Independent Learning

Literature Review

Bill Meyer, Naomi Haywood, Darshan Sachdev and Sally Faraday

Learning and Skills Network

department for
children, schools and families

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*Bill Meyer, Naomi Haywood,
Darshan Sachdev and Sally Faraday*

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Contents

1 Executive summary

The aim of this literature review was to explore the concept of independent learning and to identify reliable, robust and relevant research to develop a detailed picture of the different aspects of independent learning and possible impact on pupils. The review is based on UK and international literature, where appropriate.

1.1 Methodology

The review used a mixed-method approach guided by a combination of the principles of 'systematic review' and 'realist synthesis' to explore several research questions linked to independent learning. The stages of the review comprised:

- Development of inclusion and exclusion criteria

- Development of a search strategy

- Database searches

- Initial screening and quality assurance

- Development of a framework for analytical review

- Review and synthesis of literature

- Second stage of quality assurance

- Iterative refinement of key findings and themes

1.2 Emerging key findings

1.2.1 Defining independent learning

- There are a number of different terms used to describe independent learning, the most common being 'self-regulated learning'. All these different terms describe very similar themes and processes, including pupils having an understanding of their learning; being motivated to take responsibility for their learning; and working with teachers to structure their learning environment.

- There is a consensus in the literature that independent learning does not involve pupils merely working alone. Instead, the important role teachers can play in enabling and supporting independent learning is stressed.

- There are a number of different ways of defining and describing independent learning, without there being a shared understanding of how these different definitions and descriptions relate to one another. The literature works with different definitions and this may make it difficult for policy-makers and practitioners to find clear guidance.

1.2.2 Key elements of independent learning

- The key elements of independent learning may comprise factors which are internal and external to learners. The external elements are the development of a strong relationship between teachers and pupils and the establishment of an 'enabling environment'. The internal elements are the skills that individual pupils have to acquire.

- The skills that pupils need for independent learning are cognitive skills, metacognitive skills and affective skills. Cognitive skills include memory, attention and problem-solving. Metacognitive skills are skills associated with an understanding of how learning occurs, while affective skills are skills that are related to feelings and emotions.

- The strong relationship between teachers and pupils involves trust and a mutual responsibility for learning, which is based on teachers providing explicit messages about learning, teachers being attentive and responsive to pupils' interests and needs, and schools developing a greater consistency in their approach to learning.

- To understand the relationship between teachers and pupils it seems important to consider pupils' experiences in their family and local community since this allows pupils to relate learning occurring in school to their everyday lives, thus serving as a powerful motivator for pupils to engage in their own learning.

- The 'enabling environment' includes the physical environment and material resources. Importantly it also includes social interaction and support from teachers and peers.

- There is an implicit assumption in the literature that information and communications technology (ICT) has a useful role to play and can be an important part of the enabling environment.

- The successful promotion of independent learning will require careful attention to the learning environment, focusing both on the relationship between teachers and pupils, and the wider physical environment and resources within it, including ICT. This has implications for the scope and content of any guidance offered.

1.2.3 Models of independent learning

- Models of independent learning build on the theoretical notion of learning styles. Of the many theories of learning styles, some suggest that individuals have different ways of learning, such as through written text or through imagery. This conceptualisation of learning has provided a useful basis for teachers and pupils to talk about learning.

- Pintrich (2000) proposes a theoretical model of self-regulated learning that emphasises the importance of individuals planning, self-monitoring, controlling and evaluating their learning activities.

- Zimmerman (2002) extends Pintrich's model by emphasising the importance of motivation within self-regulation. Zimmerman suggests that motivation influences the three phases of self-regulation: forethought, performance and self-reflection.

1.2.4 Skills required for independent learning

- The skills required for independent learning can be divided into cognitive skills, metacognitive skills and affective skills.

- Cognitive skills include memory, attention and problem-solving. Pupils need to have reached a certain level in their cognitive development, such as being able to decode basic information before they can embark on independent learning. Teachers are able to promote this cognitive development to encourage independent learning.

- Metacognitive skills are skills associated with an understanding of how learning occurs, such as pupils being able to state how they learn and pupils being able to identify other people who help them with their learning. Metacognitive skills are necessary for pupils to self-assess their learning.

- Affective skills are skills that are related to feelings and emotions, such as developing a value system, then internalising and acting on these values. Motivation is considered the most important affective skill and is directly associated with increased independent learning and can also be an outcome of independent learning.

- An important skill linking motivation to independent learning may be 'delay of gratification', which refers to someone's ability to wait in order to obtain something that they want. Since motivation includes persistence in the face of difficulties and being willing to try again following initial difficulties, 'delay of gratification' may be important in order for motivation to be used for independent learning.

- There is lack of agreement in the literature concerning whether the skills necessary for independent learning are domain-specific or can be readily transferred across different subjects.

1.2.5 How teachers can promote independent learning

- The UK and international literature indicates that pupils do not become effective independent learners by themselves. Rather, pupils need to learn how to learn, indicating that effective ways to learn can and should be promoted by teachers.

- The promotion of independent learning requires a new role for teachers, which is based not on the traditional transmission of information, but on process-oriented teaching, which ensures that pupils are actively involved in the learning process.

- The literature provides a variety of suggestions relating to how teachers can promote independent learning by using a range of strategies, including scaffolding; providing pupils with opportunities to self-monitor; offering models of behaviour; developing a language for learning and providing feedback on homework.

- The literature provides an array of metaphors to describe the role of teachers in independent learning including coach and guide. This role involves teachers motivating pupils.

- Although most of the literature focuses on individual features of how teachers can promote independent learning, some authors describe comprehensive programmes that aim to teach pupils the skills associated with independent learning.

- ICT is highlighted as a potentially important tool for transforming teaching and learning although this review found little evidence to provide guidance on how this might be done.

- The review suggests that long-term interventions are necessary for independent learning to develop.

- Clarity is lacking about the skillset teachers require, how these skills might be acquired for the promotion of independent learning and how teachers can build these skills into current classroom practice.

- The evidence of the impact of teachers promoting independent learning on pupil outcomes is based mainly on case studies.

- Much of the literature focuses on observation, rather than on the views of teachers and pupils. To gain a clearer understanding of how independent learning could be applied successfully in schools it would be helpful to gather the views of teachers and pupils in more detail.

1.2.6 How schools can promote independent learning

- There is a consensus in the literature that the promotion of independent learning necessitates a whole-school approach. This requires the support of senior managers and teachers.

- Study support may be an important means for schools to enable independent learning since it provides pupils with an opportunity to choose their own learning activities and achieve their own learning goals. This may pave the way for pupils to become independent learners.

- The self-regulation empowerment programme (SREP) developed in the US provides an application of Zimmerman's (2002) self-regulation theory. This programme involves making it clear to pupils that success in learning is under their control. However, there are several limitations of the SREP so when using the programme pupils' individual characteristics must be taken into account. This may be difficult to achieve in practice.

- The key feature of devising innovative methods and strategies to involve disaffected pupils more fully in their learning to improve academic performance is characteristic of the approach used successfully in Education Action Zones (EAZs). This approach can be used to inform the implementation of independent learning.

- There is a lack of good practice guidance and good examples of initiatives in initiating and supporting independent learning in schools. They are needed to help generate guidance on the steps that schools can adapt to implement and promote independent learning in their particular context.

1.2.7 The impact of independent learning

- Within the literature claims have been made for wide-reaching benefits of independent learning including:

  - increased academic performance
  - increased motivation and confidence, and the ability for pupils to engage in lifelong learning
  - allowing pupils to become more aware of and better able to manage their limitations
  - enabling teachers to provide differentiated tasks for pupils
  - promoting social inclusion by countering alienation.

- The literature indicates that the use of independent learning may have a specific impact on particular pupil groups:
  - boys seem to be more inclined towards performance goals and more superficial or surface learning strategies (such as rote learning) than girls
  - gifted pupils seem to be more likely than other pupils to use self-regulatory learning strategies
  - independent learning may highlight the progress of pupils with special educational needs and give them a sense of control over their achievements
  - independent learning strategies may be effective in countering the alienation of 'socially excluded' children.

- However, caution is needed in interpreting the evidence base for these claims. Most of the research methods used involve case studies and observation rather than experimental studies, hence there is a dearth of robust evidence to support the contention that the reported benefits are entirely due to independent learning.

1.2.8 Role of assessment

- Both formative and summative assessment are important in relation to independent learning.

- Formative assessment is assessment *for* learning. It supports independent learning and can include the use of self-assessment and assessment based on set criteria. The literature indicates that formative assessment may increase pupils' feelings of achievement and enjoyment and increase motivation.

- Summative assessment may be assessment *of* learning that occurs following the use of independent learning and may inform the provision of future independent learning. It may be used as part of formative assessment to enable each individual pupil to understand *what* he/she has learnt and *how* he/she has learnt it. It seems that this use of both formative and summative assessment is especially successful for independent learning.

- The use of formative assessment and summative assessment seems to be especially important for independent learning because it allows pupils to understand the standard of performance expected of them, to monitor their own performance and to know what they can do to improve.

- There are few references to assessment in the literature on independent learning. Other literature indicates a strong link between assessment and independent learning that is complex and requires further consideration.

1.2.9 Challenges and suggested solutions

The literature identifies a number of challenges in implementing independent learning and also suggests some solutions.

- One of the main challenges is the teachers' perception that the delivery of the National Curriculum requires some whole-class teaching approaches. The literature suggests that this may restrict the opportunity for independent learning because it is teacher directed rather than fostering pupils' involvement in and responsibility for their own learning.

- Another challenge is that teachers' perceptions of how pupils learn may not correspond to the conceptualisation of independent learning. This may pose a barrier to the implementation of independent learning since some teachers do not perceive pupils to be able to learn independently. This barrier could be overcome by supporting teachers and ensuring that they understand that independent learning does not undermine their role as teachers.

- A further challenge is that pupils may resist the introduction of independent learning or may abuse the freedoms associated with its introduction, which makes the implementation of independent learning impossible. To overcome this barrier it is necessary for independent learning to be appropriately planned and structured. This involves supporting teachers and adopting a whole-school approach.

- The use of ICT for independent learning may prove challenging since it requires time and effort to create appropriate resources. It is suggested that this barrier could be overcome by designers ensuring that they consult pupils and engage them in the production of ICT resources. This would ensure that ICT resources are appropriate and may provide opportunities for teachers and pupils to learn collaboratively.

- Last, but not least, another challenge is that the level of parental support that pupils receive for school work is linked to their socio-economic background. Therefore independent learning may benefit pupils from a more advantaged socio-economic background more than pupils from a less advantaged socio-economic background, thus increasing the socio-economic divide. This

Implications for policy and practice

- Any reference to or promotion of independent learning will need to be supported by a clear and consistent definition of independent learning. It may also be helpful within the definition to explain the relationship between independent learning and allied terms and concepts.

- The successful promotion of independent learning will require careful attention to the learning environment, focusing on both the relationship between teachers and pupils and the wider physical environment and resources within it, including ICT. This has implications for the scope and content of any guidance offered.

- Teachers may be helped to promote independent learning in their pupils through an understanding of the models and theories of learning that underpin effective learning. This has implications for initial teacher training and continuing professional development and also for curriculum policy and guidance.

- The evidence is inconclusive about the extent to which skills for independent learning are domain-specific or transferable across domains. Further evidence is therefore required to enable appropriate guidance to be developed.

- The role of teachers in assisting pupils to learn how to become independent learners is a crucial one as pupils do not become effective independent learners by themselves. There is a well-documented repertoire of strategies teachers can use. This has significant implications for the training and development of teachers both in understanding their role and in deploying appropriate strategies for independent learning.

- As the evidence indicates that promoting independent learning requires a whole-school approach, appropriate guidance and support are needed for head teachers and strategic managers and they need to be based on a strong body of evidence.

- The volume of case-study evidence available suggests that there are wide-ranging benefits to pupils from independent learning. The lack of strong evidence suggests that the promotion of independent learning warrants further consideration and development before wider implementation.

- The relationship between assessment and independent learning suggests that careful consideration needs to be given to the development of formative and self-assessment approaches when they are being used to foster independent learning.

- There are a number of implications arising from any potential proposal for a strategic implementation of independent learning which require consideration. These include:

o   the need to review guidance on curriculum delivery in the light of a changing role for teachers and subsequent consequences for teacher training and professional development

o   progressive and systematic preparation for and development of pupils in becoming independent learners within the curriculum

o   ensuring parental understanding of and support for independent learning.

2   Introduction

The concept of 'independent learning' is associated with, or part of, a number of other educational concepts and wider policy agenda of contemporary relevance such as 'personalisation', 'student-centred learning' and 'ownership' of learning. It is a feature of important issues such as pupil–teacher roles and relationships, and the role of information and communications technology (ICT) in learning. Theoretical study and practical application of the principles of independent learning are perhaps most advanced in the US, but the concept is of increasing significance in the UK. It is one of the essential elements of 'personalisation', which government sees as vital to the continuing development of a system of school education that promotes high-quality and lifelong learning and social equity and cohesion (DfES, 2006).

An understanding of how learners learn, both in terms of theories of cognition and their practical application, is crucial to developing strategies aimed at improving the capacity for independent learning. This contention is supported by a large body of literature - for instance, the US-based Bransford *et al.* (2000) and Schunk (2005) and the UK-based Reynolds *et al.* (2002), Huddleston and Unwin (2002) and Higgins *et al.* (2007). These and other writers have shown how new information from many branches of science has added to our understanding of what it means to know; from the neural processes that occur during learning to the influence of culture on what people see and absorb. The issue of learning styles, originating from the work of the US-based Gardner (1983), is relevant here, though enthusiasm must be tempered by the severe qualifications made by the UK-based White (1998) and Coffield *et al.* (2004).

It is not, however, only the process that matters. To be of value, an educational theory must in its practical application have outcomes that are demonstrably beneficial. Here again, most of the research showing measurable outcomes derives from the US (Schunk and Zimmerman, 1994; Zimmerman, 2002). In the UK, the 'Learning How to Learn' project (Teaching and Learning Research Programme, 2008) and the Institute of Education's EPPI-Centre Thinking Skills Review Group (EPPI-Centre, 2004; EPPI-Centre, 2005) have looked at outcomes of independent learning and the latter's literature reviews indicate that thinking skills programmes and approaches have a considerable and positive impact on measurable pupil performance. However, it is not necessarily possible to isolate achievement gains due to independent learning from those that may be due to some other factor or a combination of factors (EPPI-Centre, 2004).

