

> DISABILITY AND PS2



ACCESS ALL GAMERS



For people with disabilities, playing PS2 can be difficult or even impossible. But from adapted controllers to sight and sound mods, the technology is out there to make gaming more accessible



Daniel is crazy about PlayStation. But because he's paralysed from the neck down, he can't use the DualShock controller. His mum, Gillian, says that after the traffic accident that left Daniel disabled, the only way he could enjoy his favourite games was watching his friends play them.

He's just one of many people with disabilities who find that videogames and consoles simply aren't accessible to them.

That could be because they have coordination or dexterity issues that make it difficult to use a joystick

or small buttons; or it may be that they are partially sighted, blind or deaf and so can't see or hear what's going on in a game.

There are nine million people in the UK aged 16 and over who have disabilities of some kind, and for those who love gaming it's devastating to be unable to join in the fun that everyone else takes for granted.

demand and dollars

Developers tend to focus on the far bigger market of able-bodied people for financial reasons. "It's not malicious," says Reid Kimball, a game designer who is

deaf. "Some may say, 'we can't justify development dollars spent on making our games more accessible' but it's not because they are mean-spirited."

"They're trying to balance greater demand from players for next-generation gameplay, graphics, AI and physics and so on. When push comes to shove, accessibility features, which aren't as sexy as graphics, often get pushed off the schedule."

However, a disability doesn't necessarily mean you have to give up gaming. Hardware and software solutions are available and over the next five pages we'll look at some of them and what they do.

dexterity

If you have little or no control over your limbs because you're paralysed, for example, or have muscular dystrophy, tasks such as holding a PS2 controller can be impossible, let alone moving the joystick or rapidly pressing the buttons.

However, there is hardware available that adapts the



This motion-sensitive controller is worn on the head

controller to make it possible to use. The Dream-Gamer is one such device. It's a cap fitted with motion sensors that detect the movements of the wearer's head.

The system was invented by Mark Heath and Dr Michael Taylor for six-year-old Daniel, who is paralysed from the neck down, after they were approached by his mum Gillian last year via the Round Table charity.

hat's entertainment

It was originally designed for Daniel to use with his radio-controlled car, but after Gillian told the makers how much he loved PlayStation, they adapted it to be used with the PS1 and PS2 in conjunction with their controller pads.

Michael explains: "We take the standard controller and connect four motion sensors to the left joystick. We also make a connection to the X button."

"So far we have mounted the motion sensors into a baseball cap because we originally designed the concept for Daniel, and Daniel could only move his head."

"But other people may have different requirements and, if we are asked to, we will build the control gear



Daniel (right) wearing his Dream-Gamer cap

into a glove, or shoe, or anything else the user finds comfortable to use.

"Although Dream-Gamer is an adapted controller, the changes we make do not prevent [the DualShock] from being used as a normal controller by anyone else."

switchcraft

Inventor Barrie Ellis has worked with severely disabled people for 10 years. He says it is easy to make videogames more accessible by simply adapting existing hardware to work with 'one-switch interfaces'.

OPS2: How do one-switch interfaces work?

Barrie: If you're unable to hold a standard controller, but can perhaps use your head and feet to play, being able to split controls and put them where you need them makes a big difference. Switch interfaces do this in a versatile way.

It's possible to connect very specialised controls, such as large external switches and movement sensors, to computers and other electrical devices for ease of use.

My switch-adapted Namco Arcade Stick can be used in this way when connected to a PlayStation. It's especially useful to gamers who find a DualShock controller difficult or impossible to play with because it allows them to play in many different ways with different parts of the body.

OPS2: How successfully do they work with PS2 games?

Barrie: Switch interfaces can work brilliantly with videogames for many gamers, especially those that can deal with quite a few buttons or are happy to game as a team effort.

A number of games work very well, such as Everybody's Golf, Destruction Derby and Um Jammer Lammy. There could be many more with a few extra menu options considered from the initial design.

OPS2: Is it actually feasible to develop games with one-switch interfaces in mind?

Barrie: Definitely! Developers have already been making one-button games for mobile phones for years now, such as EA's Air Hockey and GamEvil's Stepping Stone. The time is right for developers to consider including simplified control options for their games.

On top of this, I strongly believe that there isn't a game out there that couldn't be modified to play with a single button. In fact, I'm aware of a university working right now on a one-button version of Half-Life 2, using a variety of assistive modes.

