

identifies as high users of highly decorative, commercial, display resources and this may not be directly transferable to a secondary setting. It is not necessary for classrooms to be sparsely decorated but teachers should have consideration for how the walls can be used as part of pupil learning; what is pedagogically useful and what is distracting as pupils with SEN can be sensitive to visual overload.

In conclusion, the research indicates that for the classroom environment to be optimised for the needs of all pupils, including SEMH pupils, and prevent problems before they occur, tables should be arranged in rows to face the teacher but maintain flexibility for specific tasks. Teachers should use uncluttered walls to display information that is currently being taught, information for ongoing repetition and display of pupil interaction and progress. They should consider who a display is for and let pupil work stand out rather than over use decorative elements. Displays should evolve and update as the year goes on, being interacted with as part of lessons rather than staying the same with little reference to learning.

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The Learning Environment and pupils with SEMH

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Learning Environment and SEMH

The available research on learning environments generally has a focus on mainstream environments and pre-school or primary school settings; however, there is a small amount of research that looks at secondary and SEND settings. Research that explores the physical features of the mainstream classroom frequently uses pupil behaviour, time on/off-task and quality/quantity of work completed as measures for evaluation, and as these are measures common to research into SEMH, it has been considered appropriate to translate this research into recommendations for SEMH settings.

Research that explores specialist provision and the learning environments of pupils with more complex SEND requirements has not been considered for this review.

What constitutes 'learning environment'?

The term 'learning environment' includes many different factors. Schubert (1986, in Merritt 2013) classified the attributes of learning environments into five different dimensions:

- Physical - tables, desks, chairs
- Material - curricular and instructional materials
- Interpersonal - interaction between students and teachers
- Institutional - school governance
- Psychosocial - the culture or atmosphere of a school

This review will mainly consider the physical, classroom environment in which pupils learn however there are connections and influences between all the factors cited.

The literature considering the importance of the physical classroom environment for learning explores

elements that teachers have little control over such as temperature and lighting, and ones they may have more influence over such as the arrangement of furniture or decorative aspects of the room. This review will concentrate on the aspects of the classroom environment over which teachers have some control.

Seating arrangements

Wannarka and Ruhl (2008) conducted a synthesis of literature exploring recommendations for classroom seating arrangements with pupils ranging from ages 7 to 15 (including one special school for pupils with behavioural difficulties) and found that classroom arrangement had an impact on both behaviour and achievement of pupils.

Their synthesis looked at seating arrangements including rows, clusters and semi-circles and concluded that rows were the best arrangement for appropriate behaviour and of most benefit to disruptive pupils. Rows decreased the amount of time pupils were off task and increased the amount of time they spent paying attention which also increased the amount of instructional time in lessons. One study they reviewed found that during tasks that required individual work, pupils increased the quantity of work they produced when sat in rows, doubling on-task behaviour and reducing disruption by two-thirds. This is supported by Carbone (2001) who discusses classroom design for pupils with ADHD and suggests traditional row seating, away from distraction and reduced stimuli, to be the best arrangement for pupils with ADHD.

Ramli, Ahmad and Masri (2013) looked at user perception of the classroom environment, exploring different layouts of tables and chairs. Students were more likely to think of the classroom in terms of enjoyment and a 'fun environment' and prefer groups of tables, whilst teachers were more likely to consider pedagogy and behaviour when making decisions about layout. Students and teachers had an overall

preference for a long rows layout of furniture and the study reports that students were quieter and less distracted when in rows.

In reviewing the layout of the classroom, it is important to take into consideration the tasks in which pupils will be participating. In their 2008 synthesis, Wannarka and Ruhl included studies looking at different layouts of seating and found during tasks that involve group discussion the research indicates that clusters or semi-circles may be appropriate and for the task to dictate the seating arrangement. This is echoed by Ramli et al (2014) who studied principals' perception of classroom environment. Whilst they found that rows and columns were the best arrangement in terms of discipline and pupil behaviour, classrooms need to be arranged in a way that promotes the best learning.

There is strong evidence that explicit, direct, approaches that teach skills using small steps and frequent checking for learning, are more effective than implicit, constructivist, methods, especially for novices and disadvantaged pupils (Rosenshine, 1986; Hattie, 2009), and that constructivist methods should be used as support for explicit learning (Rowe, 2006). The research suggests that having a classroom with desks arranged in rows whilst maintaining the flexibility to rearrange tables for specific tasks is the best arrangement.

Design decisions

Teachers make 'design decisions' to varying degrees, particularly in secondary environments where teachers are more likely to share classrooms and have less control of these factors. Whilst wall or carpet colour are normally prescribed, wall displays are an element of the classroom environment over which many teachers make decisions and there is a body of research which focuses on how the visual environment, including wall displays, affects learning and behaviour.

Fisher et al (2014) conducted a widely reported experiment in which pre-school children were taught in both highly decorated and sparsely decorated classrooms. They found that pupils in the highly decorated environment had higher levels of distraction and off-task behaviour and decreased learning gains when compared to pupils in the sparse environment. Their review of the literature indicates that distractibility decreases with age and they highlight how this is not considered in classroom decoration with lower age groups often taught in very highly decorated rooms and older pupils in less decorated rooms. The researchers are clear that they are not suggesting that classrooms need to be sparse but that this study provides 'proof on concept'. Despite a series of familiarisation lessons, participants may have been affected by the frequent

changes in environment and in a natural classroom setting pupils may habituate to their environment. This research should not be generalised beyond kindergarten, however there is support for these findings in other studies.

