Fingerprint readers in schools and Coronavirus (COVID-19)

Recommendation

The government should recommend suspension of the use of biometric platen across UK education systems for activities where fingerprints are non-essential for ID verification, i.e. canteens and libraries. Implement hygiene measures, where there is no alternative, i.e. in high-level security access.

Precautionary suspension of the use of biometric platen for routine activities should have minimal detrimental impact, but might reduce the risk of transmission across whole school communities.

Issue

Millions of children in UK schools use fingerprint pad readers ("biometric platens") every day for trivial transactions, to verify their identity for cashless payment systems in school canteens just before they eat meals, and / or to borrow library books.

Biometric platens facilitate the transfer of germs from children's fingers via direct contact with the same surface, used by large numbers of pupils in buildings, and between different age groups, who would not otherwise have any direct classroom contact. Not every child in a school will use the same door handle or bathroom, but almost all will use the same platen at the canteen till, or in the library.

We believe therefore that the biometric platens used in education pose an increased but avoidable risk, for the spread of disease at speed and scale, across children in the same setting, —a greater risk than direct classroom contact among peers— and therefore across communities, and the wider population.

The WHO Chief Scientist tweeted COVID-19 research on March 7, that suggests, "children are as likely to be infected as adults" and "the household secondary attack rate was 15%"[1]

Hygiene evidence

Research on biometric platens in schools by Professor Leaton Gray (University College London) and Professor Phippen, (Plymouth University) in 2017 suggest that hygiene is poor, and found that:

> "Pupils repeatedly expressed disgust regarding the lack of hygiene surrounding biometric platen use. Comments included, '*I see loads of disgusting things on it*', and '*Cards could be better because it's more hygienic*'. **Perhaps the most disturbing comment to the research team was the revelation that some people routinely lick the platen clean, for example pupils and dinner supervisors routinely licking their fingers and then rubbing the platen to polish it.** By no stretch of the imagination can this be seen as representing good practice in ICT use, and it represents a fairly damning indictment of the system's lack of usability if routinely licking the equipment is seen as practical and necessary." [2]

Some companies such as Schlage, recommend **not** spraying any liquids for cleaning such as into their hand reader.[3] This limits schools from thoroughly cleaning platens between each child's touch. Microsoft even suggests for its product, used more commonly in business settings, a complex process, *"to clean the Fingerprint Reader window, users must apply the sticky side of a piece of adhesive cellophane tape on the window and then peel it away. Under heavy usage, the coating on the Fingerprint Reader window may turn cloudy from the salt in perspiration."[4]*

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[1] Qifang, Bi et al (March 4, 2020) Epidemiology and Transmission of COVID-19 in China https://doi.org/10.1101/2020.03.03.20028423
[2] Research on biometric platens in schools. Professor Leaton Gray, UCL, and Professor Phippen, Plymouth University (2017) https://pearl.plymouth.ac.uk/bitstream/handle/10026.1/10702/Invisibly%20Blighted_1st%20proof.pdf?sequence=1&isAllowed=y Page 47 (our bold emphasis) Invisibly Blighted: The digital erosion of childhood
[3] Equipment vendor Schlage 0:08 / 1:43 "How to clean your hand reader" https://www.youtube.com/watch?v=vZ3OOtSTviE
[4] How to clean and maintain your Microsoft Fingerprint Reader device (2017)

Background: the risk posed by fingerprint readers in UK schools

WHO advice[5] suggests people can catch COVID-19 by touching infected objects or surfaces, then touching their eyes, nose or mouth and **that coronaviruses (including preliminary information on COVID-19) may survive on surfaces for up to several days**.

Evidence base

This technology is uncommon in other countries in educational settings. There is therefore limited research into disease transfer via such devices. U.S. based researchers in 2007[6] using bacterial (not viral) tests on biometric readers in lab-based tests, found that E.coli survived on devices slightly longer than staph bacteria but only for up to around 20 minutes, and the majority of bacteria was transferred within the first 10 touches. The virus by contrast may survive 'for up to several days' (WHO). Mathematically this means one carrier might infect multiple children in one day (using both canteen and library readers), and each in turn be a source of infection to others using the same platens.

Case studies

West Sussex secondary school, with 2,000 pupils, aged 11-18. Only 3 children do not use biometric readers. West Sussex has 3 confirmed COVID-19 cases and nearby Brighton/Hove has 7.[7]

Other relevant locations

There are 18 confirmed cases[8] in Scotland, where one-third of Local Authorities use biometrics, and 7 cases in Wales,[9] where almost all council-managed secondary schools use fingerprint readers.

Number of children in education and using fingerprint readers

The majority of children using these systems are in England's state schools. We do not have statistics for independent or private education.

- England: There are 8.8 million children in state education in 24,000+ schools[10]. 20,832 are primary schools, 4,188 are secondary schools. Over 70% of secondary schools use fingerprint readers.[11] No statistics for primary school use, but common in school libraries since 2005.[12]
- Wales[13]: 470,000 pupils in Wales. Use is widespread, but numbers unconfirmed.[14] We estimate upwards of 70% across primary and secondary schools, similar to England.
- Scotland: 700,00 pupils. In use by around one-third of Local Authorities. Where used, close to 100% use is common.[15] (For regional distribution across Scottish Authorities see: Table 1).
- Northern Ireland: 335,000 in Northern Ireland. Number using biometric readers is unknown. (Fingerprint readers were introduced in N.I. in 2010).[16]

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https://support.microsoft.com/en-gb/help/894036/how-to-clean-and-maintain-your-microsoft-fingerprint-reader-device

[5] WHO Q&A on COVID-19 https://www.who.int/news-room/q-a-detail/q-a-coronaviruses (accessed March 8)

