

The effects of Virtual Reality



**A submission of school pupils' views to the
House of Commons Digital, Culture, Media and
Sport Committee**

**For their Inquiry into Immersive and Addictive
Technologies**



**Written evidence submitted by Dr Roger Morgan OBE
on behalf of the Pupils 2 Parliament project**

Introduction

- 1. Pupils 2 Parliament is a project to enable school pupils to consider and feed in their views to parliamentary, national government and national body inquiries and public consultations.**
- 2. The project has been approved by the Clerks of both Houses of Parliament to use the term 'Parliament' in its title.**
- 3. This report gives views of 171 pupils aged 8 to 14 in six discussion groups from Quarry Bank primary school, Brierley Hill; Martock Church of England primary school, Somerset; Gig Mill primary school, Stourbridge; and The Bishop of Hereford's Bluecoat School, Hereford.**
- 4. All views, votes and proposals came spontaneously from pupils, with no prompt or 'lead' on what they should say, and are reported without selection, addition or comment.**

Summary

- All the pupils had played computer games. 68% played them a lot or often.**
- 60% had paid for something extra during a computer game. 65% of all the pupils thought this was fair enough, 35% thought it shouldn't be allowed.**
- 70% of the pupils had used a virtual reality headset.**
- 32% of those who had used one reported feeling a bit sick while using the headset.**
- 36% of all the pupils reported often feeling travel sick on car journeys or on other forms of transport.**
- We had information on both travel sickness and feeling sick using a virtual reality headset for 99 of the children. For these children, we found a statistically significant link between suffering from travel sickness and feeling a bit sick when using a virtual reality headset – children who are prone to travel sickness are likely also to be prone to feeling sickness when using a virtual reality headset.**
- Pupils thought visiting a place in person, or meeting an expert or someone with first hand experience of something, would be better ways of learning than using virtual reality. The next best ways of learning after using virtual reality would be 'walking through' a place or building on a computer screen, learning from a book, or being taught by their teacher. Watching a TV programme about something, playing a computer game about something on screen, and acting a situation in drama, were rated the least good ways of learning.**
- The top three 'good things' about virtual reality according to the pupils were visiting places virtually without or before visiting them in person, use in training and**

practice of complicated skills such as surgery or flying a plane, and to experience things you wouldn't get in real life.

- The most common 'bad thing' about virtual reality according to pupils was the risk of getting addicted to games and virtual reality, followed by getting more interested in virtual reality than real life, and being bad for your eyes.
- 79% thought that realistic computer games risk getting children and young people 'hooked' or addicted into playing them too much.
- Pupils' top proposals for getting children to spend less time playing realistic computer games were adding time limits to games, monitoring children becoming addicted to particular games, and addiction warnings printed on games.

Pupils' experience of electronic gaming and virtual reality

5. All 171 pupils, both primary and secondary age, had played computer games.
6. 54 said they played computer games "sometimes", 61 that they played them "often", and 56 (33 per cent) that they played them "a lot". 68 per cent of the pupils, over two thirds, played computer games "often" or "a lot".
7. 60 per cent of pupils had paid for extras during a computer game. 65 per cent of the 171 pupils thought it was "fair enough", and 35 per cent thought it shouldn't be allowed.
8. Some some thought that if you had paid for a game, you should not have to pay for any extras. If the basic game was free, some thought it was acceptable to be asked to pay for extras, while others thought there should be no charges for anything in a free game. It is acceptable though to be asked to pay extra for early access to a game or part of a game that is still under development.
9. Just over half (54 per cent) of pupils had used a Virtual Reality headset "once or a few times", and 16 per cent used Virtual Reality headsets often. 70 per cent (just over two thirds) of pupils had used a Virtual Reality headset, and 30 per cent (just under a third) had never tried one. The figures were very similar for both primary and secondary pupils.
10. One pupil defined virtual reality and electronic gaming as:

"reality inside a computer".

Pupils' views on the good things about virtual reality

11. The most common 'good things' about virtual reality, according to the pupils, were:

- ‘Visiting’ places in virtual reality without going there personally (from 12 pupils)
- Use in training for complicated skills like flying a plane, sailing a ship, or to be a doctor, vet or nurse – virtual reality is “a way of learning without the risks” (from 9 pupils)
- Experiencing things you wouldn’t experience in real life (from 7 pupils)
- Experiencing a wider range of different things than you could otherwise (from 5 pupils)
- Giving realistic training and practice simulations for military and emergency services personnel to prepare for emergencies (from 5 pupils)
- Providing entertainment (from 3 pupils)
- Taking you to places you couldn’t otherwise visit, eg the wreck of the Titanic (from 3 pupils)
- Being able to visit and learn about places in history and learn about them, eg World War II sites (from 3 pupils)
- Keeping social contact with friends, including friends who have moved away (from 2 pupils)
- Helping your health by being a way of having fun (from 2 pupils)
- Letting you interact with things you can’t normally interact with (from 2 pupils)
- Possible development into a new art medium (from 2 pupils)
- It can be used in education (from 2 pupils)
- Visiting somewhere in virtual reality is an alternative if you are angry that you cannot really go there (from 2 pupils)