Qualitative outcomes - those to do with motivation and morale, for instance - are also claimed as benefits of independent learning (Griffith, 1998; Williams, 2003). These outcomes may be important in themselves in terms of enabling pupils to function adequately as members of society both as children and, in the future, as adults. They are also a prerequisite and an accompaniment to the strictly educational outcomes (Zimmerman, 2002).

As indicated in the DCSF *Invitation to tender* (2007), many schools in England and Wales identify the development of pupils' independent learning skills as an aim in their school development plan. But it is not always clear what is meant by 'independent learning', how it works in practice, or how teachers might best foster it. Questions also surround the issues of the benefits and challenges of independent learning and how it can be made inclusive.

This report aims to provide a review of literature that explores independent learning and identifies reliable, robust and relevant research to develop a detailed picture of the different aspects of independent learning and its possible impact on pupils.

3   Policy context

Over the last decade concern about formal education and its outcomes has been prevalent in Europe, North America and beyond (Boekaerts, 1999). Independent learning has been one of the approaches explored by national governments and educators as a means of improving educational outcomes. It also contributes to satisfying demands for greater personalisation and inclusivity. In the UK, the broad issue of personalisation has run rather ahead of the specific issue of independent learning as a matter of policy debate and formulation, but where the details and implementation of personalisation do feature in policy documents and statements the need to promote and develop independent learning is not always recognised as an important, indeed essential, part of a personalised scheme.

The booklet from the Department for Education and Skills (now the Department for Children, Schools and Families) *A national conversation about personalised learning* (DfES, 2004a), in laying out what should be done in the classroom to facilitate personalised learning, stated that children should be motivated 'to become independent, e-literate, fulfilled lifelong learners' (DfES, 2004a, p7). The roles of teachers, schools, school governors and central and local government in managing and providing the conditions and infrastructure for independent learning and the other, linked, components of personalised learning - notably choice, assessment for learning and student and parental voice - are underlined and the argument is advanced that implementation of this policy will lead to 'the shared goals of high quality and high equity' (DfES, 2004a, p7).

The National Conversation document noted that for effective teaching and learning to take place in a personalised system it will be necessary to 'instil key learning skills and accommodate different paces of learning' (DfES, 2004a, p9). As examples of approaches that might be adopted, the document cites a school in which teachers assist children to take control of their own learning by setting with them realistic learning challenges such as re-designing the school grounds and evaluating the results of their efforts; and another school in which teachers help the children to identify and develop their learning skills and then structure their lessons according to how pupils will most effectively learn.

Neither of the two important White Papers, *Higher standards, better schools for all* (DfES, 2005a) and *14-19 education and skills* (DfES, 2005b) makes direct mention of independent learning, though both regard personalised learning - seen in terms of appropriately tailored curricula and opportunities for individual pupils and other demand-led features - as crucial to the success of education in the future.

The report of the Teaching and Learning in 2020 Review Group (DfES, 2006), with its emphasis on personalised learning, stresses, both implicitly and explicitly, the association of independent learning with the personalised approach. Though the report recognises that primary and secondary schools face different challenges in personalising learning because of the different stages pupils are at in their learning journey, it nonetheless envisages a future in which *all* children have an appropriate degree of 'ownership' of their learning and advocates the personalised learning 'mix' of assessment for learning, learning how to learn and pupil voice as the best means of developing all aspects of learning.

The teaching of 'thinking skills' is already an explicit part of the National Curriculum in England and Wales and has made a direct contribution to initiatives such as *Teaching and learning in the foundation subjects* (DfES, 2004b) and *Leading in learning at Key stage 3* (DfES, 2005c), which emphasise the importance of thinking skills approaches to developing pupils' oral and questioning skills. Thinking skills are also an important part of the Primary National Strategy Aims (DfES, 2004c).

The important role that ICT can play in developing independent learning is stressed in the report of the Teaching and Learning in 2020 Review Group (DfES, 2006), and in the government's e-learning strategy, *Harnessing technology* (DfES, 2005d).

The wish of government to give impetus to a move towards independent learning as part of the personalisation agenda is clear, but the degree to which this will be possible in practice has been questioned in the literature. Thus, Williams (2003) points to what she sees as the paradox of increasing prescription through the National Curriculum at the same time as the policy of promoting independent learning. Teachers, she argues, are being asked to help their pupils develop as independent learners in the face of a curricular regime based on an input/output model that may be thought to leave little time for independent thinking or action. Bullock and Muschamp (2006) take up this theme but hold that the practical development of independent learning is, nonetheless, possible under present conditions and is in fact already a growing tendency in primary schools.

4   Methodology

The aim of this project was to conduct a literature review that explores independent learning and identifies reliable, robust and relevant research to develop a detailed picture of the different aspects of independent learning and possible impact on pupils.

To achieve this aim, the project sought to explore several research questions linked to independent learning. See Appendix 1 for these research questions.

The review used a mixed-method approach guided by a combination of the principles of 'systematic review' and 'realist synthesis' (Pawson, 2002; Pawson *et al.*, 2004). See Appendix 2 for details of this approach.

The review then progressed using several stages to ensure a systematic approach to the available literature:

- Development of inclusion and exclusion criteria

- Development of a search strategy

- Database searches

- Initial screening and quality assurance

- Development of a framework for analytical review

- Review and synthesis of literature

- Second stage of quality assurance

- Iterative refinement of key findings and themes

See Appendix 3 for details of the processes involved in these stages.

5 Defining independent learning

Key findings

There are a number of different terms used to describe independent learning, the most common being 'self-regulated learning'. All these different terms describe very similar themes and processes, including pupils having an understanding of their learning; being motivated to take responsibility for their learning; and working with teachers to structure their learning environment.

There is a consensus in the literature that independent learning does not merely involve pupils working alone. The important role teachers can play in enabling and supporting independent learning is stressed.

There are a number of different ways of defining and describing independent learning, but not a shared understanding of how these different definitions and descriptions relate to one another. The literature works with different definitions and this may make it difficult for practitioners to find clear guidance.

Implication

Any reference to, or promotion of independent learning will need to be supported by a clear and consistent definition of independent learning. It may also be helpful within the definition to explain the relationship between independent learning and allied terms and concepts.

There are numerous definitions of independent learning, building both on UK and international literature. For the purpose of this review it is therefore important to consider these definitions, in addition to the definitions offered by the DCSF *Invitation to tender* document (2007). It is also important to contrast the dependent learner with the independent learner since this illustrates the potential benefits of independent learning. Extrapolating from this contrast, it may be of interest to consider independent learning along a continuum, stretching from the dependent learner to the independent learner. In addition, it is important to note that there are a number of allied terms used to describe independent learning, such as 'self-regulated learning'. These different terms appear to describe almost identical themes and processes and it is therefore important to take these allied concepts into consideration in order to formulate a conceptualisation of independent learning.

5.1 Broad definitions of independent learning

The DCSF *Invitation to tender* document suggests that independent learning is a broad concept. The document cites Perry *et al.* (2006, p3) in defining self-regulated learning as 'independent, highly effective approaches to learning that are associated with success in and beyond school'. It also cites Candy (1991) who suggests that independent learning is a method and educational philosophy in which learners acquire knowledge by themselves and develop the ability to undertake enquiry and critical reflection.

In support of these definitions there is a consensus in the UK and international literature that independent learning is a process during which learners develop the values, attitudes, knowledge and skills needed to make responsible decisions and take appropriate actions in regard to their own learning (Bates and Wilson, 2002; Gorman, 1998; Kesten, 1987; Williams, 2003).

> *Independent learning is that learning in which the learner, in conjunction with relevant others, can make the decisions necessary to meet the learner's own learning needs.* (Kesten, 1987, p3).

There is also a consensus that independent learning is fostered by creating opportunities and experiences that encourage learner motivation, curiosity, self-confidence and self-reliance, and is based on the understanding by learners of their own interests and a valuing of learning for its own sake. However, it is important that independent learning does not involve simply giving pupils more independence. Instead it involves teachers thinking clearly about learning outcomes and learning stages (Gorman, 1998).

The report of the Teaching and Learning in 2020 Review Group (DfES, 2006 p4) offers a conceptualisation of what the term 'independent learning' might mean within its description of how learning can be personalised:

> *Learners are active and curious: they create their own hypotheses, ask their own questions, coach one another, set goals for themselves, monitor their progress and experiment with ideas for taking risks, knowing that mistakes and 'being stuck' are part of learning.*

This sentence contains the essence of an understanding of 'independent learning' - a number of different terms, such as 'self-regulated learning' and 'expert learning', have been used for the concept - that is shared by different authors, from different countries, drawing their knowledge and experience from different contexts. In the UK independent learning is part of the government's personalisation agenda, but is not synonymous with it.

5.2   Contrasting the dependent and the independent learner

Typically, UK and international writers make a contrast between the 'dependent' and the 'independent' learner (Alexander et al, 1992; Boekaerts, 1997; Williams, 2003). The dependent learner is a passive recipient of knowledge, or at least of teaching: he or she accepts the teacher as the expert in the learning process and sees his or her own role as subsidiary or dependent. By contrast, the independent learner is active in directing and regulating his or her own learning and is him/herself a learning expert. Winne and Jamieson-Noel (2002) see the ability to fuse information processed and information processing without teacher intervention as setting the independent apart from the dependent learner.

5.3   Continuum between dependent and independent learning

Independent learning is a direction for the process of education, not an absolute standard. As the UK and international literature has generally suggested, particularly when focusing on the practical perspective, that there are different degrees of independence in a continuum from the dependent to the independent learner (Bereiter, 2002; Ertmer and Newby, 1996; Boekaerts, 1997). The dynamic of the

continuum is a shift in responsibility between learner and teacher, so that by degrees the learner assumes greater responsibility for directing his or her own learning and negotiating strategies and processes with the teacher. For movement to take place along the continuum, together with the transfer of responsibility there must be a development of independent learning skills by the child.

5.4   Exploring allied concepts

There are a number of different terms used to describe independent learning, such as 'self-regulated learning' (Schunk and Zimmerman, 1994; Pintrich, 2000), 'self-directed learning' (Korotov, 1992), 'learning to learn' (Black *et al.*, 2006), 'self-directed active learning' (Birenbaum, 2002), 'student-centred learning' (Black, 2007), 'self-learning' (Mok and Chen, 2001), 'self-access learning' (Chia, 2005) and 'supported study' (MacBeath, 1993). All these terms describe essentially the same themes and processes. These themes and processes involve pupils having an understanding of their learning, taking over responsibility for their learning and working with teachers to structure their learning environment. This allows pupils to become active participants in their own learning process (Zimmerman, 1986). Importantly, there is a consensus in the UK and international literature that independent learning does not only involve pupils working alone. Instead independent learning involves 'more capable others' guiding pupils towards becoming more independent (Bullock and Muschamp, 2006; Allan *et al.*, 1996). Considering these similarities among the different terms used to describe independent learning, it is worth examining these allied concepts.

5.4.1   Self-regulated learning

In the US, the term 'self-regulated learning' is generally used as the equivalent of the English 'independent learning'. American studies and practical applications in the field derive largely from the pioneering work of Schunk and Zimmerman, whose initial impetus was a consideration of how and why successful academic achievers attain the results that they do. Schunk and Zimmerman (1994, p309) define self-regulated learning as 'the process whereby students activate and sustain cognitions, behaviours and affects which are systematically oriented towards attainment of their goals'.

Also based in the US, Pintrich (2000, p453) defines self-regulation as 'an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environment.'

According to Zimmerman (1986) the self-regulated learning theory that underpins this definition focuses on how pupils activate, alter and sustain their learning practices in specific contexts. Zimmerman notes that according to this theory even high-ability pupils may not achieve optimally because they are not able to use or control context-specific cognitive, affective and motoric learning processes. Self-regulated learning theory also suggests that while the environment is important for learning, there is no environment that will ensure learning. Therefore self-regulated learning theory suggests that even optimal learning environments require selections and structuring to allow pupils to learn.

Zimmerman emphasises the importance of Bandura's (1986, cited in Bandura, 2001) social cognitive theory for self-regulated learning. This is because social cognitive theory considers the motivational and motoric dimensions of learning, in addition to knowledge. Therefore 'self-regulated learning theorists view students as

metacognitively, motivationally, and behaviourally active participants in their own learning process. Motivationally, self-regulated learners are persons who plan, organise, self-instruct, self-monitor, and self-evaluate at various stages during the learning process'. (Zimmerman, 1986, p308).

This view indicates that motivationally self-regulated pupils perceive themselves to be competent, self-efficacious and independent. Behaviourally these pupils are able to select, structure and create environments that make optimal learning possible. Zimmerman therefore suggests that self-regulated learners are aware of the functional relationships between their own patterns of thought and action, and the social and environmental outcomes. The effective use of self-regulation strategies is suggested to increase perceptions of self-control, such as autonomy, competence and efficacy. These positive self-perceptions form the motivational basis for self-regulation during learning.

The UK-based Marcou and Philippou (2005) state that self-regulated learning has been conceptualised in three ways:

- the learner's ability to make use of metacognitive strategies (this involves learners understanding how they learn best)
- the learner's ability to use metacognitive strategies *and* cognitive learning strategies (cognitive strategies are the different ways in which pupils learn, such as through visual or auditory means)
- the importance of considering motivation, cognitive and metacognitive aspects in learning.

This conceptualisation of self-regulated learning stresses the importance of motivation in promoting the cognitive and metacognitive aspects of learning.

5.4.2   Self-directed learning and learning how to learn

The Dutch researchers Bolhuis and Voeten (2001) consider 'self-directed learning' and 'learning how to learn' to be synonymous concepts that involve pupils learning more independently. This allows pupils to be better prepared for higher education, work and life. To provide for this kind of learning it is necessary for schools to be transformed into 'a house of study' in which teachers activate pupils and teach them how to learn by guiding and coaching their learning process. According to the Russian researcher Korotov (1992) self-directed learning allows learners to become self-disciplined and creative. Korotov also suggests that characteristics of self-directed learners involve self-monitoring and 'comradely solidarity' (p22).

The British researchers Higgins *et al.* (2005) define 'learning to learn' as a process during which pupils discover about learning. This involves a set of skills that allow pupils to learn more effectively and therefore become learners for life. For Higgins *et al.* the concept of 'learning to learn' therefore holds at its heart the belief that learning is learnable. This learning is based on pupils having an awareness of:

- how they prefer to learn and what their strengths in learning are. (This concept is identical to Marcou and Philippou's 2005 notion concerning the importance of metacognitive strategies.)
- how they can motivate themselves to learn and have the confidence to succeed
- aspects that are important to consider when learning, such as the need for water, nutrition, sleep and a positive environment

- specific strategies that they can use, such as how to improve memory to make sense of complex information. (This concept is identical to Marcou and Philippou's 2005 notion concerning the importance of cognitive strategies.)
- habits that they should embrace, such as reflecting on learning, to allow them to make subsequent improvements.

