Driverless cars – where are we going?

Submission of pupils' views to the House of Lords Science and Technology Select Committee

For their inquiry on autonomous vehicles

Introduction

1. This submission is by Pupils 2 Parliament, a project to enable school pupils to consider and feed in their views to parliamentary, national government and national body public consultations and inquiries. The project has been approved by the Clerks of both Houses of Parliament to use the term 'Parliament' in its title.

2. Pupils 2 Parliament aims to bring the particular viewpoint of children and young people to those conducting inquiries and consultations - plus the uniquely fresh and often challenging analysis that children and young people bring to decisions and policies.

3. The project also aims to give school pupils the chance to learn about and consider key decisions being made by parliament, national government and public bodies, and genuinely to participate in democracy by feeding their views into real national decisionmaking.

4. Pupils' views are independently gathered through discussions with groups of pupils led by someone from Pupils 2 Parliament, using material from the relevant consultation or inquiry document to explain the issues. We specialise in putting the issues and questions even-handedly, without leading pupils in any way or suggesting any responses. All views come spontaneously from pupils, with no adult prompt.

5. This submission gives pupil views for the Committee's inquiry on autonomous vehciles. The information we gave and the questions we asked pupils were based on the Terms of Referemce for the inquiry.

6. The submission contains all pupil views given, without selection, comment or addition. The views submitted are entirely pupils' own views, and nothing but pupils' views.

7. Views in this submission came from discussion with 51 pupils aged 9 to 10 at Belle-Vue Primary School, Stourbridge, West Midlands.

The uses of driverless vehicles

8.   Pupils were asked to list the uses they could see for driverless cars and other sorts of autonomous vehicles – and to say what they saw as the good and bad things about them.

9. Uses for driverless cars were for elderly drivers who could switch their driverless car to take over if they felt tired, or their hands or legs were aching, for deaf or blind people to use, to be designed to use less fuel, to go for long journeys (for families, this meant that parents could rest while the car drove itself, and for anyone it meant you could relax during journeys), to drive more safely and so reduce accidents and injuries such as whiplash, to carry pregnant women without having a steering wheel in front of them, as taxis that could be called more conveniently than usual taxis, and to allow the

driver to switch to auto to sort out any problems with pets or other animals they were carrying.

10.   A good point about driverless cars was that sensors should be able to 'see' further and more widely than the mirrors drivers use on ordinary cars. Their sensors should be able to detect traffic ahead before a human could and before you got to it.

11.   Pupils also saw a valuable use for autonomous submarines to explore the sea at depths where the pressures would be dangerous for humans. They also saw a useful ability to control any sort of exploration vehicle remotely using gloves fitted with position sensors.

12.   Pupils also gave some extra ideas. Mobility scooters could be made autonomic, to take elderly or disabled people where they wanted to go and home again. This would be good for people finding it hard to drive a scooter, or to remember the way for themselves. The sensors on a driverless car could gauge the speed of an approaching vehicle and work out what it might do if it registered that it was going too fast. Autonomic motor bikes could let riders ride at a more stable angle while the sensors watched the road ahead, and could perhaps be made to correct things if the rider was overbalancing. All driverless cars could be programmed to take their passengers to the nearest hospital in an emergency, wherever they are.

13.   Bad things pupils saw in the development of driverless cars and autonomic vehicles were that people would still need to take driving tests in cars with a full set of controls, otherwise they would only be able to travel as passengers in driverless cars, the computer controls of a driverless car could end up taking you where you didn't want to go, sensors could turn out to be worse than humans at seeing what is going on around the car ("maybe humans are better than sensors and may react quicker"), computers can miss things, and the computer might simply 'make a mistake' and cause the car to hit something. There was also concern about sensors getting damaged, with a broken sensor causing an accident. While a driverless taxi might be easy to call, someone might pay for one online and then without a human driver, someone else could steal their ride, or the taxi might not turn up at all once you had paid for it online.

14.   Many were concerned that the computers in a driverless car or other autonomic vehicle could be hacked into. Or they could get a computer virus and become unreliable and unsafe. If you used the time the car was driving itself to eat and drink, there was the risk that spilling a drink might affect the car's electronics. Finally, while you would probably need a password to give instructions to a driverless car, passwords are often found out, and electronic pads or mobile phones with control codes for the car could be taken.

15.   Some were worried that driverless cars might not be good at finding their way through diversions and road blockages – "if you're driving to the airport and the road is blocked, it may not know where to go instead". There was also a concern that driverless cars would turn out to be very expensive – and expensive to repair.

16.   Many pupils were worried that in a driverless car, someone relaxing or sleeping could knock the controls and make make the car wrongly sense the driver was taking

control, or directly cause an accident. If this stopped the car suddenly, that could cause an accident by a vehicle behind running into it. There was also the concern that a child could accidentally start the car moving, or touch the controls.

17.   Many others were worried that a driverless car could brake or change direction too sharply and hurt or injure its passengers.

