else go on to ask someone else, thereby indicating the first answer was not the one required or anticipated.

Biggs (1994) suggests that pupils in Chinese classrooms should be more willing to participate in classroom discussion because of the nature of children’s attributions when faced with difficulties with their learning. Whereas children in the West tend to attribute failure to learn to a lack of ability those in the East are more likely to put their failure down to lack of effort. Hence there is more willingness to accept help from others rather than regarding those who answer questions as ‘boffs’. Nevertheless, as in English primary classrooms, thinking time may be best achieved initially by asking children to discuss the questions with their neighbour or in small groups. In class discussion teachers should try to eliminate the kinds of responses identified by Alexander (2008b) which lead pupils either to give short unelaborated answers or to attempt to remain silent by pretending that they are still thinking about a response. These include summarising, repeating or reformulating the pupil’s answer or exhorting pupils to remember what was said or done earlier.

**Explaining why as well as how**

The third key element in teaching for understanding requires the teacher to encourage explanations and elaborations of answers. Here again from the analysis of classroom discourse in five cultures, Robin Alexander (2001) demonstrates that teachers are not good models in this respect. Classroom practitioners rarely justify their decisions in class nor do they attempt to situate the learning in a wider context by telling pupils, as in a previous example, how the conversion of energy from one form to another relates to global warming and the survival of the planet. Correct forms of speech should be encouraged. In Hong Kong and in some English-language classes, for example, teachers now provide cue
cards on which words such as ‘because’ are printed and the class have a rule that any statement or suggestion must be followed by using one of the words on the cue cards to make a sentence. However, in most lessons, because it is rare for pupils to explain or elaborate in response to teachers’ questions during present patterns of classroom discourse, it is clearly necessary to offer training to pupils and to couple this with subsequent debriefing during which pupils have an opportunity to evaluate the quality of their responses.

A teaching framework for developing understanding

In considering teaching for transmission it was possible to produce a sequence of specific classroom practices (questioning, instruction, practice, etc.) which combined to form a specific pedagogic approach known as direct instruction. It is now possible to do something similar in relation to teaching for understanding although the descriptions are naturally more generalised, because to say that a pupil understands something implies a number of possibilities. Brophy (2004: 41) refers to the statements as key features which characterise the conditions for promoting understanding rather than indicating a set of sequential actions, as in the case of the direct instruction. In other words, if these features are not present it is unlikely that understanding will develop. These key features are set out below. Although the wording of the six key principles used in the SCT study do not exactly match Brophy’s (1992) ten features they are the practical interpretation of them and follow from the earlier extended discussion of Brophy’s ideas:

1. Pupil exploration will usually precede formal presentation. [Used in the study but not incorporated in the six principles. It relates to beginning lessons with a class discussion rather than immediate instruction. It also relates to increasing pupil participation.]
2. Pupils’ questions and comments often determine the focus of classroom discourse. [Second key principle concerning extended questioning.]
3. There is a high proportion of pupil talk, much of it occurring between pupils. So that the metaphor ‘teacher as a listener’ and ‘guide on the side’ rather than as a ‘sage on the stage’ are characteristic of the lesson. [Third key principle concerning increased pupil participation and also fourth principle since Brophy argues this should often be done through the use of group work.]
4. The lesson requires pupils to reflect critically on the procedures and the methods they used. [Fifth and sixth principles involving feedback which is informative (i.e. discusses procedures used rather than supplying correct answers) and also assessment for learning which requires pupils to assess the value of using different approaches. Brophy elaborates on these as an aid to metacognition.]
5. Whenever possible what is learned is related to the pupils’ lives outside school. [Again not specified as a principle but teachers have been encouraged to situate work in local contexts.]
Background: principles of small class teaching

6 Pupils are encouraged to use a variety of means and media to communicate their ideas. [Stems from Howard Gardner’s notion of multiple intelligences and teachers have been encouraged to use practical applications using a variety of materials whenever appropriate.]

7 Content to be taught is organised around a limited set of powerful ideas. [Brophy argues this is best done at the start of a lesson using advanced organisers, the first key principle.]

8 Teachers structure tasks in ways which limit the complexity involved. [This refers to scaffolding tasks.]

9 Higher-order thinking is developed within the context of the curriculum and not taught as a discrete set of skills within a separate course unit. [This argues for a holistic approach and not using specific thinking skill packages. We have adopted the former approach.]

10 The classroom ethos encourages pupils to offer speculative answers to challenging questions without fearing failure. [Tries to put less emphasis on getting the right answer and relates to the use of praise to reward ‘smartness’ rather than for correct answers. Thus teachers have been encouraged to praise effort when there is evidence that pupils have thought hard about their answers.]

These ten key features relate closely to the theoretical principles that view learning as a process of construction and reconstruction as distinct from information processing. The first feature, indicating that exploration of the pupils’ ideas should usually precede the teachers’ formal presentation of new information, and the second concerning the use of these ideas to focus subsequent discussion, stems from the constructivist viewpoint that children are not empty vessels into which knowledge is poured. Thus even in the case of a most abstract concept the pupils are likely to have partial, if incorrect, understandings on which the teacher must build. The third proposition regarding pupil talk and ‘teacher as a listener’ contrasts with the balance of classroom talk during direct instruction. The third key feature also implies that co-operative learning involving pair and group work will be a frequently used strategy.

The fourth key feature is about developing ‘metacognitive awareness’ and marks the beginnings of the process where pupils learn to become independent thinkers. This is the third strand of Patricia Alexander et al.’s (1991) knowledge typology. The fifth characteristic addresses the question of authenticity in support of the proposition that learning is more meaningful when it can be situated in contexts with which pupils can readily identify (Putnam and Borko, 1997). The use of a variety of means and media to promote understanding (sixth key feature) stems from Howard Gardner’s (1983) theory of multiple intelligences. Gardner argues on the basis of his theory that concepts can be well understood only if pupils can represent its core features in several ways. Thus it is desirable that multiple modes of representation draw on a number of intelligences. For Gardner this is not simply a case of ensuring that there are sufficient representations to cover different pupils’ intellectual strengths but more importantly to demonstrate the ‘intricacy’ of the subject matter:
This tack is more than a ‘smorgasbord’ approach to education – throw enough proverbial matter at students, and some of it will hit the mind or brain and stick. The theory of multiple intelligences provides an opportunity to transcend mere variation and selection. It is possible to examine a topic in detail, to determine which intelligences, which analogies and which examples are most likely to capture important aspects of the topic and to reach a significant number of students.

(Gardner, 1999: 176)

The seventh feature is related to the need for teachers to capture the pupils’ interest, thereby, hopefully, motivating them to learn. But an added bonus in adopting this approach is that the learning can lead to a transformative experience, in that it does more than add to the store of the student’s knowledge but ‘enables him or her to see some aspect of the world in a new way’ (Brophy 2004: 267). It follows from this that it is important, initially, to structure the task (eighth key feature) so that the student doesn’t feel that it is too demanding. This process is generally referred to as ‘scaffolding’.

The ninth key feature contrasts with the approach which seeks to promote structured thinking skills programmes. The argument here concerns the well know problem of ‘transfer’ of learning (Salomon and Perkins, 1989) where students often find it problematic to apply the skills learned in one subject domain to another. On the other hand, McGuinness (1999: 7–8) argues that when thinking skills are taught within subjects there is a danger that ‘they may get lost in the midst of subject knowledge-based teaching and pupils may fail to see the connections between similar types of thinking in different subjects’. For this reason McGuinness suggests a compromise or ‘middle way’ whereby ‘contexts are first identified within the curriculum where particular thinking skills can be developed’. Lessons are then developed where ‘thinking skills and topic understanding are explicitly and simultaneously pursued’.

The final key feature concerns the creating of classrooms as ‘learning communities’ (Watkins, 2005). In learning communities, according to Watkins, pupils equate learning with effort and not ability, promote disciplined discourse, and share responsibility for ‘knowing what needs to be known and ensuring that others know what needs to be known’ (Watkins, 2005: 56). The result is that learning is richer and knowledge is co-constructed. To this end Watkins quotes a conversation with two 11-year-old pupils:

Even if you learn something perfectly or are a pioneer in your area, all your work is useless if nobody else can understand you. You might as well have done no work at all. The point of learning is to share it with others. Lone learning is not enough.

(Watkins, 2005: 57)

For the Hong Kong study of SCT, of which more will be said later, Brophy’s ten key features were further distilled into six key principles and it is these which
Background: principles of small class teaching

form the framework for this book. They are displayed in Figure 2.6 and can be briefly stated as follows:

- The first principle requires setting objectives such that they are not only concerned with the content to be taught but also emphasise the thinking processes the lesson is intended to enhance.
- The second principle concerns improvement in the quality of the questioning between teachers and pupils during whole-class discussion.
- The third principle promotes co-operative learning through increased peer interaction.
- The fourth principle encourages active participation of pupils in the learning process in ways that require them to construct a framework to accommodate what they have newly learned while assimilating previously required knowledge within this revised schema.
- The fifth principle is based on extensive research (Hattie and Timperley, 2007) which suggests that, in general, corrective feedback (showing pupils their errors and demonstrating how to get the right answer) is less effective than evaluative feedback where the pupil is helped to identify their own mistakes and to suggest ways of remedying them.
- The sixth principle concerns assessment for learning and involves greater use of formative forms of assessment, particularly those where judgements rely on oral exchanges between teachers and pupils rather than written assignments.

The principles are intended as guides and are not to be adopted slavishly. Indeed the emphasis of a particular principle in the course of a lesson will depend

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**Figure 2.6** The six principles of SCT.
on the kind of knowledge that the teacher is seeking to impart. That is why the first of our key principles involves the use of an ‘advanced organiser’ to encourage teachers to identify the different kinds of knowledge demands they make of their students. Thus it is not so much a polarity between the use of direct instruction and the use of thoughtful discourse in the pursuit of understanding but a judicious blend of both teaching approaches that are the mark of an effective classroom. In the following chapters we will go on to consider each of the six principles in turn and to discuss with examples how they may be put into practice.
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Part II

Application of six principles to small class practice
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3 Setting objectives, asking and answering questions

In this chapter we first emphasise that identifying learning goals or setting clear objectives is the key to effective teaching and learning, and these goals should not merely be content-based, but consider students’ thinking process. We then examine the pattern of questioning which typically takes place in most primary classrooms. Research shows that most teachers’ questions are designed either to elicit information or find out whether pupils have followed instructions. Teachers rarely allow pupils time to think before pressing for an answer. As a result there is very little extended discussion in which pupils not only answer questions but ask them. The chapter explores the reasons for this state of affairs and suggests various strategies for promoting thoughtful discourse.

The importance of identifying learning goals

It is essential for teachers to identify their learning goals when sitting down to plan the lesson. The prime purpose is not for satisfying the administrative or course requirements of their principals or college supervisors, but for establishing a direction to guide learning of their students. As Dean et al. (2012: 3) elaborate:

When teachers communicate objectives for student learning, students can see more easily the connections between what they are doing in class and what they are supposed to learn. They can gauge their starting point in relation to the learning objectives and determine what they need to pay attention to and where they might need help from the teacher or others. This clarity decreases anxiety about their ability to succeed. In addition students build intrinsic motivation when they set personal learning objectives.

Usually when asked to specify lesson objectives teachers do so in terms of content. For example a teacher might write the objective as ‘to learn how to count to 200 in tens’ or ‘learn the names of the main people in the story of the proud man’ or to ‘trace with the finger the Chinese characters depicting strength (強壯)’, to name but three examples. It is rare that in specifying such objectives the teacher will consider the purposes for which this content is being
taught. It may be that counting in tens is to speed up the process of certain calculations or that the names of the people in the story are a prelude to an activity requiring pupils to identify aspects of the various individuals’ character and that learning to trace the character is to be used to identify certain combinations in a story which all have connections with human behaviour. A major disadvantage of restricting learning objectives to specifying content to be learned is it creates a mindset that associates content with a transmission mode and so reinforces the tendency to devise a lesson where for the most part teachers talk and pupils listen. As Frey and Fisher (2011: 17) note, besides outlining the content of what will be learned a lesson’s purpose should also lay out ‘the learner’s role in what will be accomplished, and the expectations for the interactions’.

Back in the 1960s there were various attempts to devise taxonomies of objectives which attempted to identify the nature of the learning and put this in some hierarchical listing ranging from the least to the most complex functioning of the mind. The most famous of these was constructed by Benjamin Bloom (1971). For our purposes the taxonomy is too detailed so it has been reduced to three main levels which are shown below:

**Low level (transmission):** to recall, define, identify, state, recognise, name, list, measure

**Medium level (application):** to use, show, perform, explain, illustrate, predict, interpret

**Higher level (understanding/self-regulation):** to classify, design, organise, compose, discover, summarise, conclude, separate

The important shift to note is that each level is defined by *action* or *doing* words so that unlike the earlier examples of content-based objectives it suggests that the process involves some form of active pupil participation rather than just listening while the teacher talks or demonstrates.

Anderson and Krathwohl (2001) expanded Bloom’s taxonomy from one-dimension to two, postulating a matrix of depth of knowledge by cognitive actions. The former defines the four levels of knowledge as factual, conceptual, procedural and metacognitive, while the latter identifies six categories of cognitive processes – remembering, understanding, applying, analysing, evaluating and creating. Irrespective of differences in terminology between different taxonomies, they remind teachers about the distinction between lower- and higher-level thinking processes.

In Chapter 2, we contended that all learning is situated within a specific context. Children also learn by relating new experience to their prior experiences. Hence teachers have to take into account the classroom context (including class size, space and time) as well as the needs or prior knowledge of the students when setting the learning goals (Russell and Airasian, 2012). In this regard, it is normal for learning objectives to differ across classes or schools even if teachers are each planning a lesson on the same topic at the same grade level.
There are plenty of references to guide teachers stating and constructing instructional or teaching objectives (Gagne et al, 2005; Gronlund and Brookhart, 2009; Dean et al., 2012; Russell and Airasian, 2012), and we do not intend to cover them in this book. Nevertheless, there are two important considerations that emerge from this body of literature that are important in relation to the six principles. The first concerns the need to look beyond the specific context when setting the objective so that what is learned can be applied to other situations. For example, consider the earlier stated objective, ‘to count up to 200 in tens’. If we set this as the learning goal then it is highly likely that most pupils will be able to do this after one or two lessons. However, the real purpose of the teaching is presumably for pupils to learn how to manipulate combinations of numbers to speed up the process of calculation and not just to carry out this particular exercise. Wiliam (2011: 60–1) calls the above a confused learning objective and argues that when writing objectives teachers should first separate the objective from the context. As an example, he suggests that a confused learning objective such as ‘To be able to write instructions on how to change a bicycle tyre’ be clarified so that the learning goal becomes ‘To be able to write clear instructions’ and the context of learning then becomes ‘changing a bicycle tyre’. Clarke’s (2008) example has the same learning goal but a different context: to make a box guitar. When teachers engage in this way they shift the focus of their teaching from the transmission of new knowledge to an understanding of how to apply such knowledge in a variety of circumstances; that is to teach for understanding and all that this implies in fostering thoughtful discourse.

The second important point to emerge from the literature on objectives concerns the translation of the objective in ways that enable students to know what they need to do in order to achieve the stated learning goal. Defining success criteria, according to Clarke (2008: 92), starts by the teacher setting out the basic framework but then elaborating on this in discussion with the pupils. Clarke argues that if this is not done then it is likely that the statements will ‘have little meaning for many pupils’ and therefore ‘less impact on their learning’. Clarke also insists that the criteria should be applicable to all pupils in the class and that ‘differentiation should be sought via the amount of support provided within the activity’. For example, for the above learning objective: To be able to write a clear set of instructions, Clarke describes a lesson where the teacher showed ten-year-old pupils examples of work from the previous year. These were graded ‘very good’, ‘good’ and ‘average’. Pupils were then asked to discuss in pairs the criteria used by the teacher in judging success and came up with a list which included the following elements (Clarke, 2008: 105):

- A [relevant] title
- What you need
- How to make [i.e. what has to be done]
- [Clear] diagrams
- [Use of] bullet points
Time connectives [i.e. indicators of the sequence of actions (e.g. next, then, at the same time etc.)]

For the lesson pupils had to write out a set of instructions for making a box guitar. They then had to attempt to make the instrument by following their partner’s instructions. The teacher recorded that ‘The lesson was extremely successful and the children produced the best set of instructions they had all year’. Clarke (2008: 110–11) provides many examples of other learning objectives, such as writing balanced and persuasive arguments, and shows that over time a broad list of what she terms generic success criteria can be built up so that the need to devote a considerable part of a lesson to indentifying suitable criteria (as in the above box guitar example) diminishes with time. In mathematics a similar exercise in learning to solve mathematical word problems produced the following set of agreed criteria:

- Read the question at least twice
- Underline key words
- Decide which operation to use
- Estimate the answer
- Choose a method (mental, pencil and paper, calculator)
- Do calculation, interpret answer and include any units (kg, cm etc.)
- Check the answer.

The process of establishing suitable success criteria is particularly valuable when considering two of the six principles to do with giving feedback and assessment for learning. This is because it marks a shift in pedagogy from teaching for understanding, with its emphasis on thoughtful discourse to that of teaching for independent learning where pupils gain the capacity to work things out for themselves with minimal support from their teacher or peers. As one eight-year-old pupil, recorded by Clarke (2008: 92) said: ‘I think success criteria help me because I know what I need to do and what I need to do to improve my own work.’

Setting objectives in the affective domain

Most of this book explores the cognitive benefits which can result from reducing class size. However, in the final chapter we look at the other advantages which arise in what is referred to as the affective domain. This domain covers a range of social emotional responses which range from dispositions to behave in certain ways (attitudes) to motivational factors influencing learning such as self-esteem, self-efficacy and the like. In the same way that it proved possible to reduce the cognitive objectives to three broad levels, so too a similar classification is possible in the affective domain. In its original form five broad levels were identified (Krathwohl et al., 1964) but for our purposes the first three are most relevant to small class teaching (SCT). These are set out below, together with the action
words that describe the relevant behaviour associated with the sub-set of the domain.

*Receiving (awareness)*: asks, identifies, locates, points to, names, clarifies.  
*Responding (commitment)*: helps, performs, reports, practises, volunteers, questions.  
*Valuing (consolidation)*: initiates, invites, joins, persuades, shares, explains.

The first level describes the situation where the student is *aware* of certain ideas, materials and procedures and is prepared to tolerate them without having a strong disposition to act as a result of acquiring this information. For example, in seeking to create a harmonious classroom environment a teacher might discuss and establish with the pupils a set of ‘rules’ which includes such items as ‘We listen when the teacher or another pupil is talking’ and ‘We put our hand up when we wish to ask or answer a question’. At the awareness stage a pupil may be able to repeat these rules when asked to do so but retains an open mind as to their value. However, at the next level the same pupil comes to regard the rules as valuable, preferring the situation where they are in force to the laissez-faire alternative where other pupils shout out their answers instead of waiting their turn. His commitment to the classroom rules therefore strengthens. At the final level this commitment is consolidated to the point where the pupil not only values the rules himself but seeks to persuade other pupils to behave in a similar way.

Assessing affective outcomes can be difficult. It is sometimes possible to use simple questionnaires for this purpose, but for the most part it is by monitoring pupils’ behaviour that teachers can determine the levels of the pupils’ affective response and smaller classes clearly make this easier to do. All sorts of responses, such as completing homework on time, bringing the correct equipment to school, willingness to present their work to the rest of the class and general attentiveness, can offer valuable clues. However, it is important for the teacher not to jump to conclusions on the basis of one or two incidents, particularly when these are of the negative kind, but as we will suggest in the final chapter to try to understand the motivation which lies behind such behaviour. For example, Rudduck and Flutter (2004) describe a situation in an English primary school where there was a strong anti-learning culture among a group of boys. Not belonging to this group could have severe consequences ranging from being ostracised at play times and regarded as a ‘swot’ (a teacher’s pet or in American jargon an ‘apple polisher’) to being physically and verbally bullied. One pupil decided he wished to reform but feared the consequences of so doing. He decided therefore to behave sufficiently badly in class so that his teacher was forced to send him to detention after school. There he was supervised doing homework. In this way he was able to improve his academic performance but at the same time retain his relationship with his male peers who thought that he was only completing the homework because he was forced to do so during detention and not because he had become more committed to school, the teachers and to learning. Attitudes are always conditioned by social contexts so
Application of six principles to small class practice

that it does not always follow that they result in appropriate forms of behaviour. Although the above example may be judged to be an extreme one, in the context of Asian classrooms, teachers, everywhere, always need to exercise care when interpreting behaviour as an indicator of attitudinal dispositions. We will return to this issue in the final chapter.

In the above sections, therefore, we have emphasised that learning is the prime consideration in lesson planning, and teachers need to promote the learners’ active role in the classroom to achieve the intended learning goals and secure positive attitudes. In the following section, we will elaborate on how this can be achieved through teachers engaging students in thoughtful discourse through the use of appropriate questioning techniques.

Asking pupils questions

Reviews on the topic of teachers’ classroom questioning report that in a single day teachers can ask around 400 questions (Leven and Long, 1981; Wilen and Clegg, 1986) and this takes up about 20 per cent of lesson time. On the other hand, these reviews found that the pupils rarely asked questions of the teacher. Most of the questions that teachers asked were designed to check that pupils had retained the knowledge previously taught or could demonstrate newly acquired skills. This generally occurs either at the beginning of a lesson when the teacher is seeking to find out if children have remembered what was taught in the previous one or as part of what is called ‘direct instruction’ where having introduced new ideas or information either through instruction, modelling or demonstration the teacher then attempts to make sure that the pupils have grasped these ideas by initiating a question and answer session.

In such cases the exchanges between the teacher and the pupil tend to be very brief. Consider for example an English lesson to nine-year-old pupils in a P4 (Primary 4) Hong Kong classroom, where the topic being taught involved shopping. In an effort to interest pupils in the topic the teacher began by asking the children about what shops they liked. The following exchanges took place:

Teacher: Which shops do you like best?
1st pupil: Toy shops
Teacher: Toy shops. How about you?
2nd pupil: I like toy shops
Teacher: Anyone else?
3rd pupil: Cake shops
Teacher: Cakes yes which ones?
3rd pupil: Custard tarts
Teacher: What about you (points to another pupil)?
4th pupil: I like cake shops.
Teacher: And you do you like custard tarts too?
4th pupil: Yes
We can notice certain common characteristics in this question and answer sequence which took less than half a minute to complete. First of all, the teacher tended to repeat an answer so when the first pupil says ‘toy shops’ the teacher repeats ‘toy shops’. Second, the questioning was fairly rapid. The teacher asked six questions so that, on average, each question and answer sequence took around five seconds. Having asked the first pupil the teacher immediately moves onto another without following up the initial answer so that there must have been barely any pause between the teacher asking the question of another pupil after having the previous pupil respond. Thus the sequence follows a pattern which is repeated over and over again:

**Teacher:** asks question of first pupil (brief pause)

**1st pupil:** answers question (brief pause)

**Teacher:** repeats first pupil’s answer and asks another pupil the same or similar question (brief pause)

**2nd pupil:** answers question

Sometimes the alternative scenario presents itself when a pupil is uncertain of an answer.

**2nd pupil:** hesitates (brief pause)

**Teacher:** asks another pupil

This style of questioning is very common in most classes across the world both in the Eastern and in the Western hemispheres. These kinds of exchanges consist of what has been described as the IRF (initiation–response–feedback) sequence which tends to give rise to what other researchers have named cued elicitations (Edwards and Mercer, 1987). The previous example concerning shopping is illustrative of this strategy in that when the first pupil says that he likes toy shops the teacher immediately repeats that answer indicating not only to the first pupil but all the other pupils that this is an acceptable response. For this reason other pupils are likely to offer the same or similar answer so that when the first pupil says he likes toy shops, the second pupil says he also likes toy shops and the pattern is repeated with the third and fourth pupils’ responses. In this form of questioning, teachers tend to reformulate answers, provide prompts or clues in order to indicate to pupils which answers are acceptable and which are not.

One consequence of this type of questioning is that it tends to encourage avoidance by some pupils who may be worried if they do not give an answer that the teacher wants. This was well illustrated in a conversation which Galton (1989: 126) held with a group of ten-year-olds around his question, ‘What do you feel like when the teacher asks you a question?’ These pupils replied as follows:

**1st pupil:** It’s like walking on a tightrope.

**2nd pupil:** We guess.

**1st pupil:** And then we get found out and you don’t know the answer.

**3rd pupil:** Then you wait until the teacher tells you and then you say oh yes that’s it.
Pupils appear to go to extraordinary lengths to save face in front of the teacher and other children in the class during these question-and-answer sessions. In the same interview pupils told Galton that when a teacher asks the questions early in the exchanges all pupils will put up their hands because ‘if we don’t the teacher will ask us’. However, they then take their hand down again and pretend to be thinking of a good answer because ‘if you don’t answer at once the teacher will pass on to someone else’. This is what happened in the second scenario presented in the previous paragraph. Moreover, as Edwards and Westgate (1994: 144) argue this form of teacher–pupil discourse is, in effect, a process of socialisation whereby pupils are inducted into the predetermined culture of education, knowledge and practice rather than being provided with opportunities for the development of their own individual cognitions.

There are clearly situations where this form of pupil interrogation is acceptable, as was pointed out earlier when the teacher wishes to check on what has been remembered from the previous lesson. But when the object is to develop pupils’ understanding (as described in Chapter 2), the aim of the teacher is to promote a more thoughtful form of discourse so that pupils can engage in the process of both construction of new ideas and the reconstruction of existing ones.

### Categorising types of questions

In helping teachers to formulate a wide variety of questioning it is sometimes a useful strategy to consider the nature of the objectives or learning goals which the teacher intends to accomplish during the course of the lesson. As argued in a previous paragraph, this tendency to specify objectives in terms of the outcomes to be achieved rather than the processes involved in reaching these outcomes tends to emphasise the teacher’s role as a transmitter of knowledge rather than encourage the kinds of exchanges which require pupils to construct and reconstruct knowledge. It is helpful therefore if teachers, when writing lesson plans, not only specify the outcomes it is hoped to achieve but also specify the key action words by which these outcomes will be realised. In the earlier three-stage hierarchic representation, low-level objectives, as has been suggested, tend to be associated with transmission models of teaching. The aim is for pupils to be able to recall, define, identify, recognise, list or measure various outcomes so that they mainly refer to the acquisition of new knowledge or skills. Medium-level objectives refer to the application of this knowledge and the kinds of language which describe such purposes are action words such as ‘to use’, ‘to show’, ‘to perform’, ‘to explain’, ‘to predict’ or ‘to interpret’. At this level pupils are required to apply their knowledge in ways which may require them to reconstruct what they already know.