5.4.3 Active learning

The Israeli writer Birenbaum (2002) contrasts two types of learning activities. One learning activity is determined by external regulation and involves the teacher taking over learning and thinking activities on behalf of pupils. This would, for example, involve a teacher explaining the relationship between concepts of theories, making comparisons and drawing conclusions. The other learning activity involves pupils performing learning and thinking activities by themselves. Birenbaum describes this learning activity as self-directed active learning.

Self-directed active learning can therefore be defined as the extent to which pupils are metacognitively, motivationally and behaviourally active in their learning (Anthony, 1996; Kane, 2004). The cognitive, metacognitive and resource management techniques that pupils activate, in addition to the related motivational beliefs, allow pupils to accomplish academic goals and overcome any hurdles along the way. Furthermore, active learning is associated with the capacity to assimilate new knowledge and use it to solve problems, the ability to think critically and self-assess, and the ability to communicate and work collaboratively with others (Silberman, 1996).

5.4.4 Student-centred learning

According to the Australian writer Black (2007), student-centred learning is a widely accepted and highly effective approach to teaching and learning, which is based on high-quality teaching that is tailored to each individual pupil's needs. Black notes that this can be achieved by allowing pupils to design their own learning paths with the support of community advisers and mentors. Engaging pupils in learning is therefore possible if classroom activities centre on the lives, knowledge, interests and energies of pupils. Also, teachers should use a flexible range of pedagogical and curriculum approaches that consider a range of individual differences among pupils. The aim of student-centred learning is to create 'engaged and independent learners' (Black, 2007, p6).

Cole (2001, cited in Black, 2007) cites various approaches to student-centred learning as outlined below:

- Learning based on the notion of multiple intelligences - this approach considers deep and challenging learning, problem-solving and decision-making in authentic situations. In addition, this approach involves high levels of pupil decision-making, a cooperative classroom culture, supportive relationships and assessment as an intrinsic part of learning.
- Learning based on the authentic curriculum, which involves teaching and learning being personalised as much as possible - this is made possible by the teacher taking on the role of a coach for the pupil's active, self-directed learning.
- Learning based on constructivism - this suggests that teachers should tailor their instruction to pupils' needs and interests. In addition, this approach involves assessment of pupils' learning in the classroom context rather than

in separate formal tests. Cole states that this approach recognises that the more relevance pupils see in the curriculum, the more interested they will be in learning.

5.4.5   Self-learning

Knowles (1975, cited in Mok and Chen, 2001) defines self-learning as the ability to learn on one's own, and considers this to be a basic human competence. The Chinese writers Mok and Chen (2001) consider self-learning to be synonymous with self-regulated learning. According to Mok and Chen, both concepts emphasise the importance of education centred on pupils, which allows pupils to develop skills necessary for lifelong learning within a rapidly changing environment.

Mok and Chen consider self-learning a cyclical process based on three components: mindset, action and outcomes.

- The learner's mindset is linked to the learner's pre-existing conditions of motivation, cognition and willingness to learn.

- Action indicates the learner's intended activities and behaviours.

- Outcomes indicate the results of consequences of the learning process.

These three components are linked by the four processes of planning, monitoring, feedback to mindset and feedback to action.

- Planning is the process of preparing for monitoring and feedback.

- Monitoring indicates the process of identifying a mismatch between the intended targets and action and the outcomes of the learning process.

- Feedback to the mindset supports learners in reflecting and changing their mental models, and then changing the planning process.

- Feedback directly to action supports learners in adapting their learning behaviours.

Mok and Chen note that the learning associated with change in behaviour does not involve a change in mental conditions of learners and therefore may not be linked with long-lasting learning. The cyclical nature of self-learning indicates that learning may take place over several cycles before long-lasting learning occurs. The cyclical nature of self-learning also indicates that learning is layered, as after completing a cycle a learner's level of knowledge of the learning task is likely to advance to higher levels.

5.5   Defining independent learning - a way forward

Building a definition of independent learning can use as its foundation the work undertaken on developing and understanding the concept of 'self-regulated learning', a concept closely allied with the term 'independent learning'. The key ingredients that need to be featured in the definition of independent learning include the shift of responsibility for the learning process from the teacher to the pupil. This shift in responsibility involves pupils having an understanding of their learning, being motivated to learn and collaborating with teachers to structure their learning environment.

6   Key elements of independent learning

Key Findings

The key elements of independent learning may comprise factors which are internal and external to learners. The external elements are the development of a strong relationship between teachers and pupils, and the establishment of an 'enabling environment'. The internal elements are the skills that individual pupils have to acquire.

The strong relationship between teachers and pupils involves trust and a mutual responsibility for learning, which is based on teachers providing explicit messages about learning, teachers being attentive and responsive to pupils' interests and needs, and schools developing a greater consistency in their approach to learning.

To understand the relationship between teachers and pupils it seems important to consider pupils' experiences in their family and local community since this allows pupils to relate learning occurring in school to their everyday lives, thus serving as a powerful motivator for pupils to engage in their own learning.

The 'enabling environment' includes the physical environment and material resources. Importantly it also includes social interaction and support from teachers and peers.

There is an implicit assumption in the literature that information and communications technology (ICT) has a useful role to play and can be an important part of the enabling environment.

Implication

The successful promotion of independent learning will require careful attention to the learning environment, focusing both on the relationship between teachers and pupils, and the wider physical environment and resources within it, including ICT. This has implications for the scope and content of any guidance offered.

The literature suggests that key elements of independent learning may be comprised of factors which are internal and external to learners. The external elements discussed here are the development of a strong relationship between teachers and pupils and the establishment of an 'enabling environment' in which ICT has a part to play. The elements that are internal are the skills - cognitive, metacognitive and affective - that individual pupils have to acquire. (These skills are described in detail in section 8).

6.1   Strong relationship between teachers and pupils

In addition to the skills that pupils need for independent learning, the literature indicates that an essential element of independent learning is a strong relationship between teachers and pupils (Bates and Wilson, 2002; Kesten, 1987; Williams, 2003; Gorman, 1998; Alexander et al, 1992; Boekaerts, 1997). This relationship is based

on trust and a mutual responsibility for learning. Black (2007) suggests that trust and mutual responsibility are established by teachers providing pupils with explicit messages about learning. Black *et al.* (2006) also suggest that trust is built by schools developing a greater consistency in their approach to learning from lesson to lesson, and that this is likely to lead to pupils becoming active participants in their own learning process, thus sharing responsibility for learning with teachers.

In addition, Sharp *et al.*'s (2002) research in the UK suggests that the new relationship between teachers and pupils is based on the creation of a more informal atmosphere within lessons, which includes teachers being highly spontaneous in responding to pupils' interests and needs. Their research indicates that this serves as a strong motivator for pupils to engage in learning and allows for more flexibility and creativity in their learning.

Some authors, such as Black (2007) and Hinds (2007), have highlighted the importance of considering pupils' experiences in their family and local community since this affects the relationship between teachers and pupils. The literature suggests that families and the local community are essential in providing the setting that enables pupils to relate learning occurring in school to their everyday lives. This seems to be a powerful motivator for pupils to engage in their own learning, thus ensuring that teachers and pupils can share responsibility for learning (Black, 2007). Kimonen and Nevalainen (2005) have suggested that there needs to be increased cooperation between members of the school community and representatives of the local community. Hinds (2007), in support of this suggestion, has noted that this would enable pupils to reflect on their own learning beyond the boundaries of their school, thus allowing for a more holistic, broader learning journey for pupils.

6.2   An enabling environment

Although the relationship between teachers and pupils is an essential element of independent learning, it is not sufficient. A further essential element of independent learning is the 'enabling environment', which is the supportive environment within the classroom that makes pupil-teacher interactions foster independent learning. This importance of the 'enabling environment' indicates that independent learning does not occur in isolation. However, while many authors have highlighted the importance of an enabling, supportive environment, (Bates and Wilson, 2002; Kesten, 1987; Williams, 2003; Gorman, 1998; Alexander et al, 1992; Boekaerts, 1997), this concept has often been introduced without the writers identifying what the ingredients of such an environment are (Malone and Smith, 1996; Paris and Paris, 2001; Sharp *et al.*, 2002).

One important contribution that does consider what the ingredients of an 'enabling environment' has been made by the British writer MacBeath (1993). MacBeath proposes a hierarchy of environmental support that is needed for independent learning (see Figure 1). The enabling 'physical environment' is the base of this hierarchy since 'without this nothing is feasible' (MacBeath, 1993, p9). The 'physical environment' refers to the environment in which independent learning takes place, such as a library or a classroom. Following this base is the 'time environment', which can be used and controlled by teachers. The 'time environment' may therefore refer to the length of time teachers give pupils to work on specific tasks. Then there is the 'peer environment' whose norms and expectations may increase or decrease pupils' willingness and ability to undertake independent learning. This is followed by the 'material resources', which refer to study aids such as books and audio tapes. Finally, at the top of the hierarchy are the 'tutor resources', which refer to the traits, knowledge and skills of teachers, tutors and mentors.

Figure 1 Hierarchy of support
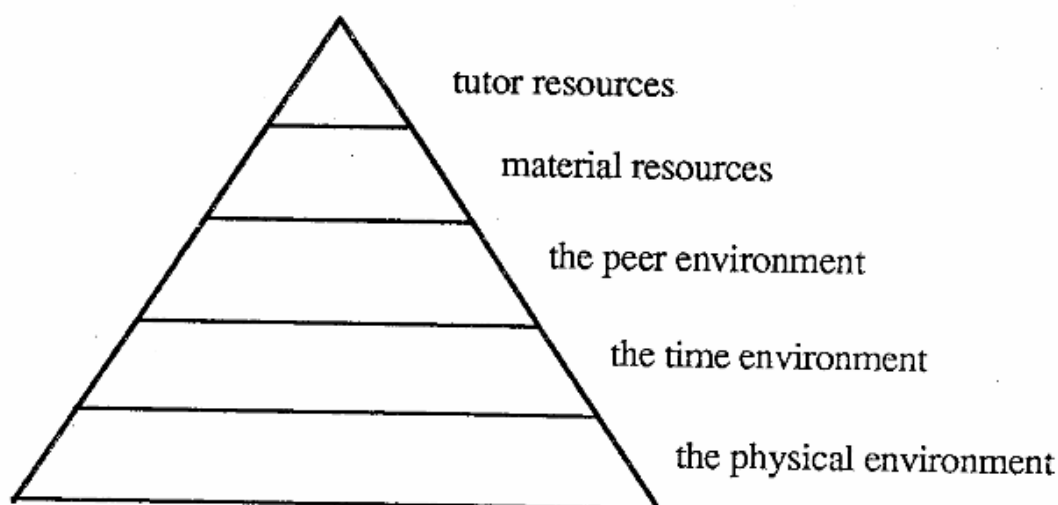
6.2.1 The role of information and communications technology

While the use of ICT is not mentioned explicitly as part of MacBeath's hierarchy of support, its importance is implied at all levels. There is an implicit assumption that ICT is an essential component of this enabling environment. The 'physical environment' in schools is being increasingly equipped with many forms of ICT, such as the internet, electronic whiteboards, computers with various software, and mobile devices. Similarly the 'time environment' and the 'peer environment' are likely to be influenced by ICT since teachers and pupils are able to communicate by various means, including electronically and physically. This may provide more flexibility in the time pupils have for learning and how they perceive learning. The 'material resources' are inevitably based on ICT, with pupils more likely to use an internet library than a physical library when searching for information. The 'tutor resources' are also likely to be influenced heavily by ICT since teachers' knowledge and skills are enhanced and developed through ICT.

The part that ICT has to play in learning is widespread throughout the UK literature although its role in relation to independent learning is implicit. (Hinds, 2007; Malone and Smith, 1996; Wilson, 2000). There is a wealth of international literature documenting the importance of ICT for independent learning (Mok and Chen, 2001; Peet, 2000; Lim and Chai, 2004; Stefansson, 2004). Most of this literature focuses on work carried out in East Asia and North America, and may therefore not be directly applicable to the UK. However, since the principal elements of independent learning remain identical across countries, this literature may pave the way to a better understanding of how ICT can support and promote independent learning in the UK.

Summing up the various benefits of ICT proposed in the literature, the Chinese writers Mok and Chen (2001) propose that there are four ways in which it facilitates self-learning:

- ICT allows for the easy assessment and measurement of self-directed learning
- ICT has dramatically increased the speed and access of information
- ICT allows for more in-depth feedback, such as through the use of multi-media
- ICT breaks down the barrier between the learner and the educator, and allows learners to interact easily with each other.

7 Models of independent learning

Key findings

Models of independent learning build on the theoretical notion of learning styles. Of the many theories of learning styles, some suggest that individuals have different ways of learning, such as through written text or through imagery. This conceptualisation of learning has provided a useful basis for teachers and pupils to talk about learning.

Pintrich (2000) proposes a theoretical model of self-regulated learning that emphasises the importance of individuals planning, self-monitoring, controlling and evaluating their learning activities.

Zimmerman (2002) extends Pintrich's model by emphasising the importance of motivation within self-regulation. Zimmerman suggests that motivation influences the three phases of self-regulation: forethought, performance and self-reflection.

Implication

Teachers may be helped to promote independent learning in their pupils through an understanding of the models and theories of learning that underpin effective learning. This has implications for initial teacher training and continuing professional development and also for curriculum policy and guidance.

Models of independent learning build on previous work on learning styles theory, which suggests that each individual has a preferred way of learning (Boekaerts, 1999). Given the importance of the individual during independent learning it is therefore important to consider this theory. Referring to the importance of learning styles, the US-based writer Pintrich (2000) proposes a model that considers the different processes involved during self-regulation. The US-based writer Zimmerman (2002) extends this model, detailing the sub-processes involved during the phases of independent learning. Zimmerman's model further highlights the important role of motivation, indicating that pupils must be motivated for independent learning to occur.

