

Do school grounds have a value as an educational resource in the secondary sector?

Barbara Chillman
Sussex University / Learning through Landscapes



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1 Introduction

Secondary school grounds are the only outdoor environments which are primarily for the use of young people, where they can socialise without feeling that they are poaching territory or are being viewed as a nuisance by the rest of the population (Titman, 1999). While younger children also have a variety of other play spaces, the importance of school grounds to teenagers is heightened by the fact that the 12-19 age group are one of the sectors of the population who are least likely to use public green spaces such as parks (DTLR, 2002), and that there is a lack of dedicated facilities for teenagers outside schools (Nestlé Family Monitor, 2002).

The educational use and improved design and management of school grounds has been largely supported by NGOs in many countries. In the UK, the charity Learning through Landscapes specialises solely in school grounds, while other organisations such as Groundwork, BTCV and the Wildlife Trusts carry out substantial portions of their work in school grounds – in an evaluation of Groundwork's first 21 years of delivering educational activities, the organisation calculated that it had delivered projects in 3857 schools, involving more than 350,000 young people (Groundwork, 2002). Although not all of these projects involved school grounds, use of the grounds is viewed by the organisation as a means to building capacity for Citizenship and Sustainable Development Education in schools. Use of the school grounds is also promoted by organisations who support Sustainable Development Education and Citizenship Education (Ecoschools, 2001, pp. 85-92; School Councils UK, 2003, pp. 68-73). Other school grounds organisations around the world include The Learnscapes Trust in Australia; the Boston Schoolyard Initiative and the San

Francisco Schoolyard Alliance in America; environmental organisations such as Evergreen in Canada and Enviroschools in New Zealand also concentrate much of their resources on school grounds projects.

The last twenty years have seen a shift in the way that school grounds are seen within education, and particularly within government departments for education as evidenced by the change in focus of Building Bulletin regulations. In 1982, Building Bulletin 28 concentrated on technical information about the size and composition of Playing Fields and Hard Surface Areas, but eight years later, Building Bulletin 71 was concerned with the broad educational use of the 'Outdoor Classroom', (Department of Education & Science, 1990), and in 1997, Building Bulletin 85 provided detailed guidance on good practice in the use, design and management of school grounds, which stated:

School grounds are a valuable resource. Their size and design, the features they contain, how they are used and the way they are managed can have a significant effect on the life and work of the school and on the quality of education its pupils receive.

(Department for Education and Employment, 1997, p. 3)

This change in emphasis was strongly influenced by the research of Eileen Adams (1990), which included visits to over ninety schools, including thirty secondaries, across the country, and described examples of good practice in the design and use of school grounds at that time. The educational use these schools made of their grounds included the use of the outdoor environment as a context for learning across the curriculum; playground design projects in partnership with landscape architects which provided a focus for year-long programmes of study; extensive use of the

school grounds for fieldwork in Environmental Studies, Geography and Science; and outdoor projects in individual curriculum areas including Art, Technology and History. The research also revealed the complexity of the school grounds' use for the informal curriculum. Building Bulletin 71 was directly based on this research.

While this shows a clear increase in interest in the wider use of school grounds, these publications unwittingly demonstrate a declining prominence given to *secondary* school grounds. In her chapter on the use of school grounds as an educational resource, Adams provides five case studies from primary schools, one from a middle school and nine (albeit sometimes brief) from secondary schools. Building Bulletin 71 contains ninety five photographs of schools, of which only five are clearly secondary schools, and by Building Bulletin 85, secondary schools have become completely invisible – out of twenty nine photographs, twenty four are clearly primary and five ambiguous. This is despite the fact that the majority of the technical guidance included is equally applicable to secondary schools.

The low priority given to secondary school grounds is reflected in the Building Schools for the Future programme. While there is a per annum £2.1 billion commitment to rebuild or refurbish all secondary schools in England and Wales over the next 15 years, there is neither a requirement nor overt encouragement from government to consider the outdoor environment as part of this programme. Yet simple economic analysis shows that to maximise the return on this capital investment it should be divided between school buildings and grounds to reflect the relative benefits that will accrue from each. These benefits will include not only those generated by an improved environment and better facilities, but also those which

result from the process of improvement, especially where students are actively involved in this process. If the benefits from investing in the school grounds are not identified, or are undervalued, then capital investment will be misallocated.

This low status of school grounds in the secondary sector extends beyond government to the schools themselves. An indicator of the relative importance that primary and secondary schools give to maintaining and improving their grounds could be their participation in school grounds development programmes. Organisations working to improve school grounds commonly report a lack of interest and motivation from the secondary sector. Secondary schools account for 16% of the total number of schools in the country, but only 8% of Learning through Landscapes' school members and 10% of schools using their own capital funding to take part in the School Grounds of the Future programme (March 2004). Secondary schools are better represented in the Sport England-funded Grounds for Improvement grant programme, accounting for 14% of the schools involved, suggesting that secondary schools more easily see the relevance of improving their grounds for sports than for other educational or social purposes (LTL internal statistics).

As well as declining quality due to lack of investment, secondary school grounds are subject to declining quantity due to the disposal of the land for other uses. The School Standards and Framework Act 1998 allows schools to dispose of playing fields only if the proceeds from sale are used for improving sports or education facilities, which allows schools to sell, or build on, school grounds in order to create indoor sports facilities or more classrooms. The National Playing Fields Association argues that this "can have the effect of encouraging head teachers, governors and

local education authorities to take a short term view of their playing fields as immediately realisable assets” (NPFA, 2003, p.5). Moreover, the legislation only covers sports pitches, not other areas of outdoor space which might be used for social or recreational purposes, making these areas particularly vulnerable to development.