The third and highest level relates not only to understanding but to self-regulation where pupils are able to work things out for themselves without adult help. This requires pupils to develop new schema or extend or reorganise existing ones, which includes not only the new learning but accommodates the old. According to Brophy (2004: 40), ‘Students who learn content with
understanding not only learn the content itself but appreciate the reasons for learning it in a form that makes it usable when needed.’ Howard Gardner (1999: 169), he who developed the theory of multiple intelligences, suggests that understanding refers to the operation of higher-order cognitive processes which go beyond information processing since ‘students exhibit understanding when they can invoke ideas flexibly and appropriately to carry out a specific analysis, interpretations or critiques and (this is emphasised) especially to perform their understanding with respect to new material’. As we saw (page 43) the idea of viewing understanding as performance is key to Gardner’s thinking and the reasons are worth repeating. The first of these reasons stems from the common-sense observation that although understanding must involve the assimilation and transformation of knowledge from the perspective of the teacher and the learner the physical events which occur in the mind or brain are far from transparent and are strictly speaking irrelevant to their educational missions (Gardner 1999: 160). The second and equally important reason for requiring students perform their understanding is that it challenges ‘traditional ways of doing (or not doing) things whereby the teacher is required to look beyond the mastery of the dictionary definition or recitation of text book examples’. Gardner suggests: ‘focusing on performance immediately marks an important shift: instead of mastering content one thinks about the reasons why a particular content is being taught and how best to display ones comprehension of that content in a publicly accessible way. When students realise they will have to apply knowledge and demonstrate insights in a public form they assume a more active stance vis-à-vis material seeking to exercise their performance muscles whenever possible’ (1999: 161). The action words which describe such processes are those such as ‘classify’, ‘design’, ‘organise’, ‘compose’, ‘discover’ ‘summarise’, ‘identify’, ‘conclude’ and ‘separate’. This in turn can lead the teacher to think about the kinds of questions which are required to test for recall, application and understanding. At the lower level, pupils may be asked to give an example so that the questions are of the kind ‘what’, ‘when’, ‘who’ and ‘define’. At the application stage questions might ask students to compare, reorder, rephrase, explain, extend or to distinguish between different examples or to choose between or to ask how you would perform a certain task. At the third and higher level students can be asked to describe, to think of a way, to propose, to put together, to choose or to judge. Such an analysis can be vital not only in helping teachers to formulate the kinds of questions that they wish to ask, in order to determine how well the student has mastered these learning objectives, but there is also a clear hierarchy in that as the learning objectives become more complex and move from the low to the high level then the teaching moves from using strategies such as teacher-talk and demonstration, designed to master transmission, to the kinds of more complex questions and classroom discussion, which help children to construct new understandings and to reconstruct old ones, to the final point where they become independent in their learning and acquire strategies whereby they can solve problems and develop their creative capacities. At this ultimate stage they are able to conduct an internal dialogue in which they both pose questions and
offer tentative answers. This is what we mean by such terms as self-regulation and independent learning.

**Extending questioning**

Consider for example how the teacher might have conducted the early exchange on shops at the beginning of the chapter with the aim of promoting thoughtful discourse:

> **Teacher:** Which shops do you like best?
> **1st pupil:** Toy shops
> **Teacher:** Why do you say that?
> **1st pupil:** Because it’s fun to play with toys
> **Teacher:** Anyone else has something to add?
> **2nd pupil:** Toys are fun
> **Teacher:** Can you say more?
> **2nd pupil:** You can play toys with friends.
> **Teacher:** Any other views?
> **3rd pupil:** I like cake shops
> **Teacher:** Go on
> **3rd pupil:** Yes, I like custard tarts

Here the teacher does not close down the exchange with the pupil by repeating the answer but seeks to extend the conversation by encouraging the pupil to ‘Can you say more?’, ‘Go on’ and so forth. Follow-up questions such as ‘Please explain’, ‘Can you say more?’ and ‘Any other views?’ are all designed to make the pupil think and explain their reasoning so here in this exchange there are several reasons offered for liking toy shops such as ‘Toys are fun’ to have and also because they help pupils to socialise by sharing with their friends. These kinds of exchanges lead to what Robin Alexander has called ‘dialogic teaching’. As was discussed in some detail in Chapter 2 (p. 46) Alexander’s notion of dialogic teaching is designed to promote a ‘community of enquiry’ in which ideas are ‘bounced back and forth’ between the teacher and the pupils. The use of the term, ‘dialogic’ stems from the dialogues of the ancient Greek philosopher, Socrates (469–399 BC), whose approach was to pose questions which constantly challenged the judgments of others in order to seek a more general or universal truth. Initially, the philosopher asked his students questions designed to show the contradictions and inadequacies of their opinions. This is equivalent in the constructivist process to the stage where a person experiences ‘cognitive conflict’. At this point, Socrates’ line of questioning changes direction. His purpose is now to assist the student in resolving this conflict by helping him to accommodate these new ideas within his existing knowledge base.

A similar approach was employed by the Chinese teacher and sage, Confucius (51–479 BC). Like Socrates, Confucius is thought to have left it to others to
write down his thoughts and conversations with his disciples. The following
dialogue between Confucius and his interrogator, Zigong, can be taken as an
example to illustrate the form of dialogic teaching practised by the Master and
illustrates the process that Zigong underwent in order to grasp the main point
being taught:

**Zigong:** Poor without being obsequious, rich without being arrogant – what
would you say of someone like that?

**Confucius:** That is acceptable, but it is still not as good as being poor and yet
joyful, rich and yet loving ritual.

**Zigong:** An ode says, ‘As if cut, as if polished; as if carved, as if ground’. Is
this not what you have in mind?

**Confucius:** Zigong, you are precisely the kind of person with whom one can
begin to discuss the *Odes*. Informed as to what has gone before,
you know what is to come.

(Confucius, 2003: 6–7)

In the above extract, Confucius, unlike Socrates, appears to follow a less didactic
approach in that rather than confront Zigong with the weaknesses of his posi-
tion he adds to the disciple’s conclusion and these additional thoughts bring
about a broader perspective. Nevertheless, the same process of accommodating
new knowledge within an existing schema takes place (i.e. Zigong undergoes
a process of construction and re-construction as a result of the Master’s
prompts).

In Hong Kong during the setting-up of the small-class teaching project teachers
of English often argued that this kind of dialogue was too difficult for the
younger pupils because they lacked the necessary language proficiency to engage
in these talking strategies. Some teachers took up the challenge, however, and
devised simple cue cards which children could use in their groups. Starting with
pairs pupils might exchange simple phrases such as those described in going to
the shops but would be asked to seek further explanations by using such phrases
as ‘please say more’, ‘can you explain’ and so forth. Pupils were also instructed
that whenever they made a statement they should also add a ‘because’ phrase.
Another teacher introduced the idea of **meeting-and-greeting**. Before the lesson
began the whole class, including the teacher, would shake hands and say ‘good
morning’ or ‘good afternoon’ as the case might be, and then use some simple
language constructions from the cue cards as, for example ‘Do you like sport?’
and ‘What is your favourite sport?’ Various possible answers were posted on the
walls in the classroom and each week would be added to so that the conversation
could be extended. In a class of 25, therefore, each child met and greeted
24 pupils and the teacher. Teachers using this technique not only found that the
pupils extended their conversations to include more than one or two responses
over time but also gained confidence so when they were asked to come and
speak in front of the whole class they could readily do so without the support
of a microphone.
In Mercer’s study he and his colleagues were able to show similarly that the quality of talk improved and, for example, there were nearly four times as many uses of words such as ‘because’ and ‘I think’, and nearly five times as many sustained utterances (defined as exceeding 100 characters) (Mercer et al., 2004).

Hong Kong schools also adopted other ways of improving language proficiency when not using the native tongue. Some had an ‘English Day’ where both teachers and pupils had to use English in the playground when class teaching was not taking place. For example, children would not be served at the shop drinks or snacks if they did not use English to order what they wanted. Younger pupils could solicit help from older ones in learning what to say and what to ask for. Some teachers had their pupils compile a dictionary of words, phrases and sentences. Each page was divided into three columns. The first column contained the English version, the second the Chinese but in the third column the Chinese version was rewritten in the same order of words as in the English version. This latter approach follows the suggestions of a school of linguists, particularly Butzkamm and Caldwell (2009). In England, for example, a child in a French lesson might be learning to say or write the phrase, ‘I like you’. In French this would be ‘je vous aime’ but in the English order the you (tu or vous in French) would come after the verb so it would be written as ‘je aime vous’. Butzkamm and Caldwell argue that the different ordering of the words in a phrase as they occur in different languages is one of the major obstacles that children have to overcome and that this technique helps to alleviate such problems. There are many examples where order matters in Chinese, but which are not followed in English and where the ideas of Butzkamm and Caldwell could be relevant. For example, the date ‘the first of April’ in Chinese is ‘四月一日’ in which the day ‘一日’ comes after the month ‘四月’; whereas in UK English, it becomes ‘the first of April’ in which the month comes after the day.

**Wait times**

We also saw in Chapter 2 (p. 47) that another key element in promoting thoughtful discourse is for teachers to provide suitable wait time (or thinking time) after asking the pupil a question (1st wait time) and to pause again (2nd wait time) after the pupil has responded. The second wait time is particularly important because it offers pupils the chance to elaborate on their initial response, as in the earlier example where the pupil explained that s/he liked toy shops ‘because it’s fun to play with toys.’

In his book *Embedded Formative Assessment*, Wiliam (2011) suggests that teachers should keep in mind the following maxim ‘pose, pounce, pause, bounce’ whenever asking questions designed to provoke discussion. To avoid always having the more motivated pupils answering questions in class, Wiliam also suggests that teachers keep pupils’ names in a suitable container and for questioning of this kind pick names from the container to answer the first, second and third question and so on. In this way the teacher avoids selecting some children more
frequently because they are the ones who usually put their hands up while the reluctant respondents pick up the message that you can avoid answering if you keep your hand down. This form of random selection, however, also can bring its own problem in that pupils may relax having had their turn because their name is no longer in the container. This can be dealt with by the teacher instituting a ground rule whereby, if a pupil is seen not to be paying attention his or her name goes back into the container with the chance of being asked another question.

In the UK, teachers, having tried this approach, sometimes claim it leads to indiscipline because the pace of the lesson slows and some children become impatient at not having their turn to answer. The keenest among them may call out, ‘Teacher! Please. Ask me please,’ and the teacher has to stop the lesson to restore order so that pupils raise their hand and wait to be asked. Now it is true that in recommendations on good classroom management teachers are often advised not to let the pace of the lesson drop because pupils may fill the space created with undesirable behaviour, such as calling out answers without waiting to be asked for a response. The ‘pose, pounce, pause, bounce’ technique will only be effective when the teacher has created a classroom climate where ‘thoughtful discourse’ is the norm. For this reason it is preferable, initially, to use an alternative approach which is also suggested by Wiliam (2011).

The alternative procedure which proves very effective is that of ‘pair and share’. Here, whenever asking a question which is designed to provoke thoughtful discourse, the teacher will tell pupils that this is a question that requires some thought and he or she will therefore ask them to turn to their neighbour and discuss it for a minute or two before taking answers. This technique is particularly effective in the case where children are reluctant to risk answers because by ‘pairing and sharing’ you deny the rest of the class the knowledge of which pupil in the pair thought up the particular answer. It therefore provides a much safer situation than is the case when individual children are required to respond.

The architecture of classroom seating as an aid to discussion

In large classes space is generally very limited and the layout is restricted so it is usual to see pupils sat either in a row of single desks or in rows of tables with pupils sitting in pairs. When this is done group work requires the pupils on the first row to turn their seats around so that they are facing the pupils in the second row behind them. This arrangement is then repeated for successive pairs of rows. Groups of six can be organised by getting the pupils in the third row to sit at each end of the second row table. Reducing the class size, however, offers more opportunities to modify the classroom layout.

Research has shown that organising the class seating in a horseshoe arrangement tends to promote extended classroom discussion. Where this is not possible two rows in a double horseshoe with the seats of the rear row place in the gap between seats in the first is recommended (Hastings and Schweiso, 1995). These
arrangements are shown in Figure 3.1. Hastings and Schweiso recommend that teachers adopt a flexible classroom with pupils seated at tables for group work but that it should be changed to a horseshoe shape when the aim was to engage in sustained classroom discussion. In Hong Kong one teacher found an easy way of meeting this demand. In the space in front of the tables the teacher marked a set of paper dots which she stuck to the floor in a horseshoe arrangement. At the back of the class she kept stacking stools. Given the instruction, it was a matter of seconds for pupils to collect a stool, bring it to the front of the class, place it on a dot and sit down ready for a class discussion.

**Figure 3.1 A horseshoe arrangement.**

Scaffolding questioning

When teachers ask questions designed to provoke discussion rather than testing whether the child remembers what has previously been taught there tends to be what Doyle has described as a degree of ambiguity. In Doyle’s (1983: 183) terminology ambiguity refers to the ‘extent to which a precise answer can be defined in advance or precise formula for generating an answer is available’. This ambiguity carries with it a risk for the pupil who responds s/he will give an inappropriate answer. The greater the ambiguity involved the greater the risk of this happening.

Scaffolding questioning is a way of dealing with this problem. Scaffolds can be used either to lower the risk and therefore the ambiguity or in ways that
while reducing risk maintain the ambiguity and therefore continue to promote discussion and thinking. Doyle argues that in most cases teachers tend to opt for the first strategy but implies when attempting to develop deeper conceptual understanding it is more important to use the second approach and attempt to lower the risk while still maintaining as much ambiguity in the questioning as possible.

By way of illustration consider the following exercise which was set for a group of P3 mathematics pupils in a Hong Kong classroom. The teacher wrote on the whiteboard the following sums and asked them to work out what all the answers had in common:

\[
\begin{align*}
5 + 9 &= ? \\
7 + 9 &= ? \\
9 + 9 &= ? \\
3 + 9 &= ?
\end{align*}
\]

The children had little difficulty in filling in the missing numbers but were clearly puzzled as to what was required for the rule (there was a degree of ambiguity). Initially the children did not understand what was required so the teacher proceeded to ask them questions designed to clarify the problem. She began by asking what they noticed was the same in all the sums to which one child replied that all the sums had ‘=’ signs and another that they were all ‘+’ or ‘add’ sums. The teacher, somewhat frustrated, then, told the class to look at each sum in turn, to rearrange them in order of ascending answers and then see if there was a difference in the last numeral and the number which was added to nine in each case. As a further help she underlined the 3 and the 2 in the answer 12 from the first addition. Eventually the children began to understand that by adding ‘9’ to another number the answer would always be ‘10’ and the number less ‘1’ so that 9 + 7 gave you 16 and 9 + 8 gave you 17, and so on.

This form of scaffolding is generally known as ‘guided discovery’. By gradually giving more hints and guidance the teacher reduced the risk because she pointed the class to the solution required. However, in so doing she also lowered the ambiguity, particularly when underlining the numbers 3 and 2, since the more guidance given the more obvious it became what the answer required should be. The problem with this approach, however, is that it tends to create a dependency on the part of the pupils because they come to expect that the teacher will always offer such guidance in order that they can solve the problems rather than leaving them to work things out for themselves. It is preferable in Doyle’s view to look for solutions whereby one lowers the risk but maintains the ambiguity of the questioning. In the above illustration, the teacher might have provided some scaffolding by telling pupils that she was looking for differences between the number which was added to ‘9’ and the result of the sum. This would have avoided the situation where children made absurd guesses such as that all sums
had ‘=’ sign thereby requiring the teacher to give more and more guidance until eventually she had almost told the pupils the answer required.

In promoting classroom discussion it is also important, whenever possible, to choose topics which have a particular meaning or relevance to the pupils involved. This is particularly true when seeking to promote discussion in English lessons. This is because most texts are such that they are intended to be used in different circumstances in different countries; otherwise publishers would find themselves creating unique costly additions for each particular country. So, for example, one might find in a text used in Hong Kong a unit on travel where pupils are asked how they came to school and are given several pictures one of which is a bicycle. A pupil in answering questions might be forced to say that ‘I came to school by bicycle’ when this would be highly unlikely in the Hong Kong situation where riding a bicycle in the crowded traffic would probably result in grievous injury. Teachers are often reluctant to change the text and substitute more relevant modes of transport such as using the Mass Transit Railway (MTR) in Hong Kong. They are also often reluctant to ignore a particular exercise where it does not seem relevant for fear that parents will accuse them of laziness in not being prepared to set a mark for a particular piece of work.

Yet having the courage to alter the text can pay rich dividends. One particular case involved the children having to say what their favourite sporting activity was. In the book there were pictures of a tennis racquet, a football, a swimming pool, a hockey stick and a cricket bat. In this particular school one of the favourite sports was a form of baseball. The teacher therefore replaced the particular exercise in the textbook and, instead, took digital photos of children when they were playing various games during the physical education periods. Thus there were children using tennis racquets, playing baseball, basketball, football and also doing gymnastic dance. For the target language the children had to say ‘I like’ and then name a particular sport.

There was considerable excitement in the class in identifying their classmates in the photographs, but it also had an effect on their answers because instead of saying ‘I like baseball’ children began to reply ‘I like baseball and basketball’ thus extending the number of characters used. The use of the digital camera can therefore be a valuable tool in the teacher’s armoury because it can situate the topic in contexts which are familiar to the children. This not only makes the topic more relevant but it can also exercise a powerful motivating effect, as in the above example. In the shopping exercise instead of using the text book which talks about shopping in Lucky Supermarket in Any Town because the text is being sold in a range of countries the Hong Kong teacher might substitute pictures of shops in say Tai Po and then ask children to hold a conversation where one child lives in that location while the other is visiting from, say, Sha Tin or Tuen Mun. Pictures of shops in Tai Po can then be projected onto the whiteboard and the children can hold conversations about the location of a cake shop or a toy shop in the particular supermarket or shopping mall. The hesitancy which takes place when children are asked to engage with these kinds of dialogues often arises from unfamiliarity with the context in which they are asked to perform.
Helping pupils to ask questions

At the beginning of the chapter it was stated that researchers have shown that teachers ask a large number of questions in any one day. But the research also shows that in contrast pupils initiate few exchanges. Part of the reason for this has been suggested by Brown and Palinscar (1986): pupils do not know which question to ask when faced with different contexts. The ability to ask pertinent questions is a necessary skill that needs to be acquired when the learning objectives are at the higher level, particularly when the aim of the teacher is to provide strategies to enable pupils to self-regulate their learning and work things out for themselves. Brown and Palinscar suggest that one way of helping pupils is to scaffold such tasks by providing pupils with a list of circumstances in which different questions are appropriate. Brown argues that this is a key skill if children are to be able to become independent learners because in the context of learning how to converse with others, either through class discussion or in groups, pupils come to learn how to hold similar conversations with themselves. Brown and Palinscar’s approach is called ‘reciprocal teaching’. In an earlier study to help children to generate appropriate ‘how’ and ‘what’ questions, pupils were given a list of inappropriate ones that they might be tempted to use. Initially pupils were given a short written passage and then asked to decide whether or not a particular question from the list was concerned with the most important information in the paragraph. Pupils then subsequently went on to discuss why a particular question was a poor one, either because it was too narrow, or too focused; in this way they were gradually taught to recognise good questions from poor ones. In one instance, for example, the following task was set:

Pupils were first asked to consider a single sentence:

*The falcon is a female hunting bird*

They were then asked to select from the following words to ask a question which provided information about falcons:

*Who, when, why, what, where and how*

After discussing the reason for choosing ‘What is a falcon?’ as the best answer, pupils were then provided with another sentence:

*In the past only rulers and their sons were allowed to own falcons*

Again the answer ‘Who in the past were allowed to own falcons?’ was considered the best answer after discussion.

Gradually, in this way, pupils learned to distinguish using *who* (to find out about persons), *when* (to find out about time), *why* (to find out about reasons for),
Application of six principles to small class practice

what (to gain information), where (to locate a place) and how (to find out about ways of doing/making things) questions.

As pupils progressed in their understanding they were given longer passages. In one from a newspaper the difficulties faced by children attending inner-city schools in the United States because of the prevalence of gangs largely based on racial groupings was described.

The students were first asked to consider filling in the blanks in a number of questions to illustrate the different use of ‘how’ and ‘what’ questions. Thus to the question dealing with ways whereby gangs stopped students coming to school, pupils had to insert either the word ‘how’ or ‘what’ and then discuss how the answer would differ in the kind of information provided. Rosenshine et al. (1996) compared this reciprocal teaching approach to that of direct instruction where pupils were given rules about which questions to ask. Rosenshine and colleagues concluded that on the whole reciprocal teaching was a better form of scaffolding than more frequently used techniques such as guided discovery or modelling. Due caution, however, should be exercised with this approach in that in some cases reciprocal teaching can end up in providing so much support that the students do little in the way of mental processing themselves and when this happens it is said to be a result of over-prompting and as such does little to help students learn to generate their own questions.

In summary, therefore, in seeking to promote higher-level learning objectives teachers need to encourage ‘thoughtful discourse’. They do this by providing additional thinking or wait times either by using the pose, pounce, pause, bounce approach where in between receiving the pupil’s answer they introduce encouraging phrases such as ‘Interesting’, ‘Can you say more?’ or ‘Does anyone want to add something?’ rather than repeating the first pupil’s answer. Alternatively they can introduce the ‘pair-and-share’ technique whereby after asking the question they then instruct pupils to turn to their neighbour and spend a minute or two discussing it before the teacher calls for answers. At the end of the lesson, the teacher can put a number of questions to himself or herself such as ‘How many pupils generally participated?’, ‘Were thinking times sufficient?’, ‘Did pupils’ responses indicate that more than simple recall was taking place?’ and ‘Did my [the teacher’s] responses help to extend the discussion?’ The purpose of asking pupils such questions, therefore, is to do more than test their powers of recall. It should provide the class with opportunities to share different conceptions in order to develop their ability to both construct new knowledge and reconstruct old ideas in ways which accommodate this new learning. In this way, a pupil’s readiness to learn is not simply a matter of the stage of development that s/he has reached but the willingness to learn from other classmates’ experience.

Teachers may experience difficulty when first attempting to put some of the above suggestions into practice, not only because it is difficult to remember to pose, pounce, pause, bounce in the midst of all the other moment by moment decisions that are required during the course of a lesson, but also because some pupils may react badly to such changes because they are used to the previous cued elicitation form of questioning and have worked out a strategy to avoid
having to be the first to give an answer. But teachers, if they persevere, will find that pupils’ expectations will change so that, for example, even when monitoring a group and asking a very general question such as ‘How are you getting on?’ the replies will no longer consist of ‘Fine, thank you’, and will not only provide a detailed account of the group’s progress but also reasons for the various decisions taken during the course of the activity. Even questions designed to elicit information will often result in extended answers. When this begins to happen then the ‘thoughtful discourse’ which is essential for bringing about understanding will have become a central feature of that teacher’s classroom.
4 Sustaining successful group and pair work

This chapter differs somewhat from the previous one on questioning. In the latter case, the writing dealt with mainly practical concerns arising from the need to shift from teacher-dominated exchanges with pupils to a situation where the dialogue is more evenly distributed. In the case of co-operative learning, and its manifestations in the form of group and pair work, the subject of the present chapter, there is a need initially to provide a more detailed theoretical perspective. This is because the ideas and concepts involved when asking pupils to work in groups are often misunderstood by critics of this approach. If teachers are to use this approach effectively they need to be clear about both the benefits and limitations of working in this manner.

The chapter consists of four sections. First, it seeks to clarify the misconceptions of teachers regarding the relationship between group work and small class teaching (SCT) and goes on to point out that not all group work is productive. Second, successful group and pair work are structured with the elements of co-operative learning, taking into consideration the composition of the group and the relation between group size and task. Third, examples of the issues of group work that may arise will be presented and possible solutions suggested. In the final part, the importance of establishing group rules and providing social skills training will be stressed for sustaining successful group and pair work. Examples of activities designed to improve pupils’ communication skills, ensure that group activities are well managed (so-called maintenance skills) and also ways of enabling groups to arrive at a consensual view will be provided.

Small class teaching and group work

A number of studies have shown that teachers tend to remain unchanged in their teaching practice when they change to teach in small classes (Shapson et al., 1980; Galton and Simon, 1980; Hargreaves et al., 1998). However, the benefits of a small class environment will not come automatically if teachers do not adapt their teaching in small classes. In an attempt to change their teaching practice, teachers have made reference to the education reform which has an emphasis on learning to learn and the development of generic skills and values.
and attitudes. As such, many teachers turn to adopt group work as it is easier to organise in a small class setting. At times, there were teachers who think that SCT and group work are synonymous. Having attended professional development programmes on SCT, teachers now become clear about the strategies of SCT which consist of whole-class teaching, group work and individual instruction. Group work, which can be adopted in large classes, can be employed more effectively, if not equally, in small classes.

Not all kinds of group work are productive. In some group work, group members mostly work on their own. Their interaction is limited to information sharing and clarification of assignments. Each member is responsible for his own learning. Johnson and Johnson (1999) call this a traditional classroom group. Sometimes it is even counter-productive and becomes a pseudo-learning group which means ‘the interaction among group members detracts from individual learning without delivering any benefit. The result is that the sum of the whole is less than the potential of the individual members’ (ibid., 71).

There is yet another kind of group called the co-operative learning group working on the concept of co-operative learning. Co-operative learning is the instructional practice in which pupils learn together in small groups towards a common goal. In the process of learning together, pupils employ social skills to help one another to master the learning materials by asking questions and receiving explanations, show care and concern to each other, and reflect on the performance of group members in a harmonious ethos (Johnson and Johnson, 1999). Much research has been done over the past 30 years on the use of co-operative learning across age groups, ability levels and cultural backgrounds. Co-operative learning has shown to be superior in all tasks except the rote skills (Johnson and Johnson, 1985). Co-operative learning develops higher-order thinking skills (Mathews et al., 1995), and enhances motivation and improves interpersonal relations (Nastasi and Clements, 1991) as well as enhancing motivation and peer relations (Slavin, 1985). Most important is that it exploits the diversified abilities of pupils to increase their cognitive and social performance. Because positive interdependence and individual accountability are structured into co-operative group work, this makes pupils help one another to master the learning materials, since when the group succeeds, each group member can also succeed.

Elements of co-operative learning

Co-operative learning is operated on the basis of five basic elements: (1) positive interdependence; (2) individual accountability; (3) face-to-face promotive interaction; (4) interpersonal and small group skills; and (5) group processing.

Positive interdependence

Positive interdependence is considered as the first and most important element of co-operative learning, enabling students to recognise that their goals can only
be attained when the goals of all members in the group are also attained (Johnson et al., 1990; Johnson et al., 1993). Consequently, in order to reach their common goal, members have to try their best to study the learning materials on the one hand and to use every possible way to make sure that every member in the group has also understood the materials on the other. Furthermore, the members must realise that each one of them can make a unique contribution to the success of the group. Then they will increase their efforts (Harkins and Petty, 1982). Otherwise, they will decrease their efforts if their potential contribution is regarded as dispensable (Kerr, 1983).

Acknowledging the importance of goal interdependence, Johnson and Johnson (1999) posit that it is better to supplement goal interdependence with other types of positive interdependence. These forms of positive interdependence include positive celebration/reward interdependence, positive resource interdependence, positive role interdependence, positive identity interdependence, environmental interdependence, positive fantasy interdependence, positive task interdependence and positive outside enemy interdependence.

Positive celebration/reward interdependence exists when each member of the group receives the same reward when they successfully complete a joint task. They then celebrate their success. Positive resource interdependence exists when each member of the group has a part of the information or materials, the whole of which is required for the group to achieve its goal. Positive role interdependence exists when the group members are assigned complementary and interconnected roles such as leader, recorder and checker. It gives each member a responsibility to work towards the joint task. Positive identity interdependence exists when a mutual identity of the group is established by creating a name, motto or mascot for the group. Environmental interdependence exists when the group members gather together in close proximity to work. Positive fantasy interdependence exists when group members feel that they must collaborate in order to survive. Positive task interdependence exists when the joint task is so designed that the completion of a member’s work depends on the completion of each other’s work. Positive outside enemy interdependence exists when the groups are in competition with one another.

Each of the items of positive interdependence mentioned above serves as supplement to the positive goal interdependence to bring about the maximum effect on pupil performance. For example, when either positive resource interdependence or positive reward interdependence is used together with positive goal interdependence, both individual achievement and group productivity are increased (Johnson and Johnson, 1990). A further example can be seen from the studies (Lew et al., 1986; Mesch et al., 1986), which indicate that student achievement can be enhanced by using positive goal interdependence, but the effect is better when coupled with reward interdependence.

Despite the importance of positive reward interdependence for achievement, Cohen (1994) proposes that if the group members are engaging in a true group task, reward interdependence may not be necessary for achievement so long as individual accountability is maintained. A true group task is usually an
open-ended discovery or conceptual task characterised by an ill-structured problem. Cohen (1994: 8) defines a group task as ‘a task that requires resources (information, knowledge, heuristic problem-solving strategies, materials, and skills) that no single individual possesses so that no single individual is likely to solve the problem or accomplish the task objectives without at least some input from others’. For example, some co-operative learning methods like Group Investigation and Complex Instruction do not require reward interdependence but are still able to enhance achievement. Cohen argues that in Complex Instruction, the task is intrinsically interesting to motivate the group members to interact with one another to bring about achievement.