18.   Pupils had three concerns about the effects of driverless cars on human behaviour. Firstly, driverless cars could encourage more people to make more journeys, even very short ones, by car, and so stop getting exercise by walking. Secondly, they could encourage people to drink too much alcohol, thinking they could drink more because the car would take them home without them having to drive. Thirdly, passengers might be more likely to smoke in a driverless car than while they are driving.

The pupils' vote on the future development of autonomous vehicles

19.   Once the pupils had discussed the uses, good things and bad things about autonomic vehicles, we asked them to vote on whether they were for, or against, the future development of lots of driverless vehicles.

20.   Pupils were overall against the development of lots of driverless vehicles, by 40 votes to 11.

What if pupils' families were to buy a driverless car?

21.   We then asked whether they would be really pleased if their own family was going to get a driverless car. This time, the vote was more balanced, but still more pupils voted that they would not be really pleased about their family getting a driverless car, by 27 votes to 23.

22.   Pupils were not strongly keen on driverless vehicles – overall, they were against the development of lots of them, and the majority did not think they would be really pleased if their own family got one.

The priority for the next autonomous vehicles

23.   We asked the group for proposals for the sort of driverless vehicle that the UK should develop first. We put these in order of priority by asking how many pupils supported each proposal. Here are the pupils' priorities in order:

1st   Drones to deliver medical supplies in rural countries (supported by 34 pupils)

2nd   Driverless cars for disabled people (supported by 33 pupils)

3rd Driverless cars for elderly people (supported by 30 pupils)

4th Autonomous leisure cruise boats (supported by 25 pupils)

Joint 5th Driverless vehicles to carry families (supported by 22 pupils)

Joint 5th Submarines for underwater exploration (supported by 22 pupils)

7th Driverless coaches for transporting people (supported by 6 pupils).

24.   The children's priorities for the development of autonomous vehicles, each supported by over half the pupils, were clearly drones for dropping medical supplies in rural countries, and driverless cars to carry disabled and elderly people.

Interest in working in the autonomous vehicles industry

25.   The Select Committee is interested to know the likely supply of people to work in the autonomic vehicle industry in the future, so we asked the pupils how many of them would like to work on developing different sorts of autonomous vehicles in their own futures.

26.   The majority of pupils (27 pupils) thought they would be interested in working in the autonomous vehicle industry in the future.

Worries about hacking and autonomous vehicles

27.   The Committee has raised the issue of cyber security of autonomic vehicles, and this was something the pupils themselves raised in our discussion. We asked our 51 pupils how worried they were that driverless cars' computers might be hacked into.

28.   Over half (33 pupils) were 'very' or 'a bit' worried about driverless cars' computers being hacked. 7 pupils were not worried about this at all.

29.   The complete figures were 18 'very worried', 15 'a bit' worried, 11 'not really' worried, and 7 'not at all' worried.

How safe should driverless cars have to be before they are used on UK roads?

30.   Lastly, we asked the children to think about how safe driverless cars should have to be, compared with humans driving cars, before being used on our roads. We had explained that around nine out of ten road accidents involve driver errors, and that driverless cars are expected to make far fewer errors than humans, and so be much safer. We wanted to test children's views on how much safer they should have to be in order to be allowed on the roads.

31.   The children wanted driverless cars to prove themselves to be as near as they could possibly be to perfect safety before being allowed to use UK roads freely.

32.   37 out of the 51 pupils voted that driverless cars should have to be as near as they can to being perfectly safe before being used on the roads. 6 voted that they should be allowed on the roads once they had proved themselves safer than human drivers. Another 6 voted that they should be allowed on the roads once they had been proven as safe as human drivers. 2 voted that driverless cars should be allowed on the roads even while they were a bit less safe than human drivers, while they were being developed and because they were expected to get gradually safer as their design improved.

33.   Pupils told us they voted the way they did because of the risks they still saw for driverless cars, such as their control computers being hacked into or getting a computer virus. Those risks needed to be got rid of first. They still saw the cars likely to fail sometimes and cause accidents - which could kill people likely to be using them, including families or pregnant women. If driverless cars were so much better than humans, they needed to prove that there would be very little chance of an accident with them – "more humans can enjoy themselves then".

34.   The small number of pupils who voted that driverless cars should be allowed on the roads once they were found to be as safe as human drivers voted that way because using them on the roads would not increase road accidents, and that would be OK. Using driverless cars that had the same level of safety as human drivers was also OK because the cars should become safer with time; "should be the same because throughout the years it will get better, not worse".

35.   Those who thought that driverless cars should prove themselves safer than human drivers before being allowed on the roads gave two final quotes for this submission: "because they're meant to be better than normal cars"; "if it's not going to be safer, what's the point of bringing it on the road?".

36.   I am grateful to the Head and staff of Belle-Vue School for letting me carry out this discussion with their pupils, especially grateful to the member of staff who worked hard to take notes of the pupils' views, and above all I am grateful to the pupils themselves who gave their fresh thinking, views and ideas for this submission.

Dr Roger Morgan OBE

Pupils 2 Parliament
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