Any balanced decision regarding the change of use of outdoor space requires that its value to the school has been fully identified and valued. This value could include benefits in the form of improved academic performance, attitudes to school or behaviour through the suitable design and effective use of the grounds for the formal, informal and hidden curriculum, as well as from pupil participation in the maintenance and improvement of their grounds. The intangible, long-term and non-monetary nature of these benefits leaves them vulnerable to being undervalued when balanced against the more obvious, and immediate, financial gain from sale of land, or even the benefits from new buildings for classrooms or indoor sport, as these benefits may be more easily recognised by school staff whose working lives are predominantly spent indoors. If the value to secondary schools of their grounds is not recognised, the school may find themselves unexpectedly worse off as a result of selling, or building on, land; if the potential value to secondary schools of their grounds is not being exploited, schools could benefit more from making better use of their grounds than from selling them.

1.1 Focus and rationale

If rational, welfare-maximising decisions are to be made about the disposal of, or investment in, school grounds, it is vital that the potential benefits from secondary school grounds are identified and understood. This review will assess the evidence currently available about how school grounds can be valuable to learning in secondary schools, and consider whether deficiencies in the quantity or quality of the research might be responsible for these benefits being underexploited or undervalued. Where evidence specific to secondary schools does not exist, this review will include research into parallel areas such as primary schools or non-school environments, to identify key findings which could be transferable to the secondary school grounds context, and into which more research is needed.

The potential benefits from secondary school grounds can be grouped into four categories:

- The value of secondary school grounds to the formal curriculum – using the ‘outdoor classroom’ within lessons to allow more frequent experiential learning in many subjects and facilitate the use of different learning and teaching styles.
- The value of secondary school grounds to the informal curriculum – that part of the day when students are using the school grounds for social purposes, i.e. breaktimes and before and after the school day.
- The value of secondary school grounds to the hidden curriculum – the implicit messages conveyed by the way the grounds are designed, used and managed, which contribute to the overall ethos of the school.

- The value from the process of the improving secondary school grounds, particularly when this involves active student participation, providing opportunities for students to gain academic, social and personal skills, potentially leading to improved attainment, behaviour and attitudes to school.

For each of these, the potential benefits offered by secondary school grounds will be identified, and research evidence used to consider the extent to which those benefits are currently being realised.

2. The value of secondary school grounds to the formal curriculum

The use of school grounds for teaching and learning has a long history. Government grants were first made available for school gardening as long ago as 1895. School gardens were boosted by their use for growing vegetables during the Second World War and their value was recognised by the Food and Agricultural Organisation and UNICEF in 1964 by the publication of a book on school vegetable gardens, (Rickinson et al., 2003a).

2.1 Potential value: how can use of the grounds benefit secondary school teaching and learning?

The traditional use of the school grounds for formal teaching – particularly at the secondary level – has been for physical education. Continuing concerns about the health and fitness of young people, as well as periodic media panics over the nation's sporting prowess, have tended to protect sports facilities, and the size and quality of

playing fields is the only aspect of the school grounds which is subject to statutory regulation. The 1996 School Premises Regulations defines playing fields as grassed areas suitable for the playing of team games, laid out for the purpose, and capable of sustaining team games for seven hours a week during term time; it also provides a sliding scale of minimum areas for both primary and secondary schools, according to the number of pupils – for example, a secondary school of 1000 pupils requires at least 45000m² of playing field. This area can be reduced where the school has facilities at the school for indoor instruction in team games; synthetic outdoor surfaces; regular instruction in swimming at the school or elsewhere; or has access to facilities not at the school for team games. With a trend to building shared community-use sports centres on school sites, often financed through Lottery funding or specialist sports college bids, many secondary schools are finding that the increased access to modern sports halls and swimming pools means that they need less outdoor playing fields – indeed, such sports centres are often built on land previously used as outdoor playing fields.

In recent years, increased government interest in the wider use of the “outdoor classroom” – within the school grounds and beyond – has been shown by the launch of the Growing Schools initiative in September 2001, in response to concern that children and young people had become distanced from nature. It aimed to ‘inspire all schools to use the “outdoor classroom” as a context for learning’ (Department for Education & Skills, 2003, p. 2) and was also seen as supporting Sustainable Development Education, along with a variety of other government initiatives aimed at encouraging healthier eating and more active lifestyles. This initiative has funded a range of partner organisations to deliver a number of high-profile projects including: a

show garden at the 2002 Hampton Court Palace Flower Show, to which 21 schools, including 5 secondary, contributed features; a teacher support website; teacher training programmes; support for farm and field study centre visits by pupils; and school grounds development projects in Early Years settings as well as primary, secondary and special schools.

More specifically to secondary schools, further emphasis on outdoor learning can be implied by the introduction of the new category of Rural Schools to the specialist schools program from September 2004, one strategy in response to the call by the Policy Commission on the Future of Food and Farming to 'reconnect consumers with what they eat and how it is produced' (2002, p. 6). Schools opting for a rural dimension to their chosen specialism are encouraged to make use of their school grounds, and will be expected to show how they intend to extend learning using resources outside of the classroom, and reflect issues such as land management, rural livelihood issues, conservation/heritage and environmental stewardship.

The government has also recognised how the use of school grounds can help meet other educational priorities, such as the introduction of Citizenship education – the QCA schemes of work for Citizenship at both Key Stages 1/2 and Key Stage 3 include modules on pupil participation in improving the school grounds (QCA 2002; QCA 2001). School grounds development projects could be one way to reduce the number of students (52%) who believe that they have little say in how their schools are organised and run (Kerr et al. 2003).