**Individual accountability**

Individual accountability means that the success of a group depends on the individual learning of all the group members (Johnson and Johnson, 1989; Slavin, 1995). Apart from responsibility for one’s own learning, each member has also to be responsible for facilitating the learning of the rest of the group members. Individual accountability exists when the performance of each individual member is assessed, the results are given back to the individual and the group to compare against a standard of performance, and the member is held responsible by group mates for contributing his or her fair share to the group’s success (Johnson and Johnson, 1999). As such, individual accountability motivates the group members to help one another to give maximum effort to learn (Slavin, 1995) so that when the member is assessed individually, each one can contribute their efforts to the success of the group.

When individual accountability is not felt by the group members, ‘social loafing’ may result meaning that for an additive task in which individual members’ effort are summed up towards the group product, it may happen that only a few members of the group are actually working on the task, while the rest of the group contribute a little effort without being noticed (Latane et al., 1979; Vecchio, 1995). Experiments conducted by Williams et al. (1981) confirm that when it is difficult to identify the contribution of the members, they will make less effort towards the group goal. Therefore, it is important to assess the group according to the individual learning of each member so as to structure individual accountability for maximum effect of co-operative learning (Slavin, 1989; Manning and Lucking, 1991).

Individual accountability can be structured by asking for explanations, oral examination and testing. Teachers can require all group members to explain or teach what they have learned to help each other in order to reach the required learning goal (Johnson et al., 1993). Teachers can also conduct random oral examinations by selecting a member of each group as representative to answer questions for his or her group (Kagan, 1990). Finally individual accountability can be structured within the activity by testing the group members so that each individual group member has a clear picture of the level of each other member, in order that improvement can be made through peer assistance (Slavin, 1995;
Johnson and Johnson, 1999]. To facilitate the structuring of individual accountability, it is advisable to start with small groups (Messick and Brewer, 1983). Individual accountability can be fostered by the effective use of group reward based on individual performance (Slavin, 1987). With other things being equal, group reward and individual accountability enhance the achievement outcomes of co-operative learning (Slavin, 1995).

**Face-to-face promotive interaction**

When engaging in co-operative learning, group members have to communicate with each other to work on the task. During this face-to-face interaction, members encourage and facilitate each other in order to accomplish the task of reaching the group goal. As Johnson and Johnson (1999) state, face-to-face promotive interaction among individuals fostered by positive interdependence greatly influences efforts to achieve caring and committed relationships and psychological adjustment and competence. Slavin also agrees to the effect of face-to-face promotive interaction by citing the findings of Meloth and Deering (1992) in that students’ interaction in co-operative groups can be effective though there are no group rewards. Nevertheless, group interaction together with group rewards yields much better outcomes than either one alone (Fantuzzo et al., 1992).

What has been described in the previous paragraph somewhat oversimplifies the relationship between interaction and achievement. Research studies based on the simple frequency of interaction as a predictor for achievement have had inconsistent results. Webb (1983) found that there was little relationship between interaction and achievement, but Cohen et al. (1989) found that simple measures of frequency of task-related interaction were related to achievement. Cohen analysed these studies and proposed that positive associations between interaction and achievement or productivity depended on the nature of the group task. In Webb’s studies, the tasks, which were solved in well-structured methods and had a right answer, could actually have been completed by individuals. In the study of Cohen et al., the tasks, which were open-ended and consisted of an ill-structured problem, could only be accomplished through the co-operation of the group members, each of whom had some indispensable resources such as knowledge, skills and materials. Cohen (1994: 8) concludes that ‘given an ill-structured problem with no right answer and a learning task that will require all students to exchange resources, achievement gains will depend on the frequency of task-related interaction’. However, the more developmentally advanced student in a heterogeneous group working on ill-structured problems may be negatively affected in the course of interaction with the less developmentally advanced student (Tudge, 1990).

For Webb’s studies of group tasks that can be solved by individuals, the giving of detailed explanations rather than the measures of interaction determines students’ achievement (Webb, 1983). Also, it is the student offering explanations who achieves more than the student who receives the explanations. However,
if the student who asks for explanations is only given the correct answer without an explanation, the more he asks for help, the less he achieves (Webb, 1991).

Thus while acknowledging the relationship between interaction and achievement; it is important to structure the communication to ensure group members interact with one another. Cohen (1994) suggests three ways to structure interaction: giving task instructions or detailed procedures for discussion, scripting the conversation and assigning members roles. Having reviewed some studies, Cohen (1994: 18) draws a general inference that ‘when the learning task is factual recall, understanding of the assigned reading or application of procedures and concepts in a relatively routine fashion, structuring the interaction through roles and scripts can be very effective’. For ill-structured problem tasks, structuring of interaction inhibits the freedom and degree of interaction resulting in lower achievement. Moreover, care has to be taken in using roles to facilitate interaction. For example, a role such as a facilitator to ensure every member interacts with each other is useful. On the other hand, if the task is divided into different parts, and each member is assigned a role to work on one part of the task independently, there will be very little interaction.

In an experiment to compare the learning outcomes using Student Teams-Achievement Divisions (STAD) and Group Investigation, it was found that the STAD classes performed better on low-level questions while the Group Investigation classes performed better on high-level questions (Sharan et al., 1984). Cohen (1994) concludes that the experiment illustrates the association of learning outcomes with the kind of interaction brought about by the differences in tasks and task instructions. As a conclusion, the amount and type of interaction that affect achievement differ according to the nature of the task. Consideration has to be given to the kind of learning outcome expected when structuring interaction.

**Interpersonal and small group skills**

Social skills are the key to the productivity of a group, as these skills reduce interpersonal conflict and facilitate interaction (Cohen, 1994). Research shows that if the students are rewarded when they use social skills, they will become more sophisticated in using the skills and will use the skills more often, resulting in higher achievement (Lew et al., 1986).

There are a variety of interpersonal and small group skills, including, for example, moving about quietly, monitoring time, interrupting appropriately, encouraging one another and resolving a conflict. These skills do not come automatically with co-operative learning (Barnes and Todd, 1995) but have to be explicitly taught as systematically as any subject like mathematics or social studies in order for the groups to be productive (Johnson and Johnson, 1989; Johnson et al., 1993).

Acknowledging the importance of social skills in reducing interpersonal conflict does not imply that conflict should be eliminated completely in a co-operative learning group. Conflict, especially cognitive conflict, can enhance
cognitive growth and academic performance as well as positive relationships among pupils (Johnson and Johnson, 1997). However, the mere presence of conflict cannot result in cognitive growth nor can the inactive conflict such as a mere statement or gesture indicating conflicting views (Bearison, 1982). For cognitive growth to occur, the conflict has to be successfully resolved by reaching a consensus out of opposing points of views (Johnson and Johnson, 1979).

**Group processing**

Group processing according to Johnson and Johnson (1990: 32) is defined as ‘reflecting on a group session to describe what member actions were helpful and unhelpful, and making decisions about what actions to continue or change’. Through group processing, interpersonal conflict is reduced and the probability of appropriate behaviours to complete the task, and members caring for one another increased. This results in a highly motivated group (Cohen, 1994). Mullen and Copper (1994) attribute the achievement gained to the increase of group cohesiveness which enhances the commitment of members to the task.

In a study conducted by Yager, comparison was made as to achievement between the co-operative learning group with group processing, the co-operative learning group without group processing and the individual learning group. It was found that the co-operative learning group with group processing performed the best on daily achievement as well as retention measures (Yager et al., 1985). A follow-up study was conducted to compare the achievement between the co-operative learning group with teacher processing, the co-operative learning group with teacher and student processing, the co-operative learning group without processing and the individual learning group. The results showed that the co-operative learning group with teacher and student processing had the highest scores (Johnson et al., 1990).

Two conditions have to be met before group processing can have an effect on achievement. The first condition is that the behaviours to be processed must be specific (Huber and Eppler, 1990). Specific processing behaviours included: reflecting on group discussion, commenting on behaviours of group members and planning for improvement. The second condition is that the behaviours to be processed must be directly relevant to the desired behaviours in the task (Miller and Harrington, 1990). If these conditions are satisfied, processing the group while the members are working on the task can also raise the productivity of the group.

**Composition of grouping**

Merely grouping pupils for the purposes of classroom organisation may have little effect on pupil performance (Gamoran, 1987). In this connection, various methods of grouping have been used when conducting co-operative group work, for example grouping by gender, ability and ethnicity. For pedagogical purposes,
pupils can be grouped either in homogeneous groups (i.e. on the basis of the same ability and characteristics) or in heterogeneous ones (i.e. on the basis of different ability and characteristics). The choice of grouping remains controversial despite the fact that there has been considerable research on these two kinds of groupings. When pupils are homogeneously grouped, the teacher can make adaptations to the curriculum materials to suit the ability of different groups so that learning is more effective (Kulik, 1992). Mullen and Copper (1994) believe that performance of group members can be increased if the group is cohesive. ‘Homogeneous grouping may be particularly conducive to group cohesiveness since students may share similar expectations about group goal’ (Lou et al., 1996: 449). ‘Influential educationalists find good learning practices in homogeneous-ability groups when studying the core curriculum subjects’ (HMI, 1989a, 1989b, quoted in Kutnick, 1994: 26). However, research also indicates that not all pupils benefit in homogeneous groups. With homogeneous grouping, high-ability pupils tend to work on their own with little interaction between group members; whereas low-ability pupils show no improvement in their performance because there is an absence of high-ability peers to provide elaborated explanations (Webb, 1989). Moreover, these low-ability pupils may suffer if the teacher does not make adaptations to instruction methods and learning materials or if the pupils feel they are left out for their low ability (Lou et al., 1996). Only the medium-ability pupils benefit from homogeneous grouping, as most of the highly elaborated interactions which enhance learning occur between them (Webb, 1992) and they can manage the learning materials without the teacher having to make major adaptations (Lou et al., 1996).

With heterogeneous grouping, research shows that the performance of low-ability pupils improves (Webb and Cullian, 1983) because these pupils receive more elaborated explanations from their high-ability peers about the learning materials (Webb, 1992). However, medium-ability pupils suffer because of their middle position in the group; they seldom give explanations to low-ability peers or receive explanations from high-ability peers (Webb, 1992). In the case of high-ability pupils, research shows inconsistent results for their learning outcome. Some research suggests that there is no decrease in performance of high-ability pupils (Hooper et al., 1989); others show that they perform as well in heterogeneous as in homogeneous groups (Hooper and Hannafin, 1988; Nastasi and Clements, 1991). Webb (1992) argues that high-ability pupils learn more in heterogeneous than in homogeneous groups because in the giving of elaborated explanations to the low-ability peers, they reorganise and clarify information in different ways which enhances the development of their metacognitive capacities.

Various plausible explanations have been put forward to answer the discrepant results of the performance of high-ability pupils in homogeneous and heterogeneous groups as mentioned above. These include age, gender, communication skills and personal traits (Bearison et al., 1986; Slavin 1985; Webb, 1992).
Group size and task

In a broad sense, group size can vary from an individual to the whole class, each with its advantages and disadvantages. However, for the purposes of this research on co-operative groups, the size at each end of the continuum falls well within this range. Teachers generally use small groups or pairs when co-operative learning is first introduced because smaller group size requires less use of interpersonal skills and members are more interdependent on each other, hence more interactions (Johnson and Johnson, 1999). Abrami et al. (1995: 60) assert that ‘the larger the group, the more complex communication becomes, and the more difficult it is to promote equal participation, interpersonal skill development, and, possibly, learning’.

Co-operative learning groups usually employ group sizes from two to six (Abrami et al., 1993). Vermette (1998) argues that a group larger than four is problematic because members tend to play a reduced role and it is difficult to account for everyone’s opinion during discussion. He suggests an ideal team size of three or four as ‘the teacher could reasonably expect a balance of interests and personalities, a mix of strengths and talents, a broader range of Gardner’s intelligences, a divergence of philosophical perspectives, differing levels of perseverance, and a good chance at sparking some creativity’ (ibid.: 73). Kutnick (1994: 20) argues that whether a particular group size is useful depends on the type of learning task the group undertakes; for example, dyads can be effective for incremental type of learning tasks which are used to introduce ‘new ideas, procedures or skills or demand[s] recognition and discrimination’. Expert/novice dyads, representing an inequality of knowledge and mutuality of interest, are ‘particularly effective in cognitive problems that have a finite solution’ (Rogoff, 1990, quoted in Kutnick, 1994: 22). Collaborative/co-operative dyads, representing an equality of knowledge and mutuality of interest, are ‘most effective in open-ended problem solving, especially related to spatial and creative, as opposed to formula-led procedural tasks’ (Damon and Phelps, 1989, quoted in Kutnick, 1994: 22), and ‘in brainstorming to generate a range of new ideas’ (Doise and Mugny, 1984, quoted in Kutnick, 1994: 22).

For co-operative and collaborative groups of four to six, the appropriate learning tasks to be undertaken include ‘enrichment tasks of application and synthesis work; work that draws upon multiple perspectives of group members, such as collection of information for a database, and integrates cognitive skills by identifying and challenging individual approaches to problem solving (Kutnick, 1994: 24–5). Kravitz and Martin (1986) found a curvilinear relationship between group size and productivity losses in additive tasks, the group product of which is contributed by the sum of individual members.

The change in group size from individuals to pairs to triads caused overall productivity to increase a great deal, although it was not double or triple that of individuals working alone. However, an increase in group size from ten upward tended to have a minimal effect on overall productivity. (Jackson and Williams, 1988, quoted in Abrami et al., 1995: 23)
Issues arising from group work

Group work, if not carefully designed using the principles of co-operative learning, and considering the composition of grouping, group size and task, can be problematic. This section will present examples of the issues encountered in the group work in the subjects of Mathematics, English and Chinese, followed by possible solutions as suggested by teachers and researchers.

Problems arising from unequal participation

A teacher wanted to teach his students how to calculate the area of a rectangle. In an attempt to let the students find out the formula by themselves, the teacher gave each group 24 pieces of paper of one centimetre square. He then asked the students to work together to use the pieces of paper to form four rectangles of different length and width, each time using up all the 24 pieces. Each of the four group members was interested in this activity but there was only one set of the 24 pieces of paper. The more able member was quick to grab the opportunity to work on the task while the other members were unhappy to become the observers. Having formed a rectangle of 12 cm in length and 2 cm in width, the more able student cleared the pieces in order to form another rectangle of different length and width. The other three members asked the more able student to let them do it but were turned down. They became frustrated.

The problem arises because the basic elements of co-operative learning, positive interdependence and individual accountability have not been structured into the group activity. To solve the problem, a suggestion is made as follows. Each of the group members is given 24 pieces of paper of one centimetre square and is asked to form one rectangle using up all the 24 pieces. After forming a rectangle, each of the members takes turns to write down the length, width and area of the rectangle on a chart provided to the group. This is their individual accountability. The members find that although the length and width of the rectangle of each of the members may not be the same the area remains 24 square centimetres by adding up the area of each of the pieces of paper. This is positive interdependence. They then discuss and eventually discover the formula of a rectangle by multiplying the length and width. Quarrels and conflicts may also arise from the unequal participation in group work. Below is a conversation between two students when they were asked in a Primary 3 Mathematics lesson to work together to draw a square of sides of 27 cm each and then divide it into three equal portions in as many ways as possible (Chan, 2006).
Application of six principles to small class practice

A: Give me a pencil sharpener. A sharp pencil can draw the figure better.
B: I don’t want to see you do the work. This time, I want to do it.
A: You’ll ruin the work.
B: No, I’m good at drawing.
A: Don’t waste time arguing. As usual, I do it and you help me when I need it. Now give me your ruler. I am going to measure 27 cm.
B: Use your own unless you let me draw it.
A: My ruler is only 12 cm long.
B: I’ll tell the teacher if you don’t let me do the drawing.

It is apparent that student A is more able and, as such, usually dominated during the group work. For the task in question, however, student B, who was weak at Mathematics but good at drawing, wished to take the lead in the drawing. Student A did not agree and continued to treat student B as his assistant. They quarrelled over the division of work and asked the teacher to resolve their conflict.

When interviewing the students, Chan was told that the more able students worried that the quality of work would be affected if their less able peers took over the lead of the work; whereas the less able students felt that they did not have any chance to contribute to the work of which they were capable:

A: It is reasonable to divide the group task among members according to their abilities. A more able member should take a leading role in the work division. If we rely on a less able member to take charge of the work, the outcome of the work will not be good and we cannot get a group reward.
B: We quarrel over the division of work in the group. I feel ill-treated by my high-ability peers who always take over the division of work and do not allow me to work on those [parts] I think I am good at.

The problem of the above pair work can be analysed using the concept of power status of the pairs. The equality/inequality of power of people is interpreted by Hofstede (1994: 28) using the concept of power distance which is ‘the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally’. In the present example, the heterogeneous pairs differed largely in terms of their ability, or in more precise terms, the overall academic position of the pupils in class, which was determined by the total of marks awarded to a student in all the subjects examined. Yet not all subjects carry the same weight of marks. Subjects like Chinese, English and Mathematics have a much bigger weighting than that of Music and Art. The unbalanced recognition for different subjects favours the students who are talented in logical-mathematical ability or linguistic ability in getting a higher academic position, while relatively penalising the students who are talented in musical ability or spatial ability. In this context, a student who
Sustaining successful group and pair work

has a high academic position is usually held as someone with more knowledge. As it is commonly recognised that knowledge is power, the more able student in the pair has a higher power status. Testimony to this is the way student A took control of the pair work and treated student B as his assistant.

Nevertheless, the existence of unequal power status in groups should not always be taken as problematic. On the contrary, this inequality can sometimes help to increase the cohesion of the group members, in a similar manner that according to Confucius’ thinking inequality in human relationships contributes to the stability of the country. Confucius proposes five cardinal relations which link the power and responsibility of a person with another at an upper or lower position on the hierarchy: relations between emperor and minister, father and son, husband and wife, among brothers and among friends (Gabrenya and Hwang, 1996). Being mutual and complementary, these relations tie the relevant parties together in harmony. Therefore in normal circumstances, inequality in power status can help to maintain a stable relationship of interdependence among the members of a group, which increases the efficiency of co-operation. However, when the power structure of the group is suddenly in disequilibrium, quarrels and conflicts may arise. The problems seen in the example were probably due to disequilibrium in the power status between the two students. Student B had a low academic position, but he was talented in spatial ability. The pair work in question was a drawing task in which student B possessed more knowledge, hence more power. However, student A did not want to lose his power that had been taken for granted and prevailed in the group. In order to maintain the original power structure and to avoid conflicts between the members, it would have been advisable for the teacher to monitor the group and to take control in allocating the work to the students, if necessary. This is supported by Harwood (1995) who found that the presence of teacher correlated with improved quality and continuity of group discussion.

The problem of unsophisticated use of social skills

Frustration and loss of interest can develop in groups when students do not know how to use the appropriate social skills in their interaction. The result generally produces feelings of frustration in the less able students and a loss of interest by the more able students. These problems were most prominent in lessons in which a particular form of grouping, Jigsaw II, was employed as the teaching strategy. Jigsaw II usually starts by assigning to each member of a group a different portion of the reading materials. Upon finishing the reading, pupils from different groups with the same portion of reading materials form an expert group to discuss the content. When the group members go back to their home groups after discussing in the expert groups, each member takes a turn to teach and learn from one another. In the following conversation extracted from a Primary 4 Chinese lesson, the more able student C was teaching his part, by reading from his notes, to his three members, D (medium ability), E (medium ability) and F (the weaker student).
Application of six principles to small class practice

C: The athlete who had won many awards in cycling was once a problem child mixed up with the gangs in the street.
D: Oh really?
E: Difficult to believe.
F: What is a gang?
C: Come on. You know it.
F: I honestly don’t know. What does the word look like?
C: Don’t waste time. Here you are. (Showing his notes to F)
D: Be quick. We can’t finish our task on time.
C: The problem child had an opportunity to participate in a training course in cycling and from then on he gradually began his career as an athlete.
F: I can’t hear it. Can you repeat that?
C: The problem child had an opportunity to participate in a training course in . . .
F: Wait. Say it slowly.
C: You idiot! We are never going to finish. I’m fed up with repeating simple things again and again.
F: You are an idiot, too! I have tried hard to follow closely. The teacher has told us to respect each other. I’m going to tell the teacher.

If pupil C had been more sophisticated in his use of social skills, the conflict might have been avoided. There is a need for students to acquire social skills under normal classroom conditions and to apply these skills in working with the others in their groups (Kutnick and Mansion, 1998). Social skills are the key to the productivity of a group (Johnson and Johnson, 1997), as these skills reduce interpersonal conflict and facilitate interaction (Cohen, 1994). Students can show proper behaviours in group work after they have learned the proper social skills (Gillies, 2002). If the students are rewarded when they display effective social skills, they will become more adept in using these skills and will use them more often, resulting in higher achievement (Lew et al., 1986). Nevertheless, Chan (2004) found that Hong Kong teachers have often overlooked the importance of teaching their pupils the social skills necessary for engaging in cooperative group work. These social skills include, for example, active listening, encouraging, seeking help and taking turns. Chan’s study showed that although teachers admitted that their pupils needed to learn the social skills required for effective cooperative group work, a majority of the teachers did not teach their pupils the social skills. Some of these teachers wrongly perceived that their pupils could learn social skills incidentally through their interaction in group activities. Acquiring social skills was regarded as only a matter of time. Others argued that they had invited renowned guest speakers to their school regularly to conduct talks for all the pupils in order to make them understand the importance of social skills. The teachers thought that their pupils were able to learn social skills by listening without practicing. The perceptions of these two types of teachers run contrary to the literatures on a acquiring social skills.
Social skills do not come automatically with co-operative learning (Barnes and Todd, 1995), but should be formally taught during a lesson in the same way that a teacher teaches any curriculum subject (Lew et al., 1986). It is suggested that teachers should identify the essential social skills necessary for a certain group task, and teacher revise them with their students prior to asking them to begin work. According to Johnson and Johnson (1990), to learn a social skill, students must see the need for it, understand what it involves before they practice it and evaluate it on completing the task.

Problems of participation without active engagement

In an English lesson, students were asked to practise in a meaningful context the language structures ‘Where do you come from?’ and ‘How do you like China?’ and to use the vocabulary ‘America’, ‘Australia’, ‘Canada’ and ‘Japan’. Students were asked to form pairs and student A in a pair had to ask his partner B the above questions. After B had responded to the questions they switched roles. This time, B asked A the above questions and student A had to respond. The pair work was then completed. When the teacher randomly picked a student to report to the class to check whether he could remember the answers of his partner, the student was unable to provide answers.

In this example, the pair work is structured and members are interdependent of each other. The problem is that the member is not held accountable to his partner for the work done. As such, a student can complete his share of the task by just asking the questions and does not need to care what answer his partner gives.

In this situation Cai et al. (2005) suggests using Three-Step Interview, a co-operative learning structure of Spencer Kagan, to improve students’ active engagement. This time, students are asked to form groups of four with members A, B, C and D and then are sub-divided into two pairs, A and B and C and D. In the first step of the interview, while A asks B the two questions and B answers; C asks D the two questions and D answers. In the second step of the interview the responsibilities are reversed: B asks A the two questions and A answers and D asks C the two questions and C responds. In the third step of the interview, each member takes turns to tell the other pair the information he or she has got from the interview. In order words, the sequence is as follows: A tells C and D about B, B tells C and D about A, C tells A and B about D, and D tells A and B about C. The task now requires the interviewee to listen closely and assess the accuracy of the information reported by the interviewer. As the interviewer does not want to be caught out, he will take an active interest in the interviewer’s answers as he comes to realise that he is held accountable to his partner for the work the latter has done.
Problems in reporting back

Very often, students are asked to report to the class on the outcomes of their group work. Reporting back is an effective learning and teaching strategy as it provides an opportunity for students to demonstrate their performance in front of the class. Hence they become more responsible for their learning, as well as receiving feedback from the teacher and their peers. However, reporting back can have constraints and problems, such as not enough time for all the groups to present, not paying attention to the presenter, and avoiding the need to participate by saying, ‘We have the same views/findings as the previous groups’.

The constraints and problems of reporting back can be solved in a number of ways. In case of time constraints, it is not necessary for all the groups to do their reporting back in the class. Some groups can be asked to demonstrate their outcomes on paper and put it up on the boards in the classroom for their peers and teacher to write down their feedbacks or to receive their verbal feedback in the next lesson (Jacobs et al., 2002). Alternatively, as Looi et al. (2010) suggest, it is only necessary to ask one group to do their presentation. Before that, each group exchanges their outcomes for peer assessment. The group with the best result will present their work to the class.

Sometimes, students do not pay attention when other groups are reporting back. This can be largely because they are busy preparing their own report or because they are tired of hearing similar things being repeated again and again. If it is because of the former, teachers are advised to allow ample time for the preparation and then collect the presentation materials from all the groups prior to the commencement of reporting back. Each group can be given an evaluation sheet to complete when other groups are doing their presentation for the purposes of peer evaluation. If it is because of the latter, different learning tasks can be assigned to different groups so that each group can learn from one another during the reporting back. This is similar to the approach ‘Peer Assessment with Positive Interdependence (PAPI)’ suggested by Kao (2013). To implement the PAPI approach, each group is asked to work on a different task related to a topic, for example planning for an overseas study trip. Upon completion of the group task, students will do peer assessment on the outcome of other groups using the evaluative criteria provided by the teacher. This can increase the objectivity of the assessment and also help the students to become critical assessors.

To discourage the students from reporting back by saying ‘We have the same views/findings as the previous groups’, teachers can ask them to give feedback to the group in question or present additional views if any. For example, a student can say:

We agree with the previous group in suggesting less use of the air-conditioning in order to save energy, but on second thoughts, we do not think it is easy for people to change their habit of enjoying air-conditioning on a hot day. They need time to change and with the help of an alternative solution such as a fan.

(Jacobs et al., 2002)
Training students for group work

Most of the problems discussed in the previous section can be attributed to a single factor: the pupils did not receive sufficient training for working in groups. Working well in groups is not something that just happens. Students need to learn how to work together to benefit one another. This includes two major steps: establishing group rules and providing social skills training.

Establishing group rules

In heterogeneous groups, it is not uncommon to find students of different gender, levels of motivation and performance. The diversity can help to enhance co-operation among the group members on the one hand, but create misunderstandings and conflicts on the other. Effective group work and classroom management must coincide to provide the right environment for learning (Kutnick, 1994). An orderly group does not mean that every student is told to sit still and learn in a passive way. It is a group in which students work together to arrive at a positive learning environment. Though there are some students who can self-manage themselves properly, the majority of the students need some rules and procedures as guidelines. However, not all teachers remember to enforce the rules all the time and think that it does not matter if sometimes the rules are not followed. Teachers who think in this way show inconsistency and it is not therefore surprising that some students choose not to follow the rules in an attempt to try their luck.

There are teachers who set group rules together with their students. This will make the rules more acceptable to the students, and hence increase the possibility of following them. However, the quality of such rules thus made depends on the skills of negotiation of both parties concerned. Gillies and Boyle (2006) found that the negotiation skills used by the teacher will eventually be modelled by the students when they work in groups. Evertson et al. (2003: 24) suggest, ‘A teacher who establishes reasonable rules and procedures, who provides an understandable rationale for them, and who enforces them consistently will find that the majority of students are willing to abide by them’.

It is essential to remember that rules should emphasise positive values and attitudes, be easy to remember and be few in quantity. Rules such as ‘Be considerate’, ‘Help each other’, ‘Respect others’ and ‘Play your role’ should be set for groups. With younger pupils teachers can provide a list of suggestions and ask groups to select their top three or four. Ample examples should be given to illustrate these rules so that students can understand what kinds of behaviours constitute the breaking of them.

One of the group rules mentioned above is ‘Play your role’. To enhance the co-operation of the members, some teachers like to assign specific roles to the group members, such as leader, recorder, timekeeper and encourager. Usually the roles are assigned according to the student’s ability with respect to the role.
Having assigned the roles, teachers should discuss clearly with the students what they are expected to do in their respective roles. Sometimes, in order to develop students’ ability in a role that is not his strength, students are given new roles. It is suggested that a new role can be assigned to a student when he has mastered the skills of his original role, become bored with the original role or been moved to a new group (Huang and Lin, 1996).