7.1 Learning styles theory

There are numerous learning styles theories and while these are not explicit models of independent learning, the claims made by learning styles theorists suggest that learning styles may have a role in enabling learners to understand how they learn and thus improving their learning and making them more independent learners. Learning styles theory originated in the US and is derived from earlier work on 'multiple intelligences' by Gardner (1983) and learning theory by Kolb (1984). The British writer Hall (2005) suggests that there is a great appeal to learning styles because of the focus on the learner rather than on the subject matter. Importantly, the concept of learning styles may allow teachers and pupils to explore learning and provide a common vocabulary in which strategies, motivation and the processes particular to each learning experience can be discussed. Hall suggests that the learning style debate could therefore be used for a constructive dialogue between teachers and pupils. It seems that this aspect of learning styles theory may be of particular importance when considering independent learning.

By offering learners a vocabulary for understanding both how they learn and why they learn more effectively in different contexts at different times, learning styles may help students to become more autonomous, more motivated and more self-regulated. (Hall, 2005, p56)

However, it is worth noting that the evidence base on learning styles theory has been contradictory and therefore some claims in respect of some theories about learning style have to be treated with caution. Likewise, there has been controversy about the misapplication of learning styles theory to practice.

7.2   Pintrich's model

Pintrich (2000) proposes a model that aims to classify and analyse the different processes that play a part during self-regulated learning. In Pintrich's model the processes of self-regulation are organised according to four phases: planning, self-monitoring, control and evaluation. These four phases represent a general sequence, which pupils complete as they carry out tasks.

Within each of these phases self-regulation activities are in turn structured into four areas: cognitive, motivational / affective, behavioural and contextual.

The process of self-regulation begins in the planning phase, where activities such as goal setting occur. The self-monitoring phase includes activities that help pupils become aware of their state of cognition, motivation and emotion. In response to the self-monitoring phase, control activities are put into place, such as regulating time and effort. The evaluation/reflection phase includes judgements and evaluations that pupils make regarding this task execution. These judgements and evaluation influence the planning phase of subsequent learning tasks.

7.3   Zimmerman's model

Extending Pintrich's model, Zimmerman (2002) proposes a model of the phases and subprocesses of self-regulation, which demonstrates the important role of motivation. This model suggests that self-regulated learners are proactive learners who incorporate various self-regulatory processes (eg goal-setting, self-observation and self-evaluation) with task strategies (eg study, time-management and organisational strategies) and self-motivation beliefs (eg self-efficacy, intrinsic interest) (Zimmerman, 1989 and Zimmerman, 2000, cited in Cleary and Zimmerman, 2004). Furthermore, this model considers self-regulatory processes in terms of three cyclical phases: forethought, performance and self-reflection.

The forethought phase refers to those beliefs and processes that exist and occur before efforts to learn are made. It consists of two major processes: task analysis and self-motivation. Task analysis involves setting goals and undertaking strategic planning. Zimmerman stresses that there is considerable evidence that if learners set specific goals for themselves, such as memorising a word list for a spelling test, their performance improves. Similarly, there is considerable evidence for increased academic performance if learners plan their learning, such as planning to use specific spelling strategies.

Self-motivation is based on Bandura's (2001) model of self-efficacy, which stresses the importance of pupils' belief in being able to accomplish a specific learning outcome. This indicates that if pupils believe in their personal capability, they are more motivated to learn in a self-regulatory fashion.

There are two major processes involved in the performance phase: self-control and self-observation. Self-control refers to the use of specific methods or strategies that were previously selected during the forethought phase. Examples of these specific methods and strategies are imagery, self-instruction, attention-focusing and task strategies.

Self-observation refers to recording personal events and self-experimentation to determine the cause of events. For example, pupils may be asked to record the time that they spend on specific tasks to make them aware of the time they spend studying.

The self-reflection phase involves two major processes: self-judgement and self-reaction. One type of self-judgement is self-evaluation. Self-evaluation involves comparing one's performance against some form of standard, such as the performance of others or one's own prior performance. Another type of self-judgement is causal attribution. Causal attribution refers to beliefs about one's successes and failures. Attributing failures to fixed abilities damages motivation because it implies that any efforts will be in vain. In contrast, attributing failures to controllable processes improves motivation because it implies that the use of different strategies could lead to success.

One type of self-reaction is a feeling of satisfaction and positive emotions concerning one's performance. This increases motivation, whereas a reduction in self-satisfaction leads to a reduction in further efforts to learn (Schunk, 2001, cited in Zimmerman, 2002). Self-reactions also include defensive and adaptive reactions. Defensive reactions are those that involve the protection of one's self-image by declining from further opportunities to learn and perform. An example of a defensive reaction would be a pupil dropping out of a course or being absent for a test. Adaptive reactions are those that involve making adjustments aimed at increasing the effectiveness of one's methods of learning.

This model proposed by Zimmerman (2002) is cyclical because self-reflections from previous efforts to learn influence subsequent forethought processes. For example, Zimmerman and Bandura (1994, cited in Zimmerman, 2002) found that self-dissatisfaction leads to a decreased level of self-efficacy and reduced efforts during subsequent learning.

The Greek writers Marcou and Philippou (2005) suggest the importance of studying volition when considering motivation within models of self-regulated learning. By volition they refer to the knowledge and the skills necessary to establish and support an intention until goal attainment. Previous research found that pupils' motivational beliefs are related to their use of volitional strategies (Wolters and Rosenthal, 2000, cited in Marcou and Philippou, 2005). Marcou and Philippou argue that volitional strategies are an integral element of self-regulated learning theory, together with cognitive and metacognitive strategies. This suggests that the model proposed by Marcou and Philippou, compared to that offered by Pintrich (1999) includes an additional dimension, namely the volitional strategies described by Wolters and Rosenthal.

8   Skills required for independent learning

Key findings

The skills required for independent learning can be divided into cognitive skills, metacognitive skills and affective skills.

Cognitive skills include memory, attention and problem-solving. The literature indicates that it is necessary for pupils to have reached a certain level in their cognitive development, such as being able to decode basic information before they can embark on independent learning. It seems that teachers are able to promote this cognitive development to encourage independent learning.

Metacognitive skills are skills associated with an understanding of how learning occurs, such as pupils being able to state how they learn and pupils being able to identify other people who help them with their learning. Metacognitive skills are necessary for pupils to self-assess their learning.

Affective skills are those skills that are related to feelings and emotions, such as developing a value system, then internalising and acting on these values. Motivation is considered the most important affective skill and has been shown to be directly associated with increased independent learning. Motivation can also be an outcome of independent learning.

An important skill linking motivation to independent learning may be 'delay of gratification', which refers to the ability to wait to obtain something that one wants. Since motivation includes persisting in the face of difficulties and being willing to try again following initial difficulties, 'delay of gratification' may be important in order for motivation to be used for independent learning.

There is a lack of agreement in the literature on whether the skills necessary for independent learning are domain-specific or whether they can be readily transferred across different subjects.

Implication

The evidence is inconclusive about the extent to which skills for independent learning are domain-specific or transferable across domains. Further evidence is therefore required to enable appropriate guidance to be developed.

A review of the literature indicates that there are many skills required for independent learning. These skills can be divided into cognitive skills, metacognitive skills and affective skills. Many authors suggest that all these skills are important for learning (Birenbaum, 2002). These skills are also described as 'thinking skills' and become evident from a young age. An important consideration concerning these skills is whether they can be transferred across subjects or whether they are domain-specific, which would indicate that they may not be readily transferrable across subjects.

8.1 Cognitive skills

The importance of cognitive skills for independent learning is highlighted by several UK and international authors who indicate that for independent learning to occur it is necessary for pupils to have good basic cognitive skills, such as memory, attention, problem-solving and creativity (Malone and Smith, 1996; Carr, 1996; Boekaerts, 1997; Anthony, 1994; Zimmerman et al, 1996; Zimmerman, 1998; and Weiss, 2004). These authors highlight that independent learning may not be possible until pupils have reached a specific level in their cognitive development. These developmental approaches are based on Piaget's theory of cognitive development. The Swiss psychologist Piaget (2001) considers childhood as a succession of four developmental stages: sensorimotor stage, preoperational stage, concrete operations and formal operations. Each stage represents the child's understanding during that period. Development from one stage to the next is caused by the accumulation of errors in the child's understanding of their environment. Eventually this accumulation of errors leads to children restructuring their thought processes, which defines their transition to the next developmental stage. Importantly, these stages can be generalised across subjects and are not culturally specific. The stages are also based on children constructing their own cognitive abilities through self-motivated actions in the word. This indicates that children cannot be directly taught to accomplish tasks beyond their level of cognitive ability.

Based on these notions, the British writers Malone and Smith (1996) emphasise the importance of 'learner readiness'. This means that pupils need the necessary intellectual capabilities, such as basic decoding skills, before being able to embark on the process of independent learning (Carr, 1996). Malone and Smith suggest that these intellectual capabilities develop with as pupils get older.

In support of these notions the US-based writer Corno (1986, cited in Zimmerman, 1986) describes the role of attention and volition in self-regulation. According to Corno volition refers to the ability to make a choice between various self-regulatory strategies. Corno argues that attention and volition are important to consider because accomplished people can perform tasks with little attention to motor details. This allows these individuals to focus their energies on more strategic dimensions, such as volition. This seems to support Carr's notion that automated basic skills are necessary for independent learning to occur.

However, in opposition to the developmental approach proposed by Carr, the UK-based writers Taggart *et al.* (2005) and the US-based writers Bransford *et al.* (2000) highlight that even young children have previously unsuspected strategic competence and an awareness of learning, such as by being able to use strategies and set goals. For example, more information can be remembered if it is categorised in a meaningful manner. It has been shown that young children can be taught to use these strategies, indicating that this skill is not age related, and that teachers can have a direct influence on pupils becoming independent learners. Therefore, while certain cognitive skills may be necessary for independent learning, it seems that teachers may be able to promote 'readiness'. If these conclusions are accepted, a significant platform for the development of independent learning skills is available after the early years stage.

8.2   Metacognitive skills

The importance of metacognitive skills required for independent learning is highlighted by many UK and international authors (Bullock and Muschamp, 2006). These skills involve pupils being able to talk about learning, for example stating how they learn best.

Bullock and Muschamp (2006) conducted research in the UK and found that Year six pupils are able to describe how they learn, stating that learning involves listening, remembering, note-taking, learning by doing, guessing, applying previously learnt knowledge and formal strategies, such as 'look, cover, write, check'. Furthermore the pupils studied by the researchers were able to identify individuals who help them with their learning, such as teachers, parents, other pupils and siblings. This indicates that while recognising their own responsibility for learning, these pupils also realised their need for direction and guidance from a more capable other. Bullock and Muschamp suggest that these attributes indicate that pupils have taken on responsibilities and attitudes associated with independent learning.

The US-based authors Bransford *et al.* (2000) suggest that metacognition develops gradually and depends on knowledge as experience, thus indicating that it is difficult to use metacognition in a subject area that one does not understand. However, Bransford *et al.* found that between the ages of 5-10 children are already able to talk about and reflect on learning, and this ability grows throughout the school years. This supports Bullock and Muschamp's findings and indicates that school-age children possess the basic metacognitive skills necessary for independent learning.

The British authors Malone and Smith (1996) state the importance of pupils being able to reflect on their achievement, monitor their progress and use self-assessment for independent learning because this ensures that pupils take responsibility for their own learning. Pupils should view assessment by teachers as a formality since they already know their own level of understanding from self-assessment. Assessment by teachers should provide pupils with valuable feedback to use for their own self-assessment.

8.3   Affective skills

The importance of affective skills for independent learning is well documented in the UK and international literature. Affective skills are those skills that are related to feelings and emotions. The affective domain, described by Krathwohl *et al.* (1964) includes receiving information - paying attention; responding - motivation and satisfaction; valuing - beliefs and attitudes; organisation - developing a values system and characterisation - internalisation and acting on their values and beliefs. Motivation is identified in the literature on independent learning as the most important affective in relation to independent learning (Bishop, 2006; Malone and Smith, 1996; Marcou and Philippou, 2005; Neber and Schommer-Aikins, 2002).

By studying Norwegian ninth grade pupils Ommundsen (2003) concludes that pupils' use of self-regulatory strategies is not sufficient for them to learn: motivation is also necessary. Specifically it seems that there is a consistent relationship between pupils' use of self-regulation strategies and motivational beliefs. Ommundsen describes these motivational beliefs in terms of pupils believing in the role of effort, hard work and their capacity to succeed. In contrast, holding a stable implicit theory

of ability inhibits pupils' use of metacognitive strategies and therefore inhibits independent learning.

While motivation is required for independent learning it also seems to be an outcome of independent learning. Zimmerman (2002) states that motivation can be greatly enhanced if close self-monitoring occurs and improvements in performance are made evident. Similarly the British author Bishop (2006) reports on research that involved teaching language learners specific strategies associated with independent learning, such as how to self-assess their own work. Following this teaching of skills, pupils were able to plan and direct their own work. Pupils also demonstrated greater motivation, enthusiasm and interest. Bishop states that this is important since it provides a feedback loop, leading to increased learning. Therefore motivation is both associated with increased independent learning and simultaneously an outcome of independent learning.

An important affective skill necessary for independent learning that is related to motivation is 'delay of gratification'. 'Delay of gratification' refers to the ability to wait to obtain something that one wants. Basing their research in the US, Mischel *et al.* (1989, cited in Corno, 1992) report how a group of four year olds were tested by being given a marshmallow and promised another, as long as they could wait 20 minutes before eating the first one. It was found that some children could wait and others could not. In addition, it was found that the delay time in pre-school predicts later school-related competencies and abilities to cope or display self-control in stressful situations. Since motivation includes persistence in the face of difficulties and pupils' willingness to attempt a task again following initial difficulties, Corno suggests that 'delay of gratification' is an important skill for motivation and also for independent learning.

8.4   Thinking skills

In a literature review of 'Thinking Skills in the Early Years', Taggart et al (2005) conclude that by the age of seven, with the right assistance, children are generally able to hold an internal dialogue using 'thinking language'; construct informal rules for solving problems; sort objects according to one or more criteria; hypothesise about future events; and reason logically from given precepts. In practical terms, these are the skills required for independent learning. Other writers (Boekaerts, 1997; Anthony, 1994; Zimmerman et al, 1996; Zimmerman, 1998; and Weiss, 2004) add to and expand on these skills, citing qualities such as the ability to set strategies and goals, to monitor progress and alter strategies, to think creatively and to reflect on achievement.

8.5   Domain-specific versus transferable skills

An important consideration regarding the skills necessary for independent learning is whether they are domain-specific or can be readily transferred across subjects. While the US-based authors Paris and Paris (2001) suggest that strategy instruction in literacy may allow pupils to transfer these strategies to other subjects, the US-based Neber and Schommer-Aikins (2002) suggest that the determinants of self-regulated learning are influenced by the situation. They suggest that even if general epistemological beliefs exist, these will be adapted to specific domains. This indicates a lack of agreement about whether the cognitive, metacognitive and motivational skills required for independent learning are domain specific. The resolution of this issue could have important consequences for the teaching of independent learning skills since at present it is unclear whether pupils can readily transfer independent learning skills from one subject to another.

