

CS 8 optimusic



CASE STUDY

Imagine creating music without touching a musical instrument but just by reflecting light! This is what OptiMusic does. It is a musical instrument played by reflecting light beams.

Picture a musician on stage who is surrounded by vertical beams of light. As the musician passes through the light beams different sounds are heard. The movement of the musician and the sounds generated are all part of the show.



3 future developments

The original idea behind the product was to make stage shows more visually exciting. OptiMusic can be set up for use in a show, which involves audience participation with a dance group.

It has been used in nightclubs, at a theme park in Yorkshire and for rehabilitation for those with physical and mental disabilities. The combination of sound, light and movement helps those with special needs improve their coordination and communication skills. The people involved in OptiMusic are always looking for new ways forward.



You can find out more about Millennium Products by visiting this Design Council website www.sharinginnovation.org.uk

research

Use a search engine to find information about retro-reflective materials :

- what they are made from
- how they are made
- how much they cost
- where they can be bought
- what they are used for.

question

Discuss with others in your class why creating music might help those with physical and mental disabilities.

OptiMusic is an exciting product, which started as an entertainment system and has found other possibilities within education.

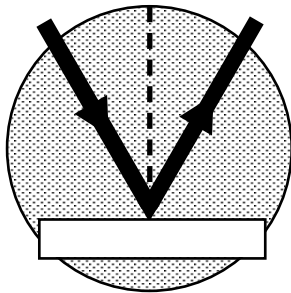
- They are thinking about:
- miniaturising OptiMusic into a hand held unit that could be a game
 - a mobile unit which could be loaned to schools and colleges for productions
 - a PC run version which will be easier to use than the original OptiMusic controller.

1 how it works

These are the parts of the system:

- One or more lamps each of which shines a single beam of light
- A phototransistor - a transistor which is light sensitive - inside the lamp unit.
- A piece of retro-reflective material - a material that reflects the light straight back to the source of light, unlike a mirror which reflects light at an angle. The retro-reflective material can be attached to any number of objects or even parts of the body!
- A MIDI keyboard
- OM-1: a light to MIDI keyboard controller. This interprets the signal from the light sensor into a signal to the MIDI keyboard.

A mirror reflects light at the same angle as the transmitted beam, but retro-reflective material reflects the light straight back to the source.

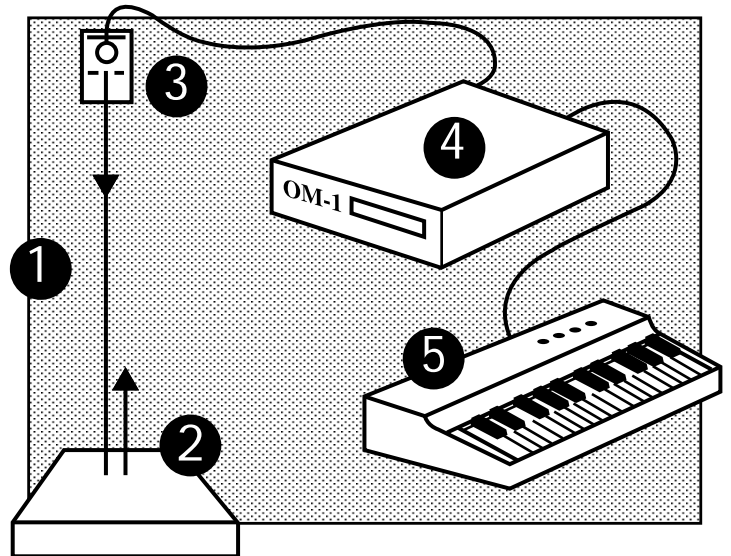


The beam of light shines down onto the floor (1).

It is then reflected directly back to the light source by using the retro-reflective material (2).

Inside the light unit the light sensor recognises that the light has been reflected (3).

The light sensor sends a signal to the OptiMusic controller OM-1 (4) that recognises the signal and sends a message to the MIDI keyboard (5). The MIDI keyboard changes the signal into a musical sound.



2 what it does

The OptiMusic controller is connected to a MIDI keyboard. Any sound created by the keyboard is allocated to a light beam. When that light is reflected back to the source that sound is made. For example, you can decide that when the light beam is interrupted you will hear a particular sound. It could be a drum beat, or a guitar chord or a special effect; whatever you decide. You can have a different sound for each light source in the OptiMusic system.

The limits of OptiMusic depend only on the limits of the imagination of the user. The system can be used as part of a dance. The dancer creates the music as they move through the beams. Several dancers can take part in the routine, each focussing on only one light. The retro-reflective material can be on their feet, held in their hands or as part of their costume.

research

Find out the meanings of the following terms used to describe musical sounds:

Pitch, tempo, rhythm, timbre, texture, duration, dynamics, structure.