BSI Education

Information for Schools and Colleges

So you want to...

design a playground

raising standards worldwide™

Children's play is a very important part of a child's development

Children's play has often unfortunately been regarded as a waste of time, serving no purpose other than occupying children's free time and a poor substitute to other educational, learning and physical activities such as sports and games.

The good news is that this misguided understanding is changing. There is increasing recognition, supported at Government level, that providing ranges of stimulating and challenging playgrounds are important to children – it is not just fun but also essential to their growth and development. Play helps with their physical, education, social and creative development.

The quality of what they learn through their play depends on the quality of the environment in which they play. The playground is not just a collection of equipment but must be seen as a setting in which play takes place. This leaflet is written against the background of the European Standard EN1176 on playground equipment.

Playgrounds and Play Equipment

Many people will be involved in designing a new playground. In a school this will be the users, teachers, parents, governors and the local authority. In a park it will include users, parents, grounds maintenance staff, leisure and amenity officers and landscape architects.

In some cases it will include professional designers from playground equipment suppliers. Particular emphasis should be laid on involving children in the design, a more complex process than merely selecting items from a catalogue.

Play items have been around for as long as time, from games scratched out in the dirt and our modern Hop Scotch versions to, smoothed rock slopes used as Slides and Tarzan ropes as Swings.

Experience and unfortunately past accidents, have shown that there is a need to make play equipment that works, is safe and most importantly fun to use. An old frayed rope swinging from a tree branch across the top of a hard brick boundary wall may be fun and challenging but provide unnecessary and significant bad risks.

Whereas a large tractor tyre swing can provide even more excitement, particular if it can take 3 or possibly even more children, all at once; in the knowledge that the ground underneath, the space around and the swing chains will all enable the excitement to continue with appropriate design controls in place to reduce the risk of a major injury occurring.

The BS EN 1176 series of standards provide these safeguards and us using them designers are able to ensure that play equipment and associated items can be provided using proven knowledge covering the main problems that may result in major injury.

BSI provides help to those buying play equipment, it has the world's leading testing system for these Standards, the Kitemark scheme. Manufacturers of playground equipment can, and many do, have their swings and other items carefully checked every year by BSI to ensure that they consistently meet the quality levels demanded by the Standards. This allows manufacturers to use the prestigious BSI Kitemark, which assures those buying or using the item, that it passes all the appropriate tests and is reliable.

Click here to design a safe playground to BSI standards http://www.kitemark.com//kitemark-4-u/playground-game.php

Importantly the guidance that is provided does not require that items only of a particular construction or design are made. The Standard gives crucial information to enable the safe construction and installation of unlimited items of play equipment by:

- ensuring that the item can take any envisaged load (normal or misuse) imposed on it
- preventing entrapment of body parts
- reducing impact injuries to the body
- reducing cuts or puncture wounds

For example on a swing:

- that the swing chains are strong enough
- that the openings in their links will not trap a child's finger so that if they fell off they did not leave part of their finger behind
- that the swing seat they are sitting or standing on is designed, through its mass and leading edge surface area, not to cause a major life threatening injury to a child if their head is hit by it
- that if the child falls off the swing onto the ground, the surface will absorb some of the impact forces and reduce the seriousness of any injury
- that there is sufficient space for the swing to be used in without interfering with children using or moving between other items

Playgrounds and Risk

Everything in everyday life is risky, whether the mug of hot chocolate that is too hot to drink or may spill into your lap, or when crossing the road you stumble and fall in front of a car.

In providing good playgrounds the aim is to encourage, opportunities to have fun and enjoyment whilst experiencing activities and situations that may not normally be encountered on the walk to the bus, or the shops. Such activities include: sliding, swinging, spinning, climbing, jumping, falling and all have a risk attached to them.

It's important that in growing up risk is experienced and that we are able as individuals to understand our own capabilities and have the opportunity to take them further, if we choose and wish to do so. Often it is by experiencing and taking a risk e.g. jumping off a platform that we understand the jumping height that we are comfortable with and that we are definitely not going to risk jumping from an even higher one.

The Standard aims to safe guard users only as much as is necessary from major or fatal injuries, whilst allowing challenging and exciting opportunities to explore and learn. It is recognised that in playgrounds, normal play activities, including pushing, jumping and running, are expected to take place. There is a need however to ensure that any play equipment does not contain any risks that are deliberately hidden and could cause harm to the user.

The Standard recognises that injuries will occur. It appreciates that minor injuries are expected such as falls, grazes, sprains, and the occasional broken limb. It is also appreciates that it cannot prevent users ignoring a recognisable safety feature, such as by climbing over a barrier and jumping or falling to the ground. The Standard aims to remove major hazards that are foreseeable.

There are good risks, those that benefit a child's development and play experience. There are bad risks, especially those that a child may not understand, that take the risk a stage too far, leading to a major accident. Part of ongoing play equipment design is to encourage opportunities for good risks. Not everything needs to be risky, it could just be fun, however risk and fun often go together. Part of the enjoyment of a roundabout is the speed at which we can travel and the 'g' forces that can start to be experienced as we lean sideways out from the roundabout's centre, all in the knowledge that if we lean too far we may fall off.