9   How teachers can promote independent learning

Key findings

The UK and international literature indicates that pupils do not become effective independent learners by themselves. Rather, pupils need to learn how to learn, indicating that effective ways to learn can and should be promoted by teachers.

The promotion of independent learning requires a new role for teachers, which is based not on the traditional transmission of information, but on process-oriented teaching, which ensures that pupils are actively involved in the learning process.

The literature provides a variety of suggestions relating to how teachers can promote independent learning by using a range of strategies, including scaffolding; providing pupils with opportunities to self-monitor; offering models of behaviour; developing a language for learning and providing feedback on homework.

The literature provides an array of metaphors to describe the role of teachers in independent learning including coach and guide. This role involves teachers motivating pupils.

Although most of the literature focuses on individual features of how teachers can promote independent learning, some authors describe comprehensive programmes that aim to teach pupils the skills associated with independent learning.

ICT is highlighted as a potentially important tool for transforming teaching and learning although this review found little evidence to provide guidance on how this might be done.

The review suggests that long-term interventions are necessary for independent learning to develop.

Clarity is lacking about the skillset teachers require, how these skills might be acquired for the promotion of independent learning and how teachers can build these skills into current classroom practice.

The evidence of the impact of teachers promoting independent learning on pupil outcomes is based mainly on case studies.

Much of the literature focuses on observation, rather than on the views of teachers and pupils. To gain a clearer understanding of how independent learning could be applied successfully in schools it would be helpful to gather the views of teachers and pupils in more detail.

Implication

The role of teachers in assisting pupils to learn how to become independent learners is a crucial one as pupils do not become effective independent learners by themselves. There is a well-documented repertoire of strategies teachers can use. This has significant implications for the training and development of teachers both in understanding their role and in deploying appropriate strategies for independent learning.

The UK and international literature indicates that pupils do not become effective independent learners by themselves. Rather, pupils need to learn how to learn, indicating that effective ways to learn can and should be promoted by teachers (Artelt *et al.*, 2003; Van Grinsven and Tillema, 2006; Paris and Paris, 2001; Gorman, 1998). The promotion of these features requires a new role for teachers, which is based not on the traditional transmission of information but on process-oriented teaching, which ensures that pupils are actively involved in the learning process and become lifelong learners (Bolhuis and Voeten, 2001).

9.1   Strategies teachers use to promote independent learning

There is an abundance of literature concerning strategies that teachers can use to cultivate this understanding of learning and promote independent learning. Generally these approaches focus on teachers scaffolding the learning of pupils until pupils are able to accomplish tasks independently (Gorman, 1998; Black, 2007) or by teachers or other more expert learners modelling the behaviour they want young learners to adopt (eg Montalvo and Torres, 2004). Other strategies include providing pupils with opportunities to self-monitor, developing a language for learning and providing feedback on homework.

9.1.1   Scaffolding

Scaffolding is based on the Russian scientist Vygotsky's (1978) notion that cognitive development is based on children following the example of a more capable other, such as a parent. This allows children to gradually develop the ability to achieve certain tasks without help or assistance. Therefore scaffolding refers to the supportive structure provided by more capable others, which aids pupils in their learning. Scaffolding may involve teachers initially guiding pupils in their practice, the objective during this practice being the gradual transfer of responsibility from the teacher to the pupil. It is important that taking away this scaffold is accomplished step by step, moving from more directive instruction in the initial stages to increased independence (Bolhuis and Voeten, 2001; Montalvo and Torres, 2004). The Australian writer Black (2007) notes that the scaffolding model takes into account that pupils differ in their existing knowledge and skill, and that their learning progresses at differing rates.

The notion of scaffolding suggests that children learn by making links with what they have previously learnt. This suggests that teaching is most successful if teachers determine the mental 'hooks' within children's previous mental schemes that new learning can be attached to. The British writer Wallace (2002) suggests that teachers can use brainstorming to determine what pupils already know and encourage pupils to access their previous knowledge. Also, Wallace suggests that mindmaps can be drawn to encourage pupils to link new information to what they already know. A mindmap is a diagram used to represent words, ideas, tasks and other items that are linked to and arranged around a central key word or idea.

The British writers Myhill and Warren (2005) suggest that teachers can gradually remove the supportive scaffold by responding flexibly to pupils' responses rather than following a predetermined teaching path. This is highly motivating for pupils, leads to increased levels of pupil participation and gradually towards more independence in their learning.

> *Allowing children less structured opportunities to talk through their ideas and test out their thoughts is one way in which teacher talk can help individuals (…) move*

from heavily scaffolded support towards the beginnings of independence. (Myhill and Warren, 2005, p66)

9.1.2 Modelling behaviour

Several UK and international authors focus on the social nature of independent learning, and suggest that independent learning can be promoted by allowing pupils to model the behaviour of teachers (Montalvo and Torres, 2004; Corno, 1992; Bolhuis and Voeten, 2001). With time this allows pupils to solve problems similar to the ones they previously observed others doing. It is therefore proposed that modelling may allow pupils to assimilate the steps taken in planning, controlling execution, distributing cognitive resources and reflecting on what has been done. The Spanish writers Montalvo and Torres (2004) propose that in addition to observing teachers, pupils could also be encouraged to observe other expert models, such as more experienced peers.

9.1.3 Self-monitoring

Several international authors propose that teachers should provide pupils with opportunities to self-monitor since this process is a key element of self-regulation (Ley and Young, 2001, cited in Montalvo and Torres, 2004; Paris and Winograd, 1999, cited in Paris and Paris, 2001). Self-monitoring depends on two processes: establishing goals and feedback from others and from oneself. Pupils can therefore be encouraged to self-monitor by helping them use internal and external feedback to oversee to what extent goals are being fulfilled and whether strategies in use are effective or not. Ley and Young (2001, cited in Montalvo and Torres, 2004) propose that teachers should provide pupils with continuous evaluating information and give them the chance to self-evaluate.

9.1.4 Establishing a language for learning

The British writers Allan and Lewis (2001) stress the development of a language of learning. The purpose behind the development of this language of learning is to help pupils become more aware of their learning styles and to foster communication between pupils and teachers. Importantly, this verbalisation may also ensure that pupils attribute improved performance on a task to the use of effective strategies, an importance that has been pointed out by the US-based writers Paris and Paris (2001). This verbalisation of learning may allow teachers to reduce pupils' misconceptions about their learning.

9.1.5 Feedback on homework

A further important aspect related to how teachers can promote independent learning is the provision of relevant and appropriate homework. The British writers Allan and Lewis (2001) suggest that homework supports pupils' learning if it is relevant, rational and based on tasks that they can relate to during their everyday lives. Moreover it seems important for teachers to provide pupils with adequate feedback on their homework since this improves pupils' confidence in working independently and may allow pupils to develop the reflective aspect of independent learning.

9.2 Long-term interventions

There is a consensus in the literature concerning the importance of promoting independent learning in the long term (Evans, 1991). This involves teachers building up a repertoire of strategies to promote independent learning and gradually engaging pupils in becoming more independent, by modelling learning behaviour and providing pupils with a supportive scaffold. During this gradual process of becoming more independent, pupils need assistance and feedback, not only on the results of their learning, but also on the process of learning itself (Artelt *et al.*, 2003).

Considering the importance of long-term interventions, the Dutch writer Boekaerts (1997) criticises the methods that teachers use to steer and guide the learning process since pupils are neither invited nor encouraged to develop cognitive and motivational self-regulated learning skills. She says that most tasks set to pupils in this type of schooling are 'outcome-based practice sessions' with teachers as the experts and children as the novices. This model assumes that the progress of the learners from novice to expert will be spontaneous. In reality, however, pupils do not become self-regulated learners overnight. For self-regulated learning to develop, teachers must create a powerful learning environment 'in which students are allowed and inspired to design their own learning experiments' (Boekaerts, 1997, p162). Children, according to Boekaerts, should be motivated actively to participate in the teaching–learning processes organised by the teacher and to construct their own knowledge based on their experience.

Boekaerts further argues that learners' early attempts at self-regulation are usually complex and demanding: even when they have access to rudimentary forms of prior knowledge and technique, they lack experience in combining them in a self-regulated fashion. Therefore, initially, their self-regulated learning is characterised by conscious, deliberate processing and they depend on external control by the teacher to regulate their learning. If they are to proceed beyond this point, the teacher has to ensure that cognitive self-regulation is an explicit educational target. The need for long-term intervention for the development of independent learning is therefore essential.

9.3 Role of teachers in promoting independent learning

There are a host of metaphors used for the role of teachers in facilitating independent learning. The most common metaphors consider teachers as coaches (Allan *et al.*, 1996; Van Grinsven and Tillema, 2006), mentors (Malone and Smith, 1996) and guides (Bishop, 2006). These metaphors focus on teachers understanding how pupils think and learn and guiding them towards independence. The British writers Malone and Smith (1996) emphasise that it is important for teachers to consider individual pupils rather than the class as a whole. The role of teachers as mentors involves teachers relaying their enthusiasm about a topic to pupils, and encouraging pupils to make enquiries for themselves. Therefore, teachers should provide opportunities for pupils to make these enquiries, for example by encouraging pupils to ask challenging questions. This may increase pupils' desire to be coached.

9.3.1 Motivating pupils

An important role a teacher can play in motivating pupils has been identified by a number of writers. Given the importance of motivation for independent learning, several UK and international authors stress the importance of teachers motivating pupils (Van Grinsven and Tillema, 2006; Malone and Smith, 1996; Corno, 1992; Birenbaum, 2002). According to the British writers Malone and Smith (1996) motivation within the classroom is based on pupils developing interest and involvement. Teachers can foster motivation by ensuring that success is recognised and praised. It is important for teachers to allow all pupils to be successful at times, by making sure that some tasks are easy. Malone and Smith also suggest that teachers should foster motivation by sharing the purpose of lessons with pupils and stating the long-term goals. However, Malone and Smith suggest that while it is important for teachers to share the long-term goals with pupils, it is also important for teachers to recognise if pupils cannot immediately achieve goals. If this is the case teachers should set immediate targets for pupils so that their interest is sustained.

It may also be possible to increase pupils' motivation by ensuring that tasks provided during independent learning are based on realistic scenarios that pupils can relate to in their everyday lives. In order to achieve these realistic scenarios the US-based writers Marx *et al.* (1997, cited in Paris and Paris, 2001) propose that classroom activities should be based on projects that are organised around a key question that is meaningful, worthwhile and feasible.

9.3.2 Using ICT

The use of ICT to facilitate independent learning is, for school-age children, an under-researched subject within the UK literature. However, there is some evidence from the General Teaching Council for England (2007) concerning the potential importance of ICT for the promotion of independent learning. The General Teaching Council for England documents a research project that investigated the use of ICT for transforming teaching and learning in schools. An aim of this project was to change the traditional roles of teachers and pupils by enabling pupils to learn more autonomously. Initially the teacher presented pupils with the learning goals, which were generally taken from the National Curriculum. Pupils were then asked how they would like to work towards this goal. This involved the teacher providing pupils with a variety of ICT tools, such as the internet, electronic whiteboards and video equipment. Pupils were directed to plan learning events and select which ICT resources to use. They then organised themselves into groups and worked collaboratively. Importantly, the project involved restructuring classroom activity so that there was a move away from teaching lessons as discrete blocks and towards focusing on project learning across lessons.

While the study offers no quantitative evidence for the impact of using ICT on pupil outcomes, it notes that teachers reported highly positive outcomes. These included pupils being highly motivated and engaged with the learning tasks. Furthermore teachers reported that they had to deal with fewer disciplinary issues and could therefore focus more on the curriculum topic in question.

This project demonstrates the possible importance of ICT for independent learning since it provides the tools for pupils to increasingly take over responsibility for their own learning. This allows for a change in how both pupils and teachers approach learning. Importantly, this project also demonstrates how teachers can act as

facilitators within the classroom, by supporting pupils in the use of ICT and therefore in the development of pupils' independent learning.

Based on these anecdotal positive outcomes the General Teaching Council for England suggests that teachers should provide pupils with as wide a range of resources as possible. It is also suggested that teachers should plan classroom activities to encourage creativity and diversity of responses, for example by allowing pupils to present their work as they choose, including video, written and oral presentations. Importantly, the General Teaching Council for England also suggests that schools should integrate the use of ICT across the curriculum rather than viewing it as a specialist subject. This may support the notion that ICT is part of the enabling environment that can foster independent learning.

Considering the role teachers can play in supporting learners in the use of ICT, the Singapore writers Lim and Chai (2004) propose five strategies that teachers should use to orient learners towards independent learning:

- Initially teachers should provide an introduction session for ICT tools.
- Teachers should give learners an overview of topics to be covered and link these topics to previous ones.
- Teachers should provide worksheets and checklists so that learners can complete their tasks at their own pace.
- Teachers should encourage learners to talk among themselves and engage in conversation about their learning.
- Teachers should provide tools for post-instructional reflection. This reflection should involve teachers linking concepts learnt to the next lesson.

The importance of teachers' role in promoting the use of ICT led Lim and Chai to conclude that independent learning may be compromised if teachers do not have enough experience in using ICT, or if teachers are not provided with adequate support from schools to gain that experience. Therefore, it appears that the use of ICT for independent learning necessitates careful mediation, both by teachers and by schools.

The use of ICT for the promotion of independent learning may be especially important for challenging pupils. This notion is expressed by the British writer Seary (2004) who argues for the greater use of ICT to assist the learning of truant and otherwise disaffected children. Computer programmes with functionalities for differentiation and assessment are particularly useful here as they allow children, working remotely from the teacher, to progress at their own pace on appropriate tasks and obtain assessments of their progress. The teacher plans the scheme of work and sets parameters, and the computer assesses the activity according to the parameters given by the teacher.

9.3.3 Using an integrated approach

The Dutch writer Boekaerts (1997) calls into evidence several intervention studies that indicate how teachers can use an integrated approach to the promotion of independent learning. The studies described by Boekaerts are based mainly in the Netherlands and involve pupils in the experimental groups being taught one or more cognitive strategies and being provided with various forms of 'scaffolding'. Domains included physics, mathematics and reading comprehension. The role of the teacher was shifted from an expert transmitting declarative and procedural knowledge to that of a 'coach' helping pupils to acquire the cognitive strategies necessary for operating

on domain-specific knowledge. The studies found that when children are encouraged to solve problems while simultaneously reflecting on their own problem-solving process they can acquire metacognitive knowledge and skills, leading to higher performance on curricular tasks in the same domain.