Another educational priority which is recognised as benefiting from the use of the

school grounds is Education for Sustainable Development. Both Ofsted (2003) and – to a lesser extent - the House of Commons Environmental Audit Committee (2003) cite examples where the school grounds have helped young people understand concepts such as citizenship and stewardship, sustainable change, diversity and quality of life. The Ofsted guide to good practice in primary and secondary schools states that ‘the factors which most strongly characterise the work of the most successful schools [in delivering ESD] include.... active involvement of pupils in initiatives...[to] improve the whole school environment, including the school grounds’ (Ofsted 2003, p. 2). It goes on to state a number of examples where the school grounds have benefited the teaching and learning of sustainable development concepts, and includes in its checklist of self-evaluation: ‘Has the school embarked on, or maintained, a programme of ground development and improvement to support learning, promote stewardship and improve the quality of life?’ (Ofsted, 2003, p. 20). This inclusion is supported by other researchers who have also demonstrated higher levels of environmental knowledge and understanding, and more positive environmental attitudes, among students who have been involved in school grounds programmes, which allow longer-term, more regular involvement in the environment than off-site environmental education programs (Education Development Center, Inc. & the Boston Schoolyard Funders Collaborative, 2000).

The model developed by Hawkins (1987, cited in Job et al, 1999) helps to illustrate one mechanism by which use of the school grounds can be of particular value. By separating the outdoor education experience into three phases – awareness/acclimatisation, investigation and concern/action, this shows how the use of a locality so immediate to students enables them to discover their own way into

investigating the environment, and develop feelings of personal responsibility. However, the benefits of familiarity need to be balanced against the motivational gains from novelty when students venture further afield for fieldwork (Rickinson et al, 2004)

As well as these specific areas of the curriculum which, by their nature, suggest the use of the outdoors, and hence potentially the school grounds, there is scope for using the school grounds as a vehicle, context or location for teaching subjects across the curriculum. The vast majority of the resources produced to encourage such teaching is targeted at primary schools, (Keaney 1993, 1996; Hare et al 1996; Dean 1999; Rhydderch-Evans 1993; Thomas 1992), but there are also some publications aimed at the secondary sector (e.g. LTL 2001; Job et al 1999), although these are often limited in scope or are focused on outdoor teaching in general, with school grounds mentioned as one option. Across the age range there is some research suggesting that such use of the school grounds can be beneficial. "That natural environments provide a venue for developing cognitive skills related to critical thinking, creative enquiry, problem solving and creative development is relatively undisputed" (Dyment 2004, p. 5).

One approach to explaining the benefits of outdoor teaching is Howard Gardner's theory of multiple intelligences – including the naturalist intelligence that Gardner added to his original seven in 1997 - which supports the use of environments that encourage hands-on approaches, problem solving and group work, and which has been influential in schools in recent years in encouraging teaching which caters to different learning styles. While any outdoor environment can be used in this way, use

of the school grounds “also provides opportunities for staff development both in terms of sharing knowledge among staff as well as building confidence in their abilities to assess and manage risk” (Rickinson et al, 2004, p. 79).

Although Titman’s research into secondary schools (1999) found little use of the school grounds for teaching, teachers who did use the grounds ‘were usually strongly convinced of the benefits, which they said included:

- Access to resources not available in a classroom;
- Opportunities to use different teaching and learning styles which enhance pupils’ self-esteem and self-confidence;
- Giving pupils responsibility which increases trust and their sense of ownership;
- Strengthens relationships between pupils and staff’ (p. 9).

In the same study, pupils were also convinced that they learnt better outdoors, being of the opinion that outdoor lessons were generally more interesting, varied and relaxed, that practical lessons were easier to understand, and that teachers were friendlier outdoors. They also complained that classrooms are too hot and stuffy, making it hard to concentrate. These findings are echoed by Lieberman and Hoody (1998), who also found that lessons outdoors encouraged an atmosphere of collaboration between students and teachers, helping students to develop their interpersonal skills.

A survey of over 200 educators involved with school grounds programmes found that 69% of respondents believed that their school grounds learning activities improved

academic learning, and 93% that the activities had a positive impact on the learning environment, stimulating improved teaching and learning (Education Development Center, Inc. & the Boston Schoolyard Funders Collaborative, 2000). However, the validity of these findings is weakened by the widely varying nature of the programmes surveyed, and the fact that “the educators who responded... are already convinced of the value and benefits of using the school grounds” (Education Development Center, Inc. & the Boston Schoolyard Funders Collaborative, 2000, p. 10).

The State Education & Environment Roundtable (SEER) has researched the effectiveness of their learning methodology of Using the Environment as an Integrating Context for Learning (EIC), which ‘is about using a school’s surroundings and community as a framework within which students can construct their own learning’ (State Education & Environment Roundtable, 2000, preface). In a rare example of a quantitative analysis with a large sample, by using paired schools and standardised test results, attendance rates and grade-point averages SEER have been able to demonstrate quantitative gains to Californian schools (including High Schools) who have adopted the EIC approach, which includes use of the school grounds. They have also observed reduced discipline and classroom management problems, increased engagement and enthusiasm for learning and greater pride and ownership of accomplishments (State Education & Environment Roundtable, 2000; Liberman & Hoody, 1999). However, it does not isolate the benefits resulting specifically from the school grounds as opposed to those from other outdoor environments, or from other differences in teaching approaches.

2.2 To what extent are secondary schools realising the potential of their grounds to support the formal curriculum?

'Although outdoor education and field centres have stressed the use of the outdoor environment from the early to mid-seventies...a 1980s USA survey suggested that most [secondary] science teachers still were not using the outdoors for formal learning', (Skamp & Bergmann, 2001, p. 1). Concern continues among science educators that the decline in fieldwork is continuing, particularly in the upper years of secondary education, with Barker et al (2002) citing Fisher's (2001) finding that only 10% of schools surveyed carried out environmental work outside the laboratory at 14-16. However, the lack of comprehensive and comparable data makes the exact position unclear.