So in providing playgrounds and their equipment we need to check that the risks are good and not bad. For example on entering the playground to get to the roundabout, the most direct route (desire line route) should not be straight through the swings, even if there is a path around them.

When we design equipment we expect very young children, to explore all around equipment, and so knowing that their understanding of height is not fully developed we make sure that higher platforms are surrounded by barriers so they cannot fall off. We also ensure that an adult, if necessary, can get in or up onto play equipment that is provided for this age group. An open sided high platform that is easily accessible to a very young child is a bad risk, even where a guard rail is provided, as they may just walk under it.

Risk Assessment and Managing the Risk

In playground design there is a need to look at all the items on the playground, how they are positioned in relation to each other and to items such as seating, gates and pathways. Do any of these create difficulties, hazards or risks?

Very simply Risk Assessment is working out in your own mind, what would be the result of an accident happening on the playground. Then what, if anything, needs to be done about reducing or managing that risk:

Remember Risk Assessment is something we do every day, it's not new to us it's just explaining to others how we came to that decision… is it ok for us to cross the road… yes the road was clear of traffic and the nearest car was ages away.

1. What the injury would be (at its most serious i.e. the harm) AND

2. How likely it is that the accident would happen. This gives the

3. Risk Level –

a. HIGH = An unacceptable injury, such as a major injury that needs hospital attention e.g. a head injury, that is likely to happen - something must be done about it

b. MEDIUM = A major injury that is not likely to occur OR a minor injury e.g. a cut, that is almost certain to occur, such as a timber handrail with lots of splinters in it. The risk can be tolerated for the time being, but when possible the risk should be reduced or removed, in this instance by sanding down the wood to remove the splinters.

c. LOW = there is no risk of any injury OR the risk is acceptable as there no significant injury will happen

4. Risk Management – what, if anything, needs to be done.

So for example:

Accident one

A child jumps off a swing seat before it has stopped moving and falls onto the ground that is covered in a tiled impact absorbing rubber surface

- The Risk Assessment
  - Injury – grazing minor cuts with bruising to knees, hands and face
  - Likelihood – very likely, children do this all the time
- The Risk Level
  - Low - the grazes and bruising will heal relatively quickly and the child will learn from the experience of the accident they caused to themselves
- Risk Management – nothing needs to be done

Accident two

A child comes down a slide and hits a bike left at the bottom

- The Risk Assessment
  - Injury – leg is badly and unnaturally twisted and the child is taken to hospital (it turns out to be a broken leg)
  - Likelihood – not likely, the bike rider had just arrived and dumped their bike as the child was coming down the slide
- The Risk Level
  - Low – although a major injury the likelihood of it occurring was very low
- Risk Management – Many children are known to come to the playground by bike and there have been problems of bikes being stolen whilst their owners are playing. A bike rack should be provided as well as new playground notices to say "Leave bikes at the bike rack please".

Three Project Thoughts

1. Good and Bad Risks – Understanding and assessing the points at which an item is boring and at which it contains a Good Risk and the point at which that risk becomes a Bad Risk.

a. Balance – mark a chalk line or lay a rope along the ground to walk, run and hop on. Next stage, consider a balance beam that is raised above the ground. At what height does the risk of falling and landing astride the beam or onto the ground become a Bad Risk.

b. Choose an item of play equipment that could be made riskier, and explain how it could be made more exciting or offer more play opportunities without it becoming a bad risk.

N.B. It is important to take into account the ground surface and its ability to absorb the impact of a falling child. The maximum EN1176 fall height for hard surfaces is 600mm and for well maintained grass over soil with no major stones or hard objects is 1.5m. Practical constructions are not advised without recourse to expert knowledge – See resources API/ RPII.

2. Types of play equipment and how 'good' are they

a. Which item is the most exciting and the most boring AND why. Is this true for every child regardless of their age, gender or ability?

b. What benefits do the children using the play equipment gain?

3. Layout and use of an existing playground

a. Considering how children will enter and use the equipment on a playground. Principles of flow routes, access, interaction between children.

b. Carry out a risk assessment of the flow routes within a playground

Resources

- All major play equipment designers, installers and manufacturers provide guidance and information through their web sites which may be accessed through their industry body (Association of Play Industries) link www.api-play.org
- Detailed guidance and advice on playground equipment inspection provision and safety can be obtained through the HSE endorsed inspectorate RPII (Register of Play Inspectors International) www.playinspectors.com
- Additional guidance on provision of children's play can be obtained from the government sponsored body Play England www.playengland.org.uk
- The BSI playground standard is BS EN1176 [2008]. This standard is over 400 pages long and written in great technical detail. It is aimed at professionals and is a chargeable item. For those wishing to look at the standard it is initially advised to view a copy at your main central reference library. Phoning to check that one is available is always advised. www.bsigroup.com/shop
- Click here to design a safe playground to BSI standards http://www.kitemark.com//kitemark-4-u/playground-game.php

Further information

The following web site has further in-depth information on the ISO 9000 series. www.iso.org - The International Organization for Standardization.

This is a brief summary of the BS EN ISO 9000 series. The full versions of the standards are available to view at most libraries and universities. An online list can be found through the education website detailed below.

The following website has further in depth information on the BS EN 1176 series: www.bsigroup.com and on the Kitemark scheme.

The full series (Parts 1-11) can be purchased from www.bsigroup.com/shop

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