The evidential studies adduced by Boekaerts appear to show that where the teacher adopts the role of 'coach', direct instruction should be kept to a minimum. Teachers should restrict themselves to introducing new topics, modelling new skills and introducing scaffolding and resource materials to the children. After this, children should share the regulation process and teachers should act as coaches. This implies that teachers should create a learning environment in which children can practise newly acquired skills. A vital element of this is for teachers to help children mentally to represent learning goals and re-define them in terms of their own short- and long-term perspectives. Teachers should explicitly teach children the principles of goal-setting, encouraging them to use their own standards and monitor against them. What is required is 'action orientation' – the ability to plan, initiate and complete intended actions, and not to confuse one's self-defined goals and intentions with those of others.

10 How schools can promote independent learning

Key findings

There is a consensus in the literature that the promotion of independent learning necessitates a whole-school approach. This involves the support of senior management and teachers.

Study support may be an important means for schools to enable independent learning since it provides pupils with an opportunity to choose their own learning activities and achieve their own learning goals. This may pave the way for pupils to become independent learners.

The self-regulation empowerment programme (SREP) developed in the US provides an application of Zimmerman's (2002) self-regulation theory. This programme involves making it clear to pupils that academic success in under their control. However, the SREP has several limitations. When using the programme pupils' individual characteristics must therefore be taken into account. This may be very difficult to achieve in practice.

The key feature of devising innovative methods and strategies to involve disaffected pupils more fully in their learning to improve academic performance is characteristic of the approach used successfully in Education Action Zones (EAZs). This approach can be used to inform the implementation of independent learning.

There is a lack of good practice guidance and good examples of initiatives in initiating and supporting independent learning in schools to help generate guidance for schools on the steps they can adapt to implement and promote independent learning in their own context.

Implication

As the evidence indicates that promoting independent learning requires a whole-school approach, appropriate guidance and support are needed for head teachers and strategic managers. This should be based on a strong body of evidence.

The UK and international literature stresses that the promotion of independent learning necessitates a whole-school approach (Wilson, 2000; Artelt *et al.*, 2003). In order for this whole school approach to be successful it is necessary for teachers to be supported (Black, 2007; Lucas *et al.*, 2002). In addition, schools may be able to promote independent learning by providing study support to their pupils (Sharp *et al.*, 2002). The US-based writers Cleary and Zimmerman (2004) propose a self-regulation empowerment programme, which is a comprehensive programme that schools can adopt to develop self-regulated learners in a step-by-step manner. Considering the importance of pupils being actively involved in independent learning, the British writers Whitehead and Clough (2004) argue for the importance of Education Action Zones (EAZs) in allowing for schools to become more aware of the needs of pupils.

10.1 Support for teachers

Several authors note that this whole-school approach is only possible if schools provide adequate support for teachers (Black, 2007; Lucas *et al.*, 2002). The British writer MacBeath (1993) argues that supporting teachers in implementing independent learning is the most crucial factor in determining its success. MacBeath describes how case-study schools in Strathclyde appointed coordinators who were key figures in spreading enthusiasm for supported study, which includes independent learning. These coordinators monitored attendance and progress of supported study, kept all stakeholders informed and liaised with other schools. This ensured that teachers were not isolated in promoting independent learning.

10.2 Study support

The British writers Sharp *et al.* (2002) suggest that an important way in which schools can promote independent learning is by providing study support. Study support is defined as a range of learning activities taking place outside school hours. Sharp *et al.* identified two main reasons why study support contributes to learning: it leads to pupils acquiring knowledge and skills, and also leads to their personal development. This acquisition of knowledge and skills leads not only to staff reporting an improvement in pupil attainment but also to further opportunities for new learning to occur for the pupils. Personal development includes pupils reporting increased self-confidence, motivation, autonomy and self-esteem. These findings indicate that there is a strong connection between independent learning and study support since it enables pupils to voluntarily choose their learning activities and achieve their own learning goals. The provision of study support may therefore provide a way for schools to promote independent learning, and allow pupils to gain the skills needed for independent learning without changing the structure of ordinary lessons. However, in support of the British writer Wilson (2000), Sharp *et al.* note that study support must be viewed as a whole-school initiative and an integral part of the school's provision for learning. This requires leadership from the head teacher and senior management team.

10.3 Self-regulation empowerment programme

The US-based writers Cleary and Zimmerman (2004) propose a self-regulation empowerment programme that middle schools can use to apply Zimmerman's (2002) self regulation theory. SREP aims to empower pupils by increasing their knowledge of learning strategies and consists of two primary components: First, diagnostic assessment indicates that it is necessary to ask specific, context-based questions that will provide information about pupils' range of learning strategies. Second, the process of developing the self-regulated learner aims to change the identified deficits into strengths. This is achieved in three steps: empowerment, provision of learning strategies and the cyclical feedback loop.

- Empowerment refers to making it clear to pupils that academic success is under their control.
- Provision of learning strategies aims to enhance pupils' range of learning strategies.
- The cyclical feedback loop involves teaching pupils how to use their newly learnt learning strategies in a cyclical, self-regulated way.

According to Cleary and Zimmerman anecdotal evidence suggests that the model has positive effects on pupil achievement and motivation. However, there are several limitations of the SREP. Importantly, it does not involve a set of specific procedures that can be rigidly applied to all pupils in the same manner. When using the programme pupils' individual characteristics must therefore be taken into account. This may be very difficult to achieve in practice.

10.4   Taking forward the lessons from Education Action Zones

Whitehead and Clough (2004) propose the importance of reconsidering Education Action Zones (EAZs) since this may ensure that independent learning takes account of pupils' needs. EAZs - a UK government policy initiative - were set up in 1997 and were meant to embody a new democratic form of education. Whitehead and Clough developed an enquiry in an EAZ to determine what could be learnt from pupils with a view to informing practice and raising attainment.

At the onset of this research the EAZ knew nothing about pupils' perceptions. In gaining the views of Year 8 pupils the researchers ensured that questions and activities were fun. They also gained information from staff working directly with pupils, such as inclusion workers. Each pupil was asked to describe and evaluate their experience of a recent lesson in English, maths or science. Pupils stated that listening and discussion was the best way for them to learn. They also said they preferred to work in a group or a pair that they had chosen rather than working as a whole class or working in a group selected by the teacher. This is because it made them feel safer, more able to draw on their own and local community knowledge, and because it allowed them to control the content of lessons more.

Whitehead and Clough conclude that considering the pupil voice would open up the possibility of making policies that are informed by pupil views, are owned by them, and are, therefore, more likely to be supported by them in crucial areas such as behaviour and modes of learning. Schools could, therefore, consider the learning from EAZs when implementing independent learning.

11   The impact of independent learning

Key findings

Within the literature claims have been made for wide-reaching benefits of
independent learning including:

- increased academic performance
- increased motivation and confidence, and the ability of pupils to engage in lifelong
  learning
- allowing pupils to become more aware of and better able to manage their limitations
- enabling teachers to provide differentiated tasks for pupils
- promoting social inclusion by countering alienation.

The literature indicates that the use of independent learning may have a specific
impact on particular pupil groups:

- boys seem to be more inclined towards performance goals and more superficial or
  surface learning strategies (such as rote learning) than girls
- gifted pupils seem to be more likely than other pupils to use self-regulatory learning
  strategies
- independent learning may highlight the progress of pupils with special educational
  needs and give them a sense of control over their achievements
- independent learning strategies may be effective in countering the alienation of
  'socially excluded' children.

However, caution is needed in interpreting the evidence base for these claims. Most
of the research methods used involve case studies and observation rather than
experimental studies, so there is a dearth of robust evidence to support the
contention that the reported benefits are entirely due to independent learning.

Implication

The volume of case-study evidence available suggests that there are wide-ranging
benefits to pupils from independent learning. The lack of strong evidence suggests
that the promotion of independent learning warrants further consideration and
development before wider implementation.

The UK and international literature indicates that the impact of independent learning
is overwhelmingly positive, with many authors claiming that the introduction of
independent learning led to improved test scores and wide-ranging benefits for pupils
(Van Grinsven and Tillema, 2006; Hinds, 2007; Schunk, 2005; Allan *et al.*, 1996).
These benefits seem to have a specific impact on particular groups of pupils, such as
boys and girls; gifted pupils (pupils whose abilities are developed to a level that is
significantly ahead of their year group); pupils with special educational needs; and
'socially excluded' children (children who are excluded from social participation
because their living standards are below those of their peers). However, these claims
must be considered with caution since the evidence is not based on experimental
studies and the claims made of the benefits may be hard to substantiate. An
important benefit of independent learning seems to be that individual differences can
be appropriately addressed. This is based on independent learning allowing pupils to
be more aware of their learning and being more able to manage their limitations.

Similarly, the literature suggests that independent learning may promote social inclusion and provide for pupils with special educational needs. This is based on independent learning increasing the motivation of pupils who may otherwise be difficult to motivate.

11.1   Improvement in test scores

There is a considerable body of UK and international literature which reports on the positive effects of independent learning on test scores (Van Grinsven and Tillema, 2006; Hinds, 2007; Schunk, 2005). Despite this, it may be harder to be sure that there is a causal link between independent learning and the success claimed. One example from the UK, reported by Allan and Lewis (2001), is from Thomas Telford School, which is the first comprehensive school in which 100% of pupils gained A–C grades in at least five GCSEs. One of the reasons for this success is claimed to be the development of independent learning skills across the school. However, this claim may not be justified without evidence that can show a clear link between the promotion of independent learning and the attainment of improved grades.

Studies in the US support these findings. Page (1989a) found that primary school children using active learning techniques have higher test scores than children who do not use active learning techniques. Page also notes that the children using active learning techniques had the best attendance record in Massachusetts and made the best progress in reading and mathematics.

Considering secondary school pupils in the US, Zimmerman and Pons (cited in Zimmerman, 1986) found that high-school pupils' use of 14 self-regulatory strategies, such as self-evaluation, is highly correlated with academic achievement. Zimmerman (2002, p.66) therefore states that 'a student's level of learning has been found to vary based on the presence or absence of key self-regulatory processes'. As further evidence for this assertion, he cites research studies on the quality and quantity of pupils' use of self-regulatory processes that reveal high correlations with academic achievement in terms of 'track placement' (p66) and performance on standardised test scores.

It may be that self-regulation is more effective for children at the top end of the ability scale since evidence from a US research review by Risemberg and Zimmerman (1992) indicates that gifted pupils spontaneously use self-regulatory learning strategies more frequently than non-gifted pupils (for a definition of gifted pupils, see section 11.5.2 on page 54). When trained to use strategies, gifted pupils also used them more effectively and could transfer these strategies to novel tasks. This suggests that self-regulation measures may be a useful adjunct in diagnosing giftedness and that self-regulation training may further enhance gifted pupils' academic achievement.

However, while the claims linking independent learning to improved academic achievement provide an insight into the potential benefits of independent learning, it must be noted that these insights are based on anecdotal evidence and case-study observations, rather than controlled experimental trials. Therefore caution must be used when interpreting these findings, since it is not certain that any increase in academic performance noted in the literature is actually due to the use of independent learning.

11.2 Improvement in a range of pupil outcomes

Allan *et al.* (1996) considered a series of UK research projects on the development of independent learning and found a range of positive outcomes associated with being an independent learner, including pupils being more likely to:

- complete courses
- meet deadlines
- find learning more enjoyable
- learn in less time
- know where to ask for help if they need it
- gain a better understanding of what they are learning about
- become aware of gaps in their knowledge
- strive to improve their ability to learn
- be more original and creative
- become lifelong learners
- recognise their achievements.

Similarly wide-reaching benefits of independent learning are summed up by the Dutch researchers Van Grinsven and Tillema (2006, p87):

> *Students in self-regulated learning environments are more motivated to learn, report more enjoyment of the material and are more actively involved in their learning than those who study in more restrictive environments.*

Black (2007) describes research in nine middle schools in Australia that implemented independent learning. In support of Allan et al.'s (1996) and Van Grinsven and Tillema's (2006) findings, Black documents that following the implantation of independent learning pupils showed a greater engagement in learning, had higher levels of confidence and self-esteem, and demonstrated increased group dynamics. Black also reports that the case-study schools reported that pupils were better able to respond to challenging aspects of the curriculum.

A collection of essays on teaching mathematics using active learning techniques in the US points to the value of active learning in making a subject seen by many pupils as mechanical and difficult interesting and comprehensible (Buerk, 1994). Techniques such as group working and verbalizing mathematical ideas are seen to improve motivation and performance. Using writing as an exploratory and explanatory tool is thought to result in cognitive processing that helps problem-solving and opens new levels of communication between teacher and pupil, as well as among pupils.

Like Buerk, Williams (2003) suggests that UK children who are independent learners work to higher standards, are more motivated and have higher self-esteem than other children. Therefore, in Williams' view, in a classroom in which independent learning is promoted, children develop skills that help them further their own learning by using their own ideas to form opinions; solving problems and using a range of strategies to deal with situations; taking responsibility for the consequences of their actions; and developing analytical, reflective and systematic thinking skills. In summary, the advantages of independent learning for children as claimed by Williams are:

- self-motivation and self-esteem
- independent judgment
- respect for peers and the environment
- self-discipline
- enjoyment of challenges
- active and energetic rather than passive learning
- good communication skills
- work to a higher standard
- greater social skills.

Summing up the wide-ranging benefits of being an independent learner, Zimmerman (2002, p.66) considers that 'because of their superior motivation and adaptive learning methods, self-regulated students are not only more likely to succeed academically but to view their futures optimistically' and develop as lifelong learners.

However, as for the claims made for the effect of independent learning on academic performance, it must be noted that the wide-ranging benefits claimed to be associated with being an independent learner are not based on controlled experimental trials. Therefore it remains unclear whether any benefits claimed to be associated with independent learning are actually linked to independent learning.

11.3   Raising pupils' awareness of their limitations and offering strategies to manage them

The linkage between independent learning and learning style theory indicates that independent learning may address individual differences in learning (Deeson, 2006). Zimmerman (2002) describes how individual differences in pupils' learning are related to some pupils lacking adequate self-regulation strategies. The teaching and emphasis on independent learning may therefore make pupils more aware of their limitations and manage these limitations, thus increasing their academic skill.

> *Self-regulation is not a mental ability or an academic performance skill; rather it is the self-directive process by which learners transform their mental abilities into academic skill.* (Zimmerman, 2002, p65).