Almeda et al (2014) and Cheryan et al (2014) report that high visuals are linked to high levels of off-task behaviour and colour and complexity of displays are negatively correlated with learning outcomes. They suggest that teachers consider what is pedagogically useful and what is distracting when making design decisions. Carbone (2001) discusses the inattention and distractibility of pupils with ADHD and how pupils are attracted to 'novel' stimuli. Making changes to unimportant features of the room such as displays can interfere with performance of pupils with ADHD and pupils with wider special educational needs who are often sensitive to visual overload (Saarela, 2007). The complexity and colours used in wall displays are discussed by Barret et al (2013) as part of a wider study of the school building environment on academic progress. They found that whilst young children may want 'exciting' spaces, they benefit from ordered, visually quiet environments. They also report that, as long as it is bright, warm colour is welcomed in senior grade's classrooms while cool colour is better in junior grades.

Throughout the literature are references to the classroom as the 'third teacher' which is a term borrowed from the Reggio Emilia philosophy and approach to preschool and primary education. This is founded on student-centred, constructivist ideals where children are encouraged to learn through discovery and the learning environment is presented in a way that encourages pupil interaction with their surroundings. Whilst this methodology has many critics, the research on classroom displays that uses the term 'third teacher' does not necessarily subscribe to constructivism and is more focussed on how best to use classroom displays for learning.

Features of the classroom as the 'third teacher' include organisation and decluttering, recommending a 'less is more' philosophy. Classrooms should be designed to fit with the routines and values of the classroom so pupils are able to focus (Carter, 2017). In creating environments that reduce sensory overload, teachers should plan their rooms and ask the opinions of others (Saarela, 2007). Tarr (2004) describes the typical primary classroom as full of decoration – often commercially produced images and boarders, and urges teachers to 'consider the walls'. As Ysseldyke and Christenson (1987) stated, 'learning and behaviour do not occur in a vacuum' and we must consider all aspects of the learning environment. Tarr warns over dumbing down the environment with trivialised images

of childhood and overpowering displays. Teachers should consider the purpose of a display beyond decoration and think about the quality of display over the quantity of display in order for pupil work to stand out.

Lenihan (2016) explores ways in which teachers can use classroom walls to create a 'creative thinking environment' and discusses how displays are often teacher-arranged decoration designed to look good and stay the same all year round. Whilst displays can be aesthetically pleasing, they should be 'supportive of deeper student understanding and social interaction'. The literature supports the direct and systematic use of classroom displays to guide children in discussion about work (Hilden and Jones, 2012; Bresson and Strasser, 2007). Word Walls, and the importance of them to be utilised and not merely 'word wallpaper', are discussed by Hilden and Jones (2012) who suggest ways in which teachers can categorise and arrange word walls for different ages and stages of learning.

Teachers need to consider whether using pupils' work time to create (or re-create) work specifically for display will benefit their learning and understanding of a topic. Cognitive scientists have shown pupils' learning benefits from tasks such as spaced practice, retrieval practice, elaboration, interleaving, concrete examples and dual coding (learningscientists.org). Whilst there are obvious exceptions for work such as art, pupils are unlikely to benefit from a display of decorative work arranged by the teacher that is unreferenced in lessons, rather than one that is used to employ these practices.

Lenihan (2016) draws on the work of Creekmore (1987) and the Harvard Graduate School of Education's Visible Thinking routines to suggest how the walls of a classroom can be used to support learning by giving each wall (plus a 'window' wall) a purpose:

- Acquisition Wall – (with the board on) for direct instruction and new ideas to reinforce the unit of work.
- Process Wall – Ideas to remember in the future and for summative assessment
- Dynamic Wall – For social interaction and successes of students

Within this system is space for integrating methods such as elaboration, concrete examples and retrieval practice. The study identifies rules such as the colour of backboard, the way headings are used, the inclusion of graphic organisers (which allows for the introduction of dual coding) and interactive elements. Using walls in an interactive and evolving manner ensures that they

are used beyond decoration and a place for pupils to explore explanations.

It appears that there is little benefit to the use of 'decorative' displays of either commercial resources or pupil work in classrooms. In addition to this there is the potential for distraction which leads to increased levels of poor behaviour and lower time on task/academic outcomes. If teachers decide to use wall displays the research suggests that interactive and frequently references displays may benefit pupil learning.

How these factors impact on SEMH

Pupils with social, emotional and mental health difficulties (SEMH) may have characteristics including being withdrawn and isolated; exhibiting challenging, disruptive and distressing behaviours; having anxiety or depression and have a diagnosis of ADD, ADHD or attachment disorder. Their special educational needs may also require support for dyslexia, dyspraxia, oppositional defiance disorder, autistic spectrum disorders and other issues with social interaction. In addition to this, they may have missed large periods of schooling (DfE, 2015). These are complex and varied needs that must be considered when working with SEMH pupils, including in making classroom design decisions.

Whilst the literature on classroom seating and displays is centred on mainstream settings, the measures that are used include behaviour, distractibility, on-task behaviours and academic achievement; all of which are relevant to the SEMH classroom.

Carbone (2001) specifically looks at classroom design for pupils with ADHD and recommends 'traditional' row seating, at the front of the room and away from distraction. They suggest the display of visible progress charts and the importance of organisation and routine. In their 2008 analysis, Wannarka and Ruhl identified rows to be best for appropriate behaviour across all settings and to have the most benefit for pupils with behaviour problems. The research also suggests that rows are the most beneficial layout to increase on-task behaviour and lower disruption however it recognises that different layouts may be needed for particular activities and that teachers should have flexibility and be able to rearrange tables when necessary.

The literature on classroom displays and wall decoration highlights distractibility as a key factor in design decisions. Whilst Fisher et al (2014) state that distractibility decreases with age, teachers should consider that this might not be the case for pupils with ADD or ADHD. Much of the research available centres on pre-school and primary settings, which the research