Many researchers (e.g. Skamp & Bergmann, 2001; Titman, 1999; Barker et al. 2002) have identified the barriers that discourage teachers from taking more lessons outdoors, including:

- lack of teacher training and confidence;
- pressures of time and timetable;
- perceived lack of curriculum need;
- insufficient funding;
- health and safety concerns and other administrative burdens.

While researchers are in broad agreement about the nature of these barriers to outdoor teaching, less research has been done into how these barriers can be overcome (Scott et al, 2003). Some of the barriers are minimised by using the school

grounds rather than going off-site, and outdoor learning in the school grounds has the added benefit of increasing the sense of ownership felt by students (Rickinson et al., 2003a).

However, the extent to which the grounds are used will also depend on the variety of features they contain which can be used by different subject areas – e.g. environmental areas for use in Science and Geography, as well as general resources such as seating areas. Titman's research into secondary school grounds (1999) found that few of the 32 secondary schools in England visited had design features in their grounds that met formal curriculum needs – only two schools had outdoor classroom areas, and one of these was derelict. Rural Studies Centres were found in a significant number, but again most were derelict. All of the schools had a pond, but this was not always used as a curriculum resource. Unsurprisingly, the majority of the schools only made occasional use of their school grounds for delivering the non-PE curriculum, even where they had relatively advantaged sites – in fact inner-city schools often made more use of their grounds in an attempt to compensate for the wider environmental disadvantage suffered by pupils in those areas.

Most secondary schools have more outdoor space than most primary schools, as well as more specialist staff expertise, larger budgets, and more likelihood of access to project management support through bursars and other administrative staff, and so if the extent of outdoor teaching was determined only by the availability of resources there should be more outdoor teaching observed in secondary schools than in primary. In reality, a stronger determinant is school philosophy, as shown by mission statements, curriculum guidelines and educational policies. From interviews with staff

at five Australian primary schools, Malone and Tranter (2003) concluded that although teachers blamed the lack of facilities for the lack of educational use made of school grounds, school ground design was “not as vital as having a view of learning that does not distinguish between the indoor-outdoor environments” (Malone & Tranter, 2003, p. 299). In the secondary sector, Titman found that “the personal and professional philosophy of headteachers was...a major determinant to the use of school grounds” (Titman, 1999, p. 10). Schools which made most use of their grounds were those where the commitment of the head gave the grounds status and profile, in some cases demonstrated by creating a special responsibility allowance.

A comparison of a primary and a secondary school in Australia which were participating in the Learnscapes programme showed that, even where specific learning features had been created, and where there was strong support at school principal level, many teachers lacked awareness of the potential of the outdoor environment for teaching and learning, and felt they did not have sufficient time to rethink their teaching programmes to make use of the facilities. Skamp & Bergmann (2001) concluded that ‘these two schools indicate that the integration of Learnscapes into the implemented programs of the majority of teachers is a slow process’, (p. 22). In the cases of these two schools there was not evidence that the primary school teachers were more likely to use the Learnscapes than their secondary counterparts, although the secondary teachers were more likely to report feeling constrained by syllabus content.

Crucial to the use of any new feature by teachers is their involvement in its planning. In one American school, where the school district and principal supported outdoor

education, a habitat area was created with paths and a footbridge. Teachers, who had not been involved in the design process, were not prepared to use the habitat in their curriculum, viewing it as a liability (Kinkead 1998, cited in Johnson 2000).

3. The value of secondary school grounds to the informal curriculum

The informal curriculum refers to that time when students are using the grounds socially, at breaktimes and before and after school. The informal curriculum provides a range of learning opportunities, characterised by self-directed and self-motivated activities, which can involve pupils in “testing concepts, practising skills, confronting challenges, calculating risks, recognising capabilities and limitations and generally developing a sense of self-worth and self-confidence” (DFEE, 1997, p. 36). It has a particular importance in developing social skills, as pupils are required to co-exist in large numbers, less supervised than they are in the classroom.

At primary school there is a general consensus that “playtime” is an important part of the school day, providing opportunities for pupils to develop physically, socially and emotionally through play and other interaction with their peers. Despite the fact that this development is not complete by the age that pupils transfer from primary to secondary school, at the secondary level “an indifference toward breaktime appears more widespread” (Blatchford, 1998, p. 6). The allocation of time to the informal curriculum typically decreases with the age of the pupils, from one third of the day for nursery and infants, to one quarter for juniors and one fifth for secondary pupils (DFEE 1997). Titman’s study found a total absence of stated policy and little evidence of a shared philosophy or rationale for the informal curriculum in the

secondary sector, with some schools questioning whether they had a responsibility for this aspect of education (Titman, 1999).

Indeed, in many secondary schools, breaktime is seen more in terms of a problem than as having value, “with a stress on unacceptable behaviour that can occur then” (Blatchford, 1998, p.3). The poor behaviour at breaktime that concerns many secondary schools, which may well be due to a lack of recreational and social opportunities, and the territorial conflicts generated by inadequate school grounds design, has prompted many schools, particularly secondaries, to reduce the length of breaktimes to increase teaching time and minimise the opportunities for mischief (Blatchford, 1998). And yet breaktime, the informal curriculum, and hence the school grounds can be argued to offer important health, emotional and social benefits to secondary-aged students.

