

BEING HUMAN

It's all very well redesigning the curriculum, but don't forget to think about who'll be using it, and where, advises ergonomics expert Andree Woodcock

Ergonomics in the educational environment is frequently associated with anthropometrics, because research in this field has tended to focus on the size of students' backpacks or the correct height of chairs and desks. But it is so much more than this.

When properly applied to schools, ergonomics takes a holistic approach to the design of teaching and learning from the perspective of the entire school population: teachers, young people, maintenance and administrative staff. It embraces equipment used to support teaching and learning, the design of the school day, support for teachers as well as young people, and the environments where teaching and learning take place (whether this is in the home, library, on school visits, or in the classroom), taught in a traditional way or via e-learning resources.

The aim of ergonomic interventions is simply to improve the effectiveness of teaching and learning by understanding the needs and capabilities of all involved, i.e. through taking a user-centred approach. Taking account of the ergonomics of the school could provide a significant increase in student performance for all levels of achievement.

Products of their environment

Applied to secondary schools, and starting from the outside, researchers have identified positive correlations between educational attainment and the appearance and maintenance of buildings. Well-designed grounds and recreational areas provide opportunities to enrich student experience, to bring the learning out of the classroom, and provide play opportunities for the acquisition of social, cognitive and physical skills.

Sports and recreation areas help develop muscles and bones, increase motor and eye-hand coordination and have a positive effect on processing skills such as decision making, attention and planning, which can improve academic performance.

In terms of the scale of the school, smaller establishments have been linked with higher attendance rates and graduation percentages, greater participation in extracurricular activities, fewer social and behavioural problems, decreased vandalism, a

7 WAYS TO MAKE YOUR SCHOOL WORK BETTER

- Provide everyone with opportunities to discuss and change the school (suggested activities can be found at <http://tinyurl.com/c9cokp3>).
- Start each term with an audit of computer use and address any problems of over use, or where young people feel physical discomfort. Ensure healthy use of computers in terms of posture and rest breaks to avoid eye strain, development of poor postures, computer addiction and repetitive strain injury. Find information presented in comic form at <http://tinyurl.com/czf2mu6>.
- Allow time for stretch exercise in classes, especially when using computers.
- Conduct a risk assessment among staff colleagues to consider stress and musculo-skeletal disorders (<http://tinyurl.com/d53s5tm>).
- Arrange lessons and activities to keep weight of backpacks to not more than 10-15% of the body.
- Use your design curriculum to start discussions about ergonomics and practical ways young people can effect positive changes in their environment.
- Focus on improving ergonomics of key areas of the school, which are of importance to young people and where the school may have control, such as eating areas, toilets and grounds.

more effective learning environment, and increases in student self-esteem, personal responsibility and leadership qualities. Attainment rates in smaller schools have been shown to be between 10 and 34% higher. Therefore, where schools have to be large, ergonomic interventions need to look at ways of overcoming this, for example, through small group teaching, classroom divisions, provision of personal spaces and quiet spaces for pupils, and strategies for staff to manage and make themselves heard in large sized classrooms.

Son et Lumière

Looking at the classroom, in one study of 2100 pupils, the use of natural light was shown to increase scores by 20% in mathematics and 26% in reading. Poor lighting can cause eyestrain, blurred vision, negative visual development and headaches, and can affect mental concentration and learning. A balance between full spectrum fluorescent, cool white fluorescent and natural lighting can improve student behaviour, as it affects mental attitude, attendance and performance and is a crucial factor in learning. Neutral tints in class relieve eye fatigue and it has been observed that changes in colour schemes affect academic performance and IQ scores and can reduce absenteeism.

Finally, students spend 45% of their time listening. Poor acoustics cause problems for pupils and teachers. Where the sound quality in the classrooms is not good, teachers have to shout to make themselves heard (increasing their stress and ill health), and children may not hear what is being said. Exposure to noise has been found to affect reading, memory, concentration, thinking, listening and behaviour, and distracts from visual tasks such as teacher instruction. It creates distraction, dissatisfaction, stress, lack of persistence in task completion, high blood pressure and 'learned helplessness', lowers performance, and decreases motivation.



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