Taking into account pupils' individual differences, the British writer Williams (2003) sees a number of advantages for teachers whose pupils are, or are developing as, independent learners. These advantages include teachers being able to organise a wider range of activities in their classrooms; to focus on teaching rather than 'housekeeping'; to hand over responsibility to children who are well advanced along the independent learning continuum; and to teach specific groups while other groups are working independently.

11.4   Promoting social inclusion

Weekes and Wright (1998) report on the role of independent learning in countering the alienation from education felt by many African Caribbean boys in Britain. They suggest that in addition to measures such as fostering school and community links, mentorship and counselling, teaching study skills is of great importance in countering alienation and low achievement among black pupils. Weekes and Wright suggest that the most important study skills are revision techniques, problem solving and essay writing.

11.5   Impact on particular pupil groups

11.5.1 Boys and girls

Research into cognitive ability has consistently shown gender differences in the impact of independent learning on memory, language fluency and mathematical reasoning abilities. Boys have outperformed girls in cognitive tasks requiring mechanical reasoning or visuo-spatial processing, whereas girls have done better in tasks requiring verbal abilities. Niemivirta (1997), in a US-based study of junior high school students, examined gender differences both in the individual factors affecting self-regulatory learning activity and the relations between those factors. Results showed that boys' and girls' motivational-cognitive profiles were slightly different. Boys were more inclined towards performance goals and used more superficial learning strategies (such as rote learning and detail memorising) than girls. Niemivirta suggests that this might illustrate the different ways boys and girls have of coping with social pressure and perceiving environmental expectations. Niemivirta therefore argues that while motivational and cognitive determinants of learning are important, cultural and contextual factors must also be considered.

11.5.2 Gifted pupils

The US-based writers Risemberg and Zimmerman (1992) found that gifted pupils spontaneously use self-regulatory learning strategies more frequently than non-gifted students. Risemberg and Zimmerman define gifted pupils as having high intelligence, task commitment, creativity, some automaticity of processing and being able to apply their intelligence to real world contexts. When trained to use self-regulatory strategies, gifted students also use them more effectively and can transfer these strategies to novel tasks. Self-regulation measures may, therefore, be useful in diagnosing giftedness and self-regulation training may further enhance gifted students' academic achievement.

11.5.3 Pupils with special educational needs

Exploring the benefits of self-regulated learning for remedial readers, Schunk (1989) presents research evidence from the US on how providing pupils with feedback on their performance affects their self-efficacy and achievement. The evidence suggests that instruction in self-regulated learning strategies promotes self-efficacy and achievement, in part through its effects on attributions. Strategy instruction gives pupils a sense of control over achievement outcomes, which promotes their learning capabilities.

Schunk's study found that highlighting progress was especially important among remedial readers and other pupils with special needs. Strategy verbalisation, explicit feedback and using a combination of strategies appear to exert their effects through a common mechanism of making learners' progress salient to them.

11.5.4 'Socially excluded' children

Independent learning may also be useful as a strategy in regard to the education of disaffected or 'socially excluded' children. Weekes and Wright (1998) examined the effects of a number of interventions made to improve the education of African Caribbean boys taking part in a project located in a number of London boroughs. They found that the teaching and development of study skills, such as revision techniques, essay writing and problem solving, was important, particularly when integrated with strategies aimed at countering alienation.

11.6   Methodological considerations

The literature reviewed here suggests that the impact of independent learning is overwhelmingly positive, with many authors claiming that the introduction of independent learning led to improved test scores and wide-ranging benefits for pupils. In addition, the benefits that are claimed to be associated with independent learning include consideration of individual differences, promotion of social inclusion and appropriate consideration of special educational needs.

The Learning How to Learn project (2001-05) examined how to effectively promote 'learning how to learn' in classrooms, schools and networks that support pupils and teachers (James *et al.*, 2006). Research in 40 primary and secondary schools in five English local authorities (LAs) and one virtual Education Action Zone found that the effects of a learning how to learn programme could not be isolated in real-world classrooms because the effects of such a programme could not be separated from those of other methods and initiatives. It was therefore difficult to estimate what proportion of a shift in attainment was due to learning how to learn interventions and what proportion was due to other factors. This project's findings therefore led to the conclusion that the positive effects claimed of independent learning cannot be directly attributed to independent learning.

12 The role of assessment

Key findings

Both formative and summative assessments are important in relation to independent learning.

Formative assessment is assessment *for* learning. It supports independent learning and can include the use of self-assessment and assessment based on set criteria. The literature indicates that formative assessment may increase pupils' feelings of achievement and enjoyment and increase motivation.

Summative assessment may be assessment of learning that occurs following the use of independent learning and may inform the provision of future independent learning. It may be used as part of formative assessment to enable each individual pupil to understand what he/she has learnt and how he/she has learnt it. It seems that this use of both formative and summative assessment is especially successful for independent learning.

The use of both formative assessment and summative assessment seems to be especially important for independent learning because it allows pupils to understand the standard of performance expected of them, to monitor their own performance, and to know what they can do to improve.

There are few references to assessment in the literature on independent learning but other literature indicates a strong link between assessment and independent learning that is complex and requires further exploration.

Implication

The relationship between assessment and independent learning suggests that careful consideration needs to be given to the development of formative and self-assessment approaches when they are being used to foster independent learning.

Although a large number of writers have considered assessment for learning, there is a shortage of literature on the role and impact of assessment on independent learning. This shortage of literature may be based on the difficulty of relating independent learning to assessment. This difficulty was explored by Black *et al.* (2006), who considered how 'learning to learn' is linked to 'assessment for learning'. These writers were unsuccessful in constructing an instrument to assess 'learning to learn' and were not able to describe how 'learning to learn' and 'assessment for learning' are linked. Considering these difficulties, Black *et al.* (2006) suggest that schools should promote practices that have the potential to increase autonomy in learning without necessarily relating this to assessment.

Despite these difficulties the literature indicates that both formative and summative assessments are important for independent learning. Formative assessment contributes to the process of learning and summative assessment demonstrates the outcomes of independent learning. It seems that the use of both these forms of assessment may promote independent learning.

12.1 Formative assessment

The US-based writers Paris and Paris (2001) stress the importance of formative assessment because it increases pupils' motivation, behaviour and attitude in the classroom. According to Paris and Paris formative assessment should include self-assessment by pupils, involving pupils evaluating their own level of understanding and interest. In support of this notion, Schunk and Ertmer (2000, cited in Paris and Paris, 2001) suggest that teachers should provide for periodic but not too frequent self-assessment components since this adds to learning goals and helps pupils maintain a high level of self-efficacy. Similarly, Paris and Paris suggest that self-assessment is linked to pupils' feelings of success and enjoyment.

Considering the UK, Griffith (1998) suggests that devices such as profiling, records of achievement, pupil-negotiated settlements, subject counselling and peer assessment may broaden the assessment process to include the pupil. In Griffith's view, the best assessment systems combine criterion and self-progress references, so that, in his ideal scheme, the collaborative group of learners might decide on what to assess and how to assess it and the teacher might validate the assessment.

12.2 Summative assessment

Paris and Paris (2001) suggest that summative assessment of self-regulated learning fosters the planning and regulation of self-regulated learning in the future. This is due to summative assessment providing teachers with a valuable understanding of pupils' level of competencies. Teachers are then able to adapt the opportunities for independent learning to match pupils' needs. Furthermore, it is suggested that teachers use summative assessment to provide pupils with feedback. This allows pupils to evaluate what they have learnt. Therefore summative assessment provides an opportunity to improve the provision of self-regulated learning within the classroom for teachers, and for pupils to develop as self-regulated learners.

Allan and Lewis (2001) add to the work by Paris and Paris by stressing that summative assessment provides pupils not only with feedback on *what* they have learnt, but also with an understanding of *how* they learn. Van Grinsven and Tillema (2006) suggest that pupils' understanding of how they have learnt is best achieved by basing summative assessment on how individual pupils have improved rather than comparing pupils. However, since pupils in self-regulated learning environments frequently work in groups, individual contributions to a group product are often obscured. Therefore it may be useful for teachers to structure group tasks so that individual efforts can be identified.

12.3 Combining formative and summative assessment

The report of the Teaching and Learning in 2020 Review Group (DfES, 2006), stresses that the combination of formative and summative assessment improves pupils' capacity to learn how to learn. The form of assessment advocated by Gilbert in this review, includes pupils monitoring their progress and collaborating with their teachers to identify their next steps. It is suggested that techniques such as open questioning, sharing learning objectives and success criteria, and focused marking should be used. Gilbert states that based on these techniques pupils may take an active role in their learning, indicating the importance of these techniques for the development of independent learning.

The Gilbert Review (DfES, 2006) also proposes that assessment should enable pupils to reflect on their learning by reviewing both *what* they have learnt and *how* they have learnt. According to Gilbert this contributes to pupils' understanding, allowing them to determine their level of achievement and make progress towards their goal. It is suggested that this reflection can involve pupils working individually or in pairs. Importantly, assessment that promotes learning is a joint activity between teacher and pupil, rather than occurring occasionally at the end of a unit of work.

These notions indicate that the role of assessment for independent learning is based on ensuring that pupils understand the standard of performance that is expected of them. Pupils then monitor their own performance against this standard, and know what they can do to improve. Therefore assessment allows for pupils to become owners of their own learning, thus paving the path towards independent learning.

In accordance with the Gilbert Review (DfES, 2006), The Standards Site (within the DCSF's website) (2008) emphasises the importance of both formative and summative assessment for learning. This importance stems from assessment providing feedback that identifies at what stage pupils are in their learning and how they can progress. The Standards Site therefore envisages that assessment promotes learning by providing feedback to both teachers and pupils. However, the Assessment for Learning Eight Schools Project (2006, cited by The Standards Site, 2008) suggests that in order for assessment for learning to develop it is necessary for pupils to already be independent learners. Therefore, while the literature indicates that there is a strong link between assessment and independent learning, this link is complex and further exploration is needed to determine the role and impact of assessment on independent learning.

13 Challenges in implementing independent learning and suggested solutions

Key findings

The literature identifies a number of challenges in implementing independent learning and also suggests some solutions.

One of the main challenges is the teachers' perception that the delivery of the National Curriculum requires some whole-class teaching approaches. The literature suggests that this may restrict the opportunity for independent learning because it is teacher directed rather than fostering pupils' involvement in and responsibility for their own learning.

Another challenge is that teachers' perceptions of how pupils learn may not correspond to the conceptualisation of independent learning. This may pose a barrier to the implementation of independent learning since some teachers do not perceive pupils to be able to learn independently. This barrier could be overcome by supporting teachers and ensuring that they understand that independent learning does not undermine their role as teachers.

A further challenge is that pupils may resist the introduction of independent learning or may abuse the freedoms associated with its introduction, which makes the implementation of independent learning impossible. To overcome this barrier it is necessary for independent learning to be appropriately planned and structured. This involves supporting teachers and adopting a whole-school approach.

The use of ICT for independent learning may prove challenging since it requires time and effort to create appropriate resources. It is suggested that this barrier could be overcome by designers ensuring that they consult pupils and engage them in the production of ICT resources. This would ensure that ICT resources are appropriate and may provide opportunities for teachers and pupils to learn collaboratively.

Last, but not least, another challenge is that the level of parental support that pupils receive for school work is linked to their socio-economic background. Therefore independent learning may benefit pupils from a more advantaged socio-economic background more than pupils from a less advantaged socio-economic background, thus increasing the socio-economic divide. This challenge could be managed by establishing strong links between schools and parents.

Implications

There are a number of implications arising from any potential proposal for a strategic implementation of independent learning which require consideration. These include:

- the need to review guidance on curriculum delivery in the light of a changing role for teachers and subsequent consequences for teacher training and professional development

- progressive and systematic preparation for and development of pupils in becoming independent learners within the curriculum

- ensuring parental understanding of and support for independent learning.

The literature is ripe with examples of the challenges that teachers and schools face when trying to implement independent learning. The challenge most noted in the literature was that current teaching practice for the delivery of the National Curriculum emphasises whole-class teaching. The National Curriculum itself does not specify whole-class teaching as the only means of delivery but it is the perception of many teachers that this is the only effectual means. It should, however, be noted that National Curriculum guidance is that 'Within the framework of the National Curriculum, schools are free to plan and organise teaching and learning in the way that best suits the needs of their pupils' (Directgov, 2008, p1).

It is generally accepted in the literature that implementation of the National Curriculum resulted in the centralised regulation and control of two aspects of the curriculum - content and assessment (see, for instance, Ernest, 2008). Pedagogy remained free from direct control although the strictly prescribed content and assessment methodology had an indirect impact. Ernest (2008) argued that the National Curricula for teacher education in the various subjects did take national control into the area of pedagogy. Griffith (1998) and Williams (2003) have argued that a thoroughgoing independent learning scheme is impossible without local control of content and assessment, let alone of pedagogy, but it is possible to regard such views as utopian even if they do present the consequences of the independent learning concept as fully expressed.

While it is important to consider these various challenges it is also important to consider the suggested solutions to these challenges offered by the literature.

13.1   Challenge: whole-class teaching

The UK literature indicates that the main challenge in implementing independent learning is the dual focus of teaching for the delivery of the National Curriculum and focus on whole-class teaching (Gorman, 1998). In support of this notion, Bullock and Muschamp (2006) note that while UK Government policies urge pupils to take responsibility for their learning, in practice the delivery of the National Curriculum lead to practice that can restrict the opportunity for independent learning.

> 'In the recent UK government policies that aim to raise standards at all levels of education, the drive for lifelong, independent learners has diminished in favour of prescription and consistent teaching approaches.' (Bullock and Muschamp, 2006, p. 49)

Similarly, Bronkhorst (1997) highlights that there are two tendencies present in Dutch education: *'the tendency to stimulate independent learning for learners; and the tendency to diminish the educational independence of the teachers'* (p. 142). Bronkhorst suggests that therefore *'learners can learn independently, but teachers have to be standardized and put under control. It could be expected that, from this contradictory situation, tensions will arise for the future'* (p.143).

Pollard (2000, cited in Bullock and Muschamp, 2006) observed that whole class teaching may risk alienating pupils from a deeper commitment to learning, thus posing a challenge to independent learning (Reddiford, 1993, cited in Bullock and Muschamp, 2006; Noyes, 2005).