The informal curriculum offers opportunities to address the rising concern with levels of inactivity and lack of physical fitness among young people. Blatchford (1998) found a drastic fall in physically active games between ages 11 and 16, and reported “a general sense of unease expressed by the pupils about their inactivity” (Blatchford, 1998, pp. 48-9). The “play” needs of teenagers are not as well studied as those of younger children, and secondary school grounds often cater only for traditional sports, with football pitches and basketball courts primarily used for formal curriculum PE made available for breaktime use. In Titman’s study of secondary school grounds, although all the schools had formal sports areas, football predominated and other aspects of the informal curriculum were rarely catered for. Only two schools – both special schools for pupils with emotional and behavioural difficulties - provided fixed

“play” equipment, reinforcing the impression that play was unacceptable once you went to secondary school. Year 7 pupils in particular – though not exclusively – expressed a need to have more fun, and recalled that playtime was fun at primary school. They also wanted opportunities for physical challenge and risk-taking, such as provided by outdoor education centres or activity holidays. Schools, however, faced with health and safety legislation and a growing litigation culture, feel unable to provide facilities to meet these needs.

As well as benefits to physical health from breaktime use of the school grounds as a place for “play”, school grounds may have a role in encouraging greater emotional and mental health. Although researchers have not focused specifically on school grounds, the potential impact of the design of school grounds is indicated by growing body of evidence – mostly from the U.S. - that natural environments in the wider world have benefits for psychological and emotional health. A variety of studies have demonstrated that greener environments are associated with people reporting fewer health complaints, having better perceived general health, experiencing less stress and other mental disorders, and hospital patients recovering more quickly (Handley et al, 2003; Henwood, 2002; Seymour, 2003; Pretty et al, 2003). However, there remains debate about how robust the evidence is. Henwood (2002) claims that “The evidence is already extensive on how contact with, and appreciation of, nature can contribute to people’s well-being and health” (p. 7), but concludes that:

It is no more than a hopeful starting point to say that the weight of the research evidence shows that ‘contact with nature is good for you’. The research claims that have been made have to be dissected in more detail (Henwood, 2002, p. 7).

This point is reinforced by Frumkin (2002, cited in Pretty et al, 2003, p. 21) who points out that despite the range of evidence available, health professionals have not widely adopted nature as therapy, and suggests that the available research is insufficiently evidence-based, being non-randomised in design, with inappropriate or no controls, and suffering from selection bias which undermines findings or relationships between cause and effect.

Despite these weaknesses in scientific evidence, contact with nature is widely thought to promote mental health through providing a setting where refuge can be taken from the pressures of life, thus supporting stress recovery and reducing mental fatigue (Kuo & Sullivan, 2001), as well as providing a context for physical exercise which has been shown to reduce anxiety (Seymour, 2003). Well-designed school grounds can provide both green environments and physical activity opportunities, and time to benefit from both of these could provide a rationale for breaktime at the secondary school level. This argument is supported using Attention Restoration Theory in two studies by Taylor, Kuo and Sullivan (2001a; 2001b). A study of children (aged 7-12) with Attention Deficit Disorder (ADD) found that they had fewer attention deficit symptoms after spending leisure time in green settings (Taylor, Kuo and Sullivan, 2001a), and research into the impact of nature located near homes on three aspects of children's self-discipline (capacities for concentration, impulse inhibition and delay of gratification) found that girls (aged 7-12) with green space immediately outside their homes scored higher on all three self-discipline measures. For boys, however, there were no significant effects, which the authors argue may be due to them spending less time playing in and around their homes (Taylor, Kuo and

Sullivan, 2001b). These results led the authors to conclude that green schoolyards could lead to higher academic performance as breaktimes in such an environment would leave children “better prepared to pay attention, to suppress disruptive impulses, and to wait patiently for future breaks” (Taylor, Kuo and Sullivan, 2001b, p. 13).

However, although the available evidence suggest that green environments are beneficial to younger children and to adults, evidence from the field of environmental psychology (Kaplan and Kaplan, 2002) suggests that for secondary school children the relationship is more complex, with natural spaces often not appearing as adolescents’ favourite places, as they offer less excitement and social potential than more developed spaces. More research is clearly needed into the types of outdoor environments that are most beneficial to this age group, particularly in the context of school grounds.

As the common sight of teenagers “hanging out” with friends on streets, in shopping precincts and in children’s play areas, even in the coldest weather shows, secondary aged students value the outdoors for socialising. One survey found that 80% of 9-16 year-olds prefer being out and about rather than staying in (cited in Worpole, 2002), and another that the percentage of pupils who “really look forward” or “look forward” to going out at breaktime, as opposed to staying in, actually rose from 70% for 11 year-olds to 80% for 16 year-olds (Blatchford, 1998). With access to external environments diminishing – for younger children as a response to parental concerns about safety, and for teenagers due to negative adult perceptions of their presence – the school grounds have become even more significant as an outdoor space that is solely or primarily for children’s use.

If the secondary school breaktime is accepted to have value, to meet students' needs at these times the design of the school grounds needs to include suitable seating areas as well as recreational activities appropriate for the age group. Titman found that seating was inadequate or non-existent, and the scarcity of this most popular feature in the school grounds led to territorial domination by older pupils. Only two of the schools provided outdoor shelter, despite the preference of many young people to be outdoors during breaktimes even in bad weather. 'In the majority of schools pupils spent the majority of the time "wandering around" either from choice or due to the lack of provision for seating' (Titman, 1999, p.11). Pupils felt that the design of their school grounds 'accentuated rather than ameliorated stress and tension' (Titman, 1999, p. 24).