On my website, I'm campaigning for accessibility features in all games, trying to encourage game designers to think about making their games easier to understand and playable to more people.

For a mainstream designer to add a speed control to their game would constitute an accessibility feature. Hardcore gamers can ignore it, but those with slower reactions (which of course could apply to us all, eventually!) will still be able to play.

I'd love to see game designers add reconfigurable controls that take into account that some gamers might like to use an old-fashioned arcade stick, an old favourite gamepad, one-handed controller or switch interface to play.

I'd love to see designers adding a choice of difficulty level that really did offer a wide choice. There's no such thing as too easy for some gamers, but a game being too hard is a very common problem. I hope that one day we will see accessibility ratings on game packaging as we do already with age ratings.

For more information or to buy any of this hardware, visit Barrie's website, www.oneswitch.com. It's a treasure trove of ideas and products for people with all sorts of disabilities.



"Our adapted controller does have limitations. We are not able to duplicate in head movements the complex, multi-button operations demanded by many games. But two individuals can play with the same controller. One, say the person with the disability, could control the up-down/left-right movement and perhaps the fire button.

"At the same time, the able-bodied person could be controlling the more complex button pressing on the same controller to change equipment or whatever. The beauty of this is that two people could play together – both being involved in the experience."

Dream-Gamer has just been awarded CE compliance and is available to buy at www.dream-racer.com.

the lip fantastic

The Quad Controller is a mouth-operated device designed by aerospace engineer Ken Yankelevitz after he was approached by Atari in 1981, and it lets physically disabled gamers to 'be on an equal playing field with their friends', as Ken puts it.

It incorporates sip/puff switches that control all 12 buttons on a PS2 DualShock pad. Mounted on a wheelchair or table, it has one mouthpiece that operates a joystick, which in turn can be toggled to control the directional pad, the left joystick or the right joystick. Lip switches also allow the use of the 'push down on the thumbsticks' functions.

Ken has built more than 400 of these controllers, each designed to meet a person's individual requirements. Feedback for this invention has been incredibly positive, with gamers such as Robert Florio, who's been paralysed since a diving accident aged 14,

heralding the Quad Controller as something that allows gamers to "control almost every aspect of the game".

"Games are extremely important to disabled people," Robert says in an interview on the Washington Post's website, www.washingtonpost.com. "Gaming becomes something you can do by yourself again.

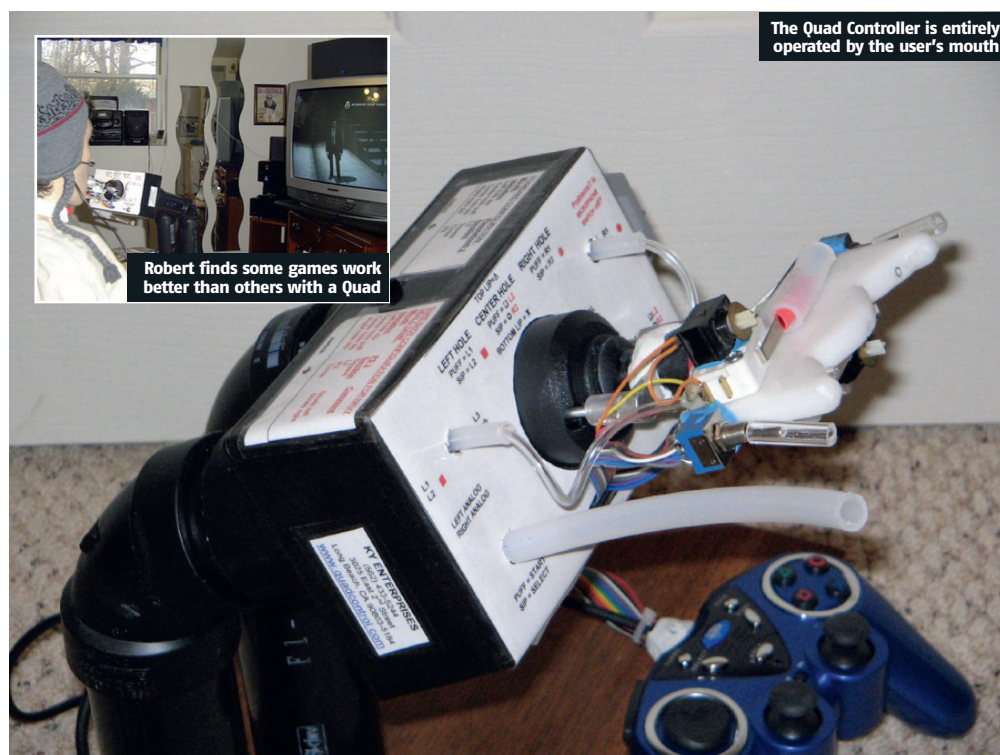
"You feel like you're interacting in a world in a way that you lost interaction in the real world."