Providing social skills training

Interpersonal and small group skills (social skills) are one of the elements of co-operative learning. Social skills have to be taught to facilitate helping each other effectively in groups (Gillies, 2003). To teach these skills, the following steps have been recommended:

First, students must see the need to use the skill. Second, students must understand what the skill is and when it should be used. Third, to master a social skill, students must practise it again and again. Fourth, students must process how frequently and how well they are using the skills. Fifth, students must persevere in practising the skill.

(Johnson and Johnson, 1990: 30)

The social skill active listening will be used as an example for illustrative purposes. First, in order to help students see the need to use the skill, the teacher should discuss with them the benefits of using it and the consequences of not using it. For young learners, the teacher may choose to tell them a story first before beginning the discussion.

Second, to help students understand active listening, a T-chart, comprising ‘What I do’ on the left and ‘What I say’ on the right, is used. An example of a T-chart is given below:

<table>
<thead>
<tr>
<th>Active listening:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>What I do</strong></td>
<td><strong>What I say</strong></td>
</tr>
<tr>
<td>Smiling</td>
<td>Giving comments, ‘Oh great!’</td>
</tr>
<tr>
<td>Nodding</td>
<td>Asking for clarification, ‘Could you . . .?’</td>
</tr>
<tr>
<td>Jotting down notes</td>
<td>. . .</td>
</tr>
<tr>
<td>Keeping eye contact</td>
<td>. . .</td>
</tr>
<tr>
<td>. . .</td>
<td>. . .</td>
</tr>
</tbody>
</table>
The teacher and the students should jointly work out the content of the T-chart. This gives a sense of ownership to the students and helps them to remember the content.

Third, having understood the social skill, students are asked to work on a group task. They are reminded to use active listening in the process. The T-chart should be placed on the blackboard and made big enough for the students to see in case they forget what to do and what to say when demonstrating they are using the social skill correctly.

Fourth, after completing the group task, group processing is conducted for the students to reflect on how well they have used the social skill. This can be a whole-class discussion led by the teacher or done by the students in their own groups. During the group processing, group members are asked to self-evaluate themselves and/or do peer evaluation with reference to the content of the social skill.

Fifth, group tasks should be assigned regularly to help the students to form the habit of using the social skill so that it can be sustained. When the students have performed effectively when using the social skill, the teacher should praise them. They can also be encouraged to practise using the skill outside the classroom or at home.

Arriving at a consensual view is another important social skill that students need to acquire if they are to interact smoothly in groups. It is not easy especially for the young students to come to a consensus during the process of seeking solutions as it takes much time and a high level of negotiating skills. There are other simpler means of decision-making, such as majority decision or averaging members’ opinions. Nevertheless, arriving at a consensual view is a high-quality social skill which can elicit commitment of members to implement the decision (Johnson and Johnson, 1994).

Like other social skills, arriving at a consensual view can also be taught to students using the five-step model of Johnson and Johnson as illustrated above, or by using a four-step model suggested by Galton (Kingsley-Mills et al., 1992) described below. The model consists of four steps: comparing, prioritising, compromising and placing limits. When students compare their views, they focus on ‘Where do we agree/disagree?’ When they prioritise, they ask each other ‘Which is the most important thing?’ Then they compromise by saying ‘What if we said?’ followed by saying ‘Most of us thought this but others pointed out that . . .’ to place limits. Here is an extended extract of a group of pupils demonstrating what a powerful learning tool the use of groups can be when group rules have been established and students have assimilated them. The four pupils, G (encourager), H (noise controller), I (recorder) and J (timekeeper), were discussing how to ease the traffic congestion problems in Hong Kong in a few months’ time. Each of them had a different picture card with some cue questions to stimulate their thinking. They were reminded to use social skills during their discussion. Two T-charts, one on active listening, the other on arriving at a consensual view, were placed on the white board for their reference.
Hong Kong is small and there is not much land to build roads for the vehicles. I think the government should build more flyovers instead.

(Nodding) It is a good idea indeed as flyovers can simply be erected on the existing roads. We do not have to reclaim land before roads can be built.

Yes, but the government has to find money for these flyover projects. Furthermore, the traffic will be even more congested during the construction periods which take quite some time to complete. I have noticed that the number of private cars has been increasing over these years. Compared with buses and trams, the carrying capacity of cars is small but they nearly fill up the roads in the peak hours. I suggest the government impose a heavy tax on cars so that it will make people think whether they really need to buy cars on the one hand, and will bring some income to the government on the other.

Could you explain how the car tax works?

OK. When a car is imported to Hong Kong, the importing company and ultimately the user of the car has to pay tax to the government. If the tax is heavy enough, say double or triple the price of the car, not many people will be interested to buy it. This can have an effect on bringing down the number of cars.

Sure. Easing the traffic congestion problem should not be just the responsibility of the government. I think the citizens should also do something. For example, they should use more public transport instead of relying on their cars.

Before we go on, I suggest we speak a bit softly as it seems we are disturbing our neighbour groups.

Agree.

We do not have much time left. Shall we round up our discussion? Fine. It is not easy for people to change their habit of driving to their workplace without the intervention of the government. The government should quickly legislate against people using their cars every day. People can drive on every other day. For example, a driver can use his car on Monday, Wednesday and Friday if the last digit of his car plate number is an odd number; whereas a driver can use his car on Tuesday, Thursday and Saturday if the last digit is an even number. There is no restriction on driving on Sunday.

I support your view as we are asked to propose a way to ease the traffic congestion problems in Hong Kong in a few months’ time and passing such an ordinance with the co-operation of the citizens takes less time than building flyovers.

And it will not do harm to the economy where imposing a heavy tax on cars could.
It seems we all agree on the suggestion of legislating against the use of private cars on every day in order to ease the traffic congestion problems in a few months’ time.

Then I am going to write it down for presenting to other groups.

Thanks.

Contrary to the didactic mode of instruction in which students listen to the teachers for most of the time, group work provides opportunities for students to interact with each other, encounter cognitive conflicts, adapt or assimilate prior concepts to construct knowledge. However, group work can lead to little learning if it is not carefully designed. It is not uncommon to find while one or two members are working on the group task, the other members are playing the role of ‘free riders’ as the elements of co-operative learning such as positive interdependence and individual accountability have not been structured in the group task. This can lead to issues like unequal participation, participation without active engagement and problems in reporting back. Sometimes, even when the group task is well designed, conflicts and quarrels still exist among the members, hindering the learning process. The problem stems from the inadequate preparation of the students for group work. Students need to be trained in how to work together in a group. This includes establishing group rules and providing social skills training.

Group work has been recommended as one of the teaching strategies in small classes on the ground that the theories of group work, such as constructivism and humanism, also underpin the concepts of SCT. Successful group and pair work can be sustained if the task is structured with the elements of co-operative learning and students are trained in working together. When successful group and pair work has become one of the common teaching strategies in the small classes, teachers will find that provided they take the time to establish the rules and continue to enforce them, it will help to transform the classroom and the teacher–student and student–student relationship.
5 The use of feedback and assessment for developing independence in learning

In this chapter we look at the importance of teacher feedback and formative assessment for helping pupils become independent learners. We argue that much of what takes place in most classrooms has to do with summative evaluation designed to make judgements about individuals relative to others with little attention to personal needs and difficulties. Smaller classes have the capacity to make the learning more personalised allowing teachers to explore pupils’ thinking. In this way pupils are able, over time, to construct a repertoire of strategies for solving problems and to develop the capacity for self-regulation whereby they can identify their own mistakes. This is the key to independent learning. We conclude the chapter by looking at the special case of assessing group work.

Learning to learn

In Chapter 2 we put forward a framework that suggested three kinds of teaching approach which were designed to promote different kinds of learning. When the goal of the lesson was primarily the acquisition of some new knowledge or skill then direct instruction was most appropriate. Here the teacher introduced the topic, provided opportunities for practice and used rapid questioning to determine whether the new knowledge or skill had been retained. An assessment task in this case might consist of short multiple-choice questions in which the pupil had to identify the correct answer.

When, however, the goal of the lesson is to develop understanding, that is the capacity to use this new knowledge in novel situations, then the teaching emphasis should seek to promote extended conversations, either as part of whole-class discussion or through co-operative learning among peers in groups or pairs. In seeking this understanding pupils not only need to construct new schema in which to accommodate this newly acquired knowledge but they also have to reconstruct what they already know to fit into this new framework. The maxim, ‘talk drives learning’ is particularly apt in such cases. Assessment must then be extended beyond being able to recognise correct answers so that multiple choice items are less appropriate and extended written answers which allow pupils to display not only their new knowledge but their reasoning come to the fore.
The final stage of the learning process is when pupils can operate as independent learners or thinkers. Galton (2007: 72) terms this becoming metacognitively wise. Metacognition or understanding and being in control of one’s thinking processes (Pintrich 2002) requires pupils to be able to identify the most appropriate strategies for accomplishing higher-order tasks, such as problem solving, making inferences or exercising one’s creativity. When engaging in such activities pupils need to acquire automacity, that is the ability to select the appropriate strategy intuitively rather than the more time-consuming process of trial and error. Added to this strategic thinking is the capacity to quickly determine when a particular strategy is ineffective. Pupils thus have to be able, among other things, to develop mechanisms for evaluating different guesses, predicting best solutions and finding ways of testing these predictions. This latter ability is referred to in the literature as having executive control. In helping pupils to acquire these capacities feedback and assessment play a key role, because the only way for teachers to evaluate their pupils’ progress in these key areas is to gain an understanding of their thinking as it happens, rather than through the use of written tests which assess outcomes rather than processes. In Brown’s (1997) view, learning in this way requires pupils to argue among themselves, and the teacher, if he or she is to help improve these conversations, must be able to intervene in these internal debates. The main vehicle for doing this is to extend the range of feedback from merely correcting pupils’ errors to providing help and advice whereby pupils can learn to correct their own mistakes.

The importance of feedback

While a teacher may structure the task initially in ways outlined in the previous paragraphs, in the course of a lesson there will be numerous occasions when pupils require help and advice. Feedback, in the widest sense, involves more than simply correcting mistakes. According to Winne and Butler (1994: 5740) feedback is any form of ‘information with which a learner can add to, overwrite, tune, or restructure information in memory, whether that information is domain knowledge, metacognitive knowledge, beliefs about self and tasks or cognitive tactics and strategies’. In early behaviourist theory feedback was seen principally as a mechanism for reinforcement in the same way as practice. However, Kulhavy (1977) has shown that it can only work in this way if the student has responded positively to the initial instruction so that the material is familiar or partially understood. Even then reinforcement may not always occur since the pupil can choose not to accept the advice offered.

Hattie and Timperley (2007) point out that feedback concerns three elements of the task which they characterise as feeding upwards, feeding back and feeding forward. Feeding upwards is concerned with setting the learning goals. These are defined not in terms of content alone but in the manner suggested in Chapter 3 on questioning as indications to the pupils of what teachers expect them to know or do by the end of a lesson. Goals which state that by the end of a lesson pupils will be able to compare, contrast, evaluate and so on are of
Application of six principles to small class practice

When pupils have a clear understanding of the success criteria for any given task they are then able to track their performance and providing the goals are sufficiently challenging make appropriate changes in strategy (Locke and Latham, 1990). This accords with Black and Wiliam’s (1998a: 13) conclusion that ‘the provision of challenging assignments and extensive feedback leads to greater student engagement and higher achievement’.

Hattie’s and Timperley’s (2007) second category, feeding back, concerns the kinds of information which allows pupils to decide how they are doing. It can either concern information about a pupil’s progress or advice on what to do next. While formal assessments provide one source of this kind of feedback, it can also be given during lessons when teachers check on pupils’ progress. One teacher’s approach to tracking is shown in Table 5.1.

Whereas, typically, a teacher might ask a class such questions as ‘Did you all understand?’ or ‘Did you all work hard?’ and get a chorus of positive responses, here the teacher is able to determine each pupil’s evaluation of their performance during the lesson and make a judgement about the effectiveness or otherwise of the teaching. Equally important, the teacher also knows that where there is a lack of understanding on the part of an individual pupil this is a genuine difficulty or is in part due to lack of effort. Some researchers (Schunk, 1983; Covington, 1992) caution against attributing success mainly to the pupils’ hard work. This is because if some in the class have been perceived to achieve their success more easily then those praised for their efforts may infer that the teacher thinks that their ability is somewhat limited. Brophy (2004: 75) in reviewing this and other research comes to similar conclusions.

Some Hong Kong teachers have adopted a practice used in the UK and known as ‘traffic lights’ which is a simplified version of the above procedure which could be used in every lesson and not just at the summation of a topic. Children were given three coloured cards or discs in red, orange and green. Displaying a green card meant that the pupil could work by himself without help; an orange that help was needed but it could probably be got from another pupil.

<table>
<thead>
<tr>
<th>Effort criteria</th>
<th>Understanding criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>I work until I complete and push myself to do more than the minimum required</td>
<td>5</td>
</tr>
<tr>
<td>I work until I complete the task</td>
<td>4</td>
</tr>
<tr>
<td>I make a certain amount of effort and ask questions to improve my understanding</td>
<td>3</td>
</tr>
<tr>
<td>I give some effort but stop if the work becomes too hard</td>
<td>2</td>
</tr>
<tr>
<td>I give very little effort</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Adapted from Pollock (2012: 24).
displaying a green card. A red card indicated the teacher’s help was needed. In this way the teacher’s attention was directed to the pupils with serious learning problems.

The use of the above procedures can develop into the third type of feedback which *feeds forward* and is concerned with pupils’ metacognitive capacities. Probing and reflecting on the use of certain strategies rather than others, identifying errors and considering the appropriateness of particular solutions are all activities that enable pupils to acquire the knowledge required to exercise greater control over their own learning through the process of self-regulation. In one Hong Kong classroom seen recently a pupil had written several sentences but omitted any full stops at the end of them. Instead of putting a cross and writing some comment such as ‘Where are the full stops?’ at the end of the text, this teacher simply put a question mark at the end of each sentence, leaving the student to identify the error and correct it for themselves. Hattie and Timperley (2007) also suggest that when a student is given feedback it may work at a number of different levels. The first of these concerns the pupil’s self-image and usually involves praise or criticism, which is often unrelated to the quality of the performance. In Hong Kong primary classrooms, for example, when a child answers any question correctly it is often the case that the teacher and the rest of the class will give him or her the ‘thumbs up’ sign and chorus ‘You are great, you are good’. In UK classrooms praise is more muted and less frequent (Galton et al., 1999; Harrop and Swinson, 2000). When, as discussed in the next chapter, pupils were shown a cartoon picture of a teacher helping a pupil with their mathematics work and asked to write down what the teacher was saying, over two-thirds of the comments were negative such as ‘You’ve got it wrong’, ‘Do it again’ and ‘You’ve got something right for once!’ (Galton, 1989). Research findings show that praise, unless it is linked to specific evidence of improvement has little effect on attainment or effort (Brophy, 1981; Delin and Baumeister, 1994). ‘You’ve got three more spellings correct compared with last time. Well done!’ is more effective than the general, ‘You’ve worked hard today. Give yourself a merit mark.’ The latter statement tends to say more about the teacher’s evaluation of the pupil’s ability or effort and can have negative consequences, particularly if the pupil feels that they have made similar efforts on other occasions which have gone unnoticed. Too often praise is used as a controlling factor (Kast and Conner, 1988) as when the class is told by the teacher, ‘I like the way that Paul is waiting with his arms folded and ready to listen’. Not only is this likely to embarrass Paul but it can antagonise other members of the class towards this particular pupil. Midgley and Urdan (1992) argue that rewards such as praise should only be given in recognition of the *quality* rather than the *quantity* of a pupil’s accomplishments, particularly when the task involved presents a challenge that taxes his or her abilities. Above all, the practice of seeking to encourage low achievers by praising poorer work is not recommended. This is because more able students often see it as unjust and this leads them to question the teacher’s credibility (Natriello and Dornbusch, 1985). Furthermore, it can have a negative effect on the less able pupil who perceives that the teacher
has little confidence in the latter's capacity to do more than complete routine, easy tasks (Thompson, 1997). According to Brophy (2004: 75):

These cautions are well taken. Ordinarily the notions that students have the ability to succeed, are making good progress, and are putting forth sufficient effort should be implied rather than stated directly in your feedback. Effort should not be mentioned at all if it is satisfactory. If you want to express appreciation to students whose efforts are more than satisfactory do so in ways that do not imply limited ability (e.g. note their careful work, their willingness to stick with a problem until they solve it but don’t tell them that they succeeded because they worked hard. With struggling students . . . feedback should emphasise persistence and patience to allow time for relevant skills to develop . . . Present difficult work not so much as hard, and therefore requiring strenuous effort, but as challenging them to remaining goal orientated and persist in using adaptive learning strategies.

In summary, therefore, Brophy’s (2004) advice is for teachers to motivate their students by telling them to save themselves from having to ‘work hard’ by ‘working smart’. Hattie (2009) argues that the different levels of feedback (self, task, task process and self-regulation) are all involved whatever the particular goals of learning. This reflects the same approach as Moseley et al. (2005: 378) where strategic and reflective thinking operates across all three of their thinking skill strands. They argue that this is because:

While the most recognisable thinking process would appear to involve a series of overlapping phases involving information gathering at the outset, a gradual building up of understanding, and ultimately productive thinking, there are likely to be many occasions when learners will come to realise that they will need to acquire more information or to revise their initial understanding.

The second level at which feedback operates is when informing students how well they have performed on a task. Typically, this involves teachers telling pupils whether their answer is right or wrong, and for this reason it is often referred to as correctional feedback. In many Western advanced countries primary teachers tend to combine corrective feedback with praise or criticism but Bennett and Kell (1989) suggest that this reduces the attention that pupils pay to the task information. Written comments tend to have more effect than providing marks or ticks in a book (Black and Wiliam, 1998a) but even then the effects seem to operate at a surface rather than a deep level that is commonly associated with the acquisition of procedural knowledge rather than understanding (Biggs and Collis, 1982). For this reason it is recommended that task feedback should be combined with the third level which involves task processing. This includes getting pupils to spot their own mistakes (rather than pointing them out) questioning them about the appropriateness of the methods chosen, and asking for suggestions about how to approach similar tasks on subsequent occasions.
The use of feedback and assessment

According to Earley et al. (1990: 105) a combination of task and task processing feedback acts as a cueing mechanism that ‘appears to be a direct and powerful way of shaping an individual’s task strategy’. On the other hand, corrective feedback alone ‘may lure people into a false sense of confidence, which could have implications for long term performance’.

This leads to the final level at which feedback can operate that has to do with becoming ‘metacognitively wise’ through self-regulation of one’s learning. Feedback about self regulation mainly concerns the ways that pupils monitor their own task processing and is therefore closely associated with the concept of assessment for learning (Black and Wiliam, 1998b). To be effective it must go beyond getting pupils to use ‘traffic lights’ or ‘smiley faces’ to indicate the extent to which they need ‘lots, little, or no’ help with their task. There are two important aspects of self-assessment (Paris and Winograd, 1990). The first has to do with self-appraisal and the second with self-management. The former concerns the capacity of the pupil to review their performance and the latter to regulate their behaviour in response to this performance review. Pupils may, for example, re-plan their whole approach, correct particular mistakes, or decide on a short-term ‘quick-fix’ solution that enables them to complete the task.

In any lesson there will often be an overlap between the acquisition of procedural knowledge, growth in understanding and the development of pupils as independent learners, within any given task or topic. Our preference is to support the thesis set out by Alexander et al. (1991), which lays stress upon the hierarchical nature of the process. In Figure 5.1 therefore, the use of various forms of ‘self-regulating’ feedback are linked specifically to the third strand of

Types of knowledge

- **Procedural** (Knowing what and knowing how)
- **Conceptual** (Building understanding)
- **Metacognitive** (Self-regulation of cognitive processing)

- Teaching as direct instruction (transmission)
- Teaching through thoughtful discourse
- Teaching using assessment for learning (AfL)

- Task feedback (mainly corrective and encouraging)
- Task processing feedback (mainly error detection and stressing perseverance)
- Self-regulation feedback (mainly monitoring performance and confidence building)

*Figure 5.1 Knowledge, pedagogy and feedback.*
the framework and the kinds of high-risk, highly challenging tasks which are essential for developing metacognitive wisdom. Task (or surface level) feedback is most frequently used when teaching for knowledge transmission, task-processing feedback when the objective is primarily to teach for understanding, while self-regulating feedback is most appropriate when used to help children learn how to control their own thinking. However, every level of feedback has implications for the pupils’ motivation because the attributions that pupils take away as a result of receiving feedback can affect their self-image in either positive or negative ways. This is because, as Gipps (1994) argues, feedback is both descriptive in that it provides information about the different levels (task, task processing, self-regulation) and also in every case evaluative (concerned with self). At task level this evaluative component is mainly designed to offer encouragement, while at the task processing stage the main object is to encourage pupils in Brophy’s (2004: 75) words to work smarter. At the self-regulation stage it is more important that the evaluative component helps pupils to maintain their confidence, particularly when the self-monitoring process suggests that the chosen strategy may not be working (Tunstall and Gipps, 1996; McCallum et al., 2002).

A detailed analysis by Hattie (2009), who has charted the effect of various forms of feedback on attainment, shows that feedback which raises questions or supplies cues or hints designed to support self-regulation has maximum impact. This is followed by feedback which acts as reinforcement (i.e. spurs on the pupils to greater effort rather than being seen as a comment on their ability). These two components far outweigh the contribution of corrective feedback, rewards (stars, merit stickers, class points, etc.). The use of reinforcement, either negative (punishment) or positive (praise), has even less impact. A further issue to emerge from this analysis was the timing of feedback (delayed or immediate). Kurlick and Kurlick (1988) found that if the feedback was largely to do with ‘teaching for transmission’ then immediate feedback was marginally more beneficial. Much depends on whether further opportunities to make use of the feedback are available and this finding accords with Nuthall and Alton-Lee’s (1995) conclusions. These researchers reported that students required several exposures to material over the course of two or three days in order to ensure that a high degree of information was retained over time. A more important determinant would appear to be the complexity of the task. When the task is difficult (in terms of challenge and risk) it is more effective to delay feedback (Clariana et al., 2000). One possible explanation lies in the exchange reported in Galton (2007: 108) where pupils said that when working collaboratively they preferred the teacher to delay giving help until group members had formed some opinions which they could defend collectively. Too early an intervention was regarded as a ‘teacher-take-over’ and made pupils feel that they no longer ‘owned their ideas’.

Assessment practice in Hong Kong primary classrooms

Assessment in the form of public and school-based examinations has long made a strong impact on education systems in Asian societies, including Hong Kong (see Biggs, 1998). In recent years, policy-makers, educators and the public have
been increasingly concerned with the negative backwash effect of this form of assessment on the school curriculum, on pedagogy and even on the lives of students and their families. In the past two decades, assessment reforms which have sought to use assessment to improve teaching and learning have been gradually taken up at the policy level. In Hong Kong, this was symbolised by the launching of the large-scale target-oriented curriculum reform in the 1990s, which advocated diversified modes of assessment and feedback mechanisms to integrate assessment into teaching and learning (Education Department, 1999; Adamson et al., 2000). The far-reaching education reforms, launched in the year 2000, further modified the assessment mechanism of various stages of education (Education Commission, 2000), highlighted assessment as key for learning and calls on all schools to review their current assessment practices and put more emphasis on assessment for learning (Curriculum Development Council, 2001). As a result of these reforms, many Hong Kong primary schools have introduced a wide range of initiatives to use assessment to promote learning. Yet its effectiveness varies a lot from school to school – it is evident that traditional assessment practices and school cultures are still inhibiting change.

During the course of the Study on Small Class Teaching (SCT) in the period 2004–2008 many primary classrooms were visited and besides the systematic observations of teaching a considerable amount of information was collected bearing on the working lives of teachers (Galton and Pell, 2012a). One fact stood out: Hong Kong primary teachers worked much longer hours than their counterparts in the West. Whereas in countries such as the UK and Canada an average week was around 45 hours, and this was slightly higher than in New Zealand and Australia (Galton and MacBeath, 2008), a large-scale study by Lai (2011) indicated that 58.4 per cent of Hong Kong primary teachers reported working 61 hours or more per week (including Saturday and Sunday) and 27 per cent worked 71 hours or more. Much of the difference could be explained in marking children’s work either in the form of the set homework or the worksheets that were completed and collected during the lesson itself. This pattern is not dissimilar from other Eastern Asian countries.

Besides taking up a considerable amount of a teacher’s non-contact time, over-reliance on this form of assessment has one big disadvantage: the teacher only discovers whether his or her pupils have understood what has been taught after the lesson has been completed. By then it is too late to have changed his or her approach to include further explanation of key points and the only solution is to spend time in a subsequent lesson re-teaching the previous content. As noted by Morris and Adamson (2010: 130).

It is common practice in schools to provide pupils with feedback on completion of their tasks. Teachers collect the assignments and carry out two functions simultaneously: grading and giving feedback. This process denies pupils the opportunity to incorporate feedback into their work before it is graded. Assessment processes that focus on learning allow for timely feedback, so that pupils can improve their work before it is submitted as the final product.
In theory teachers could also use questioning, as suggested in the above section on feedback, to check for understanding. In practice, however, questions were usually concerned to elicit factual knowledge, involved brief one to one exchanges and were rarely extended to probe for conceptual misunderstandings. Often, as described in Chapter 3, the exchange was guided by the teacher’s response so that the pupil was able to arrive at an acceptable answer through the teacher’s prompting.

If the time given to the post-lesson marking of pupils’ work is to be reduced, a teacher needs to make use of appropriate forms of assessment which allow more immediate judgements about a pupil’s degree of understanding (or misunderstanding) to be made. Clearly, extending the nature of feedback beyond its corrective forms has an important part to play so that the proportion of oral to written assessment is increased. Table 5.2 suggests how, for example, the form of assessment might vary according to the learning goals of a lesson or topic.

For low-level objectives mainly concerned with knowledge and skill acquisition we have already suggested that multiple-choice test items are most appropriate since they require pupils to recognise a correct answer rather than creating one. Here the importance of developing a supportive classroom climate is useful since it will allow neighbouring pupils to swap papers and mark each other’s answers, thus saving time and allowing the teacher to question the class when it appears that many have chosen an inappropriate answer. In this way misconceptions can readily be identified and corrected.

In teaching for understanding, however, the teacher often needs to follow the chain of thought which led pupils to come up with a particular response. Extended class discussion is particularly appropriate because it allows the teacher to follow up answers with further questions such as ‘Why do you say that?’ or ‘Can you explain a little more please?’ as discussed in Chapter 3, thus exploring the reasoning behind the pupil’s response. Drawing other pupils into the exchange so that a dialogue between pupils developed can also be promoted by asking such questions as ‘Do you agree?’ or ‘Anyone wishes to add anything?’ Extended written work in the form of a paragraph for younger pupils now replaces multiple choices and here a short written comment is to be preferred to a tick in the margin. In such written work pupils are expected to show their

<table>
<thead>
<tr>
<th>Objective Level</th>
<th>Main Teaching Approach</th>
<th>Main Assessment tools</th>
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<tbody>
<tr>
<td>1.1 Low Level</td>
<td>Teaching for transmission using direct instruction</td>
<td>Rapid class questioning, multiple-choice tests</td>
</tr>
<tr>
<td>1.2 Medium level and some higher level</td>
<td>Teaching for understanding using extended class discussion and group work</td>
<td>Use of dialogic questioning with suitable wait times and extended written work</td>
</tr>
<tr>
<td>1.3 Advanced higher level</td>
<td>Teaching for strategic thinking mainly through investigations, problem solving, etc.</td>
<td>Use of task processing feedback, pupil reflection and class debriefing</td>
</tr>
</tbody>
</table>
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working in mathematics or provide reasons in English and Chinese. Teaching pupils at an early stage that any suggestion or conclusion should always be followed by a ‘because’ is a useful means of introducing this approach.