Titman's results are in line with those gained from interviews with 16-year old students at inner-London schools (Blatchford, 1998), who expressed 'a general dissatisfaction with the outside environment available at breaktime... [which] was of interest despite, rather than because of, the environment provided' (p. 35). Again, students 'seemed not to have anywhere definite to go, and sometimes did not like spaces provided for them' (p. 36). However, when asked how they thought breaktime could be improved the 16-year olds showed little interest in improving the school grounds, being more interested in the provision of more in-school activities. This contrasted strongly with the responses the same students in this longitudinal study had given at age 11, when physical improvements to the school grounds were the most frequently suggested improvement. This result appears to show that during their secondary school years young people lose interest in the quality of their outdoor

environment, despite the preference shown by many in this age group for being outdoors. Alternatively, it could be that by age 16 students take the poor external provision for granted, an attitude strengthened by the lack of inspirational role models of secondary school grounds.

The potential offered by a more positive approach to secondary school grounds design and management is illustrated by one school that had involved the school council in the development of a basketball and social area. Here a Year 10 pupil commented:

It's brought the school together as a community, because before certain people were in one area and certain people were in another area and now when you go out at break or lunch everyone from Year 7 up to Sixth Form are ...all happy together. I think there are less arguments and less fights.
(Rickinson et al. 2003b, p. 31)

More research is needed to identify whether other secondary schools who have implemented school grounds improvement projects have experienced similar benefits.

4. The value of secondary school grounds to the hidden curriculum

The hidden curriculum has been defined as the 'complex web of inter-related messages and meanings which are unstated but assumed, which children read, not only from the physical aspects of the grounds but fromhow the grounds are managed and maintained' (Titman, 1994). This aspect of the school grounds has been explored in detail at the primary level (Titman, 1994), and in less detail at the secondary level (Titman, 1999), using a semiotic approach to uncover children's reactions to different elements common to school grounds, as well as the overall appearance and maintenance of the grounds. Schools who had improved the school grounds had changed this hidden curriculum, with consequent changes in attitudes and behaviour. (Although Titman refers to other sources stressing the importance of pupil participation in maximising the benefits from school grounds improvements, the cross-sectional nature of her research does not allow an analysis of the extent to which children's attitudes and behaviour are affected by participation in school grounds improvements, as opposed to the physical improvements themselves.)

At the primary level, the external environment was shown to be important to children as signifying opportunities for adventure, challenge and risk, and is associated with social behaviour. Titman found that the primary school children – unlike teachers – made little distinction between the school buildings and the school grounds – both were seen as an entity. Where capital investment is targeted only at the buildings it is, therefore, likely that children will be less impressed than adults as they are more aware of the still-neglected external environment. Moreover, children believed that the grounds had been purposely designed by those who managed the school, and

that uncomfortable and unpleasant school grounds were seen as symbolic of a lack of care by the school for children's needs. It was also seen as a lack of care for the environment, generating a conflict between the environmental messages transmitted through the formal curriculum and those inferred from the hidden curriculum of the school grounds. In particular, ponds - one of the more common features in school grounds in secondary as well as primary schools - could be strong signifiers of care for the environment, but they are often located in out-of-the way places and poorly used and maintained.

The design of school grounds also transmitted messages about what behaviour was expected from their users.

Are they expected to be "carers", "big tough sports players", "hidiers and seekers", horticulturalists", "confident occupiers of space", "involved with the elements", a "young animal", a "socialised proto-adult" - or what?
(Titman, 1994, p.16).

Most of these roles - and others - are applicable to secondary-aged students, but in many secondary schools few roles - other than '*big tough sports players*' - are encouraged by the design of the grounds. For example, even where outdoor benches are provided, they are often in isolation or in straight lines, perhaps overlooking a playing court, and do not facilitate social interaction.

Although the children in this study were pre-secondary age, some of the findings are echoed in the subsequent research Titman carried out with secondary students (1999). This showed a clear conflict in secondary schools where students are urged to act in a mature and civilised manner, and yet are relegated 'to leaning on litter bins

or balancing on bollards in order to eat their lunch' (Titman, 1999, p.12). Staff and pupils recognised the impact of the hidden curriculum, but often for different reasons, for example in the practice of barring pupils access to areas of the ground at the front of the school. One teacher commented: 'We've turned the big playground at the front into a sort of publicity barrier – we keep it clean and tidy of children because we're concerned about PR' (Titman, 1999, p.16). Pupils' reactions to this type of regime varied from not caring, through faint amusement to resentment, particularly where areas used by pupils were poorly maintained.

The impact of the hidden curriculum messages conveyed by the school grounds can be inferred by changes in behaviour when school grounds are improved. One barrier for many schools to improving their grounds is the fear that any improvement will be vandalised, but schools which do improve their grounds – particularly through a process of pupil participation – often report a decrease in vandalism. Research into school vandalism has also shown that:

Beautification efforts such as regularly swept school grounds, modest landscaping, painting of buildings and maintenance of school grounds may be more effective in deterring vandalic acts than steel fences, electronic sensors and fortress like expensive building construction. (Pablant & Baxter, 1996, *Environmental Correlates of School Vandalism*, cited in Titman, 1999, p. 19).

5. The value from the process of improving secondary school grounds

When school grounds are improved, the impact on student attitudes and behaviour may not just be as a result of the *product* (an improved environment), but also

through the *process* of pupil participation in the improvement. Such participation is actively promoted through government and international initiatives such as Citizenship education, Education for Sustainable Development, Agenda 21 and the United Nations Convention on the Rights of the Child. Student participation in such projects is not a simple yes-no distinction. The extent to which participation brings benefits is likely to depend on: (i) the stage(s) of the school grounds development in which pupils participated; (ii) the degree of participation experienced; and (iii) the proportion of students who participated.

There have been many different portrayals of the “school grounds development process”, but a simplified process can be thought of as:

Stage 1: Setting up a management group and informing interested parties

Stage 2: Surveying places (“What have we got?”) and people (“What do we want to change?”)