[6] Purdue University study (2007) bacteria on biometric tools. https://news.uns.purdue.edu/x/2007b/071010ElliottGerms.html

[7] Confirmed cases of COVID-19 in England (March 8, 2020) https://bit.ly/3cBIBrU

[8] Confirmed cases in Scotland: BBC (March 8, 2020) https://www.bbc.co.uk/news/uk-scotland-51792637

[9] BBC Coronavirus: Two more cases in Wales brings total to four https://www.bbc.co.uk/news/uk-wales-51790967

[10] Number of schools and pupils in England, using data from the January 2019 School Censuses (June 2019) https://bit.ly/2ICEsWN

[11] Our 2018 research suggests 70% of secondary schools in England and Wales use biometrics. In 2014, *'Figures showed that four out of 10 secondary schools now use biometric technology."* (The Independent) Current estimates from our own research. https://bit.ly/2PYq0wE

[12] Fingerprint recognition taking over from library cards in many schools (2005) https://bit.ly/2TSMGiL

[13] Wales statistics (July 2019) https://bit.ly/2VVQVNp

[14] Wales (2014) https://www.bbc.co.uk/news/uk-wales-40481480 In Wrexham, all high schools use biometric systems and 28 out of 60 primary schools operate a cashless system. Pembrokeshire is rolling out cashless payment options to primary schools. Eleven out of 12 Carmarthenshire high schools use biometrics.

[15] Scotland numbers by council from Freedom of Information requests (King, P. 2019) https://pippaking.blogspot.com/

[16] Pace N. Ireland blog (2010) Fingerprinting your child at school – the story details that Nolan didn't cover https://bit.ly/2xquohD

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Alternative procedures

2012 legislation, The Protection of Freedoms Act 2012, requires that, if schools in England and Wales choose to employ any biometric method of ID verification, they need to also be able to offer the same services without it, and must offer equal alternative arrangements.[17]

Schools must gain written consent from legal guardians to take and process a child's biometric data. The child and the guardian may also withdraw consent at any time. Therefore all schools must be able to operate without the use of the tools for any child or parent that exercises their right at all times. It is common for children to be issued a card[18], or PIN,[19] or to simply use their name at the till instead of their finger to verify ID — using the same system, but without touching the biometric platen.

Use of such readers for registering attendance or secure building access, is less common in schools, but fingerprint readers are used in Higher Education institutions for doors[20] or registration.[21]

Suspension of biometric platen for routine activities would have minimal detrimental practical impact, but we suggest could potentially slow and reduce viral transmission across school communities.

Table 1. Number of pupils in Scotland that routinely use fingerprint readers in schools. (2019) P. King

Local Authority	Total Pupils 2017	Total on roll in the schools using biometrics	Pupils using biometrics	% using biometrics	Date implemented	
Aberdeen City	22,733		0		-	
Aberdeenshire	35,649		0		-	
Angus	15,078	6,373	5,828	91%	1999	
Argyll & Bute	10,270		0		-	Considering
Clackmannanshire	6,625	2,552	2,449	96%	2009	
Dumfries & Galloway	18,754		0		-	
Dundee City	18,207		0		-	
East Ayrshire	15,860	9,488	7,500	79%	2016	
East Dunbartonshire	16,728	9,612	9,612	100%	2000	
East Lothian	14,219		0		0	Considering for 2019
East Renfrewshire	17,072		0			
Edinburgh City	49,638	13,183	9,167	70%	2016 and 2017	
Na h-Eileanan Siar	3,360	2,513	1,772	71%	Not answered	Considering
Falkirk	21,818		0		-	
Fife	49,412		0		-	
Glasgow City	67,870		0		-	
Highland	30,824	2,278	1,224	54%	2014 and 2016	
Inverclyde	9,874		0		-	
Midlothian	12,640					Reminder sent March 2019
Moray	11,905		0		-	
North Ayrshire	18,265		0		-	
North Lanarkshire	48,866		0		-	
Orkney Islands	2,728		0		-	
Perth & Kinross	17,918		0		-	
Renfrewshire	23,544	1,378	1,378	100%	2012	
Scottish Borders	14,609	610	593	97%	2017	
Shetland Islands	3,236		0		-	
South Ayrshire	14,008		0		-	
South Lanarkshire	44,079		0		-	
Stirling	12,492	593	592	100%	2011	
West Dunbartonshire	12,581					Reminder sent March 2019
West Lothian	26,912		0		-	
All local authorities	687,774	48,580	40,115	83%		

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[17] The Protection of Freedoms Act 2012, Chapter 2 Protection of biometric information of children in schools etc http://www.legislation.gov.uk/ukpga/2012/9/part/1/chapter/2/enacted The Act does not apply to children in Scotland and Northern Ireland. See https://www.whatdotheyknow.com/request/327873/response/800940/attach/3/39290%20Response.pdf)

[18] Case study: Wadebridge School, Cornwall. "If parents choose not to have their child registered for the biometric system the school will provide them with a 4 digit PIN Code for the cashless canteen system. https://www.wadebridge.cornwall.sch.uk/sixth-form/cashless-catering

[19] The largest UK vendor, RCB Cunninghams, offers this multi-method of PIN, or cards, as well as biometric platens to reader fingerprints in the canteen https://www.crbcunninghams.co.uk/cashless-catering and in libraries https://www.crbcunninghams.co.uk/case-studies/library-management

[20] Bristol University http://www.bristol.ac.uk/securityservices/access-control/biometric-reader.html

[21] Universities introduce fingerprinting for international students (2013) The Independent https://www.independent.co.uk/student/news/is-this-really-necessary-universities-introduce-fingerprinting-for-international-students-8894007.html

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