Finally in seeking to promote strategic thinking, task processing feedback is essential. Written answers provide few opportunities for teachers to follow the logic of a pupil’s thoughts. This can only emerge through extended conversations with the individual whereby the teacher can discover the reasoning (and motivation) behind the choices made. Class debriefing exercises where a pupil comes to the front and explains his or her reasoning is a particular valuable form of this approach. Other pupils can be asked to comment and to suggest alternatives with the various suggestions evaluated.

The meanings of assessment for learning

Most teachers are aware of the often-made distinction between summative and formative assessment. The terms coined by Scriven (1967) were used to distinguish different purposes to which assessment might be put as part of evaluating a curriculum. Summative assessments were concerned with an overall judgement as to the effectiveness of the curriculum package, whereas the formative form was used to enact ongoing improvements on particular units. Bloom (1971) then applied the same distinction to judgements about pupils’ attainment using tests. Summative assessment mainly concerned the grading of pupils while formative measures were primarily a means of improving teaching and learning. Later definitions (Black and Wiliam, 1998b; Cowie and Bell, 1999) extended this broad categorisation so that formative assessment

- can be undertaken by both teachers and pupils;
- provides information to be used as feedback to modify teaching and learning activities during the course of the learning.

This suggests that formative assessment is an ongoing process rather than a tool for testing the pupils’ immediate grasp of the subject matter of a lesson. Wiliam (2011: 38), for example, argues that the same test items can be used for both purposes. He cites the case of a teacher setting a past paper from a public examination as practice for the real thing. Instead of grading the scores and going through the answers this teacher put the pupils in groups, tasked with comparing their unmarked answers and arriving, collectively, at what they felt was the best possible response. These group answers were then reviewed by the whole class and as such fulfilled the above two criteria.

In an effort to avoid any confusion some commentators suggested that the term formative assessment should be replaced by the term assessment for learning (AfL) (Broadfoot et al., 1999) where the criteria were extended to include:

- the provision of effective feedback to pupils;
- active involvement of pupils in their own learning;
adjustment of teaching to take account of the assessment;
recognition of the profound influence assessment has upon the motivation and self-esteem of pupils;
the need for pupils to be able to assess themselves and understand how to improve.

More recently still other terms, Assessment of Learning (AoL) and Assessment as Learning (AaL), have been introduced. According to Clarke (2008) AoL refers to any summative measure (whether class-based, school-based or national) while the focus of AaL is on asking how to improve learning in contrast to AfL, which deals with what the pupil must do to improve. Clarke’s example concerns the use of adjectives. A teacher might say of a piece of writing, ‘This adjective could be better’ (the what), and might go on to suggest that the pupil studies a paragraph from another child’s story to see how adjectives could be used to greater effect (the how). For our purposes, a more useful exposition of these terms is provided by the Hong Kong researcher Mok (2011) who integrates these three components of assessment to create an overarching framework known as SLOA (self-directed learning orientated assessment) of which AfL is the central component.

For Mok, the main purpose of the assessment of learning component is ‘to identify the achievement of the learner at the end of key learning stages’ (2011: 23). Mok, however, unlike Clarke (2008), sees its purpose as doing more than providing a summative record of the pupils’ present levels of achievement. She argues that it is equally useful as a tool for matching achievement against the intended goals of learning, and where gaps between the former and the latter are identified, using this information to undertake adjustments to the curriculum. Mok and her colleagues (Lau et al., 2009; Lee, 2009) recognise the problem of establishing norms so that, for example, a pupil’s score in P1 can be compared to that in P2 in order to assess his or her progress. To this end item banks in mathematics and English have been developed with over two thousand items. Each item is placed on a unitary ability scale using a form of analysis known as the Rasch method (Bond and Fox, 2007), which allows items of different difficulty (i.e. those set for primary one students and those set for the upper primary years) to be compared on a single ability scale.

Rather than only recording total test scores, teachers without access to these sophisticated forms of analysis can still build an informative pupil’s personal learning profile in ways which involve only a limited amount of extra work. For example, in teaching shapes, a teacher might specify among learning goals that pupils should be able to recognise different shapes (rectangles, circles, triangles) distinguish between different forms of each shape (square, parallelogram, right-angle, equilateral triangles, etc.) and then identify such shapes in authentic situations e.g. in places around the school or in the classroom (windows, desks, roofing structure, etc.). By setting a short multiple-choice test (for assessing recognition and the pupils’ capacity to distinguish between different shapes) and partly by setting an activity where pupils walk around the school recording as
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many different examples of each shape as they can identify, marks can be awarded for each of the three components of the learning goal. In some cases, particularly in mathematics, it can save time to order the items so that in this instance the first ten questions deal with recognition and the next ten involve distinguishing between shapes. Each pair of pupils can mark each other’s answers as the teacher works through the examples and record at the top of the test paper the number correct in the first ten and the number in the second. The teacher can then record these marks for each pupil on the profile sheet. With care, and over time, profiles can reveal individual strengths and weaknesses in ways that overall total scores cannot.

Mok (2011: 114) quotes an example of a Hong Kong teacher in a P3 mathematics class where pupils had to select from four options the fraction of a triangle which was shaded. Two of the possible answers in this case were correct (½ and 4/8) but pupils selecting the second option had not mastered the concept of a ‘proper fraction’. For an English written assignment P6 aged pupils were faced with the task of describing a character in a story by referring to something the character said, did, how he or she displayed certain habits (dressed, walked, etc.) or expressed feelings. Although marking by impression, this teacher by scoring each component separately was able to give specific feedback in the following lesson concerning the strengths and weaknesses of the answers both at a whole class and individual level. In a Chinese lesson another teacher required pupils to read a short poem in Cantonese. Pupils were judged according to their correct pronunciation, their ability to read at a reasonable speed and the intonation they used in conveying a dramatic impression. The criteria were carefully explained to the class and pupils were required to discuss and evaluate each other’s performance.

Assessment for learning makes use of evidence collected through AoL and interprets it in ways that ‘inform the changes required for improvement [of the pupil’s] subsequent learning and the [teacher’s] teaching’ (Mok 2011: 26). In addition to the use of tests and worksheets to collect this information classroom questioning and task processing feedback is an important and often necessary component because the teacher has to probe the thinking of his or her pupils. In the illustrative example Mok describes a conversation with P3 pupils. A square is divided such that six shaded triangular parts are all equal and the seventh section is twice the area of the other six. Some pupils say correctly that the shaded areas cover 6/8 of the square while others say the answer is 6/7.

The teacher’s learning goal is to reinforce the idea that fractions constitute ‘equally divided portions’, but instead of reinforcing this concept the teacher hangs back from offering the correct answer and, instead, deploys the pose-pause-pounce-bounce technique discussed in the chapter on questioning. Wait times were thus extended and the teacher, because several pupils participated in the discussion, was able to determine the extent to which this was the class’s rather than an individual’s difficulty. Mok recognises that such discussions take up lesson time and so argues (2011: 31) that teachers should choose to deploy this approach when the misunderstanding is critical to the mastery of a particular concept, as
was the case here, since the notion of ‘equally divided portions’ is essential in handling fractions

With written work Wiliam (2011: 129) suggests a technique he calls ‘three questions’ suitable for upper primary. He argues that feedback is of little use if ‘it does not cause the pupil to think’. When reading a pupil’s work a teacher notes three things on which s/he would like him or her to reflect. One of these might, for example, be the choice of adjectives in the previous discussion of writing character descriptions. At the point at which the teacher notes a suitable example he or she puts a number inside a circle in the text. Then at the bottom of the page the teacher writes a question and leaves a space for the pupil to respond before writing the second question and so forth. This fulfils another of Wiliam’s criteria for effective feedback, namely it should result in more work for the receiver than the giver.

Assessment as learning has to do with the metacognitive elements of learning, what Lahelma and Gordon (1997) characterise as becoming a ‘professional pupil’. Pupils set their own learning goals and monitor their own progress towards the achievement of these goals. Getting pupils to share their thoughts with the class (thinking aloud) to encourage self-reflection is an important tool but Mok (2011: 48–51) has also developed the learning log. In their log pupils record their learning goals and self-assess how far they have achieved these (using evidence from various assessments and their estimate of their performance in class or peer discussion). Having identified gaps between intended goals and outcomes, pupils are required to consider specific strategies for improvement. From time to time the log is shared with the teacher and also in some cases with parents and peers who are invited to add comments. Use is made of rating scales to self-assess the pupil’s achievement level (very good, above average, rather weak and very weak) to determine in which subjects more effort is needed and to make predictions about future achievement. Wiliam (2011: 157) stresses that it is important for teachers to lay down the ground rules as to what it is acceptable to put into these logs. He quotes a case of a secondary school student who wrote, ‘I could do better in maths if I had a better teacher’. When told by their form tutor that this was unacceptable the student then was left to guess what it was that she should write and ended up with the sentence, ‘I would do better at maths if I brought my equipment to school’. With younger pupils Wiliam suggests that they be asked to respond to not more than three of several prompts such as:

Today I learned
The most useful thing I gained from this lesson
I was interested in
One thing I’m still not sure about is
I want to find more about
After the lesson I feel

Critics of this approach point to difficulty of adapting the existing assessment culture in countries, such as those in Eastern Asia, employing ‘high-stakes testing’
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for selection purposes. Teachers need to be reassured that these new approaches work before being persuaded to modify the existing methods. Mok (2011: 89–96) has carried out two studies involving over 1,000 pupils which point to significant gains in achievement in mathematics and English among pupils in Macau and Hangzhou on the Mainland. Perhaps more important was the upsurge in intrinsic motivation among these primary pupils in years four and five.

Assessment for learning and the key principles of small class teaching

At the end of Chapter 2 we outlined the six key principles of effective teaching in small class settings – setting objectives, questioning, group work, active participation, feedback and assessment for learning (Figure 2.4). Despite the fact that assessment for learning is placed last on the list, we would like to stress that it should never be confined to the end of a lesson or at an end-of-term examination. To maximise its potential in helping students improve their learning, assessment practices should be well aligned with the other key principles. Assessment for learning is also greatly facilitated by active and meaningful student participation in classroom activities and discourses (to be discussed in the next chapter). In the following section, we will further discuss the logical relationship between setting objectives and assessment, as well as how assessment of group work can be made more effective.

Setting effective objectives is essential to assessment for learning

Setting effective objectives is an essential element of assessment for learning. Well-set objectives not only guide effective teaching, but allow teachers to share with students the success criteria at the start of teaching of a unit, prepare appropriate assessment procedures to collect evidence of achievement, and evaluate whether the intended outcomes have been achieved during various learning stages (Gagne et al., 2005). The involvement of learners in setting goals and having a shared understanding of the assessment criteria helps them to become self-directed learners. Broadfoot et al. (1999: 2) notes:

For effective learning to take place learners need to understand what it is they are trying to achieve – and want to achieve it. Understanding and commitment follows when learners have some part in deciding goals and identifying criteria for assessing progress. Communicating assessment criteria involves discussing them with learners using terms that they can understand, providing examples of how the criteria can be met in practice and engaging learners in peer and self-assessment.

In Chapter 3, we stated that meaningful learning objectives are not only concerned with content to be taught but also emphasise the thinking process the
lesson is intended to enhance. However, in many lessons observed we found that teachers often considered that students had already successfully achieved the intended learning outcomes when the latter were able to recall factual answers or repeat teaching points at the end of a lesson. Our post-lesson discussion with teachers indicated that most of them had not clearly thought out their lesson objectives before instruction started and hence had not drawn up any effective plans for assessment. Similarly Ip et al. (2012) observed that primary school Chinese language teachers usually did not have carefully defined, concrete and consistent assessment criteria and rarely explained to students the assessment criteria before class activities. All these lapses have hindered Assessment for Learning.

A useful tool to assess whether students have achieved the objectives is the use of an assessment rubric. As Frey and Fisher (2011: 73) noted, ‘rubrics are a good way to ensure that feedback is understandable, assuming that students have developed the rubric with the teacher or that the teacher has focused on quality indicators from the rubric in advance of students’ initial work on the task’. Rubrics are also particularly suited to assess performance in authentic situations (Gagne et al., 2005). Ip et al. (2012) reports a Primary 1 Chinese-language lesson in which the teacher defines the learning objectives of speaking and listening activities, and designs a rubric to facilitate peer assessment as follows:

- **Speaking**: Recite a poem in a lively manner, and with appropriate facial expressions and body posture (the context being the child’s poem ‘A large umbrella’).
- **Listening**: Actively listen to the recitation of other students, and evaluate their performance.
- **Peer assessment**: Students in pairs recite the poem to each other in turn and fill in the following assessment rubric.

Figure 5.2 shows the assessment rubric that Ip and the teacher devised to allow pupils to evaluate each other’s performance.

**Assessing group work: a special case**

Of all the six principles, that of increasing co-operation between pupils through group and pair work is one of the pivotal changes in classroom practice associated with small class teaching. In the West, where advocacy of group work has a long history, while pupils often sit in groups, presumably for social reasons, they rarely work as a group. Research by Kutnick et al. (2007) confirmed that teachers use groups in humanities and general studies but relatively infrequently in subjects such as English, mathematics and science. When group work is undertaken it is mainly for practical reasons, as in a science lesson where the determining factor was the availability of equipment. In other cases the decision to move
to group work was often arbitrary. For example, in one instance reported in Kutnick et al. (2007) the rationale for changing from class to groups was ‘because children were becoming bored with the class work and I thought they needed a change’.

When teachers in England were asked why they didn’t use group work more often a defining factor was that many teachers thought that assessing the individual contributions to a group task was likely to be both problematic and time consuming (Kutnick et al., 2007). In overcoming this reluctance Johnson and Johnson (2004) argue that if teachers are to be persuaded to use group work more often for academic purposes they need to be disabused of a number of misconceptions about the assessment process in general and its use for groups in particular. The first of these misconceptions, and perhaps the most powerful, is that an individual assessment always requires an individual performance since an assessment to be valid needs to measure unassisted learning. Hence it follows that assessment data can only be collected once the pupil has completed the piece of work on which the marks are to be awarded. A further misconception is that it is only possible to have unbiased assessments if they are carried out by the teacher. From this viewpoint, therefore, asking pupils to assess each other, or assessing the contribution of individual pupils to a group product, provides unreliable and invalid data. For teachers to accept that it is possible and feasible to assess group work they need to be convinced that a group can have a powerful effect on the individual performance of its members. Thus group work can offer insights into the potential of some pupils that might not emerge when more conventional forms of testing are used.

<table>
<thead>
<tr>
<th>When reciting the poem, my group member is able to:</th>
<th>Please circle his/her performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recite lively and clearly</td>
<td>☑ ☑ ☑</td>
</tr>
<tr>
<td>Have suitable pauses during recitation</td>
<td>☑ ☑ ☑</td>
</tr>
<tr>
<td>Adopt appropriate body posture during recitation of the following sentences of the poem:</td>
<td></td>
</tr>
<tr>
<td>The little girl opens up a large umbrella.</td>
<td>☑ ☑ ☑</td>
</tr>
<tr>
<td>This large mushroom knows how to walk.</td>
<td>☑ ☑ ☑</td>
</tr>
<tr>
<td>Walk into the rain.</td>
<td>☑ ☑ ☑</td>
</tr>
<tr>
<td>He/she has ____. ☑</td>
<td>Signature of observer: _________________________</td>
</tr>
</tbody>
</table>

*Figure 5.2* An assessment rubric for judging the quality of speaking and listening. Source: Adapted from Ip et al. (2012: 55–6).
What aspects of group work should be assessed?

There tends to be a division of opinion as to what aspects of group work should and should not be assessed. Most proponents of group work agree that it is important to distinguish between the assessment of group working skills and the assessment of what is learned during group work but not all agree with Dunne and Bennett (1994) that the pupils’ cognitive achievements, both individual and joint constructions should be included in any assessment. In designating what constitutes essential group work skills, Webb (1995) puts the emphasis on interpersonal skills including the nature of the interactions with other group members (active listening, raising questions, making useful suggestions, explaining, etc.) and an individual’s role in bringing about successful collaboration (acting as gatekeeper, as an organiser, as negotiator in attempts to arrive at a consensus view, etc). Others emphasise various social processes such as degree of participation, the degree of empathy with other points of view, sensitivity to the needs of others. Some writers argue that individual contributions should not be assessed as this weakens the extent to which certain pupils, particularly the more able ones, are willing to share their ideas, while others argue that if only the group’s contribution as a whole is assessed then social loafing will occur whereby some pupils will stand aside and let other group members do most of the work. For these reasons a compromise position has been adopted by most advocates of group work whereby both the individual and the group contributions are assessed. Slavin (1995) reports that when both contributions are assessed the improvement in pupils’ performance produces medium-effect sizes of the order of 0.40 whereas when only one of the contributions is used the effect sizes tend to be much smaller (typically 0.17).

Assessing individual contributions to group work

Perhaps the most straightforward method of assessing individual contributions to a group task involves various forms of team games tournament approaches as designed and used by Slavin (1995). The gist of the assessment procedure is that each individual takes a test before and after the group activity. The raw score gains of each individual in the group are then added together to give a group score. Only by working together with the more able pupil helping the slower learning ones can a group achieve a winning total. At the same time the teacher can assess the improvements of individual team members by examining differences between pre- and post-test scores. Slavin argues that this method deals with the criticism that individual assessments tend to make more able pupils less willing to share their knowledge with others. Slavin’s approach has been modified by Race (2000) who suggests that the individual pupil’s score should be weighted in some way by the group’s score.

Race’s recommendation is similar to that suggested by Johnson and Johnson (2004) who argue that an individual’s grade should also reflect how well the group worked together. Johnson and Johnson suggest combining the individual
The use of feedback and assessment

score with the average group score or providing bonus points based on either the lowest individual score or the average improvement score. However, critics of the original Slavin approach, such as Jacobs et al. (2002), point to the fact that there is a need to distinguish between the products resulting from working in a group and the effectiveness of the group working skills which bring about a satisfactory joint outcome. These latter skills include understanding and implementing the task, making best use of available resources and the degree of appropriate help offered to others.

As a solution to this problem Johnson and Johnson (2004) suggest the use of peer assessment whereby each group member rates the others on various group working skills such as listening carefully to other points of view, taking one’s turn, offering reasons when making suggestions and so forth. It is argued that this not only avoids potential teacher bias when basing their judgements on informal observations, but it can also be a learning process for the pupils since as the list of skills is added to over time to include, for example, maintenance strategies, pupils gradually gain metacognitive understanding of what it is to be a good group member. A variation of this approach involves self-assessment with the pupil’s own evaluation being compared with those of his or her peers. Other methods involve choosing a pupil to carry out assessments on the rest of the group using a simple category observation system (Dunne and Bennett, 1994). These authors also offer a variety of alternative methods including post-task interviews, whole-class debriefings and video or audio recordings. Although the work involved can be considerable for teachers, Dunne and Bennett argue that it can provide them with important insights into pupil behaviour. This, in turn, can have positive effects on their teaching and their expectations, since teachers may be surprised at the amount of work that some pupils can do unaided and the extent to which others turn out to be effective collaborators.

Assessing the group’s contribution

When the group’s contribution is to be assessed a number of additional considerations need to be taken into account. In this connection, Webb (1995) points out that it is sometimes the case that the most often-cited reasons for using group work in the classroom do not match the choice of assessment method. This situation generally arises because only certain methods constitute a valid measure of a particular purpose of assessment, particularly when these purposes represent competing goals of learning from group work versus group productivity (Webb, 1995). It is therefore important in designing group assessments to appreciate that the manner in which groups are required to function will influence the outcomes of the assessment and these group processes need to be taken into consideration in the design of the assessment procedure.

Where the purpose of the assessment is to establish how much learning over and above the pupil’s individual competence has been constructed in collaboration with others it is necessary to employ some pre-test measure prior to the group activity. Webb (1995) cites an example in science where pupils first had
to list the various factors that influence yeast’s activity in food. They then carried out an activity in groups which required them to design, carry out, interpret and summarise the results of an experiment which investigated what happened when yeast was mixed with food. The summary was constructed by the group, written up and then presented orally to the rest of the class. Then in the third part of the exercise pupils again worked individually to analyse and critique a summary written by another group. The difference in scores on the first task and the third task was then taken to represent the extent to which each pupil’s learning was enhanced as the result of the group’s collaborative activities. A group assessment can then be arrived at by adding the scores of individual members.

When, however, the purpose of the assessment is group productivity then the effect on individual members is ignored and only the group outcome is considered. In this case either the quantity or the quality of the product or a combination of both measures can be used in the assessment. However, it is important from the start that pupils understand the criteria that are being employed since an assessment based on the amount of the product (the number of ideas generated by the group) may result in different kinds of collaborative behaviour than when the quality of these ideas is the main criterion. In the former case where the quantity of the ideas matters success does not depend on every group member understanding what is being proposed. Thus, there may be fewer attempts by group members to justify their ideas or to give and receive elaborated explanation as an aid to understanding, whereas when quality is the criterion then these kinds of interaction are an important part of the group process when attempting to arrive at a consensus about the most appropriate idea or the best solution to a problem.

A different kind of purpose of assessment concerns itself with the functioning of the group itself. Here social constructivist theories allied to that of Piaget’s emphasis on promoting cognitive dissonance, as a way of enabling individuals to construct new schema and to reconstruct existing ones, provide a theoretical framework for the kinds of interactions that need to take place within the group if learning is to take place. These include higher-level cognitive behaviours such as making alternative suggestions, raising questions, offering explanations and the social skills of being able to participate in the cut and thrust of debate by agreeing and disagreeing without provoking animosity on the part of other group members.

In all these different interpretations of what it means to undertake a group assessment there is a need to ensure that the composition of the groups is such that, as far as it is feasible, no one group enjoys an advantage over another. Johnson and Johnson (2004) summarise the research which shows that the ability, gender, ethnicity and status of individual members influence the way in which the group performs. Lower-achieving pupils have been found to make greater progress when in heterogeneous groups providing the more able pupils have been trained to offer appropriate help, particularly in the matter of offering relevant explanations. The evidence concerning high achievers is less clear.
Some studies show that it matters little whether the groups are homogeneous or heterogeneous while others show that in the latter type of group the more able pupils tended to assume the role of the teacher and clarify their own ideas by having to explain them to others.

**Procedures for assessing group productivity**

Race (2000) argues that assessing group tasks is one of the most difficult things to do well. He suggests that there is no ideal way to carry out this process. The main problem is that allocating a single group score can be perceived as unfair by those who do most of the work. For this reason he suggests that all assessments should carry with them some form of additional differential. If, for example, a teacher gives a group of four pupils a mark of 60 per cent then the group can be asked to partition this mark according to their estimate of individual contributions. These contributions can stand and be recorded separately or carry an added mark for particular contributions. While this approach may be perceived to be fairer it requires a certain maturity on the part of the participants to obtain a consensus about who should get most marks. If there is some borderline level, such as an award of a credit for a mark above a specific score, then groups may distribute the marks accordingly to gain the maximum advantage for their members. To avoid this possibility Race (2000) recommends that the individual contributions should also be assessed by means of a short oral viva. Even here there are problems since some pupils do not perform well under this form of assessment, either due to shyness or modesty, and there may be some advantage from being interviewed last since the questions asked become common knowledge and allow later participants to prepare for the interview. Moreover, in a class of 30 pupils conducting the assessment adds enormously to the teacher’s workload.

All commentators are agreed, however, that pupils need to be informed, prior to the assessment, not only about what is to be assessed but the means by which the assessment is to be carried out. Where group processes are to be included then the choice usually lies between the use of some simple observation check-list where the teacher follows different pupils from each group in a predetermined order or a self-evaluation sheet which pupils complete at the conclusion of the group activity. A refinement of this approach is to ask pupils to complete some form of learning diary or narrative log of group work which charts progress over time or to fill in trigger sheets at selected time intervals during the group activity. Most of the suggested observation schedules are watered down versions of research instruments. They include categories such as whether the pupil was on task, whether he or she initiated or responded in a conversation with other group members and whether the conversation was sustained. More detailed systems will also attempt to record the nature of the conversation; whether it involved making a suggestion, raising a question, offering an explanation or expressing disagreement, and so on. Other versions of this approach use videotape or audiotape to capture these pupil–pupil exchanges and then award a
summative rating for each group on the various categories. Because this form of assessment can be time consuming it has been suggested that it is carried out by means of a one-off specially chosen assignment and that as far as possible the task chosen as part of the group activity should be an authentic one which is designed to measure pupils’ performance in real-life contexts (Crotty, 1994).

In creating criteria which allow pupils to evaluate their group’s performance it is necessary to cater for different levels of complexity which match the expected capabilities of the group. At elementary level pupils might be required to report on whether members of the group took turns in talking and listening, helped other members to express their ideas, stayed on task and so forth. In the middle and high school the questions would more likely also concern the planning process (whether deadlines were met), execution (the division of labour), degree of co-operation (all members contributed to decision making) participation (all took an equal part) and how the group responded to feedback from other groups and the teacher. Whatever the sophistication of the evaluation sheets, however, it is essential that training in carrying out these assessments is provided in the provision of guidelines and exemplars. Not only does this ensure improved reliability but it also conveys to the pupils what is required of them when working in groups. Through this self-evaluation process pupils therefore gradually also gain a metacognitive understanding of what it is to be a good group person and this is likely to enhance future performance. Johnson and Johnson (2004) suggest that the assessment procedures work best when they include both group products and processes. Furthermore, they report that when teacher and pupils share responsibility for the assessment the improvement in performance is greater than when the processing is the sole responsibility of either the teacher or the pupils.

The growth in the use of information and communication technology in most schools has led to increased interest in the use of portfolio assessment described by Johnson and Johnson (2004) as an organised collection of group work samples, accumulated over time, including individual work samples from each member, together with accounts of presentations and the subsequent critiques of teachers and peers. Electronic portfolios allow pupils to display evidence of both academic and social growth over time and when these are made publicly available they can become a powerful tool for sharing learning with teachers and peers. To be effective, however, teachers need to instruct pupils in the best ways of planning and implementing their portfolios so that the criteria for good work are recognised and examples which articulate these qualities are selected. Johnson and Johnson (2004) also suggest that group assessment can be carried out through a series of conferences. At the first of these, the goal-setting conference, groups or the whole class set targets. At the second progress assessment conference groups assess the extent to which these targets are being met while at the final post-evaluation conference the groups discuss and decide their level of achievement. This, in turn, leads to the next goal-setting conference.

The above discussion would suggest that there are a number of principles which should guide the teacher when seeking to assess group work. First, a fair
system should be used that rewards both individual effort and group collaboration. Second, the assessment of group productivity should involve both teachers and pupils in the undertaking. Third, in designing an assessment of group productivity a distinction should be made between quantity and quality because this may well change the way in which group members approach the task. Fourth, a judgement also needs to be made between the purposes of the group work – whether the emphasis is to be on learning outcomes or on the group processes such as the kind of interactions that theories and empirical evidence suggest enhance learning through cooperation. Fifth, the criteria to be used in the assessment must be made explicit to pupils beforehand and training, opportunities for practice and for review should be provided. Sixth, if the assessment is to be a one-off measure, akin to a summative test, it is better to design an activity which is as authentic as possible.
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Part III

Implications for small class teaching in an East Asian context
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6 Bringing it all together and sustaining effective practice

In this chapter we begin by extending the discussion of what it means to have pupils who are ‘active participants’ in their learning, one of the six principles of small class teaching (SCT). We go on to emphasise, however, that the benefits of reduced class size encompass more than cognitive gains in that it also has the potential to foster positive attitudes to learning leading to increased levels of intrinsic motivation which, in turn, can create a sense of well-being. This requires a special kind of classroom environment; one where pupils take responsibility for their learning and behaviour, and where they are prepared to take risks and not be afraid to tell the teacher when they don’t understand what has been taught. We go on to argue that small classes, in particular, can provide the opportunity for teachers to develop the kind of relationship with pupils that foster feelings of school ‘connectedness’. We complete the chapter by looking at how schools can develop and sustain the teaching practices embodied in the six principles through the creation of learning circles and the role of the school principal and subject leaders in supporting teachers’ efforts to bring about changes in their classroom practice.