For more information on the Quad Controller go to www.quadcontrol.com and find out more about Robert at www.robertflorio.com, where he also reviews how compatible various games are with the Quad Controller.

"Accessibility shouldn't be a foreign word," Robert says on his own website, "something to be screamed in the ears of developers who are not physically challenged or impaired in any way, keeping people from playing their favorite games. It certainly isn't stopping me and my friends."

customise it yourself

The PS2 Phoenix controller is a completely customisable controller pad that could be useful for some people with physical limitations. Find out more about it at www.radicagames.com/phoenix-revolution.php



The Quad Controller is entirely operated by the user's mouth

Robert finds some games work better than others with a Quad



Robert playing *Tomb Raider* with his Quad Controller

we recommend...

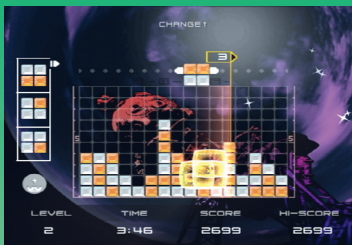
Four games that adapt well for people with impaired movement

TOMB RAIDER LEGEND



According to Robert Florio, Lara Croft is easy to manoeuvre using the mouth-operated controller, and according to us, "Legend is a largely tremendous update of the classic *Tomb Raider* template". Our score: 8/10 in OPS2#71

LUMINES PLUS



You only need to use the analogue stick and the $\otimes$ button to enjoy the fiendish puzzles in this classic game, while the mind blowing colours and stylish design make it a brain-tickling treat.

ANY RPGS



The menu-driven nature and turn-based fighting of most roleplaying games mean that you're almost exclusively using the directional pad and $\otimes$ button, while mammoth storylines and gorgeous characters will make you happily give up a good 80 hours of your life. Per game.

ICO



The straightforward controls and relaxed pace won't get in the way of you immersing yourself in this magical experience that, in the words of our review, "reminds you how emotionally powerful games can be". Our score: 9/10 in OPS2#69

vision

In 2005, a man named Brice Mellen stepped into the limelight of the gaming world. His achievement? He beat Ed Boon, developer of *Mortal Kombat*, at his own game. And oh yeah, by the way, Brice is blind. He plays by listening to the sound effects of the fight.

Being unable to see the screen is obviously going to be a problem for most people when it comes to playing videogames. But you don't have to completely lose your



sight to find it challenging. Conditions such as glaucoma or being colour blind can affect gamers, too, making it difficult to solve colour-based puzzles, for example.

sound stuff

Unfortunately, there aren't many console-based solutions for visually impaired gamers, beyond webgames that have been tailored to focus more on audio features than on visual ones.

Some games do have extensive auditory feedback that makes them more playable; mostly beat-'em-ups and RPGs. But even then, menus are often lacking in auditory information, which would leave partially sighted gamers struggling to set up a level.

Obviously, the extent of your impairment will determine what games you can play. But hopefully our suggestions, gleaned from information and comments on websites and forums covering this issue, will help.

sight sites

- www.bscgames.com BSC games is a company that specialises in making games for the blind or visually impaired. Run by Justin Daubenmire, who is blind himself, it currently produces arcade games, educational games and free games
- allinplay.com/home.html Card-based games designed for people with visual impairments and without
- www.audiogames.net a useful community blog site with news and reviews



we recommend...