Stage 3: Designing – both on the large scale and the small scale

Stage 4: Implementing the plans – building, planting, maintaining, etc.

Many schools who seek to actively involve the student population in a school grounds projects find that, whether through reasons of time, staff expertise or practicality, student involvement is greater in some stages of the programme than others. An under-explored issue in school grounds research is whether student participation in some of these stages has more impact than in others. For example, will students feel more sense of ownership of a change which they were involved in implementing but not in designing, or a change which they designed but did not implement? It might be

predicted that involvement in design would be the more powerful experience; however there is the danger that students will lose a sense of connection with the changes if they are not involved in the implementation, particularly if there is a sizeable time-lag between their design work and the final product, which can cause students to “become disenfranchised with the entire effort, feeling that their contributions were not valued” (Johnson, 2000, section 4.2.1).

The degree of participation in the process can be thought of both in terms of the whole school grounds improvement project or of the individual stages within the project. One commonly used scale of pupil participation is that of Hart (1997) who, building on a model developed by Sherry Arnstein in 1969, proposed a ladder of participation ranging from manipulation, decoration and tokenism, which he argued are not true forms of participation, through “assigned but informed” and “consulted and informed”, to the highest levels of participation where decisions are being genuinely shared between adults and children. At the highest level, “child-initiated, shared decisions with adults”, children recognise their own and others’ competencies as members of the community and seek collaboration with adults to achieve their aims. This model can clearly be applied to the school grounds development process above, where student participation only in the implementation stage is unlikely to be reach far up Hart’s ladder, as children have not been involved in the decision-making process.

The proportion of students involved would seem relatively straightforward to calculate, but it is complicated by the long-term nature of school grounds development projects. It is common for the oldest pupils involved to have left the school before the project is implemented, and for the improved grounds to be mostly

used by the newest arrivals at the school who had no say in the developments. This is exacerbated in the situation of one school in Rickinson et al.'s action research programme (2003b) which had a split site. The school took 18 months to progress from initial plans to completed improvements, but within a few months of completion only one year group was still using the playground that they had been influential in designing – two year groups had left the school, two had moved to the upper school site, and two who had not been involved in the planning stages had arrived from primary school. Despite the efforts of the coordinating teacher to actively involve the student population, most students felt little ownership of the site they now used.

Although the majority of research into the effects of school grounds improvements has looked at the impacts of the physical changes, researchers who have focused on the process of change have argued that this process may have a greater impact on student attitudes than the product (Titman, 1994 & 1999; Groundwork UK, 2002) and is particularly important in protecting improvements from misuse and vandalism. Titman's secondary school research (1999) found that pupils' opinions of the success of school grounds improvements were determined predominantly by the extent of their participation. Where there had been no opportunity for participation students were often highly critical of the quality, design or value of the outcome, and were rarely more than "luke-warm", with the more generous 'admitting that the school "had at least tried" to do something' (Titman, 1999, p. 20). She cites the example of a headteacher determined to improve the quality of the school environment for his pupils, who created a magnificent garden which he named "The Cloister" in a previously disused quad. It was 'instantly identified by pupils as a place for "boffs" and "swots" and whilst many thought it looked rather nice the vast majority boycotted

it for fear of being labelled and stigmatised' (Titman, 1999, p. 20).

Across the secondary schools surveyed by Titman, students who had been involved in school grounds development projects felt that they had developed skills in independent and collaborative learning, and developed a greater sense of ownership and responsibility. It was perceived by staff and students that student self-esteem had risen, and students appreciated the way their involvement demonstrated the school's trust in them. Similarly, students who actively participated in large school grounds development projects as part of an action research programme, (Rickinson et al. 2003b) reported a number of ways in which they felt they had benefited, including learning about skills of consultation, collaboration, teamwork, decision-making and compromise. Illustrating Hart's higher levels of participation, in one school where students' plans had to be scaled down their teacher commented:

The disappointment they had was a learning experience – we've ended up with a compromise. They normally get their own way; paring down to the possible is positive and new for them. (Rickinson et al. 2003b, p. 23)

There were also subject-specific skills learnt, particularly where the project formed part of the Design & Technology curriculum. However, in each of the six participating schools only a small percentage of students were actively involved, and those less actively involved expressed some dissatisfaction with the decisions taken (Rickinson et al. 2003b). In one school the new development had been swiftly vandalised, suggesting that the sense of ownership engendered by active participation had not extended to the whole of the school population. This research highlights the difficulty of identifying the extent to which student participation in school-grounds projects

brings benefits to the whole school, including protecting the improved grounds from vandalism.

Quantitative evidence into the effects of primary and secondary school grounds improvements on student attitudes and behaviour was collected by Learning through Landscapes in a survey of 700 schools, (351 of whom responded), who had been involved in LTL programmes over the time period 1999-2003 (LTL 2003). Of the schools responding: 84% believed that the school grounds improvements had improved pupil social interaction; 64% that pupils' self-esteem had benefited; 65% reported improved attitudes to learning and 73% reported improved behaviour; 64% reported reduced levels of playtime incidents such as bullying and 52% thought that the improvements had improved academic achievement. However, these impacts were only measured by teachers' perceptions retrospectively. Moreover, these schools had carried out a variety of school grounds improvements: in some cases the majority of the school population were involved in the improvement process, while in others only a minority of students actively participated. The reported effects, therefore, will be a mixture of those resulting from participation in the process of improvement, and those resulting from the physical changes in the grounds.

6. Evaluation of the evidence base.

Many reports on school grounds use and development conclude that well designed school grounds programs appear to make a difference in academic performance and child development, but the evidence generally fails to isolate the specific effects of school grounds use from other factors such as the use of different teaching styles.