Active participation and active learning: what do they mean?

Throughout the previous chapters there are numerous references to the pupils’ need to actively participate in the lesson with the implication that such participation brings about active as opposed to passive forms of learning. So far, however, although the term exists as one of our six principles of SCT, there has been no extended discussion of what this phrase implies. According to Maynard (2002) most teachers in the UK equate active participation and active learning with learning by doing and therefore associate the terms with a lesson involving some practical activity. There is anecdotal evidence that the same is true of teachers elsewhere. In Hong Kong, for example, during the initial stage of the implementation of SCT one teacher presented a lesson where the P6 pupils were exploring the destruction of the Roman city of Pompeii. The teacher told the class about life in the city before the volcano struck and then described the aftermath of the disaster using pictures downloaded from the internet. The group activity required the pupils to create a mime of the people going about their daily business before and after the volcano erupted. Creating and performing the mime,
especially the latter activity, was regarded by the teacher as a form of active participation.

According to Drew and Mackie (2011) the use of such terms in educational policy documents has increased during the last decade, chiefly because it is associated with the need to produce a generation of students able to cope with the economic demands of the twenty-first century. In the West, for example, active participation is often directly linked to ‘lifelong learning’ and Drew and Mackie (2011: 4) quote from an undated document from the Finnish Ministry of Education and Culture (Finland being the top performer in the most recent international comparative studies) which advocates:

A student orientated, active conception of learning [where] the organisation of schoolwork and education is based on a conception of learning that focuses on students’ activity and interaction with the teacher, other students and the learning environment.

In the case of Singapore ‘vision statement’ ‘Thinking Schools, Learning Nation’, and its follow-up document ‘Teach Less, Learn More’, and also in that of the Hong Kong’s Education Commission document ‘Learning for Life, Learning through Life’ (discussed in Chapters 1 and 2), similar references to the ‘active engagement’ of pupils using ‘real life’ situations to situate the learning can also be found.

For psychologists, however, such statements remain problematic. For a start, the idea that there is a distinction to be made between active and passive forms of learning is debatable. In that one regards new learning as indicated by a change in a person’s behaviour albeit through the transmission of some new knowledge or skills, then all learning can be said to be active (Coffield, 2008). Indeed, the advent of neuro-science has shown that involvement in different kinds of learning activities (rote learning, problem solving, creativity, etc.) merely involves neuron activity in different parts of the brain. In the light of such findings some commentators such as Watkins et al. (2007), while accepting that all learning is active, argue that some kinds involving the construction and reconstruction of knowledge are more active than other forms, such as learning by rote.

In an attempt to distinguish more clearly between passive and more active forms of learning Watkins et al. (2007) have suggested that the notion of active learning encompasses the following three dimensions:

- Behavioural: the use and creation of materials designed to motivate pupils to engage in learning.
- Cognitive: sense making through exposure to novel experiences (both material and human) designed to foster construction of knowledge.
- Social: interaction with others on collaborative activities.

Thus the prime purpose of the behavioural dimension is to motivate children to engage with learning for its own sake (intrinsic motivation) rather than because
there are rewards for success or sanctions for failure (achievement motivation). In the West there is considerable evidence to support the view that ‘learning by doing’ can be a powerful motivator in this respect. For example, Galton (2010a) in several studies of transition from primary to secondary school has found that pupils are mostly excited by the opportunity to engage in drama, physical education, design and technology and the visual arts, in contrast to traditional subjects such as mathematics, English, history and foreign languages where, according to pupils, ‘What you mostly do is write’. Prior to the transition science is also rated highly for the opportunity ‘to go into a laboratory and do experiments’, but this view changes after the first few weeks in the secondary school when it transpires that doing the experiment only occupies a brief period during the lesson with the remainder of the time taken up with writing a description of the activity and reporting the results. Similar findings emerged from an enquiry at secondary level by Stevens et al. (2008: 25). These researchers also suggest that a powerful motivator involves a feeling of being in control of the learning in the sense that ‘there is a perceived degree of freedom or space’ involved in the creation of the product which, in turn, gives rise to satisfaction in what is achieved. In a study of the use of artists in primary schools in England, Galton (2010b) records the following exchange:

**Interviewer:** Is [naming the artist] the same as a teacher?
**Pupils:** [in chorus] No.
**Interviewer:** In what ways is she different then?
**Pupil:** She lets you make big decisions.
**Interviewer:** How do you feel about that?
**Pupil:** Scary at first in case things go wrong. [nods of agreement]
**Interviewer:** But if it comes out right in the end?
**Pupil:** Then it’s magic. You feel proud and warm inside. [nods of agreement]

As we saw in the example from a Hong Kong primary English lesson on shops in Chapter 3 (page 62), situating the activity within a context which is meaningful to the pupils also acts as a stimulant to learning. Where possible, posing problems that are ‘authentic’ reflecting ‘real life’ situations not only allows pupils to relate personally to the situation under consideration, but ‘exposes students to thinking/working styles of different disciplines while preparing them for interdisciplinary teams of real world situations’ (Machemer and Crawford, 2007: 11).

The cognitive domain embraces much of what is written in Chapter 2 on the principles of constructivism and the cultivation in the classroom of ‘thoughtful discourse’ which challenges the pupils’ existing schema. It is linked closely to the social domain, which embraces the principle of social constructivism although as developed here by Watkins et al. (2007) it not only supplies another source of experience to stimulate the pupils’ thinking (a cognitive purpose) but it also enhances pupils’ willingness to engage in the learning activity (a motivational aspect). A considerable body of research supports the view that shared activities, such as extended class discussion, co-operative learning in groups or in pairs,
Implications for small class teaching in an East Asian context

act as a powerful motivator in contrast to the situation where teachers talk and pupils listen or where pupils work on their own in relative silence (Machemer and Crawford, 2007; Galton et al., 2009; Kutnick and Blatchford, 2013).

Other writers support the three-dimensional approach of Watkins et al. (2007). Skinner (2010) endorses the inclusion of pupil choice in the definition, if not on what to do (i.e. determining the task), at least on how to do it (i.e. determining the manner of tackling the task). This shifts the emphasis towards the creation of independent learners who are ‘metacognitively wise’ so that active learning and participation involves both ‘doing’ and ‘thinking’ (Zweck, 2006). In a similar manner, Birenbaum (2002: 19) suggests this requires students to be ‘metacognitively, motivationally and behaviourally active in their learning’.

The above discussion would suggest therefore that active participation incorporating active learning is an umbrella term which embraces the remaining six principles rather than a separate entity. Indeed in summarising the debate Wiliam (2009: 13) endorses this view in arguing that the two key strategies for ensuring active participation are:

- Activating students as learning resources for one another [to include] cooperative learning, reciprocal teaching and peer assessment.
- Activating students as owners of their own learning [to include] aspects of metacognition, motivation, interest; the way learners attribute their successes and failures and self assessment.

If we return to the lesson on Pompeii and the unfortunate inhabitants, the teacher’s approach would have been more in keeping with the above ideas if she had first explored what the pupils knew about volcanoes before directing their attention to Vesuvius and events in 79 AD (exploration before instruction). Pupils would then go into groups and be given some of the internet pictures of the plaster cast figures of citizens which were constructed during the excavations in the nineteenth century. The groups’ task would be to work out what had happened, with the teacher scaffolding the exercise with questions such as ‘What do the positions of some of the people (e.g. those lying down asleep) tell you about what must have happened?’ The final part of the lesson might require the pupils to imagine they were witnesses to the disaster and to write an account of these events to a friend. The teacher might then read an extract from Pliny the Younger’s diary account as seen from across the bay at Naples. Other activities might explore through the internet other more recent volcano eruptions or explore the science behind such events. Set out in this way the lesson satisfies Watkins et al.’s (2007) criteria for active learning. The use of materials (pictures, searching the internet, extracts from Pliny’s diary) is likely to promote behaviour that is intrinsically motivated, there are numerous opportunities for children to engage cognitively through attempting to make sense of what happened, and the group task was structured in such a way that success was only possible if pupils pooled their ideas and learned from each other (social).
In conducting their review of what lies behind the use of terms such as active participation, active engagement and active learning, Drew and Mackie (2011) point to an important omission, namely consideration of the affective domain and its influence on pupil motivation. In Chapter 3 we identified three levels ranging from acceptance to commitment and said we would discuss matters further later in the book. We now propose to do this under the wider theme of social and emotional learning.

Social and emotional learning

Throughout this book we have tried to emphasise that the six principles governing cognitive aspects of pupils’ performance are not to be interpreted too rigidly. There are of course other benefits that come from having smaller classes. For teachers there are fewer administrative tasks and less homework to mark, but most of all, and the evidence in the Western studies such as those reviewed by Blatchford (2011) support the conclusion, there is a change in the social and emotional climate in the classroom once numbers on roll dip below 25 pupils per class. In Chapter 2 we offered a three-stage process of pupil development. Each stage of development was matched by a particular approach to teaching. In the acquisition of new knowledge and skills the essential teaching approach tended to be that of direct instruction but when the goals of learning were to incorporate these items of knowledge into wider concepts and schemas then the emphasis shifted to talk and discussion. The third stage in the pupils’ development was one that endeavoured to extend the process so that pupils become autonomous learners. They employ the same strategies as those in which the teacher participates but as the late Anne Brown (1997) argued, pupils are now able to hold the conversations with themselves. To become an autonomous learner is to be able to regulate one’s own learning processes, and in particular to be able to choose appropriate strategies in order to solve problems or create new schemas, and also to be aware of situations that might lead to a dead-end or an incorrect solution. Such skills are acquired mainly through experience and that is why within the six principles the ones concerning evaluative feedback, which makes it possible for pupils to identify and correct errors, and also assessment for and as learning, which enables teachers to gain an understanding of the pupils’ thinking processes and for pupils to learn from their own mistakes, are so important.

But to be able to act in these ways requires an environment where pupils feel safe emotionally and where they feel a sense of what the US National Research Council (2003) referred to as school connectedness on which they elaborated as follows:

If students are to invest themselves in the forms of mastery required by schools, they must perceive the general enterprise of schooling as legitimate, deserving of their committed effort and honouring them as respected members.

School connectedness, according to Gray et al. (2011: 21) thus provides ‘a summary way of describing a nexus of such activities and experiences including relationships with teachers and peers, levels of satisfaction with what they are
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experiencing, feelings of belonging to the learning community and aspects of participation and pupil voice’. Pupils who feel connected in this way report a higher degree of well-being (McNeely et al., 2002) and improved performance (Resnick, 2000; Libby, 2004) and are likely to show a higher degree of commitment in their disposition to learn (Gray et al., 2011).

Clearly, creating this kind of emotional and social climate should, in theory, be easier in a small class and indeed McNeely et al. (2002) found that students in large schools, with presumably larger classes, reported less school connectedness. In the next section therefore we will discuss the ways in which teachers can establish a classroom environment which allows pupils to connect in ways described in the above paragraphs.

Creating a positive classroom climate

Critics of the assessment for learning approach have also argued that the use of strategies such as the tracking form (Table 5.1) or the traffic light cards are often ritualistic, rendering the procedure ineffective. Hong Kong teachers have argued, for example, that most pupils would show the green card for similar reasons as that which prompts them to put their hands up whenever the teacher asks the class if they had understood; namely to avoid loss of face. Consequently the teacher would still need to set daily homework to check the veracity of the responses. It must be conceded that the use of procedures such as traffic lights will only work if the classroom climate is such that the teacher can rely on the pupils’ truthful response and, just as important, a supportive and co-operative spirit among classmates who do not think less of an individual when he or she gets something wrong. This is only possible when pupils feel both emotionally and socially secure. Teachers often tell pupils that it is important to learn from one’s mistakes but they are rarely believed. Partly this is because the most common form of feedback is to praise correct answers. There is rarely praise for a good effort or rarer still public approval for a pupil who self corrects his or her mistakes. To change the classroom climate to one that facilitates this kind of mutual respect among pupils, teachers must actively single out for praise any incident which reinforces the desired behaviour.

By way of illustration consider a lesson in the UK described in Galton (2010b). The class, the equivalent of Hong Kong’s P3, were being taught by a visiting dancer, although the class teacher was present, and were preparing for a parents’ concert. The dance involved pupils forming themselves into a tight spiral. This coil then unwound slowly with pupils breaking off to form new groups ready for the next routine. On this particular day, one girl, Melissa, left the spiral too early and ran to her next position. Realising her error she clasped her hand to her mouth in horror. The teacher, shouted above the music, ‘Melissa, concentrate and pay attention’. The dance teacher waited until the music finished. There had been some aggressive behaviour because when children came out of the spiral they didn’t always end up at the exact spot where they were supposed to stand waiting for the next move to begin. When more pupils arrived they
frequently tried to take over the occupied space by pushing their peers out of the way. The dance teacher then turned to Melissa and said the following:

I want to congratulate you Melissa. You did exactly the right thing. You went to the next spot and didn’t run back into the spiral. I did something like that when I was your age and I was so embarrassed I did what you did and put my hand over my mouth. But afterwards I realised that nobody in the audience would know it was a mistake, that is until I put my hand to my mouth. They thought I was doing a solo. And now then you others [turning to address the rest of the class]. Melissa has taught us all something. Mistakes are going to happen. It doesn’t matter. What matters is how you cope with them. So when you come out of the spiral and you find someone is in your position don’t try to move him away but go to his place instead. That way it will look as if it was planned to the audience. So well done Melissa for teaching us all such an important lesson.

This dance teacher used an incident from her own childhood, including her feelings on making her mistake in public, to empathise with Melissa (and no doubt other pupils listening) before going on to deal with the behaviour issue of pushing and shoving.

This particular strategy, namely using one’s own experiences to establish a common bond with the class, by demonstrating an understanding of the pupil’s feelings (in this case embarrassment) is a key element in a theory of motivation known as self-determination theory (SDT) which was developed by Deci and Ryan (1985). They argue that in cases of bad behaviour, in particular, while teachers cannot condone the pupil’s actions they must indicate an understanding of the reasons for the behaviour; otherwise the pupil may feel that because they have behaved badly the teacher thinks he or she is a bad person (Deci and Chandler, 1986). Thus talking out of turn may be due to excitement rather than for the purpose of disrupting the lesson. In another example noted by Galton (2007) a ten-year-old boy hit a girl pupil who had been teasing him about ‘being keen’ on her best friend. The teacher immediately isolated the boy and the class, which had been engaged in group work, were made to go back to their individual places and work on in silence. After a few minutes the teacher (a female) looked up and said

These boy and girl things are difficult to manage. When I was your age I went with my mum to have tea with an aunt. There was a boy cousin of my own age and after tea we left to play upstairs in his bedroom. As we left my aunt said, ‘You two don’t get up to any funny business up there.’ Do you know I went red all over with embarrassment.

Note again how this teacher not only correctly identified the reason for the boy hitting out at the girl but did so by relating a story about her own emotions in a similar situation. Galton (2007) recounts that after the teacher spoke the
atmosphere, which was extremely tense, quickly became relaxed again and pupils were able to return to working in groups.

To censure while at the same time displaying understanding of the likely causes of the behaviour goes against much of what we are taught when training to become a teacher. There, messages such as ‘a friendly teacher is a weak teacher’ and advice to ‘be firm at first until the class accept you are in charge’ (the don’t smile till Christmas maxim) are prevalent. This is to misunderstand Deci and Ryan’s message. This teacher had classroom rules, although they were established as a joint exercise with her pupils, and sanctions were applied when these rules were broken. But in demonstrating her understanding of the cause of the above incident and its effect on the boy pupil she earned the respect of the class and their cooperation. This teacher always talked about our classroom, never my or your. Both parties had rights and duties. The teacher had the right to teach, the pupils the right to be taught effectively. This implied that pupils had the duty to listen when the teacher was talking, to take turns in speaking, and so on. In turn the teacher had an obligation to be abreast of her subject and to treat every pupil fairly, and when this was not possible to explain the reasons for the inconsistency. Note how in the earlier sequence involving Melissa the teacher breaks this compact by unfairly accusing the girl of not paying attention. Again it was noticeable how the teacher in the second episode generally employed ‘I’ messages (Rogers, 1991: 53) to give reasons for her actions. For example, instead of accusing pupils of being messy and untidy, when paper cuttings and bits of string were left on the floor at the end of the session she said: ‘When our classroom isn’t left tidy I have to either clean up myself or else face a cross caretaker who then has to do it. Do you [the class] think that’s fair?’

Self-determination theory focuses on creating a classroom environment based on intrinsic motivation. Pupils work hard not because they wish to be top of the class (achievement motivation) but for the feeling of enjoyment and satisfaction that comes from mastery of a difficult task. For Deci and Ryan (1985) three factors must be present to ensure pupils are intrinsically motivated. First, they must have a sense of autonomy; of being in control of how they go about learning. This carries risks of having to own up to one’s failures but when things go well pupils experience great satisfaction in succeeding through one’s own efforts, as in the earlier discussion when the pupil talked about being scared at first but feeling a ‘warm glow’ when things worked out satisfactorily.

Deci and Ryan (2008: 18) suggest that the teacher’s role as an adult authority figure can help develop positive attitudes and a sense of autonomy in their pupils by ‘Taking their perspective, encouraging initiation, supporting a sense of choice and being responsive to their thoughts, questions and initiatives’. The second factor concerns the pupils’ sense of being competent to tackle the task. When pupils are interviewed they frequently complain that teachers too often change things and thus they feel that they no longer own their work because it is no longer based upon their original ideas. This is particularly a problem with group work where teachers often intrude too soon because they are concerned that pupils have not understood the instruction or are off task. Guided discovery, in
particular, seems an inappropriate strategy for fostering competence because it tends to end up with teachers offering more and more clues about the right answer or procedure until the pupil is able to guess what is in the teacher’s mind. It is more important, therefore, to build the scaffold into the task initially, thereby limiting the range of possibilities the pupil needs to consider. In this way pupils gain self-efficacy (increased confidence in their ability to complete the task successfully) (Bandura, 1982).

The third factor is that of relatedness. Pupils need to have a sense of belonging to a ‘learning community’ where knowledge is shared and teachers and other pupils can be trusted to offer support whenever learning gets difficult. This is incorporated within the construct of school connectedness discussed earlier in the chapter. Much of what has been advocated earlier in the book, such as whole-class discussions, group work and the various suggestions in the present chapter, are designed to develop a pupil’s sense of well-being or ‘life satisfaction’ of which a feeling of being at ease with one’s teacher and peers is an important element.

Summing up, Deci and Ryan (2008) list some of the contexts which can undermine intrinsic motivation and result in negative dispositions to learning. Among these are the use of rewards and punishments as motivators, pressurised evaluations, strict deadlines and imposed goals. Readers, particularly if they are teachers, will recognise that these are just the kind of impediments that dominate the culture of many schools in Eastern Asia. To break from these cultural norms, particularly when they are endorsed by parents and society at large, is a daunting task for any individual. But it becomes possible when the effort is shared among colleagues so that, for example, a school can revise its assessment policy based on the principles of ‘Learning to Learn’ in Hong Kong or ‘Teach Less, Learn More’ in Singapore. These ideas also fit well with the principles of SCT, but even so planning the curriculum to fit the practices advocated in the previous chapters is still time consuming. This is yet another reason why it is best done as a shared activity with fellow teachers in the form of what in Hong Kong has become known as learning circles where a group of teachers jointly plan lessons, observe some of these either ‘in situ’ or on videotape, and then provide feedback with a view to making further improvements. Learning circles are the subject matter of the next section.

**Changing classroom practice**

This book has argued for a change in the way that children in Asian schools are taught. We have championed a case for reducing the amount of teacher-directed talk in favour of greater pupil participation. Specifically, we have advocated the greater use of dialogic questioning and active pupil participation in lessons so that learning is by doing rather than from telling. In addition, we have proposed the increased use of group work and a wider range of feedback techniques allied to more classroom-based assessment. This attempts to gauge what and how pupils have learned rather than simply looking at their performance on tests.
We have justified these proposals on the basis of both theories of learning, particularly those based on the ideas of social constructivism, and also on the empirical evidence which suggests that such principles result in considerable gains in attainment as well as, importantly, improved motivation and attitudes among the pupils. However, it is important yet again to stress that these principles should not, and cannot, be applied rigidly. It is the task of the individual teacher to match these principles to the context in which they find themselves teaching. The teacher’s skill lies in their capacity to adapt these pedagogic principles so that they work in practice. In the classroom few situations are alike so teachers have to learn to apply these principles through experience and by sharing knowledge with their peers. Thus the principles are to be used as a scaffold or a framework rather than seen as a straitjacket which restricts a teacher’s creativity.

Typically, when teachers are required to develop their skills and knowledge of matters pertaining to both teaching and to learning they are often required to attend refresher courses. There are, however, limits to what can be achieved with this form of professional development, particularly when the courses are short and when they take place after school, when participants have already completed a full day’s teaching. Furthermore, when teachers return to school there are often immediate problems to solve such that the ideas gained on such courses are put to the back of their minds. More difficult, however, is the problem of sharing with others. Teachers attending such courses then have the difficult job of persuading their colleagues to make the necessary changes in their classrooms when the colleagues have not had the same experience as themselves.

Darling-Hammond and colleagues (2009) reviewed a large number of professional development courses which were offered in the United States and found that few brought about desired changes in teaching. Similar examples can be found indirectly in the work of Hogan et al. (2013) and Hogan and Gopinathan (2008) in Singapore where despite massive efforts to change existing classroom practice in ways that supported more constructivist approaches, the amount of teacher-directed talk hardly changed.

These approaches to professional development can be very useful where a particular skill is to be taught, as for example when teachers were instructed in the functioning of whiteboards or needed to acquire a particular skill in using information technology. They can also be very successful when the course deals with specific subject content, for example a new technique for teaching reading. But when it comes to changes in what we might call generic pedagogy, that is the areas which the six principles address, such as changes in questioning technique or in the greater use of group work, then the chances of success are not so great.

However, Darling-Hammond and colleagues do suggest that the success rate can be improved provided a number of modifications to the course structure are undertaken. First of all, the course is sustained over time and it takes place when teachers are not tired after a full day’s work in school. Second, the course consists of the same group of teachers who work collaboratively and share their
ideas with each other. Third, the course focuses on what Ball and colleagues (2009) call high leverage practices which are designed to promote higher order thinking. These are just the kinds of practices that are embodied in the six principles. Most importantly is the fourth condition, that requires course tutors to situate such high-leverage practices within examples of classroom tasks which teachers regularly use. Teachers who attend professional development courses which concern teaching and learning regularly complain that the ideas, while excellent, are not practicable under the classroom conditions in which they work. This is often referred to as the theory–practice divide and can only be overcome if the tutors responsible for the course provide copious examples of where the theory has been used to good effect under typical classroom conditions. Lastly, it is important that when the course has been completed the participants continue to receive support when back at school when they themselves attempt to put what they have learned into practice.

In the case of Hong Kong, the authorities attempted to put these ideas into practice when introducing SCT. Courses took place over a five-week period. At least two teachers were buddied so that they could work together, not only during the lifetime of the course, but afterwards in the follow-up period of six weeks when tutors visited the schools and jointly helped to plan then observed lessons. However, the resources involved in providing this kind of professional development are not inconsiderable. When teachers are absent from school for five weeks it is necessary to provide substitute teachers. Not only does this increase the cost overall, but it also may present problems for schools in planning and timetabling.

From the point of view of the course providers there can also be problems, in that some schools see the existence of such courses as an opportunity to improve the teaching skills of some of the weaker members of staff. Part of this weakness often stems from lack of confidence in subject knowledge, particularly in the area of mathematics, where in Hong Kong, as in many countries, the subject is taught at primary level by non-experts because of a shortage of mathematics graduates. To seek to change the classroom practice of a teacher who is confident is difficult enough, but to ask a teacher who lacks confidence in the subject to change is well-nigh impossible. Thus courses have also had to increase some participants’ subject knowledge so that these teachers acquired sufficient confidence to experiment in teaching the curriculum content. Teachers’ professional development through offering courses can thus be problematic, particularly when it is the intention, as it was in Hong Kong, to go rapidly to scale, so that all primary schools could avail themselves of opportunities to maximise the positive effects of smaller classes by changing classroom practice. For this reason in particular, that is going to scale, those with responsibility for changing the way that teachers teach have looked beyond the provision of courses towards forms of school-based development which allow teachers to work in their own and each other’s schools. One of the most frequently used approaches worldwide has been the creation of communities of practice or (CoPs).
Communities of practice

Communities of practice are based on the idea that all schools have an obligation to organise themselves as centres of professional learning. This notion implies that the schools adhere to a number of ground rules. The first of these is that instructional leadership is distributed so that at any one time the expertise of a particular teacher is utilised. Thus in relation to SCT, teachers who had attended the five-week professional development courses in Hong Kong might well be expected to play a vital part in the dissemination work back at schools.

It follows from this that the second ground rule gives a high priority to the continuous professional learning and capacity building of all staff members who at various times are required to take on the task of leading and developing aspects of the teaching for both themselves and their colleagues. The results of such an approach should be that schools gradually come to codify and disseminate the expert knowledge provided by different teachers so that the professional norms become institutionalised and part of the school fabric. As this process matures, any visitor to the school would see widespread participation by teachers in rich professional dialogue which incorporates reflection on existing practice.

There have been a number of attempts to review and evaluate the effects of CoPs on the improvement of teaching and learning within schools (Louis and Marks, 1998; Stoll and Louis, 2007). The latter suggest that there are a number of factors which promote successful professional learning when utilising CoPs. First of all, the activity has to take place over a lengthy period: estimates vary from one to two years. Second, there must be sufficient resources and opportunities to practise any ideas which develop as a result of these activities. Too often teachers are asked to engage in the various discussions either after school or by giving up non-teaching time during the day when they are usually engaged in marking and lesson preparation. Third, discussions must be situated within specific content areas rather than dealing with a general issue such as the use of group work. If improving group work is the main objective, it is best done by reference to its use in mathematics, English, Chinese or other subjects. Fourth, where possible, it should also take place not only within school but between schools so that there is inter-school sharing and support. This is because teachers often experience a sense of isolation in thinking that their school, their pupils, and so forth, have unique problems. This is particularly the case when tackling problems of diversity and mixed ability teaching. In this situation, it often provides a salutatory lesson to work alongside other schools whose situation might be equally difficult, but who have accepted the challenge of trying to deal with the problems that ensue.

Fifth, and most importantly, it helps if there are mentors and outside experts who can support the work of the teachers. The presence of mentors is helpful because it can focus the discussion on the immediate issues in teaching and learning. Cobb and Jackson (2011) found, for example, that when a mentor wasn’t present discussions within the CoPs often involved what they termed
Bringing it all together

In such cases most of the exchanges concerned issues to do with such matters as the pace of the lesson, the amount of time spent on various aspects such as the introduction, explaining the task, and so forth. Because different teachers have different experiences contributors often gave conflicting advice because each teacher’s classroom context differed in some respect. For example, a teacher with a class consisting of a highly diverse range of ability might argue for more time to be spent on the introduction and in explaining the nature of the task, whereas another with a smaller range of ability might suggest that the time given to this activity was too long.

Cobb and Jackson found that changes in classroom practice only took hold when the conversation shifted to greater consideration of subject content pedagogy and generic issues. The notion of subject content pedagogy was developed by Shulman (1986) and involves consideration of the likely misconceptions pupils may have when confronting a new topic for the first time and the most effective ways of dealing with them. Shulman argues that an important part of a teacher’s repertoire is to develop various analogies which help to remove these misunderstandings, and clearly, the sharing of ideas within a community of practice can be very useful in achieving this objective. For example, in one discussion where it was suggested that most pupils in the class erroneously thought that there was a proportional relationship between the volume of an object and its weight, the group decided to make up parcels of different sizes and ask pupils to predict the rank order from the heaviest to the lightest. After holding one of the parcels in one hand and a smaller, heavier one in the other, pupils in their groups were asked to come up with explanations for this finding. Discussions should also deal with matters concerning what has been termed generic pedagogy. This has to do with the ideas embraced within the six principles to do with questioning, feedback, assessment and cooperative learning.