The best games for visually impaired players

GRAND THEFT AUTO: VICE CITY STORIES



The bright colours, open structure and detailed sound effects of this free-roaming crime spree make it easy to get involved. Our score: 8/10 in OPS2#84

SOUL CALIBUR III



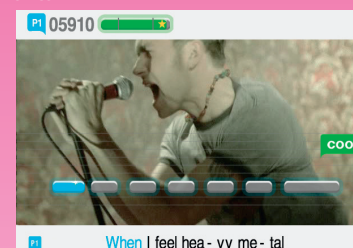
Make like Brice Mellen and get fighting. Here, in one of the best fighting games ever, the crunches of a successfully landed blow will help guide your actions. Our score: 9/10 in OPS2#66

TEKKEN 5



Another great beat-'em-up with a good sound engine, more than 30 meaty fighters and tons of headcracking moves. Our score: 8/10 in OPS2#61

SINGSTAR



We like *Singstar Rocks!* the best, but any of the series that features your favourite musical genre will work well. You just have to plug in the microphone and warble to your heart's content.

hearing

People who don't have hearing difficulties often underestimate just how much we respond to audio cues when we're playing videogames, and how important they are.

In racing games we listen to the changing pitch of the engine to judge our speed. In shooters the sound of bullets zinging over our heads helps us pinpoint where the enemy is. In rhythm-action games it takes a combination of watching onscreen cues and 'feeling' the music to pull off a successful track.

Even when games are captioned, it can be confusing to know who's saying what if the dialogue isn't clearly associated with each speaker.

One solution is the incorporation of closed captions, like the ones you've probably seen on TV. They not only

write out the dialogue, but describe sound effects and music as well.

Half-Life 2 is one iconic game that uses closed captions. After the first instalment was released, Marc Laidlaw of developer Valve Software received complaints from deaf gamers that this much-anticipated game was completely incomprehensible for them.

So Marc used closed captions in the sequel, and found that "the expense was very small and there was no negative aspect".

if the caption fits

In America, games designer and captioner Reid Kimball creates mods for current games. Reid, who developed severe hearing loss after having spinal meningitis when



he was a baby, has had most success with a mod for the classic PC game *Doom 3* (download the mod for free at gamescc.rbkdsgn.com).

It not only provides closed captions for the entire game, but uses a Visual Sound Radar that represents where sounds are coming from in relation to the character you're playing.

Reid is now working with programmers to create middleware software that can be licensed to developers so they can put closed captioning into their games.

All that, and he works full-time for LucasArts, currently designing levels and gameplay systems and scripting for *Star Wars: The Force Unleashed*.



Reid believes captions benefit all gamers, not just those who are deaf

OPS2: Are closed captions enough by themselves to help a person with hearing disabilities play a game?

Reid: Yes, closed captioning is the primary accessibility feature that hard of hearing or deaf players need so they can enjoy the games better.

Someone who can't hear misses out on the important sounds – an enemy walking up behind them, for example, a telltale sound that signals the launch of a powerful enemy attack or an NPC giving the player an objective.

So long as that information is presented in a visual way, then those who can't hear have access to the information they need.

Other ways to show visually different sounds are icons, comic book-like words or a Visual Sound Radar.

OPS2: Is it difficult to put closed captions in a game?

Reid: It isn't difficult at all when you think about the usual engineering challenges that programmers tackle in game development.

Problems such as artificial intelligence, graphics rendering or physics simulation often require teams of well-paid programmers working on these problems for at least a year.

With closed captioning, a small investment from a developer – usually one programmer, full-time for a few months – can create a complete closed captioning system that can be used for all future games with little rewrite involved per project, if any at all.

The real trick is the data entry of all the captions for dialogue, sound effects and music.

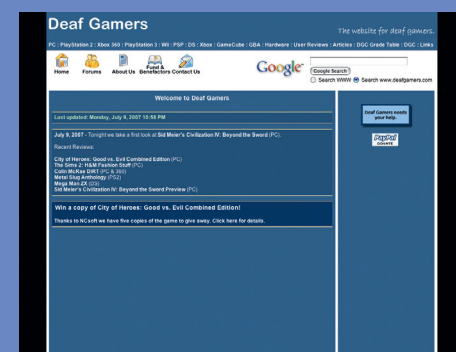
OPS2: Are there any other methods to help gamers with hearing disabilities?

Reid: Using the rumble functionality of game controllers is better than nothing and I do recommend using both to reinforce and strengthen the presence of sound.

However, rumbling does lose some fidelity. How do you make a vibration feel like a normal footstep approaching from behind, compared with a thunderous footstep from a giant boss monster that's around the

sounds interesting

■ www.deafgamers.com Reviews every videogame imaginable, both as a game and in terms of accessibility for the deaf



corner? It's also open to interpretation and misunderstanding from the players.

OPS2: Does the gaming industry cater sufficiently for its customers with disabilities?