These challenges were explored in the UK by Myhill (2006) and Myhill and Warren (2005) who found that teacher talk dominated whole-class teaching with only a very limited amount of talk initiated by pupils. Additionally, Myhill found that teachers' questions were directed heavily towards factual and closed responses, for which

pupils were expected to give answers to questions to which teachers already knew the acceptable response. Similar results were also found by Kinchin (2004) who notes that the most common teaching form is based on pupils being passive recipients of information. This form of classroom interaction clearly provides little opportunity for independent learning. Teachers interviewed by Myhill (2006) stated that they believe that classroom interactions should be inclusive, but that they felt under pressure to cover teaching objectives and to achieve pre-determined goals, as defined in the National Curriculum.

Suggested solution: Providing for pupil control and interaction

However, work by Bolhuis and Voeten (2001) in the Netherlands and Myhill's (2006) work in the UK suggests that it is possible to hand over control temporarily to allow pupils to explore their emerging thinking and understanding. In one lesson Myhill observed how a teacher was leading a discussion on capital punishment, and it became evident that this was creating strong responses from the pupils. The teacher therefore switched from leading the discussion from the front to give pupils 'time out' in pairs to share their thoughts. In response to this the pupils became animated in their conversations with each other. The teacher then continued with the whole-class discussion and retook control. This indicates that despite a focus on whole-class discussion it may be possible to include elements of independent learning without the teacher losing control of the teaching situation.

13.2   Challenge: teacher's perceptions of pupils' learning

Wood and Millichamp (2000) found that UK teachers had a strong view of pupils' learning depending on the skills and abilities of teachers so it was difficult for them to view pupils as being able to take charge of their own learning. Furthermore, teachers described 'good learners' as attentive but they did not perceive taking initiatives and taking risks to be important for pupils to be 'good learners'. This contrasts with the academic notion of what constitutes a 'good learner' and the skills associated with independent learning (Wood and Millichamp, 2000).

Additionally, the Chinese writer Nunan (1994) notes that problems of redefining teacher roles were more of a barrier when implementing independent learning than children's ability to select their own learning content and take responsibility for planning, organising, managing and evaluating their own learning.

Suggested solution: support teachers

The literature provides a consensual view of the importance of supporting teachers and ensuring that teachers understand that independent learning does not undermine their role as teachers (Wood and Millichamp, 2000).

13.3   Challenge: pupils' need for structure and preparation

In an article that examines the GNVQ pedagogy of independent learning, Bates (1998) deals with the key objective of transferring responsibility for learning from teachers to pupils that underlies the claim that GNVQ represents an empowering and progressive innovation. The article explores a critical case of classroom practice in which pupils seized their newly acquired freedoms but resisted the accompanying burden of responsibility for managing their own work. Bates suggests that this poses problems for programmes that seek to make learners responsible for their own learning without sufficient preparation and opportunities for negotiating the meaning

of what is to be learned. Paradoxically, it appeared that in resisting 'empowerment' the GNVQ pupils in fact exercised their classroom power.

Bates found that without proper guidance there is a tendency for pupils to fall behind with their work, become confused about what they should be doing, and lapse into apathy or disaffection. At this stage, while teachers are attempting to transfer responsibility, learners may be demanding a more structured and teacher-led approach.

In Bates' case study, the teachers lost the battle to implement GNVQ pedagogic objectives. Perhaps the teachers were not adequately trained; perhaps the supporting infrastructure was not properly available in the school; or perhaps GNVQ methodology was itself at fault. At any rate, Bates provides a warning of what can go wrong - pupils dropping out, wasting their time drinking coffee and failing to achieve - when independent learning is introduced without the necessary forethought, planning, support and expertise.

Kane (2004), writing about active learning in the UK, makes a similar point - it seems easy until you try it! Kane makes it clear that, badly handled, active learning can turn into a pointless and dishonest frenzy of smoke and mirrors; attempted manipulation by the teacher and thoughtless play acting by the pupils.

> *In any given situation the success of an active learning methodology depends not on the methodology alone but, ultimately, on the ever-evolving dialectical relationship between methodology and learners, mediated by the educator.*
> (Kane, 2004, p285)

Suggested solution: plan and structure the introduction of independent learning

Writing about independent learning in Australian schools, Williamson (1995) stresses the need for extensive planning before the introduction of independent learning and the necessity of tailoring what is done to the resources available. She concludes that:

- teachers need considerable support for the change-over to independent learning
- children need careful guidance on information skills
- programmes must be tailored to children's cognitive styles
- whole-school information skills programmes should start in the early years
- teachers should be trained in information skills and resource use
- the role of the teacher-librarian is important in teaching information skills.

13.4   Challenge: Use of ICT

The possibilities of ICT bring with them a number of challenges. Developing materials requires a major input of time, effort and expertise from teachers, the more so with emerging digital technologies (Wagener, 2006). Children have to be trained in how to use the technology and can be demanding regarding materials that interest them. In learning how to use ICT and how beneficially to introduce it into their classrooms, teachers face a large challenge. The incorporation of media and technology into the classroom therefore does not necessarily ensure the enhancement of learning.

Suggested solution: Engage pupils in the production of ICT resources

The US writer Page (1989b) stresses the importance of pupils being actively and creatively engaged in the production of ICT resources for learning. Page notes that this is possible if, for example, pupils are encouraged pupils to produce videos and computer programmes, and to make slide presentations. This indicates that engaging pupils in the production of ICT may ensure that the ICT resources used for independent learning are relevant and appropriate. Furthermore, it may allow pupils and teachers to learn about and use ICT resources collaboratively.

13.5   Challenge: parental support

In addition to the importance of teachers and schools supporting pupils in becoming independent learners, several UK and international authors stress the importance of parents promoting independent learning (Malone and Smith, 1996; Bates and Wilson, 2002; Bates and Wilson, 2003; Black, 2007). Bates and Wilson (2002) found that there were large differences in the level of home support that was available to pupils in the UK. Based on these differences some international authors note that there is a danger that independent learning may increase social inequalities since pupils from a lower socio-economic background are less likely to have the support of their parents than pupils from a more advantaged socio-economic background (Bolhuis and Voeten, 2001; Black, 2007).

Suggested solution: Establish close links with parents

To minimise the effect social inequalities may have on independent learning the Australian writer Black (2007) stresses the importance of establishing close links between parents and schools. However, Black acknowledges that this may be difficult because some parents are overwhelmed with the impact of family breakdown, long working days and poverty. Moreover, Black acknowledges that there may be some tension between pupil-centred approaches to learning and parents' more traditional expectations of teaching and learning. This supports the importance of adopting a whole-school approach to implementing independent learning, which involves increasing parents' understanding of learning.

14 Conclusions

Though a number of different terms are used to describe independent learning, the concept in its various guises has at its core factors that are internal and external to the learner. The internal factors are the cognitive, metacognitive and affective skills learners must acquire. It is, according to the literature, these skills together with the element of a strong relationship between teachers and pupils and an enabling environment that underpin the development of independent learning and allow it to be made a reality in the classroom. In addition, for independent learning to be realised, there must be a conscious decision by responsible authority to establish an independent learning programme and the consequent provision of teacher education, facilities and resources, and school leadership.

Since the literature indicates that pupils do not become effective independent learners by themselves, 'learning how to learn' needs to be promoted and taught by their teachers. The literature provides a variety of suggestions relating to how teachers can promote independent learning by using a range of strategies, including scaffolding; providing pupils with opportunities to self-monitor; offering models of behaviour; developing a language for learning; and providing feedback on homework. ICT is also highlighted in the literature as potentially an important tool for transforming teaching and learning; and the point is made that effective independent learning depends on productive interactions between pupil and teacher.

The literature generally asserts that independent learning is very beneficial. Advantages claimed include enhanced academic performance; improved motivation and confidence; greater opportunities for differentiation in the classroom; greater inclusivity; and the laying of the foundations for children to develop as lifelong learners, which is held to be essential to their future prosperity and happiness. There is, however, some need for caution here as the evidence base derived mostly from case studies and observation cannot confirm that the reported benefits are entirely due to independent learning.

It appears from the literature that the main challenge in implementing independent learning is the focus on curriculum delivery and whole-class teaching which conflicts with the role of the teacher in fostering independent learning. Teachers' perceptions of how pupils learn may not correspond to the conceptualisation of independent learning, posing a barrier to the introduction of independent learning - a barrier that may be overcome by providing teachers with the necessary advice and support.

Aside from teacher support, the introduction of independent learning should, on the evidence of the literature, be introduced only after proper planning and preparation and as a step-by-step process. Ill thought-out and hastily introduced schemes may quickly lead to disillusionment both in the teachers and the children.

Although existing literature indicates the nature, advantages and challenges of independent learning, there is little evidence on a number of essential themes:

- the skillset that teachers need to support independent learning or how they can acquire the necessary skills and build them into classroom practice
- the role and impact of assessment for independent learning, although what there is suggests the centrality of both formative and summative assessment to independent learning at the practical level
- the views of pupils and teachers.

However, even when allowing for these gaps in the evidence base, the literature provides a clear picture of what independent learning is, how it might be introduced and sustained, and what barriers will have to be surmounted to reap the benefits that a successful realisation of the concept will bring with it.

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16 Appendix 1: Research questions

The following research questions were explored:

- What are the key elements of independent learning?

- Are there different models of independent learning, and, if so, what are they?

- What skills are required for effective independent learning?

- How can teachers best support the development of independent learning skills?

- What kinds of processes need to happen to encourage the learner to become an independent learner?

- What other conditions need to be in place?

- What is the role of assessment, particularly peer- and self-assessment, in independent learning?

- What is the effect of independent learning on pupil outcomes?

- Do pupils become more confident in their learning when using self-help strategies?

- What are the stages in progression in independent learning?

- What are the challenges of independent learning and how can they be managed?

- What are the pedagogical issues surrounding independent learning skills?

- What is the role of ICT in independent learning and what is its impact on pupil outcomes?

17 Appendix 2: Mixed-method approach

The mixed-method approach used for this literature review allows for a rigorous approach to the selection of material through the use of inclusion and exclusion criteria and an agreed research focus, which is part of the systematic review methodology, to be combined with the flexibility afforded by the realist synthesis approach (Pawson *et al.*, 2004). The realist synthesis approach ensures that the process of reviewing the literature is rigorous and iterative. It makes possible the refinement of findings emerging from the synthesis of literature examined and the addition of evidence at each iteration of the review.

Combining principles of systematic review and realist synthesis

Systematic review theory describes a hierarchy of evidence: the higher up a methodology is ranked, the more robust and closer to the objective truth it is held to be. Thus, systematic reviews and meta-analyses (fresh analyses of data from existing studies) are at the top of the hierarchy, followed by studies resting on randomised controlled trials and those describing cohort studies. Further down the hierarchy, in descending order are case-control studies, cross-sectional surveys, case reports, expert opinion and anecdotal evidence. This ranking has an evolutionary order, from simple observational methods at the bottom to increasingly sophisticated and statistically refined methodologies at the upper end.
The randomised controlled trial is regarded as the most objective method of removing bias and producing reliable and replicable results. The nature of educational research is not favourable to the use of randomised control methods. Research and studies based on this methodology occur infrequently in the literature on independent learning. Therefore, most of the studies described and analysed in this review are further down the hierarchy of evidence than any that might rely on randomised controlled trials. Most are cohort studies (groups selected on the basis of their exposure to a particular intervention and followed up for specific outcomes), case-control studies (groups experiencing the intervention are matched with ones that have not experienced it and a retrospective analysis used to look for differences between the two groups), or simple case studies.

In giving weight to the evidence presented in this review, account has been taken of hierarchy of evidence principles. But this hierarchical approach to evidence utilisation has been tempered by the principles underpinning 'realist synthesis', which allow for an iterative building of the evidence base.

The results of the review, therefore, combine the rigour of the systematic review process and the flexibility in evidence development provided by realist synthesis, and provide a basis for a consideration of the implications of independent learning in the classroom and in terms of its practical promotion.

18 Appendix 3: Stages of the review

The stages of the review were as follows.

18.1 Development of inclusion and exclusion criteria

Initially the focus of the review and parameters were agreed. This included identifying and agreeing the inclusion and exclusion criteria to determine the selection of studies. These inclusion and exclusion criteria were as follows.

- Only literature published from 1988 onwards was included, with the exception of seminal literature.

- Only literature published in the English language was considered, including international literature in English.

- The study population was children of compulsory school age.

- Topics of interest were broadly taken as independent learning, thinking skills, learning how to learn, ICT-assisted learning, self-regulated learning, and expert learning.

- The material to be reviewed was defined as published research, UK government policy reports, systematic and meta reviews, grey literature (eg conference proceedings, guidance documents, material on websites), material from relevant organisations, and articles found in specialist journals by hand-searching.

18.2 Development of a search strategy

A search strategy was devised for each component of the review, including identification of key words and search terms and of key databases for published and unpublished research. Specific journals targeting the topic under review and the websites of relevant organisations were also identified.

18.3 Database searches

Database searches (including DIALOG, EBSCO, COPAC and IDOX) were conducted and texts were either downloaded, or, where not available electronically, consulted in a research library or ordered from the British Library.

18.4 Initial screening and quality assurance

As searches progressed first screenings were made and the details of publications selected were entered on an EndNote programme. These searches were quality assured by two research managers, acting as independent assessors by reviewing the references recorded on EndNote.

18.5 Framework for analytical review

A framework to develop the analytical review of material accessed through the searches and to explore terms and definitions was developed:

- What is independent learning? - Elements, models, skills required.

- How can teachers promote independent learning? - What works best, kinds of processes, other conditions, stages in progression.

- What is the role of assessment? - Peer assessment, self-assessment.

- The effects of independent learning - On pupil outcomes, on confidence, on motivation.

- Challenges of independent learning, how to manage these.

- Pedagogical issues.

- Information and Communications Technology (ICT) - role, impact.

18.6 Review and synthesis of literature

The retrieved studies were critically reviewed and assessed for quality and relevance. The material was then synthesised in accordance with the model of the analytical framework outlined in 18.5 (above).

Second stage of quality assurance

The two research managers, again acting as independent assessors, selected a sample of searched studies using quota sampling methods to ensure the inclusion of a spread of material, and to quality assure and validate the review and synthesis process. This process was followed by a discussion and review by the Project Team of the emerging findings and themes.

Iterative refinement of key findings and themes

Key findings and themes were refined using realist synthesis principles so as to ensure as comprehensive an assessment of the available material as possible. Further searching, reviewing and synthesis took place as necessary to establish an overview of the key findings. A draft report was prepared. Comments from the Department and external experts lead to further searches, reviews and syntheses. A final synthesis was then undertaken and the current report detailing findings and conclusions was presented to the Department.

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