Two other researchers, Coburn and Russell (2008), suggest that conversations can move from mainly considering procedural pedagogical talk towards subject content and generic pedagogic issues if those responsible for running the communities of practice employ what they term routines of interaction. Routines of interaction are said to consist of specific questions which draw the participants’ attention to issues which relate to the subject content and generic pedagogy. Coburn and Russell found that when the leaders of the discussion group did this on a regular basis then other participants began to use the same language to preface their unsolicited contributions. Two other writers, Horn and Little (2010), add to these recommendations by stating that the discussion should also be situated in the context of the participants’ classrooms so that examples chosen for discussion are authentic. It is also important to set the discussion within a framework which concerns the work of teaching and learning such as the six principles. Table 6.1 offers possible suggestions for these routines of interaction which are situated around the six principles advocated in the earlier parts of the text.

Further advice is provided by Grossman and MacDonald (2008). These authors distinguish between what they term pedagogies of investigation and pedagogies
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Table 6.1 Some routines of interaction to improve the quality of dialogue within learning circles

1 Improving classroom questioning:
   - How many pupils generally participated?
   - Were thinking times sufficient?
   - Did the pupils’ responses indicate that more than simple recall was taking place?
   - Did the teachers’ responses help to extend discussion?

2 Increasing the extent of pupils’ active participation:
   - As far as possible was the task situated in a context which was meaningful for the pupils?
   - Was there some initial exploration of the pupils’ ideas before activity began?
   - Was the task sufficiently motivating?
   - Did pupils demonstrate understanding by reaching reasonable conclusions?

3 Improving peer to peer co-operation through group and pair work:
   - Was adequate time allowed?
   - Did the task allow most of the pupils to actively participate for most of the time?
   - Did pupils need reminding about the rules (e.g. taking turns, listening carefully)?
   - Did the class have a chance to discuss how well they worked as a group/pair?

4 Increasing the range of feedback to pupils:
   - Did the teacher praise effort as well as success?
   - Did teachers’ questions help pupils to spot where they went wrong or how they could improve their work?
   - When correcting a piece of work did the teacher get the pupil to show how s/he arrived at the answer?

5 Using assessment for formative as well as summative purposes:
   - Were the forms of classroom organisation sufficiently flexible to allow groups of pupils with similar learning needs to come together?
   - Was much of the formative assessment based on what pupils said and did rather than what they wrote?
   - Does the teacher build these oral assessments into a pupil profile?

of enactment. They argue for a mix of both of these approaches when seeking to bring out significant changes in teachers’ classroom practice through the use of school-based professional development activities such as CoPs. Pedagogies of investigation involve the analysing and critiquing of examples of classroom practice using pupils’ written work or videotaped extracts, while pedagogies of enactment require the participants to plan, rehearse and enact ‘high leverage’ practices in a sequence of situations of increasing complexity. As a beginning the participants might plan and teach a sequence with other course members and might try this out with other participants acting as pupils, as in micro-teaching, before using these various strategies within a whole-class context.
The Hong Kong experience: learning circles

In Hong Kong a particular form of CoPs was developed to meet the challenges of teaching smaller classes. The Hong Kong format was known as learning circles and it consisted of a form of CoPs based on the Japanese idea of lesson study. The term derived from the Japanese word jugyokenkyuu has also been referred to in the United States as a ‘research lesson’. Developed in the elementary schools of Japan, the aim of this form of professional development was for teachers to engage in a systematic examination of their practice in order to make the teaching more effective. Teachers first work collaboratively on a lesson plan. In the stricter version, one of the teachers plans, with the help of others, a lesson or a series of lessons, then teaches it while being observed by colleagues who then critique the lessons. Resulting changes are then made and another colleague then teaches the revised lesson which is also observed and critiqued by his or her peers until sufficient cycles are completed to satisfy the participants. In practice, lack of time generally limits this plan–do–review cycle to a first and second round.

According to Makoto Yoshida (2002), the vast majority of Japanese elementary (primary) schools conduct lesson study. A typical lesson study cycle involves research and preparation in order to raise a particular question for enquiry, the planning and implementation of the first lesson followed by group meetings for reflection and improvement, and then the implementation of the improved lesson with further reflection and a filing of a report recording the various activities. A school generally works on the same goal and the same content area for three to four years. Groups generally consist of four to six teachers who mostly teach the same or similar grades and each sub-group might, typically, carry out two to three lesson study cycles in any one year (Fernandez and Yoshida 2004; Takahashi and Yoshida, 2004).

In Hong Kong learning circles seek to implement the three key stages in lesson study, namely joint planning, peer observation of lessons and post-lesson evaluation. Initially, because the learning circles are subject-based, the planning stage usually concentrates on subject-matter issues, such as what the pupils should learn, and what their likely misconceptions would be. This is understandable but at the evaluation stage much of the discussion followed the format identified by Cobb and Jackson (2011) and consisted of procedural pedagogy. Consider, for example, a discussion following a lesson in a P2 class of seven-year-old pupils. In this particular lesson the class played a game called, ‘Guess who I am’, where a pupil came to the front and imitated an animal with the class having to guess which one. The teacher, Miss Tsang, showed a card to the child who came out to the front of the class. The child then had to imitate and mime some characteristic of the animal on the card. In the first example the card showed a fish and the pupil imitated swimming. The following is an extract from the post-reflection discussion within the learning circle. The chairperson begins by asking Miss Tsang whether she was happy with the lesson. Miss Tsang replies that ‘it was a bit rushed’.
Chairperson: Which parts were rushed?
Miss Tsang: I used too much time on movement. I thought they didn’t know about flying with birds, but they knew.
Chairperson: So how would you change it?
Miss Tsang: I would have speeded it up.
Participant Teacher: I don’t think they could distinguish hair and feather. [a reference to the fact that some cards had birds and others animals]. They knew the parts but not the difference.
Chairperson: So could you show them a real feather?
Another Participant Teacher: You need to let them act it out.
Chairperson: Yes, let them crawl like a crocodile. In responding to the question?
Miss Tsang: They responded well.
Another Teacher Participant: They were able to explain the features.
Chairperson: At the group discussion.
Miss Tsang: They did discuss.
Chairperson: Some scribes did most of the work. What should you do?
Miss Tsang: Allocate the roles better.
Chairperson: Do you think the pupils learned something? How about yourself?
Miss Tsang: I wanted to be sure they understood what was meant by appearance and movement.
Chairperson: How would you link the two together? Today they didn’t do this when reporting back. Maybe you should have asked the whole group, not just the recorder.
First Teacher Participant: There were limitations on time. You could cut out the first bit and concentrate more on the movement, the crawling, define it better.
Chairperson: You could choose another animal. Did you follow the textbook? To me it was too easy. Follow up on what pupils said and ask why? Why a parrot? They were right about the spots on the fish but you directed attention to the scales. Have you seen the other lesson [i.e. the previous one taught by another teacher]?

Much of the above discussion had to do with procedural matters. When generic pedagogical issues were mentioned, as in the discussion of group work, little attention was paid to the details of what the pupils talked about. For the most part the talk concerned the management procedure of how scribes should work. The discussion focused at considerable length on the limitations of time, whether to speed up or give more emphasis to other parts of the lesson, and so on. Compare this with another extract where the learning circle had begun to use the routines of interaction set out in Table 6.1. Here the lesson, which had also been jointly planned, concerned being able to count, add and subtract such that pupils had to borrow units from the 10s or the 100s columns. The teacher in question, Mr Wei, began by producing two $100 notes which he placed on a blue square and projected on the white board using a visualiser. Ten $10 coins were then placed in an adjacent green square and ten $1 in an adjacent yellow one. Mr Wei then informed the class that he had spent $132 and asked pupils...
to tell him how much money he had left. After several more examples which required pupils to change $100 dollars into ten lots of $10 and a $10 coin into ten lots of $1, the demonstration moved from money to coloured chips after several more examples, and then the class went into groups in order to do what the teacher said were ‘more difficult ones’. The teacher explained that the three steps were as follows:

1. to write out the units;
2. to decide whether they needed to borrow;
3. to complete the sum by moving and exchanging the different coloured chips.

The following is an extract of some of the post-lesson discussion.

CHAIRPERSON: Very good use of symbols, starting with concrete money and moving to abstract examples using the coloured chips. One problem that maybe we didn’t clarify, why we start with units. Why did you start with real money?

MR WEI: I wanted to move from concrete to abstract and also move from two to three digit numbers.

ANOTHER TEACHER: I thought it was a very good demonstration. The students were involved.

SCHOOL PRINCIPAL: Yes, the whole procedure was very smooth. The problem is that the idea of borrowing wasn’t quite clear. Some didn’t understand that. Maybe you could add a square to break down the 10s into another box before moving them physically into the units.

CHAIRPERSON: Yes, I agree. The weaker students needed a bit more help.

MR WEI: That’s why I asked the group leader to move the chips in the first example.

SCHOOL PRINCIPAL: Were they the most competent ones?

MR WEI: Yes, I chose them.

CHAIRPERSON: Only one moved the chips. Would it have been better to get the others to move them and have the leader watch them rather than demonstrate?

MR WEI: I thought the group work went well.

CHAIRPERSON: Yes, but did everyone get a turn?

ANOTHER TEACHER: I don’t think so. Those that didn’t quite understand held back. But everyone appeared to be listening and watching.

CHAIRPERSON: OK, but we need to make certain that everyone takes a turn.

ANOTHER TEACHER: Why did you have four in a group? Must it be four?

SCHOOL PRINCIPAL: It’s our usual size.

ANOTHER TEACHER: Perhaps pairs would have been better. Some were not on-task.

MR WEI: If I’d paired it, it could have ended up with the weak and the weak.

CHAIRPERSON: OK, we could try. And also be more strict with time, they could be quicker. You need to work out some techniques to find out who had finished and also some way of making certain that all the individuals in the group had understood.
Here in this discussion the overwhelming responses concerned both subject-matter and generic pedagogical issues, mostly dealing with how the groups functioned. The discussion looked at the roles of leadership for example, and also the strategies for developing an understanding of borrowing from 100s to the 10s and the 10s to the units. Whereas in the earlier case perhaps 60 per cent of the comments were to do with procedural issues and 30 per cent on subject matter, leaving only 10 per cent for consideration of ‘generic teaching strategies’, now in this second extract the ratio is almost reversed.

Over time, it has been found that the teachers who regularly attended learning circles offered more ideas, began to provide more task informing rather than corrective feedbacks, dealt more effectively with diversity by having pupils of different abilities work on different tasks rather than everyone doing the same, varied the group so that sometimes children were sat with others of the same ability and at other times were in mixed ability groups, and shifted the pattern of praise so that they also rewarded effort and were more specific when giving feedback on the work. Some of these teachers created different groupings which were identified by colours (red group, blue group, etc.) when placed with peers of similar ability and fruits (orange, apple, pear group, etc.) when a group contained an ability mix. In a relatively short time it became an easy matter for pupils to switch places for a particular group activity so that little time was lost in transitions.

By way of consideration of what can be achieved using this approach, we will describe a sequence of three English lessons which were the subject of debate among a Hong Kong within-school learning circle. The learning goal was to identify various ways of telling readers about characters in a story or poem. The context in this case was an ancient Chinese fable telling the story of a proud man who was warned by the villagers not to go into the forest because of the presence of a fierce tiger. The man declined to take their advice, and boasted that he wasn’t afraid of the beast. On meeting the tiger, however, he decided to turn round and run back to the safety of the village. The man quickly tired, and fearing the tiger was about to catch him up, climbed into the branches of a nearby tree, whereupon the tiger lay down underneath to wait for the man to fall. In due course the man could no longer hold on to the branch but by good fortune landed on the tiger’s back when he jumped. The tiger ran as fast as he could to try to make the man loosen his grip and fall off. As they passed near the village the man called for help but the villagers, thinking that he was boasting about riding the tiger, ignored his pleas. Eventually the man fell off and the tiger got his dinner.

In the first lesson the pupils in a Year 5 class had to act out key words in the fable that bore on the character of the man; words such as proud, exhausted and confident. The teacher then put pupils into groups to identify phrases or words which indicated these aspects of the man’s character. She then structured the feedback session by asking for one example each of a ‘talking sentence’, of ‘his feelings’, of his ‘actions’ or of ‘describing words’. Pupils found this latter activity difficult so the teacher highlighted key words and sentences on the power
point presentation. Pupils were then instructed to write a different ending in which the man was saved and repented of his earlier boasting.

In the post-lesson discussion it was generally agreed that the language used by the teacher was too difficult for pupils to gain a clear understanding of what the group task required them to do. The scaffold was therefore simplified with the instruction to find:

- something the man said that tells you he was proud, exhausted, etc. (his speech);
- something the man felt that told you he was proud, exhausted, etc. (his feelings);
- something the man did that told you he was proud, exhausted, etc. (his actions);
- something about the man, himself, using adjectives and adverbs (his description).

This time the discussion went much better. Pupils identified phrases such as, ‘I don’t care’ or ‘even tigers are afraid of me’ and ‘the man said proudly’ as relevant examples.

The post-lesson discussion, however, concentrated on the final task. The teachers decide that having pupils write a new ending to the story missed the main point of the learning goal, which was to understand that character development could be portrayed by a person’s actions, speech, feelings and descriptions of how the character dressed, talked, walked, and so on, using suitable adjectives and adverbs. Accordingly, the writing task was changed so that the space in the story where the man used phrases such as ‘even tigers are afraid of me’ was left blank and pupils had to replace it by another indicating that the man was proud. They were now required to do this task in their groups.

In the lesson some of the groups added additional paragraphs; some made use of similes such as, ‘The man marched like a soldier into the forest’. The man also performed actions such as making funny faces or roaring back at the tiger to pretend he wasn’t afraid. All groups were keen to explain their results and their reasoning using the visualiser to display their work and to act out their version of the fable. At the end of the lesson the pupils were asked to draw a moral from the story.

The final lesson provides an excellent example of the six principles in action. The learning objective was stated in a way which did not confuse the learning goal with the context; there was active participation in terms of behavioural, cognitive and social elements. The task was well scaffolded and required pupils to think strategically. Lastly, pupils were able to devise ‘success criteria’ with the help of the teacher and by the end of the lesson understood what it was they had to do in portraying a character in a story. One group even added to the list agreed with the teacher by using similes and another by replacing ‘he said’ with ‘he thought’.

An effective strategy for these learning circles has therefore emerged which offers professional development courses to a selected number of teachers whose
role it is to co-ordinate and chair the learning circles back at school. During the course, these teachers, who typically are subject leaders, are introduced to ideas such as routines of interaction. These learning circle leaders are then mentored in the early stages of the school-based work before leaving them to handle meetings on their own.

It has also been helpful if the learning-circle leaders can occasionally come together to share ideas and talk about any difficulties they have encompassed. In Hong Kong this has been particularly fruitful in helping to deal with problems caused by a small minority of teachers, often experienced ones, who are reluctant learning circle participants but who were forced to attend the meetings following pressure from the school principal or panel head. In some cases these reluctant participants demonstrated their lack of interest in the proceedings, either physically, by adopting a sitting position so that they faced away from the table, or by attempting to engage in conversations with their next-door neighbours while the discussions were taking place. This presented difficulties for some circle co-ordinators, particularly if they were younger female junior teachers who, nevertheless, possessed more subject expertise than the male colleague attempting to disrupt the proceedings. Discussing such cases and sharing experiences was found to be both therapeutic and useful among learning circle leaders. More still needs to be done in the training of the learning circle leaders but also with school principals who in some cases need to re-think their leadership strategies. Above all else, in the case of the principals, there needs to be less delegation and more active participation, particularly in relation to the generic pedagogic issues embodied in the six principles.

The role of the school principal

In the early stages of the Hong Kong learning circles teachers were surveyed about their attitudes towards the available opportunities for professional development. A puzzling result was obtained, whereby when asked if they valued the experience of belonging to a learning circle the sample responded overwhelmingly positively. But when asked if the circles were useful, less than a third said yes. Follow-up interviews were able to explain this curious result. Teachers said that they learned much from sharing with colleagues in the circles but there were limited opportunities to put this newly acquired knowledge into practice back in their own school. Teachers mentioned two impediments in particular. The first was that as subject teachers they taught the whole range of classes from first- to sixth-year primary level. In most cases, this meant that they only had one class per year group. Consequently, there was no opportunity to learn from the mistakes in the first round of teaching for it was not possible to teach the same lesson until the following year when it occurred again in the curriculum cycle. In some schools, however, where there was an opportunity to repeat the lesson with another class in the same year group, teachers found this to be very beneficial.

The second obstacle to implementing these new ideas was the length of the lesson which was usually of 35 minutes duration. Teachers found it very difficult
to plan and deliver a lesson involving, for example, group work within this timescale and school principals were very reluctant to change the lesson times, some arguing ‘that pupils would not be able to concentrate for so long’. It was true that the majority of these schools offered some double lessons in which it was argued that group work could take place, but this was to defeat the object of the proposed changes in classroom practice, since it implied that the short 35-minute lesson would be a conventional one, based mainly on transmission, and that only the double periods would be used to employ a pedagogy based upon the six principles.

Some school principals, however, did find ways of introducing flexible timetabling to give a teacher several classes within the same year group. Teachers therefore tended to concentrate in the early years, P1 to P3, or with the P4 to P6 older pupils. One objection to this approach was that more work was involved with the more senior pupils because of homework demands, but these school principals found ways of adjusting the timetable so that the teachers with older pupils had fewer lessons overall. Some schools also extended all lessons to 45 minutes or in some cases to 60 minutes. In some schools the principal tended to see his or her role primarily as one that secured sufficient resources to enable teachers to participate in learning circles. However, these school leaders were reluctant to provide time for teachers to engage in learning circle activities unless external support was forthcoming, so the Education Department was required to fund an additional teacher who could cover for any absences. Other school principals, however, recognised that the professional development of their staff was a school responsibility and set aside sums in their own budget to allow opportunities for teachers to visit other schools, to take part in between-school learning circles, and also to have time when they might observe colleagues and engage in joint planning other than in their own non-teaching time. When such contributions to time and resources were made they yielded additional benefits. Teachers felt that in offering this support the principal demonstrated that he valued their efforts on behalf of the school and, in return, showed their appreciation by giving even more of their time and energy to the cause of improving their teaching.

It was also found beneficial for school principals to attend the learning circles whenever possible as in the second example quoted earlier. This raises a question about the principal’s role in that it was reported that CoPs worked best when they concentrated on a specific subject. School principals cannot be expected to be experts in every school subject and this therefore raises the question as to what kinds of contribution the school leader can make within subject-based learning circles. One possible way around this difficulty is for school principals to concern themselves mainly with the generic teaching approaches, such as those embodied in the six principles, but when visiting the classroom to do so in the presence of the subject leader. In this way the discussion can embody both aspects of subject content and generic pedagogy and each participant can help each other in the development of an understanding of what needs to be done by way of improvement. It was noticeable in the second extract earlier in the chapter that the school principal appeared to adopt this role. School principals
can also help to facilitate the work of learning circles by taking care to choose teachers to lead the group who are open to change, who discuss regularly with the subject leaders the management of the learning circles involving both organisational and personality problems, who help the circle leaders to scaffold a discussion by drawing attention to the key questions, and lastly, who make certain that the six key principles are being used as a scaffold only and not applied too rigidly. As MacBeath et al. (2007) argue

The task of leadership is to make visible the how, why and where of learning. It achieves this by conversations and demonstrations around pupil learning, professional learning and learning which transcends the boundaries of the school. The challenge for leadership is to nurture the dialogue, to make transparent ways in which learning interconnects and infuses behaviour. It promotes a continual restless enquiry into what works best, when, where, for whom and for what outcome. Its vision is of an intelligent school and its practice intersects with the wider world of learning.

Collecting evidence on which to judge classroom action

Most learning circles employ direct lesson observation in which peers sit at the back of the class and observe the lesson. Where this is not possible then it is customary to obtain a video recording of the lesson which can usefully be played back for later comment. The use of videotape has some disadvantage, however, in that it is often not possible to determine the context of a particular event. So, for example, if the camera focuses on a teacher talking with a group of pupils, what is happening in the background in other groups will be missed. Because of this discussions of lessons using videotape often become too focused on particular incidents rather than commenting on the generalities of the lesson. This means that an hour’s tape recording can become overwhelming in terms of analysis where in reality ten minutes could provide an hour’s discussion.

When teachers observe each other’s lessons in situ, however, it is important that there is an agreed structure so that the subsequent discussion can have some focus. Suppose, for example, that the concern is with the nature of the classroom discussion, in which case a simple observation instrument such as that shown in Figure 6.1 might be used. In one five-minute interval the observing members of the learning circle might record the proportion of time in which the teacher engages in whole-class talk, when they are involved with individual pupils, whether these individuals were boys or girls, and whether that talk extends beyond one 30-second time interval. Subsequent discussion would then focus on the extent to which the conversations with individual pupils were undertaken as part of a class, a group, or focused on a single pupil, and whether these exchanges were sustained across more than one time zone. It is not suggested that this would take up the whole learning circle session, but it would provide a starting point for further discussion. Obviously, as well as the quantity of discussion the group of observing teachers would also need to note something
of the quality of the exchanges taking place perhaps by writing down some conversations verbatim.

A second possibility might involve the use of group work. In Figure 6.2 a suggested rating scale for group work is presented. Here, at the end of the lesson, the members of the learning circle would provide a rating, each having focused on a particular group, as to whether the group was on- or off-task, whether the talk was mainly about the task or whether it was social, whether the exchanges between pupils were brief or sustained, and whether the quality of the talk involved higher-order thinking or was mainly low level to do with exchanging information, giving directions and so forth. The degree to which

<table>
<thead>
<tr>
<th>Category of teacher behaviour</th>
<th>Every 30 second interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teacher talks to class (no pupil in focus)</td>
<td>1 2 3 4 5 6 7 8 9 10</td>
</tr>
<tr>
<td>2. Teacher talks/listens to class (boy pupil in focus)</td>
<td></td>
</tr>
<tr>
<td>3. Teacher talks/listens to class (girl pupil in focus)</td>
<td></td>
</tr>
<tr>
<td>4. Teacher talks/listens to class (same pupil in focus)</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 6.1* A simple observation sheet.

<table>
<thead>
<tr>
<th>Group off task</th>
<th>1 2 3 4 5 6 7</th>
<th>Group on task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task talk</td>
<td>1 2 3 4 5 6 7</td>
<td>Social talk</td>
</tr>
<tr>
<td>Brief exchanges</td>
<td>1 2 3 4 5 6 7</td>
<td>Sustained exchanges</td>
</tr>
<tr>
<td>Low level talk</td>
<td>1 2 3 4 5 6 7</td>
<td>High level talk</td>
</tr>
<tr>
<td>states information</td>
<td>suggests</td>
<td></td>
</tr>
<tr>
<td>gives directions</td>
<td>debates</td>
<td></td>
</tr>
<tr>
<td>agrees/disagrees</td>
<td>explains/reasons</td>
<td></td>
</tr>
<tr>
<td>Practical task</td>
<td>1 2 3 4 5 6 7</td>
<td>Abstract task</td>
</tr>
<tr>
<td>Poor attitudes</td>
<td>1 2 3 4 5 6 7</td>
<td>Positive attitudes</td>
</tr>
<tr>
<td>blocking</td>
<td>encourage each other</td>
<td></td>
</tr>
<tr>
<td>interrupting</td>
<td>active listening</td>
<td></td>
</tr>
<tr>
<td>failure to agree</td>
<td>seeking consensus</td>
<td></td>
</tr>
</tbody>
</table>

*Figure 6.2* A simple rating system for group work.
the conversations embodied practical or abstract ideas and whether the group itself exhibited positive attitudes such as active listening and seeking consensus or engaged in blocking, interrupting or failure to agree could also be noted. Again, it needs emphasising that these specific uses of observation systems or rating scales are a prelude to help focus discussion which, under skilled leadership, can develop into much deeper conversations about the nature of the learning taking place.

It is also possible of course to collect information via the pupils. Many teachers would claim that asking children to make comments about the teaching is not possible in the primary school because children are too young to have useful views. Expectations can, however, be self-fulfilling, so unless one starts out with positive views about the contribution children can make one is likely to get little from the exercise. It is important that all views, however impractical, should be taken seriously. Brainstorming, where all contributions are initially accepted without comment is a useful activity and, given the earlier discussion on self-determination theory, and its impact on intrinsic motivation (Deci and Ryan, 1985), teachers must be prepared to act or explain why they can’t meet various suggestions. Pupils can be asked to help in creating the research tools and it is obviously important to start on a very small scale and not be too ambitious. Some ways in which pupils’ views and attitudes can be canvassed are through interviews, simple questionnaires with smiley faces, on the spot lesson evaluations and debriefing sessions. One of the most useful ways involves presenting pictures or cartoons with speech bubbles for the children to fill in. Figure 6.3 shows an example taken from Galton’s (2010b) work in English primary schools.

Pupils were asked to pick out two individuals from the class and say what they are saying or thinking. They can also be asked to imagine what the teacher might be saying. In Figure 6.3 it is clear that in this mathematics lesson, where the comments are taken from a study of pupils in an English primary school (although for purposes of providing a realistic illustration, the picture is from Hong Kong), the two selected children are not perceived as highly motivated. To the question, ‘What does \(7 \times 8\) equal?’ the second pupil is deemed to reply, ‘What time is lunch?’ The second pupil also does not understand the question and the teacher tells them to ‘Stop talking and get on with their work’. These imagined responses are clearly indicative of the attitudes and feelings of the actual pupil who wrote these comments, of whom it can also be surmised, from the spelling mistakes, that he or she was below average ability. Responses can be rated on a three-point scale (positive, neutral or negative). When using actual pictures it is important that they should not be of the particular pupils’ own classroom. It is also important that as far as possible the pupils in the picture have their backs to the viewer, because seeing pupils smiling or laughing tends to influence the content of the imagined conversations which the pupils record. Asking pupils to project their thoughts and feelings onto unfamiliar pupils is much less of a challenge than the situation where they are asked to comment on their own experiences; at least until a sense of school connectedness has been established.
Bringing it all together

We have now covered all six principles of SCT and also extended the discussion to include social and emotional aspects of learning, in particular the ways to promote intrinsic motivation, risk-taking and self-efficacy, which are necessary attributes for pupils bent on becoming autonomous learners. In the final chapter we deal with some of the problems raised by teachers about the implementation of SCT. We also end with a brief success story in the hope that it will encourage our readers to put into practice some of the ideas which we have put forward throughout the book.

Here is a picture of some pupils in a mathematics lesson. They are drawing a scale-plan of their classroom. Pick any two pupils and write down what you think they are saying (or thinking!)

1st Pupil: …………………………………………………………………………………

2nd Pupil: …………………………………………………………………………………

1st Pupil: …………………………………………………………………………………

2nd Pupil: …………………………………………………………………………………

If the teacher is speaking what is she saying? …………………………………………

…………………………………………………………………………………………..

An example from a UK mathematics lesson:

1st pupil: $7 \times 8$ What does that equal?
2nd pupil: What time’s lunch?
1st pupil: Soon, I hope. This is boring
2nd pupil: I don’t get this question [question]
Teacher: Stop talking and get on with your work

Figure 6.3 A simple projective test to explore pupils’ feelings about lessons, etc.
7 Some questions, answers and a little bit of encouragement

In this short concluding chapter we deal with questions asked by teachers at the various seminars, workshops and presentations that we have given in the last few years, in various parts of East Asia. We also end, by way of a positive endorsement of the ideas developed throughout the book, with a short account of a school which was on the point of closure, but which by making use of the opportunities provided by smaller classes, creating a curriculum designed to enhance pupils’ active participation and fostering teachers’ professional development, turned things around in a spectacular manner.

At the various seminars, workshops and presentations that the three of us have given for school principals, subject leaders and teachers many interesting questions have been raised about the application of the six principles for maximising the effectiveness of small class teaching (SCT). Many of these questions concerned similar issues or themes, so we have presented them here under a number of general headings.