Reid: Sadly, no. I also firmly believe that making games more accessible isn't only for the disabled.

People tell me all the time that although they have normal hearing, they still like to use captions in games because sometimes the voice acting is poor and hard to understand, or their children go to bed early and they need to turn the sound off. Accessibility features make games better for everyone.

As developers, we're entertainers and our job is to make an entertaining experience, first and foremost. Not adding accessibility features to our games is completely ignoring our responsibilities as entertainers.

After we ensure that our games are accessible to everyone, then let's go back to trying to push more and more polygons on the screen. After all, why do all that work if someone can't enjoy it? ■ Kim Richards

we recommend...

Four games that don't rely on sound

METAL GEAR SOLID 2: SONS OF LIBERTY



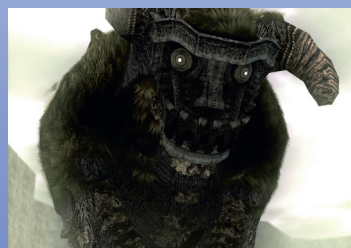
The entire *MGS* series captions not only cutscenes but in-game dialogue, too. And the use of gadgets such as heat sensors, radar and motion detectors makes spotting enemies a visual skill more than an aural one. Our score: 10/10 in OPS2#17

OKAMI



Everyone in this game speaks a gibberish language so it's all captioned. Character pictures appear next to speech, so you can tell who said what. Add eye-popping artwork and a delightful story and it's a winner. Our score: 10/10 in OPS2#81

SHADOW OF THE COLOSSUS



All dialogue in this game is in Japanese, so captions are already there and the use of sound is minimal in the rest of the game. With gorgeous graphics and really, really, really big monsters, it's a must-have game. Our score: 9/10 in OPS2#68

HITMAN 2: SILENT ASSASSIN



The clue's in the name: as well as the gameplay not relying on sound, everything is subtitled, from dialogue to cutscenes – you even get visual notification when guards have spotted your murderous presence. Our score: 9/10 in OPS2#26

find out more: some general websites on accessible gaming

■ www.igda.org/accessibility A blog site with all the latest news on games for disabled gamers

■ www.game-accessibility.com A great source of information for and about disabled gamers, with forums for discussions, articles on developments and gaming events

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- > DESTROY ALL HUMANS! 3 > CRASH OF THE TITANS > MERCENARIES 2
- > GTA IV > SPIDER-MAN: FRIEND OR FOE > THE BEST PS2 CHEATS EVER





062

DONUT ADJUST YOUR SET

YES, IT REALLY IS THE SIMPSONS, EXTRACTING THE MICHAEL FROM YOUR FAVOURITE GAMES



074

STAR WARS SPECIAL

FORCE UNLEASHED EXPOSED! FIRST DETAILS OF THE MOST POWERFUL GAME IN THE GALAXY



017 GUITAR HERO III



018 PES 2006



020 GOD OF WAR PSP



022 KILLZONE PS3



042 NEED FOR SPEED



046 SPIDER-MAN: FOF

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- 016 **NEW GAME MELTDOWN!**
WHY YOU SHOULD BE EXCITED ABOUT WHAT'S COMING ON PS2
 - 026 **SIZE ZERO SHOCK!**
PSP AND PS2 GET SLIMMER
 - 028 **WHAT CHARACTER ARE YOU?**
DISCOVER YOUR TRUE NATURE
 - 032 **METAL GEAR SOLID**
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 - 034 **DISABLED GAMING**
HOW TECHNOLOGY CAN HELP
- PLUS ALL PS2 RELEASES, LADYBOY SPOTTING AND MORE...

monitor

IN-DEPTH PREVIEWS OF TOMORROW'S GAMES

- 042 **NEED FOR SPEED PROSTREET**
- 046 **SPIDER-MAN: FRIEND OR FOE**
- 048 **CRASH OF THE TITANS**
- 050 **THRILLVILLE: OFF THE RAILS**
- 051 **GRIMGRIMOIRE**
- 052 **HARVEY BIRDMAN: ATTORNEY AT LAW**
- 054 **NARUTO: ULTIMATE NINJA 2**
- 056 **FINAL FANTASY TACTICS: THE WAR OF THE LIONS**
- 057 **FINAL FANTASY**
- 057 **FINAL FANTASY II**
- 058 **GTA IV**

008

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