12. Other ‘good things’, each put forward by one pupil, were:

- “you can design your own world”
- “you can go to different worlds and feel stuff you wouldn’t (otherwise) be able to feel”
- it’s an advanced way of showing something
- brings games to life (“feels like you are doing it in real life”)
- the equipment is expensive but is not ‘single use’ so you keep visiting places without the cost of actually going there
- more than one person can share the same experience

- “you can visualise things that are not in your real life”
- an architect can show their client around a building at the design stage
- seeing an animal virtually when you cannot see it for real
- learning to learn from mistakes by playing a game
- can teach you things and give you knowledge and experience safely
- can play a virtual reality game if you’re bored
- can be fun (including horror experiences)
- can explore different jobs to help you choose
- the virtual reality industry is expanding, virtual reality “will only ever get better”, creating jobs for which the qualifications are relatively easy to get
- virtual reality can help you exercise
- can be preventive therapy to let off anger safely
- can give less stressful experiences than the real thing
- gives a chance to visit a fantasy world
- can help overcome fears
- can encourage people to visit places without travel
- gives astronauts experience of space travel before going into space
- enables a surgeon plan a difficult operation
- “patients who can’t go outside can experience outside”
- game playing increases manual dexterity – useful for some jobs like surgery
- lets people experience activities they are limited from doing because of health issues or disability.

Pupils’ views on the bad things about virtual reality

13. The most common ‘bad things’ about virtual reality and computer gaming, according to the pupils, were:

- Becoming addicted (from 15 pupils)
- Getting more interested in virtual reality than real life (from 12 pupils)
- Bad for your eyes (from 11 pupils)
- Not being aware of your surroundings, and you can hurt yourself if moving around while using a headset (from 6 pupils)
- Bad for your health (from 5 pupils)
- Making you think something is real when it isn’t (“give false beliefs about what is real”) (from 3 pupils)
- Becoming unaware of serious danger around you in reality (from 3 pupils)
- You lose track of time (“you get engulfed in it”) (from 3 pupils)
- Becoming less sociable (from 2 pupils)

- You could be frightened enough to give you a lifelong fear (from 2 pupils)
- Too much screen time can lead to lack of exercise and weight gain (from 2 pupils)
- Going on something like a roller coaster in virtual reality can make you feel sick – even if you don't feel sick on a real roller coaster (from 2 pupils)
- Virtual reality makes you feel sick 'cybersickness' (from 2 pupils)
- Can give you a headache (from 2 pupils)
- Seeing something that hasn't happened can make you unsure whether it is true or not, which can cause you to worry about it for the rest of your life (from 2 pupils)
- It can take time to adjust from virtual reality (and the rules of behaviour that apply in virtual reality) back to real life when you switch off or are suddenly called back to reality (a parent calling you for tea "can be a jolt if you are miles away" in a virtual world) (from 2 pupils)
- Loss of spatial awareness during games or use of virtual reality (from 2 pupils).

14.
were:

Other bad things, each put forward by one pupil,

- computer gaming "distracts you from what is happening right now"
- feeling claustrophobic
- being scared
- can cause anxiety
- can make you tired
- can make you lazy
- can cause psychological stress
- can affect your ability to do a job
- could replace the jobs of teachers
- could trigger an epileptic fit
- could cause hallucinations
- cyber bullying could happen through virtual reality
- can make you do something nasty to a friend during a game
- can give you bad dreams or nightmares
- because a game is fun, you may not notice when it starts turning bad
- something you see in virtual reality could have consequences for your real life
- training using virtual reality could be risky as the virtual reality version of things will almost certainly differ slightly from the reality you would meet later (it is important therefore that virtual reality is never the *only* way someone is trained)

- it takes a long time to develop good virtual reality, so companies investing could have a long wait before seeing any profit, affecting profitability and their workers' wages
- violent games could lead to you behaving violently in real life
- if virtual reality and realistic games can influence real life, they could in extreme cases become part of brainwashing
- gun games and blood shown on screen are bad
- gun games can make people want to use guns to kill people on the street or in places of worship.

15. Some saw virtual reality itself as neither good nor bad. It depends how it is used. One pupil saw it as the responsibility of the individual to remember that real life is always more important than virtual reality – “it’s not virtual reality’s fault” if bad things happen to some individuals.
16. One pupil thought it would be better to spend the money you might spend on good virtual reality equipment on a real activity, which might be cheaper. “Doing something for real may cost less than buying the kit”.
17. A concern was raised that some games and computer programmes to do with health ask you to enter personal details. Entering details such as your weight can result in being told you are overweight, leading you to try to lose weight when you don’t need to.
18. There was a discussion in one group about watching football matches in virtual reality. Once you had paid for your equipment, you wouldn’t have to pay to go to matches in person. However, it was thought that if lots of people started watching football this way rather than going to football grounds, clubs would lose money and soon there would be a new charge to watch football in virtual reality.
19. One pupil said that virtual reality has “no benefit – it doesn’t make you a better person”. Another said “you may as well watch TV – it’s bigger” and the sound is louder and better.