Repeated commentators have bemoaned the anecdotal and impressionistic nature of much of the evidence for this (e.g. Education Development Center, Inc. & the Boston Schoolyard Funders Collaborative, 2000; Titman, 1994). Little quantitative analysis has taken place to assess the extent to which school grounds use or development benefits either academic performance or student behaviour. Even when considering qualitative data, much of the evidence considers only teacher perceptions and fails to include evidence from students themselves, (Titman, 1994). Rickinson et al.'s criticism of research evidence on children's understanding, knowledge and attitudes to food, farming and the countryside, that 'too few studies paid attention to issues of validity or reliability and many of the case studies and small-scale studies offered little more than descriptions of events' (2003a, p. vi) is also true of wider research into the use of the outdoor classroom.

When looking at the foci of school grounds research, there has been a concentration on child development at the expense of students' formal learning (Skamp & Bergmann 2001; Scott et al., 2003), and possibly as a consequence of this, there has been a much greater emphasis on Early Years and primary aged children at the expense of secondary students.

Published research in this area is particularly prone to publication bias. Much of the research is generated by the organisations who support school grounds development, and who therefore need to justify the value of their work to funders, and who have an additional advocacy remit, seeking to persuade schools, education authorities and government departments of the need to improve school grounds. In such circumstances, research which fails to demonstrate benefits is unlikely to be

made publicly available, and even that which contains mixed results is likely to be given a positive “spin”.

In her review of evidence into the benefits of the Canadian ‘green school grounds’ programme, Dymont (2004) argued that the priorities for future research included the use of a wider range of genres of inquiry; using larger sample sizes and longer time spans; identifying the full range of potential impacts of school grounds; investigating whether changes need to be of a minimum scale to have influence; exploring more the impacts from the process of change; and reaching a greater understanding of the mechanisms by which school grounds have the impacts observed. Although Dymont concentrated mostly on primary school grounds, the relative paucity of research into secondary school grounds mean that all of these priorities are just as relevant for older pupils, with the additional need to identify the types of outdoor environment which are most beneficial to older pupils.

6. Conclusion

The research evidence into the use of secondary school grounds suggests that the benefits to the formal curriculum are largely those which accrue from any outdoor learning: increased understanding through the use of real-life contexts; increased student interest and motivation, partly due to the novelty of getting out of the classroom; use of different learning styles; and more collaborative relationships between students and teachers. In addition, there is some evidence to suggest that the use of school grounds offers specific benefits, particularly to environmental and citizenship learning due to the sense of student ownership that can be engendered,

and in facilitating integration between indoor and outdoor lessons to generate longer-lasting impacts on students' learning.

Although traditional off-site field trips offer greater novelty value to students, they are only possible as special events, and involve administrative and cost burdens which are leading to their decline: well-designed school grounds could make outdoor learning a daily possibility. However, the continued rarity of such use in the secondary sector, partly due to the inadequate design of grounds as well as the classroom-biased philosophy prevalent in most schools, means that there is no evidence into the effect of sustained use of the school grounds for learning – would the impact decline as the novelty wore off? The current situation would appear to be that while secondary school grounds have a potential value to the formal curriculum, this value is neither recognised nor exploited in most schools.

The informal curriculum at the secondary level is almost completely ignored by schools and researchers alike, with little attention being paid either to the purpose of breaktimes for this age group or to the suitability of the physical environment provided in most secondary schools. However, there is emerging evidence, particularly from the field of environmental psychology, that the environment in which students spend their breaktimes could have influences on some of the key educational concerns for this sector, including physical fitness, emotional health, behaviour and attitudes to learning. If further research is carried out to demonstrate that these links do exist, and to identify the environments most beneficial to this age group, more schools may be convinced to commit scarce funds to develop attractive outdoor breaktime facilities.

The hidden curriculum of the secondary school grounds is recognised by most, if not all secondary school managers, but often in the context of the impression given to potential parents and the community rather than the way that the quality of design and management might affect student attitudes. Hence schools are concerned with removing or preventing litter or vandalism which might harm the school's image – but also remove students from public view by making the more visible areas out-of-bounds to students. Improvements to the grounds are often influenced by adult priorities – more litter bins, but not benches - or judged with adult eyes – few schools would be willing to countenance “graffiti walls”, which are often requested by students. While detailed research into the effects of individual elements of the school grounds has been carried out for primary schools, this level of information is still lacking at secondary schools.

The aspect of school grounds which is most widely recognised as offering value to the secondary sector is their potential for meaningful student participation in their improvement or management. The introduction of Citizenship and Education for Sustainable Development, influenced by national and international initiatives, has prompted schools to seek opportunities for students to take on more responsibilities, although these are not always student-led. At the lowest level of participation, such responsibility might only be an imposed rota of litter-collection, but there are a growing number of schools involving students in self-directed environmental management, for example through the Eco-schools programme.

Student-led school grounds improvement projects have the potential to offer powerful experiences, but the costs involved in making significant changes are likely to require

that schools recognise the formal, informal and hidden curriculum value of the grounds before allocating budgets to such developments. The impact of this type of student participation is dependent on complex and inter-related variables, and more research is needed to identify the key elements of successful programmes, and to explore the longer-term effects.

The relative lack of research into secondary – as opposed to primary - school grounds is in itself an indicator of the lower priority afforded to the outdoor environment in this sector. The limited evidence available from the secondary sector, added to findings that might be transferable from other situations, offer tantalising hints that better use, design and management of the school grounds could contribute towards a wide range of educational priorities in the 11-16 age range. However, there is currently a “catch-22” situation: without further convincing evidence that the school grounds can deliver these benefits, schools will not invest time and funding in them; but unless more schools invest time and money in improving their grounds, as well as making more use of this neglected asset, it will be difficult to generate the evidence required.

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