Questions about the six principles

Do we need to put all six principles in a lesson?
Should the six principles be applied on a lesson or unit base?
Are there any reference books or websites if I want to know more about the six principles?

Our response

The six principles are intended to be understood as a guide. They were created as a framework for the SCT study and the justification for their use can be found in an Appendix to the SCT Study Report where there are further references. To locate the report access the website of the Hong Kong Education Bureau and go to the primary school section. An even fuller account can be found in Galton (2007) in Chapters 3, 4 and 5. The use of these principles depends on the nature of the learning objectives. If these are low level and mainly to do with transmitting new information, skills etc., such as learning to recognise and write Chinese characters, then the lesson will mainly consist of direct instruction
so there will be fewer opportunities for active pupil participation. If the goal is to develop the student’s ability to apply this new knowledge and to show understanding by restructuring the information in ways that enable the students to solve problems, develop new ideas and so forth, then more of the six principles will come into play, particularly, extended class discussion and the use of cooperative learning in groups and pairs. If the main aim of the lesson is to foster the pupils’ capacity for independent learning, then the emphasis would fall on the kinds of feedback which allow them to regulate their own learning and to assess for themselves the degree to which they fulfil the ‘success criteria’.

Gradually, as these advanced pedagogic strategies are absorbed into the teacher’s daily routine these distinctions will begin to matter less and the principles will be applied to fit the needs of the individual child rather than the overall lesson objectives. At the start, however, it may be easier to concentrate on applying these principles one at a time starting with questioning until the teacher is confident in his/her ability to initiate and sustain an extended class discussion. Then a further variant, say making the learning more active, can be tried. Over time teachers will then have developed their range of classroom practices such that the application of these principles becomes instinctive. In planning a unit teachers can then check that they have incorporated a range of different practices although not always in every lesson. They may, for example, use a double period for extended work in groups.

Questions about groups

Is group work and SCT the same thing?
During grouping what should be the criteria to decide the arrangement of students such as students’ aptitude or academic results?
Students’ results in different subjects may vary. How can we divide them on a subject basis?
In group learning how can we deal with difficulties arising from homogeneous and heterogeneous grouping?
Regarding grouping we find there are sometimes difficulties with some written tasks if students in a group are at different levels. Should students with similar or different levels be grouped together or does it depend on the nature of the activity?

Our response

The answer to most of the above questions is in the last one. Yes, the arrangement of groups depends, in part, on the task. In most classrooms there will be a need for both kind of grouping (mixed and differentiated ability groups). The research shows that where the purpose involves reasoning then it is important that all groups contain pupils of above average ability as they are the ones that are more likely to offer the ideas and explain instructions. Because, as the questioner
Implications for small class teaching in an East Asian context

points out, pupils’ aptitudes may vary by subject it is difficult to arrange to have the same groups for all subjects. Most teachers in the Hong Kong SCT study seem to have adopted the arrangement whereby they place pupils in, say, mixed colour groups (red, blue, green, etc.) and then use, say, fruit groups (apples, pears, mango, etc.) for ability grouping. If pupils are also numbered then they keep a record in their book that they are in red 2 and pear 3 etc. The teacher can therefore change from one form to another without having to allow for an extended transition time.

Written tasks do not generally make good group activities, particularly in the early primary years, because everyone in the group wants to be the person doing the writing. It is often better to have each pupil do some writing and then pair and share what they have produced or have each pupil contribute individually to a poster. Similar problems can arise when using equipment in mathematics. In Chapter 4 a number of similar potential problems are addressed and solutions suggested. A key to success is for the teacher and the class to jointly agree a set of ‘group work rules’ and to carry out the various training exercises which explicate these. Teachers then have to remember to regularly debrief the class on how the groups performed. Once pupils have become ‘group persons’ (they tend to say ‘we’ rather than ‘I’ did this) these problems tend to reduce and pupils are happy to take turns at writing or measuring while continuing to participate in the discussion.

Group work is only part of SCT. It is one way of fostering discussion; the other is whole-class interaction by extended questioning. Because it often means a lot of preparation work for the teacher group work should only be used when it results in a valuable academic outcome as well as developing a co-operative spirit between the pupils. That is why in early primary years, informal groups, where during class discussion the teacher provides ‘thinking time’ by telling pupils to discuss possible answers to a question with their neighbours (pair and share) can be very valuable.

Questions about parents

What evidence or data can be shown to parents to convince them about changes in SCT, particularly adaptations of the text book?
What can schools ask parents to do in supporting SCT?

Our response

Parents are naturally in favour of smaller classes but often they fail to understand why their children can’t be taught in the same way as they were taught in previous years. Generally, all over the world, the research suggests that pupils’ enjoyment of school declines over time. This was true of Hong Kong students in the SCT Study but the effect was less in small classes. More importantly, while in big classes gains were mostly made by the more able pupils in smaller classes the gains were distributed across all pupils. Many parents are used to
judging the progress of their children’s learning merely through their marks or
grades attained in their homework or tests. They need to support teachers who
adopt multiple forms of assessment to inform student learning (see ‘Homework
and marking’ section below). So these new approaches work. Parents need to
be reminded of this at every opportunity. In particular, schools should make
use of supportive parents (and there are always some). They can be co-opted
onto various school committees and asked to seek out other less supportive
parents and tell them the good news.

But seeing is believing and much better than being told the good news. Some
schools have held a parents’ evening during which they can see classes of pupils
enjoying their lesson. If this is impractical then show them a video of such a
lesson. Explain how texts need to be adapted because they were mainly written
with larger classes in mind, but in a smaller class there are more opportunities
for pupil participation and that there is therefore a need to adapt the tasks in
the textbook to allow this to happen.

Parents can do much to help at home. The Hong Kong SCT Study showed
that pupils whose parents took them on outings to interesting places and who
went frequently with them to the library to borrow books did better academic-
ally. Parents should also be encouraged to set aside time, even if they can only
manage weekends, to talk with their children about school work. The more
communication between school and parents and between parents and pupils,
the stronger will be the support for SCT.

Questions about diversity

Besides peer tutoring how can SCT help teachers cater for learner diversity?
How to manage individual differences in a small class?

Our response

We have to start with expectations; both the teacher’s and the pupils’. Our
research showed, for example, that the spread of scores on tests in classes
where teachers claimed there was a wide ability range were often of the same
order as where a teacher said there was no great diversity. The greater difference
was to be found in the average scores. What teachers appeared to be saying to
us, therefore, was that it was more difficult to cope in a class of pupils where
the average was below the norm, because more of these children required
individual help.

Pupil expectations also matter. The climate should be such that pupils believe
they can do well if they try hard and that it is not all down to inherited ability.
Teachers should therefore look carefully in the ways they provide feedback in
seeking to promote positive attributions. For example, is praise given for effort
as well as for correct answers? More specifically, flexible grouping arrangements
are essential (see earlier answer) and a shift in the balance away from whole class
instruction is also necessary. When bringing slower learning pupils together look
Implications for small class teaching in an East Asian context

for several different ways of providing explanations using concrete rather than abstract approaches (e.g. using pictures, diagrams or apparatus to illustrate a certain idea or principle). Be prepared to adapt the content so that it can be related to their everyday lives. With written homework it is often the case that while more able children are required to write their own sentences slow learners either copy out those of the teacher or fill in missing words from a list at the bottom of the page. This is what is termed differentiation by pace whereas it is more important to differentiate by task and set an activity which deals with the pupil’s specific weakness but provides a sufficient challenge. This is not an easy option and planning is best done in teams rather than individually.

In a study on transition from primary to a UK secondary school Maurice Galton interviewed pupils who had underperformed in the primary school and had been placed in very small classes of no more than 15 after the move to the big school. When asked why they were in such a class most said it was because ‘they were no good at maths or English’. At the end of school year they had caught up with the others in their age group and were due to return to normal classes after the summer vacation. When asked if they could cope they all replied, ‘Yes, provided we work hard’. Thus the teachers had succeeded in changing these children’s attributions towards success. Whereas they had attributed their failure at primary school to lack of ability, they now attributed their improvement to hard work and this made all the difference to their sense of self-efficacy and confidence in being able to cope in future.

However, a much more interesting response emerged when these pupils were asked: what made the difference? All agreed it was the teachers’ willingness not only to explain things as often as was necessary but to do in different ways. ‘Previous teachers’, they said, ‘just repeated the same explanation over and over again.’

One of the main ways schools try to help pupils with learning difficulties is to provide extra teaching in the form of ‘booster classes’ in languages and mathematics. In Hong Kong these usually take place after school or in lunch or break times. Those we have viewed are often merely a repeat of the original lesson, albeit at a slower pace. The likelihood, however, is that if these pupils didn’t understand the instruction on the first occasion they are unlikely to benefit from more of the same thing. Successful booster classes are those where different approaches are tried which make use of a range of different approaches, particularly those which make use of practical, meaningful, concrete explanations and examples rather than abstract ones.

Three further possibilities exist. The first, widely used in England, is to employ non-qualified classroom assistants to help cope with the slower learners. Studies have shown that this strategy has not been as successful as was first hoped for a number of reasons. For a start, there is a tendency for the teacher to devote more of her time to raising the performance of the more able students, partly because this outcome is often seen by inspectors and other outside agencies as the main indicator of ‘good teaching’. In turn the classroom assistant is keen to have the slower learning pupils contribute to class discussion and to reporting back after group work. They therefore tend to tell these pupils what to say or
Some questions and answers

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do rather than allowing them to try to accomplish the work themselves. This can create a situation where these pupils know that if they exhibit a degree of ‘learned helplessness’ they will have answers provided for them. While this enables these pupils to contribute in lessons (and perhaps gives the teacher a false impression of their learning) it also reinforces their sense of failure. Largely because of this practice, recent UK research has shown that these primary aged pupils do better on tests of attainment in classes with the one teacher, compared with those where the teacher has the help of one or more classroom assistants.

Another source of support is the more able pupil. Many Hong Kong schools employ pupils as ‘little teachers’. When these pupils have completed the task they are requested to go and help others in the class who are in difficulties. Peer tutoring, the research shows, is a very effective strategy but cross-age peer tutoring appears to be even more successful. In the US, the situation, particularly with an older boy and a younger girl, appears to improve the achievement of both parties, mainly, it would seem, because the boy works even harder to master the topic for fear he will be ‘shown up’ in front of a younger female by making a mistake. But just as with classroom assistants, training is essential to ensure that the mentor acts as a guide and support rather than doing all the work for the learner in the partnership by providing the answers and doing all the work. In one school the teacher brings her team of ‘little teachers’ together for a half-hour during Friday lunchtime, and over a drink of juice and a biscuits briefs them on their tasks for the following week.

Finally, the rapid improvements in technology have made it possible to bring computers back into the classroom rather than leaving them unused for much of the time in a specialist room. Tablets are becoming relatively cheap and with wi-fi can bring the World Wide Web into the classroom for all kinds of purposes. Thus while the teacher was working with a group of children who are struggling others might be doing research on volcanoes or some other topics. The slower learners, in their turn, might use the technology to edit their written work by using spell-checks. It is often the case that these children also lack co-ordination skills so that their work looks less attractive than that of other pupils when displayed. Computer printout removes this difference and again helps to boost confidence when it comes to presentation.

Questions about professional development

How can teachers find time to form and participate in learning circles? What types of in-service training can best help teachers to deal with changes and expectations regarding practical teaching techniques and psychological attitudes?

Our response

Extensive research, particularly that carried out in the USA by Professor Milbrey McLaughlin at Stanford University’s Centre for Research into the Context of
Teaching (CRC), has established that school-based in-service training is by far the most effective way of bringing about change in the attitudes and classroom practices of teachers (McLaughlin and Talbert, 2006). The question remains as to how this is best done. One view sees the role of the school principal as the dominant one. She (or he) provides the vision, identifies what needs to change and drives the reforms. The other approach is less hierarchical and more collegial and seeks to distribute leadership across the whole school community. In this model the school leader is sometimes the learner. Our use of learning circles is one attempt to put this idea of distributed leadership into practice and it is also why we suggest that it is important for the school principal to be an active participant and not just an enabler.

We have also suggested some ways in which schools can create time for teachers to participate in learning circles. Having teachers teach several classes in the same year group cuts down preparation time and allows more specialisation. Our experience shows that once teachers have learned to appreciate the value of learning circles, they are prepared to cover for colleagues in the knowledge that others will do the same for them. Most teachers have told us that they need more lesson time to move from the traditional type of lesson to one where there is active participation by pupils; time for extended questioning, time for group and pair work, and time to explore with pupils how to self-correct errors. Some schools have moved to 45- or 60-minute sessions. We are not in favour of the compromise where some 35-minute periods are joined into a double session because this implies the use of the six principles during the extended sessions and more traditional practices in the shorter ones. If your school retains the 35-minute period then we suggest that the lesson planning spreads the activities over two sessions, say, introducing the topic, carrying out some exploration of pupils’ ideas through class discussion before introducing new ideas and setting up the group work activity in one session, and then doing the group work in the next. Under the present system we tend to see a lot of group work of five minutes’ duration. Since group work is best used to develop pupils’ capacity for higher-order thinking (explaining, making suggestions, evaluating ideas, etc.), participants must be allowed sufficient time for their deliberations and to have a debriefing from their teachers.

Questions about the term ‘effect size’

We have noted that, according to John Hattie, some forms of feedback have bigger effect sizes than others. What does this mean and how should teachers use them?

What is the significance of an effect size of 1?

Please say more about effect size. What is the highest score?

Our response

By convention, when researchers measure differences between two treatments (e.g. one form of feedback against another) they usually report the difference
in terms of significance at either 1 per cent or 5 per cent level. This can be interpreted as meaning that there is a 1 per cent or 5 per cent chance that the difference is due to chance providing it is assumed that the scores obtained by individuals on the two treatments are distributed in approximately the same way. But it is often possible to get a significant difference that is not educationally worthwhile due to a large sample size. Education researchers therefore use effect size to indicate the extent to which any gain in the score would indicate the degree of a pupil’s progress (this could be in terms of attainment, attitude, motivation, etc.). Effect sizes can be greater than 1 but this is rare. Sizes of under 0.3 are considered small, 0.3 to 0.5 medium and 0.5 to 1 and beyond large. In simplistic terms, they are determined by taking the differences in average scores before and after the intervention (e.g. using group work, giving task informing feedback, using extended forms of questioning) and dividing this by some measure which represents the deviation of the various individual scores around these averages.

Cohen (1988) defined an effect size as the degree to which a phenomenon is present in a population and gave the following example. A small effect size is equivalent to the difference in mean heights between 15- and 16-year-old girls (about 1.2 cm), whereas for a large effect size the comparison would be between 13- and 18-year-old girls (about 5 cm). A medium effect size is equivalent to the difference in mean heights between 14- and 18-year-old girls (about 2.5 cm). While this may make sense to the mathematically minded, it is not very helpful for educational purpose, but in terms of pupil performance some commentators suggest that a large effect size is of the order of more than a half year’s added average progress for a class and that one of between 0.3 and 0.5 represents around three months. For a teacher wishing to use these findings, however, perhaps the wisest course of action is to pay little attention to the actual numbers, unless they are around 0.1 or less, when they can be ignored, and to use ranking of the values as a guide to which is the most effective strategy. Even so a word of caution is necessary. Some findings seem to go against common sense. Thus a finding on the use of open-ended, challenging questions suggest that this is not a useful teaching strategy for raising pupils’ attainment. Obviously, researchers who conduct these meta-analyses don’t read all the papers in fine detail because they can run into several hundreds of cases. In the case of questions they seem to have missed an important distinction in the methodology between researchers who classify such questions according to the teacher’s intention and those whose classification is based on the pupils’ response. In the former case it may include a number of unsuccessful attempts by the teacher to produce extended responses whilst in the latter only successful responses are accepted. Not surprisingly, on the assumption that there is a relationship, including unsuccessful responses means that the association between the number of open questions and the attainment scores will be reduced, while when only successful responses are recorded the correlation will be higher. Teachers therefore should proceed with caution which is why some commentators such as Cambridge Professor John McBeath (a frequent visitor to Hong Kong and mainland China) argue that effect sizes and much of the current measurement
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approaches used in the study of school effectiveness are of little use in making judgements about effective teaching (MacBeath, 2013: 53–7).

There are also queries on whether the effect sizes of class size, which is a contextual factor, should be directly compared with those resulting from educational interventions, such as one-to-one tutoring, group work or feedback. After all, as we have argued, smaller classes provide better opportunities for changes in pedagogy, and the two are therefore interlinked and not separable.

Questions about pupils who seem uninterested in learning

If students don’t have good learning attitudes how can we help them follow instructions?

Our response

Perhaps the question includes its own answer in that the problem may lie in the use of the word instruction indicating a particular model of teaching. Our experience of most East Asian primary-age pupils is that they are keen to learn, respect their teachers and are much more motivated than their Western counterparts. If they become reluctant learners we need perhaps to ask what we, as teachers, are doing that causes this disaffection rather than thinking that the cause of the problem resides within the pupil. Imagine what it would be like to sit listening to the teacher talk for most of a lesson, particularly if one is not coping. How much better if that pupil could talk to the teacher one to one and explain any difficulty? This becomes a possible with SCT so the first step is surely to create a better balance between different forms of classroom organisation (class, group, pair and individual). The next is to attend to the content (as suggested earlier) by making it meaningful, explaining its relevance, that is situating it in a wider context (what the late Jere Brophy called, ‘giving the big picture’) and supporting new ideas by concrete examples. Most important, however is the development of an appropriate environment; a class atmosphere which is cooperative, where pupils help each other and where pupils are not mocked when they make mistakes or don’t understand. The teacher helps here by the kind of feedback that s/he offers when mistakes are made. A remark such as ‘Not quite right but a good try’ can do wonders for a pupil’s self-esteem. We also draw attention to the messages that emerge from Deci and Ryan’s work, which was discussed in Chapter 6. These two social psychologists argue that disruptive or distracted behaviour often occurs because the pupils are reluctant to engage in the activities because the teacher and their peers will think they are stupid and think less of them as a consequence. Their message is that while teachers should not condone bad behaviour, they should nevertheless try to convey to the pupil that they understand the motivation behind these actions. A good way of doing this is to describe an incident in the teacher’s own life which gave rise to similar feelings. We believe that creating a classroom climate of this kind, and particularly using group work to build a team spirit among class members, will eventually reduce the number of reluctant learners.
Some questions and answers

Particular problems with English as a second language

In English the ability of junior students is low. How can we arrange a discussion or even higher-order thinking in a lesson?

The students in my school are very weak in English. Suggest some practical steps whereby we can use higher-order questioning to promote dialogic talk?

You say group work should involve challenge and involve everybody in the activity, but this requires more complex instructions and debriefing. This is difficult when the pupils have little competence in English. What do you suggest?

Our response

Start with very simple phrases which can be used in conversation. These should be displayed prominently in large lettering on the classroom walls and also on cue cards. Phrases like ‘I do not understand’, ‘Please explain’, ‘Can you say more?’, and so on. Teach children the rules of active listening (look at the speaker, nod if you understand, smile to encourage speaker to say more, etc.) We would encourage colleagues teaching Chinese to use the same rules and phrases so that the Cantonese version could be placed alongside the English. Then start with pairs to start simple conversations about things which are meaningful in a local context, such as the shopping mall (my favourite shop) or sport (do you like to play basketball, football, etc.). Don’t be afraid to modify the textbook so that, for example, pupils come to school by walking or MTR and not by bicycle or motor car. Some teachers ‘meet and greet’ the class at the start of the lesson adding to the exchange week by week. This appears to be a very effective way of overcoming the pupil’s reluctance to speak out loud and clear. Other things teachers have done are to attach an older pupil mentor to the first year students. Other schools have an English day each week when outside class teachers don’t respond to pupils (except in an emergency) unless they speak in English. Younger pupils can get help from older mentors with their questions.

Teachers can also help create dialogic conversation by not responding immediately to the first pupil’s answer to a question, using phases as, ‘Say more?’ or ‘Do you think the same or different?’ Ask the Chinese teachers to adopt a similar strategy using equivalent phrases. It will be slow but in time it will work. We have seen some great lessons in schools with a high proportion of disadvantaged students where initially speaking skills were very poor but where this kind of approach when used led to gradual improvement.

There can be a real problem, initially, in setting up group tasks in English with younger children, particularly where the instruction from the authority is not to use any Chinese for fear that the children will revert to their own language in the groups. We prefer to trust the teachers’ judgement so that on some occasions it may be best to give the instructions first in Chinese and then English and to do the same at the debriefing stage. The important message is that they use English during the group activity and here a supply of key phrases written on cards, of the kind described earlier, should be made available.
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Homework and marking

Our school principal insists that we set homework after every lesson and return it marked by the next. The kinds of activities you suggest as part of SCT involve quite a lot of preparation. I find I’m working longer and longer hours as a result. What should I do?

Our parents sometimes complain if we don’t correct all the mistakes in a piece of written work. They accuse us of being lazy teachers. How does this match up with your advice to help pupils to identify and correct their own errors as part of becoming an ‘independent learner’?

Our response

We said in Chapter 5 on assessment for learning that we need a revolution to change the mind-set of parents and educational authorities whereby summative measures such as homework and tests are regarded as the only way to judge a pupil’s achievements. The two questions illustrate the magnitude of the problem. In the case of the school principal it is possible to compromise and still meet the request. In a similar situation we came across one group of English teachers who did not correct every mistake but noted it with a question mark and a comment at the end. In this case the pupil failed to put full stops at the end of each sentence. These teacher wrote at the end of the piece, ‘What goes at the end of a sentence?’ The pupil looked at the question marks, realised his mistake and added the full stops.

Ultimately, there needs to be a whole-school debate about this issue. An important ally is Professor Icy Lee of Hong Kong Chinese University who in a very perceptive article titled ‘Stop Being Composition Slaves’ provides ten cogent reasons why teachers should not aim for 100 per cent accuracy when assessing pupils’ compositions (Lee, 2009). She begins by pointing out that the pupils own what they write, so it’s not acceptable practice to rewrite their sentences as this is likely to change the pupils’ intended meaning. Furthermore, correcting every mistake implies that the teacher expects pupils to produce error-free writing. She points out that often such writing while accurate appears unnatural and does not read fluently and cites examples from famous authors.

Professor Lee also argues that correcting every mistake is counter-productive in that pupils will not remember everything. She suggests that it is much better therefore to be selective and a less threatening activity. Good writing takes time and requires redrafting and editing. Teachers must train pupils in these skills so that self-editing and peer-editing become part of learning. In this way teachers change the rules of the game so that pupils no longer feel their task is finished once they have completed the writing task.

There is no short way to bringing about such change other than persuading the principal and the subject leader. Start small. Produce some evidence; show the improvement that takes place when pupils are required to take responsibility for improving their own compositions.
Discussion in learning circles

We spend a lot of time in the learning circle discussing the best textbook to use, designing work sheets, and so on, and there is little time for issues to do with the actual teaching and learning. Our subject leader tends to dominate. What should the rest of us do?

Our response

We can only suggest you put into practice the strategy advocated in the previous chapter of introducing routines of interaction (see Table 6.1). You or a colleague might introduce into the discussion at certain points statements or questions such as, ‘I wasn’t altogether satisfied with the way the pupils worked in the groups. What did you think? What would you advise?’ or ‘I’m not sure that the pupils understood why \( \frac{1}{2} \) was the correct answer’. A more direct approach is to ask your leader to come and observe your lesson because you would like advice on a particular aspect of your teaching. Start with the more straightforward issues such as improving class discussion or group work rather than addressing assessment issues which may be less amenable to change initially in the kind of school environment you hint at in your question.

One school’s success story

By way of offering encouragement to readers who feel that in their situation the suggested changes to their teaching make too many demands, we include a brief account of a case where the SCT philosophy acted as a catalyst in transforming one particular school in Hong Kong. Pupil numbers were declining rapidly, morale among teachers was at an all-time low and most were trying to find positions elsewhere so that the school was on the brink of closure. With the leadership of a dedicated school principal who joined a SCT Leadership Project, one of the professional development activities undertaken by the Centre for Development and Research in Small Class Teaching (now re-titled as the Centre for Small Class Teaching) at the Hong Kong Institute of Education, the situation was transformed to a degree that the school gained international recognition after being nominated for and included as one of the ‘Inventory’ cases of the International Study on Innovative Learning Environments compiled by the Centre for Educational Research and Innovation of the Organisation for Economic Cooperation and Development (OECD, 2013).² The case description of the present school was unrecognisable from the one on the point of closure:

[The school] is for learners aged 6 to 12 in an area of socio-economic disadvantage. It follows the pedagogy of “invitational education” (i.e. practice based on respect, trust, optimism and intentionality), which is realised in small class environments. It places significant emphasis on ICT: teachers,
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Learners and parents share materials with an “electric schoolbag”, and a distance learning classroom is used for joint projects with other schools. The garden and library are the responsibility of the young people. Every classroom has a mini performing stage and a reading corner; books are also spread all over the school to stimulate children to read after school. The extensive after-school programmes include tutoring and supervised homework sessions as well as artistic and athletics projects. Mixed-age “caring groups” with an attached mentoring teacher meet monthly. The staff regularly attend professional development seminars and engage in collaborative lesson planning, and peer lesson observation.

(OECD, 2013: 206)

Learning circles paid a key role in the transformation. According to the OECD report teachers (2013: 146) took part in ‘lesson observation, mutual sharing and support both within school and also with another nine schools taking part in the leadership programme’. An emphasis on the social nature of learning is said to be a key factor in the development of these innovative practices and the report singles out the use of cooperative learning (using mixed ability groups consisting of normally three to four pupils) as a defining factor (2013: 162).

Teamwork and collaboration are now demonstrated among all the people throughout the school. The principal acts as a role model to realise the core values of trust, respect, care and optimism, which are essential for the effective implementation of group work and other SCT skills in the classroom. Field observation has shown that learning in collaboration with peers does not only occur between classmates during lessons, but also across grades in caring groups and other joint-curricular activities. Interviews with pupils suggested that they enjoyed learning from one another and that they were happy to help their peers. According to the teachers, the pupils have greatly improved their social skills. They now respect each other, and willingly give and receive help from each other.

Teachers have participated in various modes of professional development activities, including seminars, workshops, experience-sharing sessions and school-based professional support services. Collaborative lesson planning, peer lesson observation and sharing are now strongly emphasised in the school. Links have been established with schools in Guangzhou and FoShan on the mainland.

To paraphrase the OECD report, it argues that the various case studies, including that of the Hong Kong school, are testimony to the research findings that suggest schools whose pupils display ‘reflective powerful learning’ are those that:

- create and sustain innovative learning environments;
- make learning central to their endeavours;
- ensure learning is both social and collaborative;
- are highly tuned to learners’ motivation;
- are sensitive to individual emotional differences, including prior knowledge by engaging with each learner, but without excessive overload;
• use assessment, consistent with aims and with the emphasis on formative feedback;
• promote horizontal connectedness across activities and subjects.

These points incorporate the many messages we have attempted to convey throughout the book. The report (2013: 145) argues that communities of practice, such as learning circles, are a crucial component of successful innovation, in that effective contemporary learning environments will not be sustained by working in isolation but instead [schools] need to be connected to diverse networks and professional learning communities, learning from others . . . These relationships will depend on technology to collaborate at a distance . . . Others will rely on . . . face to face dialogue and action [involving] certain players within the learning environment such as groups of teachers . . . Such networking relationships is well illustrated by [the Hong Kong School].

The school is now oversubscribed.

**A cage without stout bars**

We conclude with an eighth-century Chinese poem:

Sent as a present from Annam  
A red Cockatoo  
Coloured like the peach blossom  
Speaking with the speech of men  
And they did what they always do to the learned and the eloquent  
They took a cage with stout bars  
And they shut it up inside

We have argued throughout these chapters that putting into practice the principles associated with SCT will ensure that the barriers which prevent our pupils from flexing their thinking wings will be removed. This will allow them to be happier and more informed citizens of the future and will, over time, produce a more creative, independent, socially responsible generation. It is our hope that we have convinced our readers to adopt a similar viewpoint and that those who are teachers will be encouraged to give SCT a try.

**Notes**

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