Virtual reality and feeling sick

20. Some people feel a bit sick when using virtual reality (“cybersickness”). One pupil had read that as many as 80 per cent of people may be affected.
21. 38 (32 per cent of the 120 pupils who had tried virtual reality headsets) said using the headset made them “feel a bit sick”.
22. We wondered whether children who tend to get travel sick are also likely to feel a bit sick using a virtual reality headset.
23. 62 pupils (36 per cent – just over a third) of all the pupils we met said they often get travel sick on journeys (or need to take tablets to stop this).

24. 38 pupils (32 per cent – just under a third) of the 120 pupils who had tried virtual reality headsets told us that they had felt a bit sick while using them.
25. We had information about both travel sickness and feeling a bit sick while using a virtual reality headset for 99 of the pupils who had used a headset.
26. 20 (61 per cent) of 33 pupils in these groups who had felt a bit sick while using a headset also suffered from travel sickness. 13 who had felt a bit sick using a headset did not suffer from travel sickness. Looking at it the other way, 53 per cent (over half) of the 38 pupils who suffered from travel sickness also felt a bit sick while using a virtual reality headset. 48 pupils who had used a virtual reality headset (49 per cent of the total) did not suffer from either travel sickness or feeling sick using a headset.
27. We tested the figures from the 99 children in these five groups to see how likely it was that there really was a link between suffering from travel sickness and tending to feel a bit sick when using a virtual reality headset. (We used the ‘chi squared’ statistical test). From the result of that test, it looks very clear that (at least among these 99 children, aged 8 to 14), children who suffer from travel sickness are also very likely to feel a bit sick when using a virtual reality headset. (The result of the chi squared testing told us that the link was ‘statistically significant’).

Virtual reality in education

28. We asked pupils to compare virtual reality with other ways of learning things in terms of how much they would be likely to learn from each.
29. More than half the pupils thought they would learn more by using virtual reality than they would from any of these ways of learning (these are in order, with the ones pupils still thought they would learn a lot from first, and the ones they thought they would learn least from at the end):
- Exploring a ‘walk through’ of a place on screen
 - Learning from a book
 - Learning about it from your teacher
 - Looking information up for yourself on the internet
 - Watching a TV programme about it
 - Playing a game about it on screen
 - Acting something out through drama.
30. From what our pupils said, the best ways of learning other than through virtual reality are walking through a place or building on screen, followed by learning from a book, then being taught by your teacher.

31. There were two ways of learning that over half the pupils thought they would learn more from than they would from using virtual reality as a way of learning. These were:

- Visiting a place to see things for yourself (61 per cent thought they would learn more this way than through virtual reality)
- Talking in person with an expert or witness (58 per cent of pupils thought they would learn more from this than from virtual reality).

32. Visiting places and meeting people with first hand experience of something both beat virtual reality as a way of learning.

Pupils' views on digital and gaming addiction

33. In all six groups, pupils spontaneously raised the risk of getting addicted to realistic computer games as a bad thing about virtual reality. This was the most common 'bad thing' about virtual reality and computer gaming.

34. 79 per cent of the 171 pupils thought realistic computer games risk getting pupils addicted into playing them too much. You "could forget the real world by liking VR too much". Many pupils thought that too much use of virtual reality, including gaming, is bad for your health, especially your eyesight.

35. There was also a concern that too much computer gaming can change the way you behave. One pupil gave an example of someone they knew who became violent from playing too many virtual reality games. Examples were quoted of pupils becoming addicted to playing particular popular games, in one case not wanting to go to school because of their gaming addiction. One pupil thought an addicted person could focus so completely on virtual reality that they would be unaware if the building collapsed around them. An example was quoted of an adult addicted to computer gaming failing to feed their own child. Another thought that someone using a portable gaming device at a restaurant could forget to eat their meal. Addiction to gaming can make you miss out on things you really need to do.

36. Some thought the risk of addiction goes up as virtual reality gets more realistic.

Some proposals for getting children to spend less time on addictive computer gam

37. Two of our pupil groups (one primary and one secondary age) considered what could be done to get children to spend less time

on addictive realistic computer games. Between them, they put forward the following proposals:

- Parents limiting time spent gaming.
- Automatic time limiting – a time limit at which a game automatically switches off (perhaps after a five minute warning to help the player switch back to real life). Including this in games might need to be put in law.
- Pop-up breaks in games with reminders to take a rest
- A visible clock on games screens to keep you aware of the time
- Better age restriction.
- Developers rating their games for risk of addiction, reviewers reassessing this once the game is in use, and users reporting children or others getting addicted to the game.
- A limit on the amount of virtual currency that can be spent in any one day.
- Warnings on games, similar to health warnings on cigarette packets.



38. I am grateful to the Heads and staff of the schools involved for enabling discussions with their pupils for this submission, especially to the members of staff who took notes of the pupils' views and votes, and above all to the pupils themselves for their views and fresh thinking.

Roger Morgan